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Aggressive Behavior as a Function of Trait Anxiety, Anger and Sex

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AGGRESSIVE BEHAVIOR AS A FUNCTION OF TRAIT ANXIETY, ANGER AND SEX

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ABSTRACT

The relationship between trait anxiety and physical aggression was investigated. Two additional variables, sex and anger level of the Ss were considered. It was hypothesized that males would express more aggression than females and that angered Ss would be more aggressive than nonangered Ss. No hypotheses were made concerning the relationship between trait anxiety and physical aggression.

Seventy-two undergraduates at the University of North Dakota were selected as Ss. A 3x2x2 factorial design was used with three levels of anxiety and two categories of anger and sex. Six Ss were assigned to each treatment condition. Trait anxiety was defined by scores on the Manifest Anxiety Scale (Taylor, 1953), and Ss were divided into low, medium, and high anxiety groups. Ss were led to believe they were participating with another student (the male confederate) in a learning experiment.

In the first stage of the study half of the Ss were angered by the confederate who administered several shocks to them in evaluation of a task they had completed. Half of the Ss were not angered. Following the anger manipulation, Ss indicated their subjective feelings of anger on a Self Report Mood Scale. In the second stage Ss were instructed to teach their partner (the confederate) a concept using electric shock as punishment. The dependent variable was the mean shock intensity ostensibly administered to the confederate on each of 31 shock trials.

Angered Ss did not respond more aggressively, on the whole, than nonangered Ss, but they did report feeling significantly more angry. Males were significantly more aggressive than females on the first shock trial. Sex differences were not obtained, however, for shock trials 1-5 or for shock trials 1-31. Trait anxiety, as measured by the MAS, was not shown to be related to the overt expression of physical aggression.

CHAPTER I

INTRODUCTION AND RESEARCH

Violence in our society is a source of growing concern to the general public. Citizens of our large cities are hesitant to walk the streets at night for fear of physical attack. A major issue of recent political contests was law and order. Gun control legislation is receiving increasing consideration and support. Violence has accompanied the current unrest on our college campuses and in the civil rights movement. The causes of violence and the problems of coping with it are important social issues in America today.

Violence or, more generally, aggressive behavior, has long been an area of central concern and study to behavioral scientists and mental health workers. Aggression in animals and man has been studied extensively by psychologists under carefully controlled laboratory conditions. The clinical psychologist, on the other hand, has attempted to cope directly with the problems of aggressive behavior so frequently encountered in his practice. The importance of the aggression variable to an understanding of human behavior is attested to by the fact that it is given major consideration in every comprehensive theory of personality.

Possibly of even greater significance to clinical psychology than the aggression variable is the concept of anxiety. In emphasizing the theoretical and empirical interest that behavioral and medical

scientists have in the anxiety phenomenon, a contemporary anxiety theorist writes:

> Anxiety is found as a central explanatory concept in almost all contemporary theories of personality, and it is regarded as a principal causative agent for such diverse behavioral consequences as insomnia, immoral and sinful acts, instances of creative self expression, debilitating psychological and psychosomatic symptoms, and idiosyncratic mannerisms of endless variety (Spielberger, 1966).

Spielberger further describes the tremendous upsurge in anxiety research that has occurred in the past 20 years.

Considering the great significance of the concepts of aggression and anxiety in the study and understanding of human behavior, and considering the tremendous volume of research that has been devoted to these two variables, it is surprising that little empirical study has dealt directly with the relationship between them. It was the purpose of the present study to test the relationship between anxiety, as a personality trait, and the physical expression of aggressive behavior toward another person. Although the source of much theorizing and speculation, the nature of this relationship has not been empirically demonstrated.

The following three sections of this chapter deal with the development and definition of aggression and anxiety concepts and with research concerning these variables. Only research which is directly relevant to the present study will be discussed, and in many instances one or two studies will be cited as representative of current knowledge in a given area. For a more extensive consideration of the research on aggression and anxiety the reader is referred to Berkowitz (1962, 1969), Levitt (1967), Spence (1964), and Spielberger (1966). In the final section of this chapter the design of the present study is discussed as well as the choice of measuring instruments.

Aggression

Two main views of the nature of aggression have dominated psychological theory for half a century. The first of these arose from the instinct doctrine of Freudian psychoanalysis. The second view, while not denying the existence of innate components in human behavior, has emphasized the role of frustration in aggressive behavior and is based on the frustration-aggression theory of Dollard, Doob, Miller, Mowrer, and Sears (1939).

Traditional psychoanalytic theory has maintained that aggressive energy is constantly being generated within the body. This energy eventually builds up and leads to destructive acts against the self or others unless these urges are neutralized or discharged in some socially accepted fashion. Freud believed that these innate aggressive urges stemmed from the "death instinct," a fundamental tendency to return to the inorganic state. Later psychoanalytic theorists (Hartmann, Kris, and Loewenstein, 1949) have discarded the death instinct concept but have maintained the idea of an innate aggressive force as the primary cause of aggressive behavior.

American psychology, in the tradition of behaviorism, has deemphasized the role of innate or "built in" factors in human behavior and has stressed observation and measurement in research and theory. The frustration-aggression hypothesis (Dollard et al., 1939) proposed that a frustration, defined as "an interference with the occurrence of an instigated goal response at its proper time in the behavior sequence," aroused an instigation to aggression. Miller (1941) later clarified the position by stating that frustration does not always lead to open aggression since competing response tendencies may be stronger than the

instigation to aggression. These psychologists held to the position, however, that aggression always presupposes the existence of frustration.

The original frustration-aggression hypothesis has been subject to a great deal of criticism in the past two decades, some major points of which will now be noted. Buss (1961) strongly criticized the frustration-aggression hypothesis on the grounds that it excludes a large class of aggression antecedents, that is, noxious stimuli, which cannot be classified as frustrating. Bandura and Walters (1963) have pointed out that many aggressive behaviors are the result of previous learning, not frustration. A person can learn to engage in aggressive actions, for example, by watching other people. They have also stressed the role of learning in the modification of reactions to frustration.

A current proponent of the frustration-aggression hypothesis, Leonard Berkowitz, has suggested several modifications of the original version (1965a). He concedes that previously learned aggressive habits may result in aggressive behavior if appropriate cues are present and that frustration need not be a factor. A readiness for aggressive action may be created by the emotional reaction (anger) to frustration or by previously learned habits. However, even if the individual is ready or primed to aggress (regardless of the source of the instigation), appropriate cues must be present in the situation before the aggression will occur. Suitable cues are stimuli associated with the anger instigator or objects having some connection with aggression. Presumably, the vigor of an aggressive response to a suitable cue is determined by (1) the aggressive cue value of the stimulus and (2) the degree of the readiness or instigation to aggress, that is, the intensity of anger or the strength of the aggressiveness habits.

Berkowitz has broadened the scope of the frustration-aggression hypothesis to include the important role which learning plays in aggressive behavior. Although the purpose of this paper is not to lend support to one theory of aggression or another, the revised frustration-aggression hypothesis, as discussed by Berkowitz (1965a, 1969), does provide a theoretical framework of the nature of aggression with which the present author is comfortable. The definition of aggression adopted in the present study is that original version offered by Dollard et al., (1939) and currently accepted by Berkowitz. Aggression is any "sequence of behavior, the goal response to which is the injury of the person to whom it is directed" (Dollard et al., 1939, p. 9). The primary difference between this and other definitions of aggression is that the purposiveness or intentionality of the aggression is considered. Berkowitz (1962, 1965a) builds a strong case for the consideration of purposiveness in aggressive behavior, but this matter need not receive further consideration here.

Berkowitz and his co-workers have placed a great deal of emphasis on the importance of aggression eliciting cues in aggressive behavior. As mentioned above, the strength of an aggressive response to a stimulus is a function of the aggressive cue value of the stimulus and the degree of readiness of the person to aggress. Although aggressive cue value is not of particular relevance to the present study, several studies have been selected for review because they demonstrate methods for increasing readiness to aggress by creating an emotional state of anger in the Ss.

In a study designed to test the catharsis concept, Berkowitz and Rawlings (1963) angered half of their male and female college Ss with insulting and degrading comments from E. The Ss were then exposed to a

violent prize fight film after being led to believe either that the aggression in the film was justified or that the aggression was not justified. The Ss then made questionnaire ratings of the experiment, E, and the movie they saw. Ss who had been angered expressed more hostility in the questionnaire ratings than non-angered Ss. More hostility also was expressed by those who had witnessed the prize fight film after receiving the justified aggression instructions. It would seem that an angry person is more likely to express verbal hostility than a person who is not angry. The results also indicate that witnessing aggression tends to increase hostile expression rather than decrease it vicariously as would be predicted by the catharsis hypothesis.

In a similar study Berkowitz, Corwin, and Heironimus (1963) used male Ss and added a neutral film condition. Again, half of the Ss were angered by insults from E, and Ss received directions describing the prize fight aggression as either justified or unjustified. Angered subjects again expressed more hostility on the questionnaire particularly if they witnessed the violent film in which the aggression was described as justified.

In a series of three studies, Berkowitz (1965b) manipulated the anger (insult technique) condition, the justified aggressive condition, and the violent film condition. In these studies E was introduced as a boxer (strong aggressive cue value) or a speech major (neutral cue value) in order to demonstrate the importance of external aggressive cues in eliciting aggression. In the first study Ss rated E on a questionnaire, and in the next two studies the dependent variable was the number of shocks delivered to E in evaluation of a task he had performed. In all three studies those Ss who had been angered by insults expressed more

verbal or physical aggression toward E. This was true particularly for those who had witnessed the violent film while believing that the aggression was justified. The fact that more aggression was expressed toward E when he was labeled a boxer was interpreted as support for the idea of aggressive cue value in eliciting aggression.

Berkowitz and Geen (1966) used a different technique to induce anger in another test of aggressive cue value in aggressive behavior. Male college students were exposed to the fight film or a neutral film (justified aggression instructions only) after E was introduced to them as "Bob," a neutral name, or "Kirk," the name of the victim in the fight film. Prior to seeing the film each S completed a brief written assignment and was told that E would evaluate his work by administering from one to ten electric shocks to him. One shock indicated high quality work and ten shocks indicated very poor work. In actuality, half of the Ss (angered) were given seven shocks and half (non-angered) were given one shock. After viewing the film the Ss were allowed to evaluate E's work on a similar task by administering shocks. The greatest number of shocks was administered by angered Ss who saw the fight film and who shocked "Kirk." It was concluded that the anger treatment was effective since the men who had received seven shocks rated themselves significantly more angry on a mood scale than those who had received one shock. The angrier Ss also expressed more negative feelings toward E. It was concluded that the E named Kirk had stronger aggressive cue value because of his name mediated association with the movie violence.

The shocking technique was also used by Berkowitz and LePage (1967) in creating differential anger levels in male Ss. The Ss were then allowed to evaluate E's performance with shock. For some Ss there

were weapons nearby, for others there were neutral objects, and for others there were no objects. Results supported the hypothesis that Ss exposed to stimuli of high aggressive cue value (weapons) would shock more. More important to the present study, however, was the fact that Ss who had received seven shocks reported themselves more angry than Ss who had received one shock. The angrier Ss also administered more shocks to E.

Somewhat less clear results of the shocking technique in arousing anger were obtained by Geen, Rabosky, and O'Neal (1968). E's confederate shocked the Ss either two or seven times in evaluation of their solutions to a problem. Then the Ss were allowed to evaluate the confederate's performance in similar fashion. The number and intensity of the Ss' shocks were recorded, and they reported their anger level on mood scales after being shocked. The attack manipulation produced significantly more aggression in both number and intensity of shocks, but only a marginal and insignificant increase in reported anger. The lack of relationship between physical aggression and reported anger is not easily explained. The authors suggest that aggressiveness may be more a function of the degree to which an S is aroused by attack than of the degree of anger he feels. This would seem to indicate that "anger" may not be the best term to describe the state of arousal or readiness to aggress that is created by the shocking technique.

It is a rather commonly held belief that males are more prone to physical aggression than are females. Several studies indicate that under certain conditions this is true. Jersild and Markey (1935) studied physical aggression in nursery school children of both sexes. They observed approximately 1500 conflicts in free play situations, each conflict lasting on the average of 30 seconds. Boys made more overt aggressive

responses than girls, and girls were more apt to aggress verbally. The differences in mode of aggression were greater in the older children, which was taken as indication that these children were beginning to learn the forms of behavior associated with their sex role.

Sears (1961) investigated aggressive attitudes, among other variables, in a study of 12 year olds. Self report scales showed that the boys expressed significantly higher levels of antisocial aggression. Girls expressed more socially acceptable aggression. This would suggest that although girls inhibit physical aggression more than boys, they do find ways to express aggression which are more in keeping with their sex role.

Boys and girls from ages 13 to 18 were studied by Lansky, Crandall, Kagan, and Baker (1961) for differences in aggression and other behaviors. Aggression measures were taken from interviews and several group administered psychometric techniques. Results indicated that boys are generally more aggressive than girls during adolescence. They pointed out, however, that sex differences seemed to be more a matter of specific types of conflicts and methods of resolution for each sex rather than in differences in the individual aggression variable.

It would seem, in light of the above studies, that the conflicts underlying aggressive behavior and the mode of aggression are not the same for boys and girls. In the previously cited Berkowitz and Rawlings (1963) study it was shown that sex differences in aggressive responding are not always obtained. The Ss who had been insulted by the male E expressed more hostility toward him on a questionnaire than subjects who had not been insulted. There were no significant differences, however, in the expression of verbal hostility for males and females.

As suggested above, the method of aggressive expression is important to consider in evaluating sex differences. Berkowitz (1962) used shock as the aggression measure with male and female Ss who worked in like-sex pairs. Half the Ss were angered (7 shocks) by their partner and half were not (1 shock). The shocked Ss were then told to evaluate (with shock) their partner's work which was presented either as "good" or "bad." Then they were given a second opportunity to shock their partner in evaluation of work that was of "moderate" quality. It was found that the angered Ss shocked more on the first trial than non-angered Ss regardless of sex. On the second trial the women significantly decreased the number of shocks administered and the males did not. Berkowitz concluded that "the women apparently had developed somewhat stronger guilt and/or anxiety than did the men as a consequence of their initial hostile behavior." No explanation is offered, however, as to why the women expressed just as much physical aggression on the first trial as the men.

Buss (1963) obtained results which are more consistent with generally held beliefs concerning sex and physical aggression. His study was designed to test certain aspects of the frustration-aggression hypothesis. Male and female college students were subjected to the following three types of frustrating experiences: (1) continued failure at an assigned task, (2) interference with winning money, (3) interference with getting a better grade. The Ss were then given an opportunity to shock the E's confederate. No differences were found for the three types of frustration, but they all produced more aggression than a no-frustration control condition. Of primary interest to the present study were the differences in physical aggression due to sex. Males shocked

more, over all, than females. It was also true that male Ss shocked the male confederate more than the female confederate. The female Ss, on the other hand, shocked the male and female confederates equally. The author concluded:

> The sex difference in aggression intensity was consistent with the results of pilot studies and with widely held beliefs. The men were more aggressive than the women. The novel sex difference was the subject-victim interaction: The men aggressed more against men than against women, but the women aggressed equally against men and women. While no one will be surprised by this result, it may well be that with other kinds of aggression (indirect or verbal aggression) different subject-victim interactions will be found. In any event, the data suggest that in research on aggression the sex of the target may be as important as the sex of the aggressor (Buss, 1963).

It is obvious that arousal level (anger) and sex are relevant and important variables to consider in a study of aggressive behavior. There are many other relevant variables, however, such as aggressive cue value, the justification of aggression, the instrumentality of aggression in reaching a goal, and the role of frustration in aggressive behavior, to name only a few. Anger or arousal level and sex were chosen for investigation in the present study because they also seem to be clinically relevant to the second main variable under investigation, namely anxiety.

Anxiety

According to Levitt (1967), theories of the origin of anxiety have come primarily from two sources: psychoanalysis and learning theory.

Psychoanalytic Theory: Freud believed that the new-born child first experiences anxiety purely as a consequence of being thrust from the sheltered and secure environment of the womb into a barrage of

unfamiliar stimulation. The infant becomes aware very early that he is totally dependent on the mother for the satisfaction of his physical needs. The tension that arises from this basic threat to the infant's survival is called primary anxiety, and is, according to Freud, the basis for all future anxiety reactions.

Later on, as the child develops an ego and a superego, new kinds of anxiety arise. One of these, "reality anxiety," has an identifiable source in the external world and is in proportion to the actual threat imposed by that source. Reality anxiety is adaptive and healthy. "Neurotic anxiety," on the other hand, is a result of constant threat that the id will overwhelm the ego with socially unacceptable sexual or aggressive impulses. The superego, or conscience, developes in order to assist the ego in controlling the id. If the superego becomes too strong it may pose a threat of punishment for any expression of id impulses or even the thought of the taboo behavior. This threat leads to "moral anxiety" which is more a guilt reaction than a reaction of fear as in reality and neurotic anxiety.

Neo-Freudians, such as Karen Horney and Harry Stack Sullivan, have placed more emphasis on frustration of the needs for protection and support as the basis for anxiety. The natural reaction to frustration is hostility toward the frustrator, and this behavior frequently leads to disapproval by the parents. The disapproval, whether it takes the form of physical rebuke or threat of loss of support, arouses primary anxiety in the child. Defense mechanisms are then brought into play to handle aggressive feelings and thus to ward off primary anxiety. Any severe threat to the defenses, however, causes an upsurge of "secondary anxiety." The neo-Freudians feel that most human anxiety is of this latter type.

Learning Theory: The learning theory approach to the nature of anxiety is no better exemplified than in the work of John Dollard and Neil Miller (1950). These men regard anxiety as a learned or secondary drive. This learned drive is based upon an innate tendency, or primary drive, to avoid pain. A person learns to fear whatever produces pain, and pain is the stimulus for the secondary drive, anxiety or fear (anxiety and fear are not distinguishable). Anxiety, then, is a learned reaction to certain stimuli in the environment that are associated with pain, and the strength of that reaction is primarily a function of the number of reinforcements (number of times the fear stimulus is accompanied by pain). If the anxiety reaction is strong enough it may generalize to similar stimuli and situations. Thus, the greater the exposure to intense fears in early life, the greater the predisposition to anxiety in later life.

Another important source of anxiety is conflict. When a person is motivated simultaneously by two strong, competing drives, conflict occurs. The greater the number and intensity of conflicts early in life, the more anxiety prone will be the adult.

An understanding of the meaning of anxiety, regardless of the theory behind it, is complicated by a serious lack of agreement among professionals. Ruebush's (1963) definition of anxiety summarizes quite well the difficulties involved:

> Almost everyone agrees that anxiety is an unpleasant-feeling state, clearly distinguished from other emotional states and having physiological concomitants. In addition to this common core of meaning, however, the term takes on other nuances and shadings of meaning, depending upon the particular theoretical orientation and operational criteria employed by individual researchers (cited by Levitt, 1967).

Levitt (1967) feels that we can establish the "common core of meaning" by saying that anxiety is a "complex state characterized by a subjective feeling of apprehension and heightened physiological reactivity."

According to Spielberger (1966) "ambiguity in the conceptual status of anxiety" arise in part, from the indiscriminate use of the term to refer to two different types of anxiety. He has offered a trait-state conception of anxiety based partly on the factor analytic studies of Cattell and Scheier (1961). Two distinct anxiety factors were identified by these researchers and labeled "trait" and "state" anxiety. The state anxiety factor is based on variables such as respiration rate and systolic blood pressure which vary or fluxuate from one occasion to the next. The trait anxiety factor presumably measured stable individual differences in relatively permanent personality characteristics. Variables that loaded the trait anxiety factor included: "ergic tension" (stimulated but undischarged tension), "ego weakness," "guilt proneness," "suspiciousness," and "low self sentiment strength" (p. 57).

Spielberger (1966) proposes that state-anxiety (A-state) is characterized by subjective feelings of apprehension and tension as well as heightened autonomic nervous system arousal. Trait-anxiety (A-trait) refers to a characteristic predisposition or proneness to perceive certain situations as threatening and to respond with A-state. In differentiating between the two conditions, Lazarus (1966) stated: "In trait anxiety the reaction is treated as an independent variable useful in predicting other behaviors. In state anxiety we are concentrating on the conditions that inspire the reaction" (P. 332).

It seems essential that researchers who measure anxiety clearly specify whether they regard it as a trait or a state. The relationship between A-trait and A-state has not yet been clearly demonstrated. Evidence is available, however, which suggests that A-state responses may be related to level of A-trait only under certain circumstances. Spielberger (1971) theorizes that individuals high in A-trait will respond with more intense levels of A-state in situations which involve a threat of failure or a threat to self-esteem. Physical danger or threat of pain, on the other hand, may not necessarily produce differentiated levels of A-state in individuals who differ in A-trait.

In a review article, Spence (1964) noted that most of the eyelid conditioning studies conducted in his Iowa laboratory showed high anxious Ss to be superior in performance to low anxious Ss. His anxiety measure was the Manifest Anxiety Scale (MAS), which may be considered a measure of trait anxiety. Researchers at other locations had, on many occasions, found no differences between high and low MAS Ss, or had found differences in the direction of superior performance for low anxiety Ss. One factor which Spence cites as important to the discrepancy in results is the amount of stress or threat in the experimental setting. In his laboratory, conditions (formal instructions by E, dim lighting, unusual equipment) were such as to maximize the likelihood of differences in emotional reactions of the two groups of Ss. In the other laboratories, conditions were more informal, relaxed, and non-threatening. This explanation is consistent with Spence's view of anxiety (high MAS scores) as a generalized drive state. High and low MAS Ss are assumed to differ in drive (D) level as a result of their level of emotional reactivity to the experimental situation and procedures.

Spielberger and Smith (1966) investigated the effects of "ego-stress" and anxiety on serial learning. Forty-four male Ss, selected for their high or low scores on the MAS, learned a list of nonsense syllables. Ss in the ego-stress condition were told that speed of learning nonsense syllables is directly related to I.Q. The results showed no differences in speed of learning for high and low anxious Ss in a no-stress condition. In the ego-stress condition the performance of high anxious Ss was inferior to low anxious Ss early in learning but superior later in learning. The investigators concluded that high drive (anxiety) may facilitate or impair learning depending upon factors such as the strength of competing response tendencies at different stages of learning. More important to the present study, however, is the conclusion that high anxiety Ss react with greater drive (anxiety) under stress conditions but not under nonstress conditions.

It would appear that a threatening or stressful environment contributes to the differential anxiety (drive) level of high and low MAS Ss. The exact nature of the threat or stress required to evoke differential levels of A-state is more difficult to identify. Rosenberg (1962) studied the relationship between anxiety and self esteem in 5,000 high school students. The self esteem measure was a ten item Guttman scale using items such as "On the whole, I am satisfied with myself." Anxiety measures were responses to questionnaire items concerning psychosomatic symptoms and secondary physiological symptoms such as hand trembling, nightmares, and "cold sweats." The author found a significant inverse relationship between the measures, indicating that high expression of anxiety is associated with low self esteem.

An investigation of the relationship between anxiety and self acceptance (assumed to be highly related to self esteem) was conducted by Suin and Hill (1964). They administered questionnaire measures of general anxiety (including the MAS), test anxiety, self acceptance, and acceptance of others, to 92 college students. Both general and test anxiety were significantly correlated in a negative direction with self acceptance (correlation coefficients ranged from -.58 to -.68). Correlations between general and test anxiety and acceptance of others were lower but negative and significant. The conclusion seems warranted that highly anxious people are less accepting of themselves and of others.

In a direct test of Spielberger's (1971) trait-state theory of anxiety, Hodges (1968) selected college males of high and low A-trait (MAS scores). He predicted that ego threat (threat of failure on a memory task) would produce greater A-state in high A-trait Ss than in low A-trait Ss. It was also predicted that threat of pain (threat of shock for poor performance) would not produce differential levels of A-state relative to A-trait. Two measures of A-state were used: the Today form of the Zuckerman (1960) Affect Adjective Check List (AACL) and heart rate. Results of the AACL were as predicted, but no differences in heart rate were found for high and low A-trait Ss. The author interpreted the results as generally consistent with Spielberger's trait-state theory and stated that "A-trait appears to reflect differences in disposition to manifest A-state, but only in response to stress situations that contain threats to self esteem or ego threat."

The conceptual clarity that the trait-state approach lends to the study of anxiety is an important contribution. So, too, is the

emphasis on the importance of particular stimuli in the research setting in creating differential anxiety levels. The present study considered the effects of threat or stress on trait anxiety. Trait anxiety is operationally defined as the score on a specific psychometric technique, The Taylor Manifest Anxiety Scale (Taylor, 1953).

Relationship Between Aggression and Anxiety

It is assumed by many personality theorists and some experimental psychologists that an inverse relationship exists between anxiety and overt aggression. Berkowitz suggests the following hypothesis:

> The strength of an individual's aggressive tendencies is directly associated with the intensity of the aggression anxiety subsequently aroused in him to the extent that he anticipates punishment or disapproval for aggression (1962, p. 93).

Aggression-anxiety is a reaction to aggressive stimulation from external sources or from within the individual. The cause of the anxiety reaction is fear of punishment or disapproval from others or from one's own conscience. The greater the likelihood of punishment or disapproval for aggressive behavior, the greater the level of aggression-anxiety. The result is an inhibition of the aggressive tendencies. This line of reasoning is popular, but there is actually very little empirical evidence which bears directly on this question.

In a previously mentioned study, Sears (1961) obtained self report data from 12 year old boys and girls. The boys in this very large sample scored significantly higher in antisocial aggression. The girls rated themselves higher on socially acceptable aggression and indicated more aggression-anxiety. The implcation, clearly, is that anxiety associated with aggression is inversely related to socially disapproved aggressive acting out.

Lesser (1958) obtained measures of aggression and anxiety from 10-13 year old boys. Each boy indicated the level and nature of aggressiveness of the others on a sociogram technique. Measures of fantasy-aggression and fantasy-aggression-anxiety were derived from TAT stories. The more fantasy-aggression-anxiety displayed by an S on the projective test, the less aggressive he was rated by his peers.

It is not uncommon for a researcher to interpret a decrease in aggressive behavior as evidence for the existence of aggression-anxiety. In the Berkowitz (1962) study described in an earlier section, males and females were allowed to shock their partner on two separate occasions. The decrease in female aggression on the second trial was attributed to "guilt and/or anxiety" resulting from the initial display of hostility. Reasonable though it is, this explanation is offered without direct empirical support.

In another investigation, Berkowitz (1960) selected male and female college students on the basis of either high or low scores on a manifest hostility scale. Working in like-sex pairs these Ss indicated initial impressions of each other on a questionnaire before and after exchanging messages. E substituted messages which, for half the Ss, were designed to arouse hostility toward the partner. All of the Ss had previously described themselves on an adjective checklist and each self description was categorized as favorable or unfavorable.

It was found, as expected, that Ss in the high manifest hostility group were more hostile toward their partners on the first rating than were low manifest hostility Ss. However, low manifest hostility Ss showed greater increases in hostility toward their partner after being aroused by the messages. Ss high in manifest hostility described

themselves in significantly less favorable terms on the adjective checklist than low manifest hostility Ss. Berkowitz concluded that high manifest hostility Ss experienced high aggressive drive after arousal, but that this produced high levels of aggression anxiety which served to inhibit the overt expression of aggression. He suggests that those individuals who see themselves in an unfavorable image are more prone to guilt and anxiety, particularly if they behave in a socially disapproved manner.

In a more direct attempt to test the relationship between anxiety and overt aggression, Hokanson (1961) selected male Ss for their high, or low scores on three different psychometric measures of hostility. Some Ss were threatened with electric shock (no one was actually shocked) if they did not cooperate. This manipulation was intended to instill "retaliating anxiety" in the Ss. Others were degraded and insulted by E for their performance on an intellectual task as a "frustration" manipulation. Then all Ss were given an opportunity to shock E. Anger level was determined by self ratings, and systolic blood pressure was the measure of anxiety.

It was found that frustrated (insulted) Ss gave a greater number of shocks than nonfrustrated Ss. For those in the frustrated and anxious (threatened) condition there was a significant negative relationship ($r = -.38$) between the degree of anxiety arousal (systolic blood pressure increase) during frustration and the vigor of subsequent shocking. The interpretation is that, for Ss who were insulted and who feared retaliation, anxiety was high and had an inhibiting effect on aggressive manifestations.

Among frustrated Ss there was also a negative correlation (r=-.32) between vigor of shocking and ratings of anger felt during frustration (ratings taken after shocking E). It seems that these Ss tended to deny their anger. The investigator suggests that a high intensity of aggressive behavior may provoke aggression-anxiety, which tends to reduce subsequent manifestations of aggression.

Leventhal and his co-workers (Leventhal, Shemberg, and Van Schoelandt, 1968; Leventhal and Shemberg, 1969) relied on an anxiety construct to explain their findings concerning sex role adjustment and aggression. In both studies, adequacy of sex role adjustment for male and female Ss was determined by scores on a psychometric scale. In the first study (1968) all Ss were instructed to teach a concept to the confederate using electric shock as punishment. Instructions were such as to socially sanction or encourage the use of shock. It was predicted and confirmed that individuals better adjusted to their sex role would express more aggression in a situation calling for aggression. It was proposed that the capacity to express aggression appropriately is positively related to good psychological and social adjustment. Also it was assumed that adequate sex-role adjustment is positively related to general level of adjustment.

The second study (1969) was identical to the first with the exception that aggression was neither encouraged or discouraged. It was predicted, and confirmed for females, but not males, that Ss less well adjusted to their sex role would express more aggression than well adjusted Ss in a situation where aggressive behavior was not clearly sanctioned. The lack of differences among males could not be adequately explained. For female Ss it was suggested that better adjusted

individuals are able to discriminate clearly between those situations in which aggression is appropriate or inappropriate. Since poorly adjusted individuals are less able to discriminate appropriately in these situations, they may not always inhibit aggression where it is not clearly sanctioned.

Anxiety is the primary mediational construct in this interpretation. If the situation calls for aggression, the poorly adjusted Ss respond by mobilizing anxiety, which is assumed to inhibit aggression. When the situation does not clearly demand aggressive responding, strong anxiety is not mobilized, and the poorly adjusted Ss fail to inhibit their aggression. These interpretations are tempered by the investigator's recognition that the relationship between anxiety and aggression has not yet been clearly defined.

The research findings in this section are consistent with the notion that anxiety has an inhibiting effect on overt aggression. However, each of the studies is subject to one or more of the following criticisms: (1) Hostile or aggressive attitudes were measured rather than overt aggressive behavior. (2) Anxiety arousal was inferred and not measured at all. (3) The anxiety measures (TAT stories, systolic blood pressure) lack sufficient validity and/or reliability.

In addition to the above criticisms, it must be pointed out that no distinction was made in these studies between trait and state anxiety. The failure to make this distinction does not, in itself, invalidate any anxiety study. There is reason to believe, however, that defining the type of anxiety under investigation would have helped to make the anxiety-aggression relationship a little more clear. Most of the studies in this section seem to be referring to A-state, that is, temporary and variable anxiety responses to specific aggressive stimulation.

Anxiety proneness can be regarded as a relatively stable personality trait, much as sex role adjustment was in the Leventhal et al. studies. Like sex role adjustment, A-trait may be assumed to be associated with general social and psychological adjustment. According to one line of reasoning, high A-trait (poorly adjusted) individuals may not always be able to discriminate clearly whether aggression is appropriate or not. In situations where aggression is not clearly sanctioned it might even be expected that high A-trait individuals would fail to inhibit their aggression.

There is no direct evidence to support such a notion, but neither can it be casually dismissed.

The Study

The present study was an investigation of the relationship between overt physical aggression and A-trait. Indirect evidence and general consensus suggest that anxiety has an inhibiting effect upon overt aggression. Direct evidence concerning the nature of this relationship is absent, however, and the present study has no precedent.

The sex and anger variables are considered in this study because their importance has been demonstrated in previous research on aggressive behavior. Although differences between the sexes are not always found in aggressive responding, when they do occur it is usually the male who is more prone to physical aggression. A similar statement may be made concerning anger arousal. An individual need not be angry in order to aggress, but the angrier he is the more likely he is to act aggressively.

A great variety of measures have been used in the laboratory study of aggression. These measures include projective tests, questionnaires, observer ratings, and the administration of electric shock.

Buss (1961) points out several reasons why the electric shock technique may be considered the best measure of aggression. Questionnaires have little generality and are subject to faking by defensive Ss. Projective techniques suffer from technical problems such as standardization of stimuli, examiner influence, and scoring. There is also the unresolved issue of what is measured by projective tests. Observer ratings constitute a more direct aggression measure, but these check list methods do not indicate intensity or strength of aggression.

Obviously the best measure of aggression would be direct, easily quantifiable, and ethically defensible. The Buss aggression machine meets these requirements. The S aggresses physically (shock) against another person in a situation where aggression is allowed, unpunished, and where no serious harm befalls the victim. Number, intensity, or duration of shocks may be recorded to provide objective and easily quantifiable measures of overt aggression. It is for all of these reasons that the aggression machine was chosen for use in the present investigation.

The choice of an anxiety measure was more difficult and, in the end, less satisfactory. In a discussion of anxiety measurement in the laboratory, Levitt (1967) categorizes these techniques as either physiological or psychological. He regards physiological measures such as blood pressure, heart rate, and electrical skin resistance, as unsuitable for use at this stage in anxiety research. These measures do not reliably relate to one another, or to psychological indexes of anxiety, or to stress intensity. Physiological measurements must be made individually, and they are extremely labile.

Psychological measures of anxiety include the projective techniques and inventories. Projective tests cannot easily be faked, but as experimental measures they have serious disadvantages which have been mentioned above. The inventory is the most popular measurement tool in anxiety research for several reasons. It can be group administered and scored easily by anyone. Its reliability, or freedom from extraneous factors in the research setting, is higher than for either projective or physiological measures. The major disadvantages of the inventory are its susceptibility to response set (responding true or false to all items), acquiescence set (tendency to agree), and the social desirability effect. Of these, social desirability, or the tendency to deny socially undesirable qualities, is probably of greatest significance in anxiety inventories. Many true-false anxiety scales have been found to correlate highly and negatively with this factor (Edwards, 1957; Fordyce, 1956). One of the techniques used to control for social desirability is the forced-choice item. Another method is to include a "lie" scale which is comprised of socially undesirable items which almost no one can deny. Anyone who scores high on the lie scale is considered to have an invalid inventory score.

All factors considered, the inventory method seems to be the most desirable tool for measuring anxiety in the research setting. The Manifest Anxiety Scale was chosen to discriminate among high, medium, and low A-trait Ss in the present study. This scale, originally developed by Taylor (1953) as a measure of general drive, has been found to discriminate between normal and psychiatric groups. Several investigators have found the MAS to be correlated moderately but significantly either with indexes of general maladjustment or ratings of anxiety made

by clinicians (Kendall, 1954; Lauterbach, 1958; Matarazzo et al., 1955). In terms of reliability and validity the MAS compares favorably with other anxiety scales. As measures of A-trait, the individual scale items seem to possess face validity, in that the S is instructed to report symptoms of anxiety which he generally feels. In addition, the MAS has been shown to correlate .75 to .85 with Cattell and Scheier's trait-anxiety factor (1961, pp. 53, 442).

The following hypotheses were offered concerning the results of this study:

1. Males would exhibit more aggressive behavior than females
2. Angered Ss would be more aggressive than nonangered Ss

No hypotheses were offered concerning the relationship between trait anxiety and aggressive behavior, nor were predictions made concerning the possible interactions among the anxiety, sex and anger variables.

CHAPTER II

METHOD

Design

Twelve experimental conditions were established in a 3x2x2 factorial design with three levels of anxiety, two levels of anger, and two categories of sex. Six Ss were assigned to each of the twelve conditions. As the data were collected Ss were alternately assigned to one of the two anger conditions. The dependent variable was the shock intensity administered on each of the 31 shock trials. Thirty-six male and 36 female Ss participated in the study, and all Ss administered shocks to the same male experimental confederate.

Subjects

Two hundred undergraduates (both male and female) enrolled in summer school psychology courses at the University of North Dakota constituted the population from which Ss were drawn. Research participation was either a course requirement or was rewarded with extra credit toward the final grade. One hundred two items from the Minnesota Multiphasic Personality Inventory (MMPI), including the MAS, the L Scale, the K Scale, and the Social Desirability Scale (Edwards, 1957), were administered.

The mean MAS score for this population was 18.4, somewhat higher than has frequently been reported in previous studies. The cutoff points

for determining the high anxiety (HA), medium anxiety (MA), and low anxiety (LA) groups were arbitrarily chosen. The HA Ss were defined as those who obtained MAS scores of 23 or above (approximately the upper 30% of the MAS distribution). The LA Ss were those who obtained MAS scores of 13 or below (approximately the lower 30% of the MAS distribution). The MA Ss were defined as those who obtained MAS scores from 16-20. The names of all students who scored within these three categories were posted, and Ss were allowed to sign up for participation in the study at a time that was convenient for them.

Apparatus

Aggression was measured by an aggression machine which, in all important respects, is identical to the original Buss (1961) apparatus. The machine is represented schematically in Figure 1. The apparatus used to administer shocks was located in a separate but adjoining room from the apparatus used for recording shock intensities. Shown on the S's side are the stimulus presentation buttons and the response lights. Below these are the ten shock buttons and the "correct" button, each paired with a light.

On the confederate's side was the panel containing stimulus lights and response buttons. A separate panel was used by the confederate to observe the shock intensities delivered by S.

The original version of the Taylor Manifest Anxiety Scale (Taylor, 1953) was used to select Ss for the study. The 50 items of the MAS were originally selected from the 550 items of the MMPI on the basis of their ability to detect anxiety, as determined by the judgments of experienced clinicians. The items are true and false and the S's score is the number of items out of 50 that he has answered in

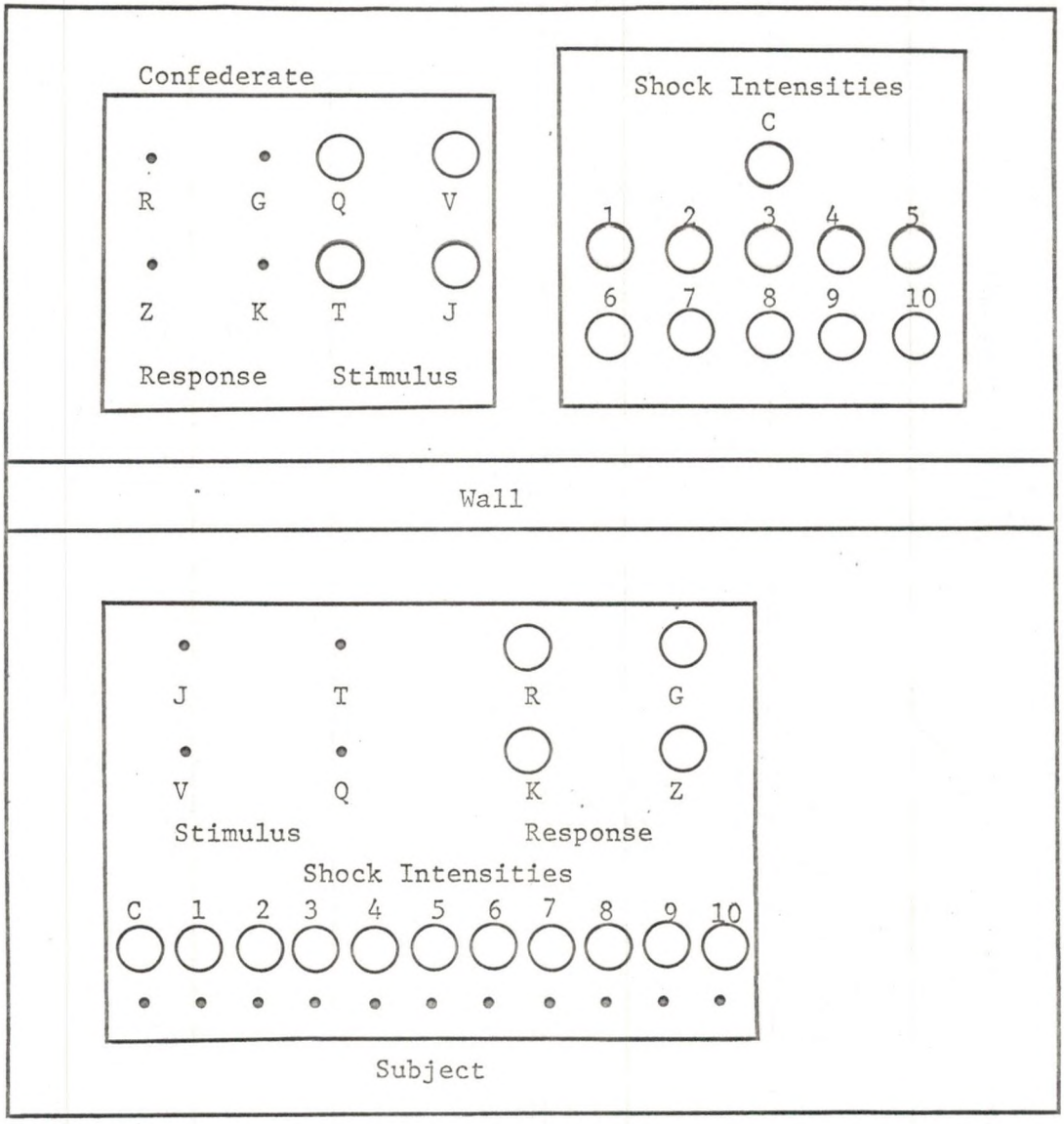

Fig. 1.--Illustration of the Aggression Machine.

the anxious direction. Normal groups usually obtain score averages from 13 to 16, although this can vary with different populations. In the present study Ss were selected on the basis of their MAS scores relative to the present distribution.

Edwards (1957) reports that the MAS and other clinical scales are significantly loaded with the social desirability factor. Some researchers have suggested that the K Scale from the MMPI may be useful in eliminating some of the error variance in the MAS which is due to social desirability or defensiveness (Kerrick, 1955; Lauterbach, 1958). The 30 item K Scale was constructed as a measure of guardedness or defensiveness in test taking attitudes, and it correlates highly with social desirability (Fordyce, 1956; Edwards, 1957). Using normal populations, researchers have found moderate to high correlations between the K Scale and the MAS (Brackbill and Little, 1954; Kerrick, 1955). Individuals who score above a certain point (a cutoff score of 23 has been used) on the K Scale can be eliminated from the MAS distribution. The result should be the loss of very defensive Ss who would not, or could not, admit to anxiety symptoms.

The 15 item L Scale from the MMPI has also been used as a control for defensiveness or faking on the MAS (Hodges, 1968; Spielberger, 1962). The rationale for its use is the same as for the K scale. The L Scale is not as subtle or sensitive a detector of guardedness as is the K Scale, however. Correlations between the L Scale and the MAS range from moderate to very low (Kerrick, 1955; Matarazzo, 1955). An L Scale cutoff score of approximately 7 has been used to eliminate "defensive" Ss.

The K, L, and Social Desirability scores were obtained for all Ss in the present study, but they were not used in the selection of Ss from the MAS distribution. These data were collected in order to allow consideration of the MAS scores in relation to test taking attitudes, if desired.

After the data collection was begun, it was determined that some measure should be taken to help clarify whether or not the experimental manipulation of anger or arousal was effective in creating differential levels of anger. For this purpose a brief Self Report Mood Scale (appendix) was constructed which was administered immediately following the anger manipulation. Ss were asked to report their "feelings at the moment" in regard to four different mood continua: happiness vs. sadness, contentment vs. anger, calmness vs. anxiety, and self confidence vs. feeling inadequate. Of most relevance to this study is the contentment vs. anger continuum. The distance, in millimeters, of the S's check mark from the left end of the continuum was taken as an indication of the relative degree of sadness, anger, anxiety, or inadequacy which he felt at that moment. The Self Report Mood Scale was administered to the final 48 Ss in the study.

Procedure

Each S was led to believe that the male confederate was a fellow summer school student at the University. The S and the confederate were first told that they were about to participate in a two stage learning experiment, and that each would have a chance to act as S and E. It was explained that the experiment involved the administration of electric shock. The S was given an opportunity to withdraw from the study if he

desired. Following this, a rigged lottery method was used to determine who would be S in the first stage of the study. The confederate and the S were presented lottery cards and told that one card was marked E and the other S. Actually both cards were marked S, and the confederate always reported receiving the E card.

Anger Arousal Phase: The confederate and S were then shown the apparatus for administering shock. The anger manipulation phase of the experiment was introduced with the following instructions:

> The first stage of this experiment deals with problem solving ability under stress. You (the S) are the subject in this stage, so you will work on a problem, and you (the confederate), as the experimenter, will evaluate his/her solution. After you read his/her solution you will administer from 1 to 10 shocks. The poorer the solution the greater the number of shocks you are to administer. One shock indicates an excellent solution to the problem, and 10 shocks indicate an extremely poor solution.

Both the S and the confederate were then taken to an adjoining room and shown the apparatus for receiving shock. The confederate left the room and the S was given the following problem:

> List ideas a publicity agent might employ in order to better a popular singer's record sales and public image (Berkowitz and Geen, 1966).

S was allowed to work on the problem for 5 minutes. At that time E returned, attached the shock electrode to S's fingers, and left, ostensibly to bring S's solution to the other person for judging. Approximately one minute later the confederate in the adjoining room administered either

one shock (nonangered condition) or 8 shocks (angered condition) using Button 1. The number of shocks administered was alternated throughout the study so that every other S received 8 shocks. These shocks were of very low intensity and were not painful. E returned to S, asked him how many shocks he had received and unhooked the shock electrode. At that point S completed the Self Report Inventory (Self Report Mood Scale).

Aggression Phase. E and S then returned to the other room and the second stage of the experiment was begun. The confederate was asked to step into the hall, and the aggression machine and the learning task were explained to S in a manner similar to that used by Buss (1966). S was instructed to use the machine to teach a concept to the other person via reward and punishment. The task was a four-point discrimination problem involving letter pairs (J-Z, T-G, V-R, Q-K). S was shown how to present stimuli to the confederate and record his responses. It was indicated that each time the other person responded correctly, S was to press a button which flashed a "Correct" light on the confederate's portion of the apparatus in the adjoining room. S was instructed to shock the confederate each time he made an error.

The shock buttons on the aggression machine were numbered 1-10, and S was told that he could vary the intensity of the shock from weak (Button 1) to strong (Button 10). In order that S would know how much punishment he would subsequently deliver, he was given shocks from Buttons 1, 3, and 5. This gave S an idea of the differing increments of punishment. Button 1 gave a very mild shock (210 volts, 1.2 milliamperes), at Button 3 the shock was stronger (210 volts, 3.10 milliamperes), and at Button 5 the shock was noxious (210 volts, 4.3 milliamperes). In order to maximize the ambiguity as to whether strong shock

was appropriate, the S was told that previous researchers had not been able to determine whether strong shocks produce faster learning or whether weak shocks produce faster learning.

E, S, and the confederate then entered the shock receiving room where S read the following instructions to the confederate:

> This stage of the experiment is concerned with the effects of reward and punishment on concept learning. Notice the lights and buttons on the board before you. Each has a different letter beneath it. Your task is to determine how the letters beneath the lights are related to the letters beneath the buttons. Each time I flash one of the lights you are to respond by pushing the button which you think is appropriate. When your response is correct, the "correct" light will light up. When your response is incorrect you will receive a shock. Do you have any questions?

S hooked the shock electrodes to the confederate's fingers and accompanied E to the adjoining room. A list of stimulus patterns (appendix) was given to S which he presented to the confederate. He was told to continue the experiment until the other person gave five correct responses in succession. Unknown to S, the confederate had a programmed list of responses (appendix) which was the same for all Ss. Each session was programmed for 60 trials, 31 of which terminated in "punishment." The confederate responded incorrectly on each of the first 5 trials (shock trials). Thereafter, incorrect responses (shock trials) occurred randomly at the following rate: seven shocks on trials 6-15, six shocks on trials 16-25, five shocks on trials 26-35, four shocks on trials 36-45, and four shocks on trials 46-55. The last five trials were

"rewarded." The confederate actually received no shocks, since he unhooked the shock electrodes after S left the room. The intensity of shocks administered by S was indicated to the confederate on a ten-light panel which he uncovered in S's absence. The measure of aggression was the number of the button pressed on each shock trials. The confederate recorded all shock intensities on a data sheet.

Following the learning task S was asked to note any feelings or questions he had about the experiment. Finally, all Ss are asked not to discuss any aspect of the experiment with anyone for the remainder of the summer term. They were told that a debriefing session would be held for all interested Ss near the end of the summer session.

Although each S had the opportunity to decline participation in the study after he or she learned that electric shock would be administered, all Ss chose to participate. As determined by the written and verbal comments of the Ss, the real nature of the study was seriously questioned by only one S. He insisted that the confederate was collaborating in the study, and he refused to complete the aggression phase. Consequently, he was dropped from the study. One other male S was dropped because he failed to understand the instructions, and two female Ss were dropped because they reported receiving less than six shocks in the anger phase, when they had actually received eight shocks.

CHAPTER III

RESULTS

The results of this study were analyzed as a 3x2x2 factorial (Winer, 1962, pp. 248-258). The .05 probability level was adopted as that point which F must exceed for the null hypothesis to be rejected. Three analyses of variance were computed. In the first analysis the dependent variable was the mean intensity of shocks administered by each S over all (31) shock trials in the aggression phase. The dependent variable in the second analysis was the mean shock intensity administered on trials 1-5 of the aggression phase. In the third analysis the dependent variable was the shock intensity administered on trial 1 of the aggression phase.

The means and standard deviations for each treatment condition over all (31) shock trials are shown in Table 1. A Cochran test for homogeneity of variance was computed, and the results ($C = .1889$, $p > .05$) were not significant. A summary of the analysis of variance over all shock trials is shown in Table 2. None of the main effects or interactions were significant at the .05 probability level, and, consequently, neither of the experimental hypotheses were supported by the data. The anxiety-anger and the anxiety-sex interactions did, however, approach significance.

TABLE 1

MEANS AND STANDARD DEVIATIONS PER GROUP OF OVERT AGGRESSIVE RESPONSE OVER 31 SHOCK TRIALS

Sex and Anger Level	Anxiety Level	N	Mean	SD
Male-angered	Low	6	3.11	1.10
Male-angered	Medium	6	2.09	.50
Male-angered	High	6	3.49	1.60
Male-nonangered	Low	6	2.38	.98
Male-nonangered	Medium	6	3.44	.62
Male-nonangered	High	6	3.67	1.18
Female-angered	Low	6	3.52	1.73
Female-angered	Medium	6	2.52	.98
Female-angered	High	6	2.41	1.07
Female-nonangered	Low	6	2.31	1.02
Female-nonangered	Medium	6	2.41	.91
Female-nonangered	High	6	2.34	1.18

TABLE 2

SUMMARY OF ANALYSIS OF VARIANCE OF OVERT AGGRESSIVE RESPONSE OVER 31 SHOCK TRIALS

Source	SS	df	MS	F	P
Anxiety (A)	1.56	2	0.78	0.52	NS
Anger (B)	0.13	1	0.13	0.09	NS
Sex (C)	3.70	1	3.70	2.49	NS
AB	7.44	2	3.72	2.50	NS
AC	5.53	2	2.76	1.86	NS
BC	2.26	1	2.26	1.52	NS
ABC	1.29	2	0.64	0.43	NS
Within	89.04	60	1.48		
Total	110.98	71			

Analyses were computed using the mean intensities of shocks administered on trials 1-5 and on trial 1 to determine whether differential levels of aggressive response occurred early in the aggression phase. The means and standard deviations for each treatment condition on trials 1-5 are shown in Table 3. The Cochran test for homogeneity of variance was computed, and the results ($C = .1916$, $p > .05$) did not approach significance. A summary of the analysis of the variance for trials 1-5 is shown in Table 4. None of the main effects or interactions were significant at the .05 probability level. The anxiety-anger interaction approached significance.

TABLE 3

MEANS AND STANDARD DEVIATIONS PER GROUP OF OVERT AGGRESSIVE RESPONSE OVER SHOCK TRIALS 1-5

Sex and Anger Level	Anxiety Level	N	Mean	SD
Male-angered	Low	6	2.23	.92
Male-angered	Medium	6	1.40	.45
Male-angered	High	6	1.83	.80
Male-nonangered	Low	6	1.56	.52
Male-nonangered	Medium	6	2.50	.78
Male-nonangered	High	6	2.26	.78
Female-angered	Low	6	2.06	1.20
Female-angered	Medium	6	1.63	.45
Female-angered	High	6	1.83	.67
Female-nonangered	Low	6	1.60	1.08
Female-nonangered	Medium	6	1.63	.71
Female-nonangered	High	6	1.83	.73

TABLE 4

SUMMARY OF ANALYSIS OF VARIANCE OF OVERT AGGRESSIVE RESPONSE OVER SHOCK TRIALS 1-5

Source	SS	df	MS	F	P
Anxiety (A)	.28	2	.14	.18	NS
Anger (B)	.09	1	.09	.12	NS
Sex (C)	.73	1	.73	.97	NS
AB	4.67	2	2.33	3.14	NS
AC	.72	2	.36	.48	NS
BC	.87	1	.87	1.17	NS
ABC	.55	2	.27	.36	NS
Within	44.88	60	.74		
Total	52.25	71			

The means and standard deviations for each treatment condition on trial 1 are shown in Table 5. The Cochran test for homogeneity of variance was computed, and the results ($C = .3007$, $p > .05$) very closely approached significance. The variance for one of the cells (females, nonangered, low anxiety) was equal to zero, and, on the whole, the variance in aggressive responding on trial 1 was greater for males than for females. On the basis of these results, the tenability of the hypothesis of homogeneity of variance might be questioned. Norton (in Lindquist, 1953, pp. 78-86) has demonstrated, however, that the F test is highly robust and is not seriously affected by moderate violations of the assumption of homogeneity of variance.

TABLE 5

MEANS AND STANDARD DEVIATIONS PER GROUP OF OVERT AGGRESSIVE RESPONSE FOR SHOCK TRIAL NUMBER 1

Sex and Anger Level	Anxiety Level	N	Mean	SD
Male-angered	Low	6	1.83	.70
Male-angered	Medium	6	1.33	.48
Male-angered	High	6	1.66	.76
Male-nonangered	Low	6	1.66	.76
Male-nonangered	Medium	6	2.66	1.50
Male-nonangered	High	6	1.50	.76
Female-angered	Low	6	1.33	.75
Female-angered	Medium	6	1.16	.40
Female-angered	High	6	1.16	.40
Female-nonangered	Low	6	1.00	.00
Female-nonangered	Medium	6	1.33	.75
Female-nonangered	High	6	2.00	1.15

A summary of the analysis of variance for trial 1 is shown in Table 6. Males responded significantly more aggressively ($F = 4.86$, $p < .05$) than females, and, for trial 1, the experimental hypothesis regarding sex was supported. The anger main effect approached significance but in the direction opposite to that predicted, that is, nonangered Ss tended to respond more aggressively than angered Ss. The anxiety-anger and the anxiety-anger-sex interactions also approached significance.

TABLE 6

SUMMARY OF ANALYSIS OF VARIANCE OF OVERT AGGRESSIVE RESPONSE FOR SHOCK TRIAL NUMBER 1

Source	SS	df	MS	F	P
Anxiety (A)	.36	2	.18	.24	NS
Anger (B)	1.39	1	1.39	1.90	NS
Sex (C)	3.55	1	3.55	4.86	.05
AB	3.03	2	1.51	2.06	NS
AC	1.87	2	.93	1.27	NS
BC	.06	1	.06	.08	NS
ABC	3.52	2	1.76	2.41	NS
Within	44.00	60	.73		
Total	57.78	71			

The possibility was considered of using K or L Scale cutoff scores (K = 23 or above, L = 7 or above) to eliminate "defensive" Ss from the MAS distribution. So few Ss scored above these cutoff points that eliminating them from the sample would not have appreciably altered the results of the study. Consequently, K or L Scale cutoff scores were not used as a correction for defensiveness on the MAS.

The results of the Self Report Mood Scale (Self Report Inventory) are summarized in Table 7. Comparisons, using the t-test, were made between angered and nonangered Ss for each of the four mood continua. Angered Ss reported feeling significantly more angry, sad, anxious, and inadequate. The largest difference between the two groups was in reported feelings of anger.

TABLE 7

SUMMARY OF SELF REPORT MOOD SCALE SCORES FOR EXPERIMENTALLY ANGERED AND NONANGERED Ss

Mood Continua	Anger Level	Mean	SD	N	t	df	P
Contentment vs. Anger	Angered	57.95	25.23		4.67	46	.001
	Nonangered	26.37	20.29	24			
Happiness vs. Sadness	Angered	61.54	22.66	24	2.98	46	.01
	Nonangered	40.70	22.57	24			
Calmness vs. Anxiety	Angered	80.50	32.57	24	2.59	46	.025
	Nonangered	54.29	35.38	24			
Self Confidence vs. Feeling Inadequate	Angered	72.25	26.93	24	3.80	46	.001
	Nonangered	40.87	28.99	24			

CHAPTER IV

DISCUSSION

Although none of the anger main effects or interactions were significant at the .05 probability level, it is interesting to examine some of the trends in the data. The anxiety-anger interaction ($F = 2.06$, $p < .25$) for the mean aggressive response on trial 1 is graphically represented in Figure 2. The trend in the MA and HA groups was for nonangered Ss to respond more aggressively than angered Ss. Only in the LA group was the difference in the predicted direction, that is, angered Ss responded more aggressively than nonangered Ss.

The anxiety-anger interaction ($F = 3.14$, $p < .10$) for the mean aggressive response on trials 1-5 is graphically represented in Figure 3. The trend in the LA group was for angered Ss to respond more aggressively than nonangered Ss, but the differences for MA and HA Ss were in the opposite direction.

The anxiety-anger interaction ($F = 2.50$, $< .10$) over all 31 shock trials is graphically represented in Figure 4. The largest difference in aggressive response between angered and nonangered Ss occurred in the LA group and was in the predicted direction. The reverse was true, however, for the MA group, and for HA Ss the anger manipulation had virtually no differentiating effect.

Earlier in this paper several studies were cited (Berkowitz and Rawlings, 1963; Berkowitz, Corwin, and Heironimus, 1963; Berkowitz, 1965b;

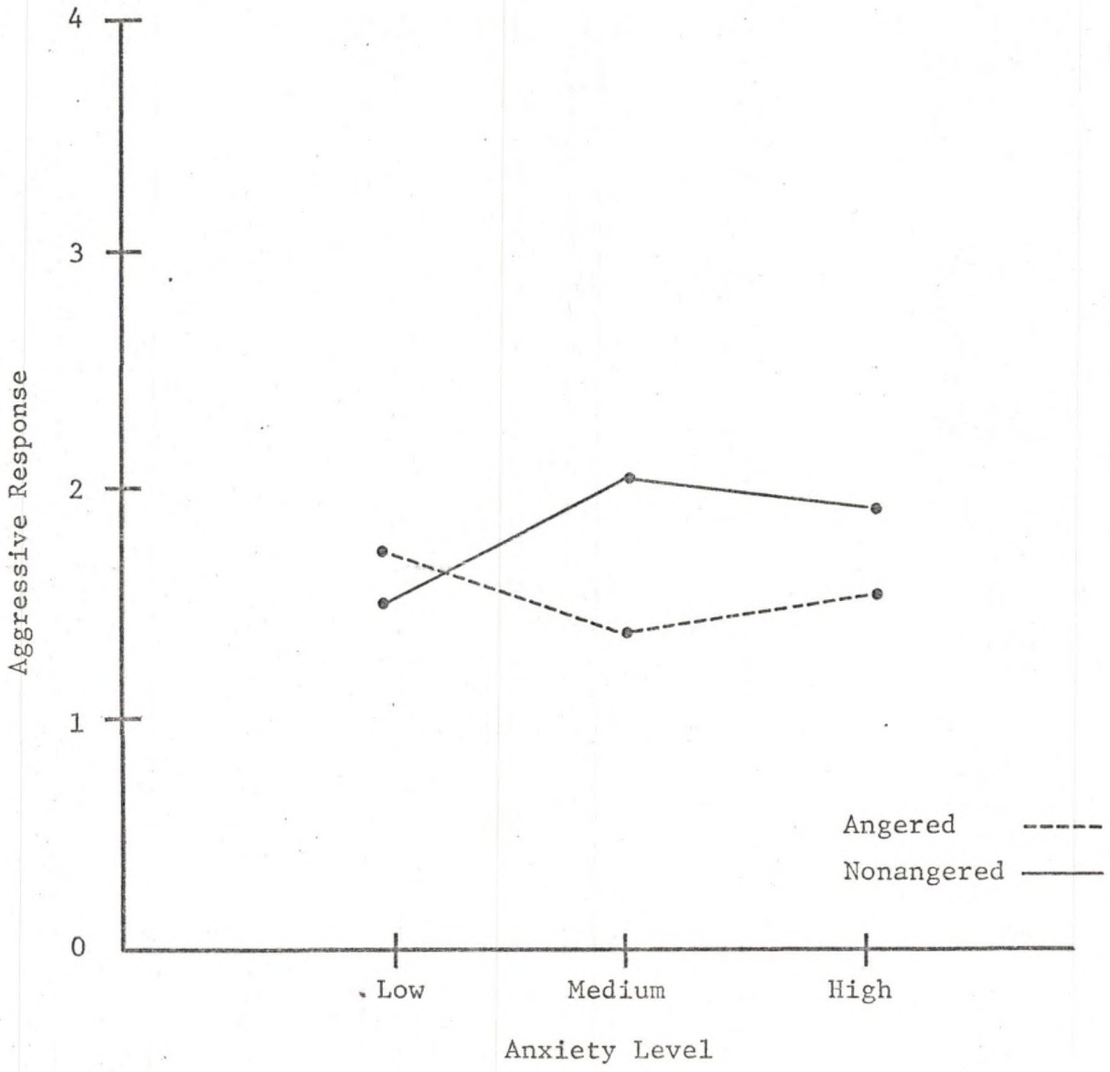

Fig. 2.--Graphic Representation of the Mean Aggressive Response on Trial 1 with the Sex Variable Collapsed.

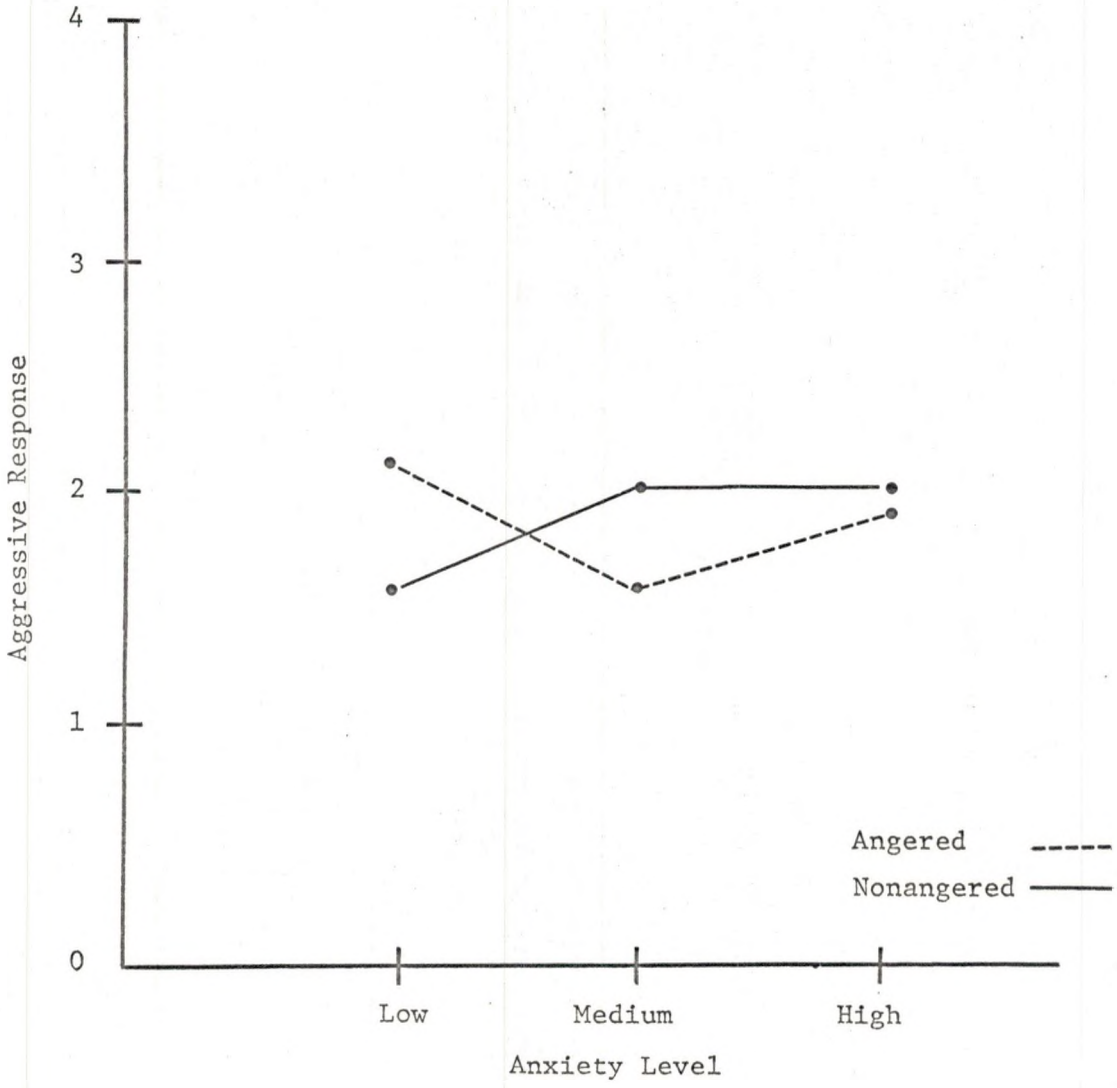

Fig. 3.--Graphic Representation of the Mean Aggressive Response on Shock Trials 1-5 with the Sex Variable Collapsed.

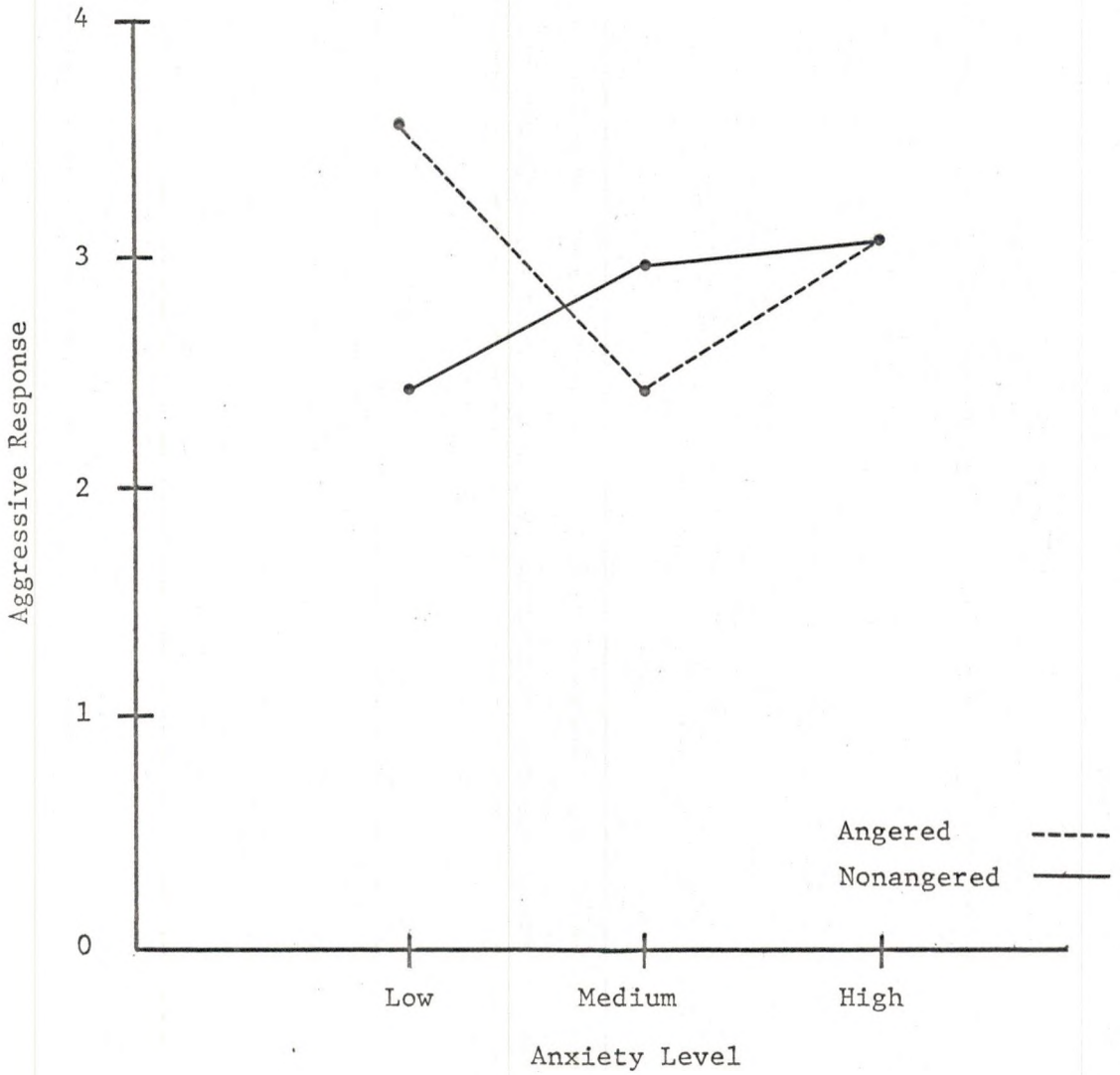

Fig. 4.--Graphic Representation of the Mean Aggressive Response Over 31 Shock Trials with the Sex Variable Collapsed.

Berkowitz and Geen, 1966; Berkowitz and LePage, 1967; Geen, Rabosky, and O'Neal, 1968) which support the notion that when differential levels of aggressive responding are obtained as a result of anger manipulation, it is the angered Ss who will be more aggressive. The opposite trends for MA and HA Ss in the present study are surprising and not easily explained.

While angered Ss did not, on the whole, respond with more physical aggression than nonangered Ss, they did clearly report feeling more angry on the Self Report Mood Scale ($t = 4.67$, $p < .001$). This relationship between physical aggression and reported anger is the opposite of that obtained in the previously cited study by Geen, Rabosky, and O'Neal (1968). These authors found that angered Ss responded with more physical aggression than nonangered Ss but did not report feeling significantly more angry. The results of the present study suggest that, although angered Ss may admit feeling angry, this does not necessarily mean that they will respond with more physical aggression than nonangered Ss.

On shock trial 1 males responded with significantly more physical aggression than females. This seems to indicate that, when given an opportunity to aggress physically, males are initially less inhibited than females. However, when the mean aggressive response over shock trials 1-5 is considered, this sex difference drops out. Similarly, there is no significant sex difference in mean aggressive response over all 31 shock trials.

The anxiety-sex interaction ($F = 1.86$, $p < .25$) over all shock trials is graphically represented in Figure 5. The largest difference in aggressive response between males and females over all shock trials occurred in the HA group and was in the predicted direction. The implication, albeit a cautious one, is that high anxiety is less inhibiting

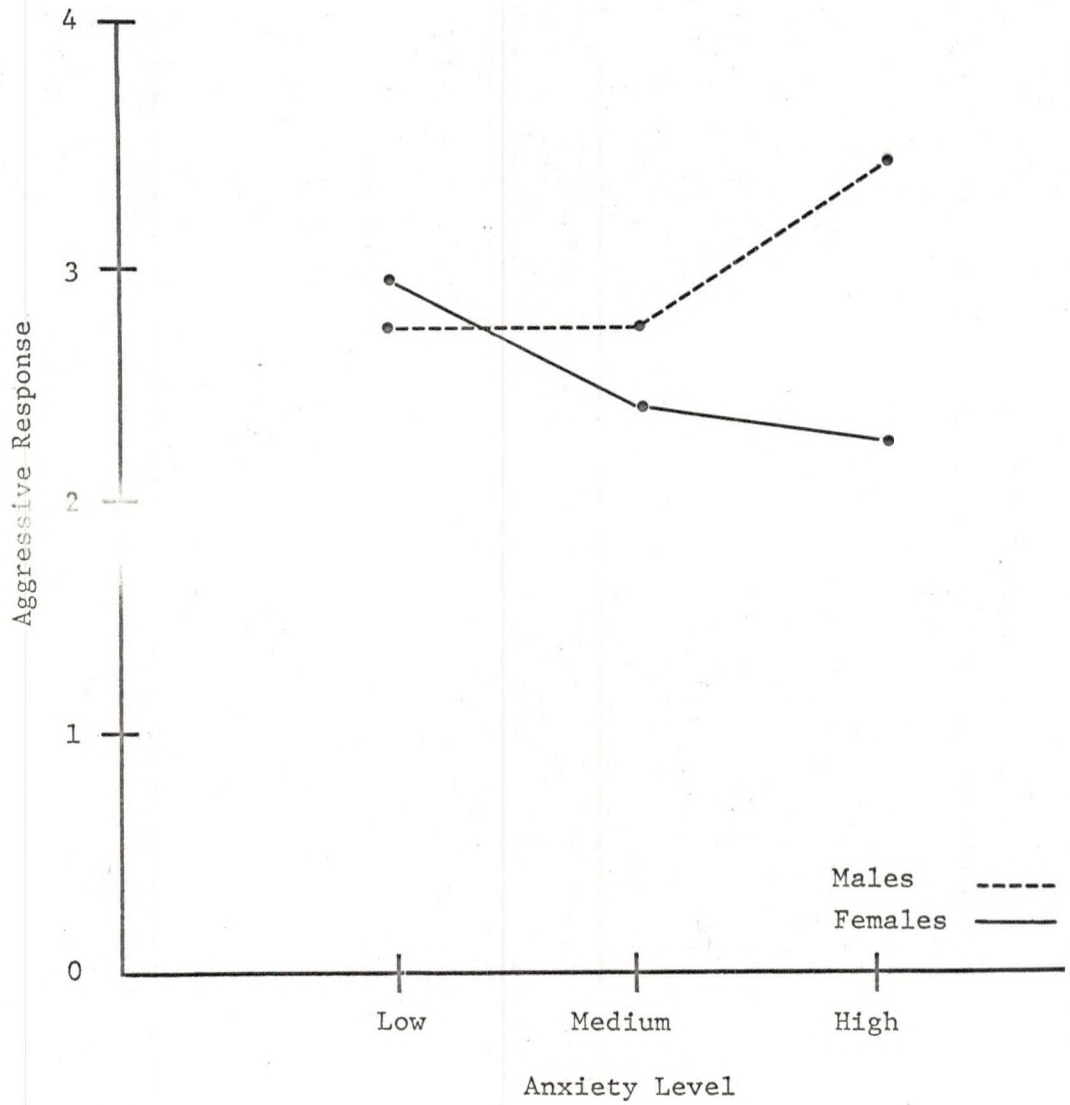

Fig. 5.--Graphic Representation of the Mean Aggressive Response Over 31 Shock Trials with the Anger Variable Collapsed.

of physical aggression in males than in females over many shock trials. Why the significant sex difference on trial 1 did not hold over later shock trials is not clear.

The present results offer no evidence of a clear relationship between trait anxiety and physical aggression. The interpretation might be made that the two variables are not related, but the lack of evidence of a clear anxiety-aggression relationship in the present study might be attributable to the inadequacy of the anxiety measure. The concept of trait anxiety, in a clinical sense, is broad and complex, and its definition and measurement are at a relatively primitive stage. Due to the limitations of anxiety measuring tools, interpretations of the results of anxiety studies must be made with caution, and the ability to generalize is limited. The present study is no exception. As measured by the MAS, trait anxiety was not shown to be related to physical aggression. In the author's opinion, the obvious need in future research in this area is for the development of more valid and reliable measures of anxiety, in the broader clinical sense.

The aggression machine used in this study appears to be a satisfactory and useful tool for the measurement of physical aggression in the research setting. In several studies cited earlier in this paper (Berkowitz, 1962; Buss, 1963; Berkowitz, 1965b; Berkowitz and Geen, 1966; Berkowitz and LePage, 1967; Geen, Rabosky, and O'Neal, 1968) differential levels of aggressive responding were obtained using a shock machine. Shortly before the present study was conducted, Thompson (1970), at the University of North Dakota, obtained differential levels of aggression with the same aggression machine used in this study.

In light of Berkowitz's (1965a) observations on the influence of aggression eliciting cues in the environment, it is important that this factor be taken into consideration in aggression studies. In the present study the confederate was the primary aggression eliciting cue since he administered shock to the Ss (in the anger phase) immediately prior to the aggression phase.

A great deal of intersubject variability was noted in sensitivity to the various shock intensities administered. In future studies of this nature, it is suggested that a shock intensity threshold be established for each S. Increments in shock intensity could then be callibrated from that threshold for each individual S. Consequently, responsiveness to the various shock intensities should be more constant across all Ss.

The fact that males responded more aggressively than females very early in the aggression phase of this study but not on later trials has implications for future aggression research involving both sexes. The possibility should not be overlooked that sex differences may occur early in a series of aggression trials even though there may be no differential effect over many trials. It might be advisable to use a more brief "one shot" measure of aggression in evaluating potential for aggressive responding. This approach appears reasonable since many violent or aggressive acts are impulsive and of relatively brief duration.

CHAPTER V

SUMMARY

The present study was designed to investigate the relationship between trait anxiety and the physical expression of aggression. Two additional variables, sex and anger level of the Ss, were considered. It was hypothesized that males would express more physical aggression than females and that angered Ss would be more aggressive than non-angered Ss. No hypotheses were made concerning the relationship between trait anxiety and physical aggression.

Seventy-two undergraduates enrolled in psychology courses during the 1970 summer session at the University of North Dakota were selected as Ss. Trait anxiety was defined by scores on the Manifest Anxiety Scale (Taylor, 1953), and Ss were divided into low anxiety (LA), medium anxiety (MA), and high anxiety (HA) groups on the basis of these scores. Ss were led to believe that they were participating with another student (the male experimental confederate) in a learning experiment.

In the first stage of the study (the anger manipulation phase) half of the Ss were angered by administering eight shocks to them in evaluation of a task they had completed. The nonangered Ss received only one shock, which indicated that they had performed excellently. Immediately following the anger manipulation, Ss indicated their subjective feelings of anger on a Self Report Mood Scale.

In the second stage of the study (aggression phase) Ss were instructed to teach their partner (the confederate) a concept using shock as punishment. The dependent variable, or measure of aggression, was the mean shock intensity administered by the S on an aggression machine (Buss, 1961).

The results were analyzed in a 3x2x2 factorial design, with three levels of anxiety and two categories of anger and sex. Six Ss were assigned to each of the 12 experimental conditions. Analyses of variance were computed on the mean shock intensities on shock trial 1, on shock trials 1-5, and on all shock trials (1-31).

Angered Ss did not respond more aggressively, on the whole, than nonangered Ss, but they did report feeling significantly more angry on the Self Report Mood Scale. On shock trial 1 males responded with significantly more aggression than females. Significant sex differences were not obtained for shock trials 1-5 or for shock trials 1-31. As measured by the MAS, trait anxiety was not shown to be related to the overt expression of physical aggression.

APPENDIX

SELF REPORT INVENTORY
(SELF REPORT MOOD SCALE)

Consider your feelings at this moment. For each of the items below put a check (X) on the line at the point that best describes the way you feel right now.

1) Happiness vs. Sadness

Very Happy	Very Sad

2) Contentment vs. anger

Content Peaceful	Very Angry

3) Calmness vs. anxiety

Calm At ease	Anxious On edge

4) Self confidence vs. Feeling inadequate

Very Confident	Incompetent Inadequate

STIMULUS PRESENTATION SHEET

Stimulus	Key Response
J	Z
T	G
V	R
Q	K

Trial	Stimulus	Response	Correct Response	Trial	Stimulus	Response	Correct Response
1.	J	____	Z	51.	J	____	Z
2.	T	____	G	52.	V	____	R
3.	T	____	G	53.	J	____	Z
4.	Q	____	K	54.	V	____	R
5.	V	____	R	55.	Q	____	K
6.	T	____	G	56.	V	____	R
7.	J	____	Z	57.	T	____	G
8.	V	____	R	58.	J	____	Z
9.	T	____	G	59.	V	____	R
10.	Q	____	K	60.	Q	____	K
11.	J	____	Z	61.	J	____	Z
12.	Q	____	K	62.	T	____	G
13.	V	____	R	63.	T	____	G
14.	J	____	Z	64.	Q	____	K
15.	V	____	R	65.	V	____	R
16.	Q	____	K	66.	T	____	G
17.	J	____	Z	67.	J	____	Z
18.	T	____	G	68.	V	____	R
19.	V	____	R	69.	T	____	G
20.	T	____	G	70.	Q	____	K
21.	V	____	R	71.	J	____	Z
22.	T	____	G	72.	Q	____	K
23.	T	____	G	73.	V	____	R
24.	J	____	Z	74.	J	____	Z
25.	Q	____	K	75.	V	____	R
26.	V	____	R	76.	Q	____	K
27.	Q	____	K	77.	J	____	Z
28.	V	____	R	78.	T	____	G
29.	T	____	G	79.	V	____	R
30.	T	____	G	80.	T	____	G
31.	J	____	Z	81.	V	____	R
32.	Q	____	K	82.	T	____	G
33.	J	____	Z	83.	T	____	G
34.	V	____	R	84.	J	____	Z
35.	J	____	Z	85.	Q	____	K
36.	T	____	G	86.	V	____	R
37.	V	____	R	87.	Q	____	K
38.	T	____	G	88.	V	____	R
39.	J	____	Z	89.	T	____	G
40.	Q	____	K	90.	T	____	G
41.	J	____	Z	91.	J	____	Z

Trial	Stimulus	Response	Correct Response
42.	Q	____	K
43.	V	____	R
44.	T	____	G
45.	Q	____	K
46.	Q	____	K
47.	J	____	Z
48.	T	____	G
49.	V	____	R
50.	T	____	G

Trial	Stimulus	Response	Correct Response
92.	Q	____	K
93.	J	____	Z
94.	V	____	R
95.	J	____	Z
96.	T	____	G
97.	V	____	R
98.	T	____	G
99.	J	____	Z
100.	Q	____	K

SHOCK INTENSITY RECORD SHEET

Name_____
Sex_____
Anger_____
Anxiety_____

Trial	Stimulus	Response	Shock Intensity	Trial	Stimulus	Response	Shock Intensity
1.	J	G	_____	31.	J	Z	
2.	T	Z	_____	32.	Q	R	_____
3.	T	R	_____	33.	J	Z	
4.	Q	Z	_____	34.	V	R	
5.	V	G	_____	35.	J	K	_____
6.	T	G		36.	T	G	
7.	J	K	_____	37.	V	R	
8.	V	R		38.	T	Z	_____
9.	T	K	_____	39.	J	Z	
10.	Q	Z	_____	40.	Q	R	_____
11.	J	R	_____	41.	J	R	_____
12.	Q	Z	_____	42.	Q	K	
				43.	V	R	
13.	V	G	_____	44.	T	G	
14.	J	Z		45.	Q	R	_____
15.	V	K	_____	46.	Q	K	
16.	Q	G	_____	47.	J	Z	
17.	J	Z		48.	T	Z	_____
18.	T	G		49.	V	G	_____
19.	V	Z	_____	50.	T	G	
20.	T	G		51.	J	Z	
21.	V	R		52.	V	K	_____
22.	T	Z	_____	53.	J	Z	
23.	T	R	_____	54.	V	R	
24.	J	G	_____	55.	Q	G	_____
25.	Q	G	_____	56.	V	R	
26.	V	R		57.	T	G	
27.	Q	Z	_____	58.	J	Z	
28.	V	G	_____	59.	V	R	
29.	T	R	_____	60.	Q	K	
30.	T	G					

TABLE 8

SHOCK INTENSITIES ADMINISTERED PER S ON EACH OF 31 SHOCK TRIALS

Treatment Condition	S	Trials 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Male	1	3	3	4	4	2	5	2	4	5	4	1	2	5	6	2	5	3	4	5	4	4	2	3	4	4	5	3	6	4	4	3
	2	2	3	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4
Angered	3	2	2	2	2	2	2	2	2	2	5	2	5	5	5	5	5	5	5	3	3	5	3	3	5	5	5	3	5	5	3	5
	4	1	1	1	1	3	3	3	2	2	3	3	3	3	4	3	3	4	3	3	3	2	4	2	3	1	3	2	3	3	2	3
Low	5	2	5	3	2	6	5	5	5	5	6	8	7	5	6	4	5	5	7	6	1	3	7	5	5	4	4	5	4	3	4	5
Anxiety	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Male	1	2	1	1	2	3	2	1	3	3	3	2	2	3	3	4	3	1	2	4	2	4	3	4	4	2	4	4	4	4	3	4
	2	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	2	1	2	2	1	2	1	2	2	1	2	2	1	2	2	2
Angered	3	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1	1	2	2	2	1	4	2	3	3	3	2	2	3	3	3	3
	4	1	2	2	1	1	1	3	1	1	1	1	1	3	1	1	1	1	3	1	4	3	3	3	1	2	3	3	2	3	3	3
Medium	5	2	2	3	2	2	3	2	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	4	4	4	5	2	2	2	3
Anxiety	6	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	4	3	3	3	2	4	3	3	4	3	4	1	3	2
Male	1	2	2	2	3	5	5	5	5	6	7	8	3	8	5	6	8	7	7	5	7	9	9	8	8	5	10	10	10	5	6	6
	2	3	3	3	3	3	2	5	4	4	3	4	3	4	6	6	4	6	5	4	5	5	6	6	5	4	7	6	5	5	6	4
Angered	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	4	2	1	2	2	2	1	2	3	3	1	4	2	4	4	1	2	1	1	2	5	4	3	6	1	7	4	5	3	3	2	3
High	5	1	1	2	2	1	2	1	3	2	4	3	2	4	3	3	4	4	5	3	5	4	3	5	3	4	4	5	5	4	5	5
Anxiety	6	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Male	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	1	2	2	2	1	3	2	3	3	3	2	1
	2	1	1	1	2	1	1	1	1	1	1	1	2	2	2	3	2	2	2	3	4	2	3	2	3	3	3	1	1	4	3	3
Nonangered	3	2	2	2	2	2	2	2	2	2	9	9	9	9	9	9	9	9	9	2	2	2	2	2	2	2	2	2	2	2	2	2
	4	2	2	2	2	2	2	2	2	3	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	4	4	3	4	3	4
Low	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	2	2	2	1	2	2	2	3	1
Anxiety	6	3	3	2	2	1	3	4	2	1	2	2	3	2	3	4	2	2	3	2	2	1	2	2	2	2	3	4	2	3	3	2

TABLE 8--Continued

Treatment Condition	S	Trials 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Male	1	5	3	3	3	3	2	3	3	3	3	3	2	2	2	3	5	3	3	3	3	3	3	3	3	3	3	4	4	3	3	3
	2	3	5	4	2	2	5	3	2	2	2	5	5	1	5	6	3	6	3	5	5	3	4	4	7	7	1	7	6	4	5	1
Nonangered	3	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	5	5
	4	4	2	3	2	3	3	4	3	3	2	2	2	3	3	3	2	3	2	3	4	4	4	3	5	2	3	4	3	3	2	3
Medium	5	1	3	3	2	2	3	3	3	4	4	4	4	5	5	4	5	5	5	6	5	6	5	6	7	5	6	5	6	6	6	7
Anxiety	6	2	2	2	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	3	5	5	4	4	5	5	4	4	4
Male	1	1	2	2	3	3	3	3	3	2	3	3	3	3	3	3	3	4	4	3	4	3	4	3	4	4	4	4	4	4	5	4
	2	1	2	3	3	3	3	4	3	4	5	3	6	7	5	7	7	7	3	4	7	4	3	1	3	1	1	1	1	2	4	3
Nonangered	3	1	2	3	3	3	4	4	4	4	5	5	5	6	6	6	7	7	7	7	7	7	7	8	8	8	8	9	9	9	9	9
	4	1	1	1	1	1	2	2	2	1	2	3	3	2	3	3	4	3	3	4	4	4	3	5	3	3	3	4	2	3	3	3
High	5	3	4	3	3	5	3	5	4	5	6	5	2	7	5	5	7	6	4	4	6	6	4	6	3	3	6	4	3	3	4	3
Anxiety	6	2	1	2	3	2	2	3	1	1	1	1	3	2	3	3	5	2	2	3	2	5	4	4	4	5	1	1	3	4	3	3
Female	1	1	1	1	2	1	1	2	2	2	1	2	2	2	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2
	2	1	1	1	1	2	1	1	1	1	1	1	1	2	2	2	2	2	3	1	1	2	1	1	2	1	2	1	2	2	1	1
Angered	3	1	2	2	2	2	2	3	3	3	4	4	3	3	4	4	4	5	5	5	6	5	6	5	6	6	6	7	7	7	8	8
	4	1	1	2	1	2	1	2	2	2	3	3	1	2	3	3	3	4	4	3	3	3	4	2	4	3	3	4	4	3	3	3
Low	5	3	4	5	5	6	6	5	5	6	7	6	6	6	7	7	7	6	7	7	7	7	7	7	7	5	5	6	6	6	6	5
Anxiety	6	1	3	2	2	3	7	4	9	3	3	5	1	10	4	2	9	4	5	5	3	5	8	6	9	9	10	9	1	8	2	4
Female	1	1	1	1	2	2	2	2	2	2	2	3	3	2	1	2	2	2	3	2	2	3	2	2	3	2	2	2	3	3	3	2
	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1
Angered	3	2	2	2	3	3	3	3	3	4	3	4	3	4	4	3	4	4	4	4	4	4	4	4	4	5	5	4	4	5	5	5
	4	1	1	1	1	1	1	1	1	1	2	1	2	2	2	3	2	1	2	2	1	2	2	3	3	3	3	3	3	2	1	3
Medium	5	1	1	3	2	3	4	6	3	4	1	1	2	3	2	2	3	1	2	2	2	3	3	3	3	3	3	5	4	2	2	3
Anxiety	6	1	1	3	2	3	3	3	3	4	5	3	5	5	7	5	3	2	5	5	5	7	3	2	4	5	4	4	4	4	3	4

TABLE 8--Continued

Treatment Condition	S	Trials 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Female	1	1	2	2	2	3	2	3	1	3	1	2	1	2	1	3	3	3	3	1	1	2	3	2	2	2	4	2	3	3	4	3
	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Angered	3	1	2	3	4	5	4	5	3	4	3	5	5	4	5	4	5	5	5	4	5	5	5	5	5	5	5	5	4	5	5	5
	4	1	1	1	1	2	1	2	2	2	2	1	1	1	1	3	3	3	2	1	3	1	2	3	2	5	3	2	1	3	2	2
High	5	1	1	2	2	2	3	3	3	4	4	4	4	3	3	3	3	4	3	3	3	3	3	3	4	3	4	4	3	4	4	4
Anxiety	6	2	2	2	2	3	2	2	3	2	2	2	2	2	2	2	2	3	2	2	2	2	1	1	1	2	1	1	2	1	1	1
Female	1	1	1	1	1	2	2	1	1	2	1	2	2	1	1	2	1	1	1	1	1	2	2	1	1	1	2	2	1	1	1	1
	2	1	2	1	1	2	2	1	1	1	2	3	3	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	3
Nonangered	3	1	1	1	1	1	1	1	1	1	3	3	3	1	4	5	5	3	3	4	3	5	2	4	5	3	1	2	3	3	1	5
	4	1	4	4	4	7	1	6	1	1	1	4	4	1	9	7	1	1	5	7	1	7	8	5	5	9	3	6	5	5	5	7
Low	5	1	1	1	1	1	2	1	2	1	1	2	2	3	3	3	5	3	3	2	3	5	3	3	4	3	4	6	5	5	4	4
Anxiety	6	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Female	1	1	1	1	1	1	2	3	1	2	2	2	2	2	2	2	2	1	2	1	1	2	3	3	3	3	3	3	3	3	3	4
	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Nonangered	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	4	1	2	3	2	2	2	2	2	2	2	4	4	5	5	5	5	2	5	5	5	5	5	5	5	5	4	4	4	3	3	3
Medium	5	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	3	2	2	2	1	1	1	1	1	1	3	3	3	3	3
Anxiety	6	1	1	2	2	2	2	2	2	1	3	3	3	3	3	3	3	3	4	4	5	4	4	5	5	4	3	5	4	5	4	4
Female	1	4	1	2	3	3	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6
	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
Nonangered	3	1	1	1	2	1	1	2	1	3	3	2	2	2	4	3	3	3	1	3	3	4	3	2	1	1	1	2	1	2	2	3
	4	3	3	3	3	3	5	5	3	3	4	4	4	4	8	7	3	4	3	3	3	1	1	1	1	1	1	1	1	1	1	1
High	5	2	2	1	2	2	2	2	2	3	2	3	2	2	2	2	2	2	2	3	2	2	2	2	2	3	3	4	3	3	3	3
Anxiety	6	1	1	2	1	1	1	1	2	1	2	2	1	2	1	1	1	1	1	2	3	1	1	1	3	2	1	1	3	2	3	2

REFERENCES

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Bandura, A., & Walters, R. H. Social learning and personality development. New York: Holt, 1963.

Berkowitz, L. Manifest hostility level and hostile behavior. Journal of Social Psychology, 1960, 52, 165-171.

Berkowitz, L. Aggression: A social psychological analysis. New York: McGraw-Hill Book Company, 1962.

Berkowitz, L., Corwin, R., & Heironimus, M. Film violence and subsequent aggressive tendencies. Public Opinion Quarterly, 1963, 27, 217-229.

Berkowitz, L., & Rawlings, E. Effects of film violence on inhibitions against subsequent aggression. Journal of Abnormal and Social Psychology, 1963, 66, 405-412.

Berkowitz, L. The concept of aggressive drive: Some additional considerations. In Leonard Berkowitz (Ed.), Advances in experimental social psychology. New York: Academic Press, 1965a.

Berkowitz, L. Some aspects of observed aggression. Journal of Personality and Social Psychology, 1965b, 2, 359-369.

Berkowitz, L., & Geen, R. G. Film violence and the cue properties of available targets. Journal of Personality and Social Psychology, 1966, 3, 525-530.

Berkowitz, L., & LePage, A. Weapons as aggression-eliciting stimuli. Journal of Personality and Social Psychology, 1967, 7, 202-207.

Berkowitz, L. The frustration-aggression hypothesis revisited. In Leonard Berkowitz (Ed.), Roots of aggression: A re-examination of the frustration-aggression hypothesis. New York: Atherton Press, 1969.

Brackbill, G., & Little, K. B. MMPI correlates of the Taylor scale of manifest anxiety. Journal of Consulting Psychology, 1954, 18, 433-436.

Buss, A. H. The psychology of aggression. New York: Wiley, 1961.

Buss, A. H. Physical aggression in relation to different frustrations. Journal of Abnormal and Social Psychology, 1963, 67, 1-7.

Buss, A. H. Instrumentality of aggression, feedback, and frustration as determinants of physical aggression. Journal of Personality and Social Psychology, 1966, 3, 153-162.

Cattell, R. B., & Scheier, I. H. The meaning and measurement of neuroticism and anxiety. New York: Ronald Press, 1961.

Dollard, J., Doob, L., Miller, N., Mowrer, O., & Sears, R. Frustration and aggression. New Haven: Yale University Press, 1939.

Dollard, J., & Miller, N. Personality and psychotherapy. New York: McGraw-Hill, 1950.

Edwards, A. The social desirability variable in personality assessment and research. New York: Dryden, 1957.

Fordyce, W. E. Social desirability in the MMPI. Journal of Consulting Psychology, 1956, 20, 171-175.

Geen, R., Rabosky, J., & O'Neal, E. Methodological study of the measurement of aggression. Psychological Reports, 1968, 23, 59-62.

Hartmann, H., Kris, E., & Loewenstein, R. M. Notes on the theory of aggression. Psychoanalytic Study of the Child, 1949, 3-4.

Hodges, W. F. Effects of ego threat and threat of pain on state anxiety. Journal of Personality and Social Psychology, 1968, 8, 364-372.

Hokanson, J. E. The effects of frustration and anxiety on overt aggression. Journal of Abnormal and Social Psychology, 1961, 62, 346-351.

Jersild, A. T., & Markey, F. V. Conflicts between preschool children. Child Development Monographs, 1935, No. 21.

Kendall, E. The validity of Taylor's Manifest Anxiety Scale. Journal of Consulting Psychology, 1954, 18, 429-432.

Kerrick, J. S. Some correlates of the Taylor Manifest Anxiety Scale. Journal of Abnormal and Social Psychology, 1955, 50, 75-77.

Lansky, L. M., Crandall, V. J., Kagan, J., & Baker, C. T. Sex differences in aggression and its correlates in middle-class adolescents. Child Development, 1961, 32, 45-58.

Lauterbach, C. G. The Taylor A scale and clinical measures of anxiety. Journal of Consulting Psychology, 1958, 22, 314.

Lazarus, R. S. Psychological stress and the coping process. New York: McGraw-Hill Book Company, 1966.

Lesser, G. S. Conflict analysis of fantasy aggression. Journal of Personality, 1958, 26, 29-41.

Leventhal, D. B., Shemberg, K. M., & Van Schoelandt, S. K. Effects of sex-role adjustment upon the expression of aggression. Journal of Personality and Social Psychology, 1968, 8, 393-396.

Leventhal, D. B., & Shemberg, K. M. Sex role adjustment and nonsanctioned aggression. Journal of Experimental Research in Personality, 1969, 3, 283-289.

Levitt, E. E. The psychology of anxiety. Indianapolis: Bobbs-Merrill Company, Inc., 1967.

Lindquist, E. F. Design and analysis of experiments in psychology and education. Boston: Houghton Mifflin, 1953.

Matarazzo, J. D. MMPI validity scales as a function of increasing levels of anxiety. Journal of Consulting Psychology, 1955, 19, 213-217.

Matarazzo, J. D., Guze, S. B., & Matarazzo, R. G. An approach to the validity of the Taylor Anxiety Scale: Scores of medical and psychiatric patients. Journal of Abnormal and Social Psychology, 1955, 51, 276-280.

Miller, N. E. The frustration aggression hypothesis. Psychology Review, 1941, 48, 337-342.

Rosenberg, M. The association between self esteem and anxiety. Journal of Psychiatric Research, 1962, 1, 135-151.

Ruebush, B. K. Anxiety. In H. W. Stevenson, J. Kagan, & C. Spiker, (Eds.), Child psychology: The sixty-second yearbook of the national society of education. Chicago: University of Chicago Press, 1963.

Sears, R. R. Relation of early socialization experiences to aggression in middle childhood. Journal of Abnormal and Social Psychology, 1961, 63, 466-492.

Spence, K. W. Anxiety (drive) level and performance in eyelid conditioning. Psychological Bulletin, 1964, 61, 129-139.

Spielberger, C. D. The effects of manifest anxiety on the academic achievement of college students. Mental Hygiene, 1962, 46, 420-426.

Spielberger, C. D. Theory and research on anxiety. In Charles D. Spielberger (Ed.), Anxiety and behavior. New York: Academic Press, 1966.

Spielberger, C. D., & Smith, L. H. Anxiety (drive), stress, and serial-position effects in serial-verbal learning. Journal of Experimental Psychology, 1966, 72, 589-595.

Spielberger, C. D. Toward a trait-state theory of anxiety. In R. B. Cattell (Ed.), Handbook of modern personality theory. Chicago: Aldine Press, 1971.

Suin, R. M., & Hill, H. Influence of anxiety on the relationship between self acceptance and the acceptance of others. Journal of Consulting Psychology, 1964, 28, 116-119.

Taylor, J. A. A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 1953, 48, 285-290.

Thompson, R. J., Jr. Instrumentality of aggression and strength and arbitrariness of frustration related to direct physical aggression. Unpublished doctoral dissertation, University of North Dakota, 1970.

Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill Book Company, 1962.

Zuckerman, M. The development of an affect adjective check list for the measurement of anxiety. Journal of Consulting Psychology, 1960, 24, 457-462.