EMOTIONAL SENSITIVITY AND
SYMPATHETIC BEHAVIOR

by

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We accept this thesis as conforming to the
required standard

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ABSTRACT

The purpose of this study was to examine the proposition that the accurate perception of the emotional state of another person would serve as an important determinant of the degree of the perceiver's physiological arousal and that this emotional arousal would serve to instigate an act designed to alleviate the distress of the other person. The subjects were asked to administer increasingly painful shocks to a performer who sat behind a screen. Two degrees of responsibility for inflicting pain and two different kinds of feedback of verbal cues of the performer's pain were combined in a 2x2 factorial design. In the Responsibility conditions either the subject or the experimenter took the responsibility for administering the aversive stimulation to the performer. In the Verbal conditions the performer either responded verbally at the moment of apparent shock or remained silent. The subjects, 40 volunteers, 20 males and 20 females, were randomly assigned to one of the four experimental conditions with the stipulation that each group contained a balanced number of males and females. During this experiment a Grass Polygraph provided a continuous record of the observing subjects' GSR reactivity. The subjects were also required to complete three of Davitz’s test of emotional sensitivity (1964), Knowledge of Vocal Characteristics, Sensitivity to Vocal Stimuli, and the Metaphors Test.
The main effects for **Responsibility** and **Verbal** conditions were analyzed in terms of their relationship to the experimental measures. The Combined Emotional Sensitivity score and the individual scores on the emotional sensitivity battery for all the subjects were correlated with the experimental measures. This procedure was repeated for each experimental group and for the verbalization trials alone.

It was hypothesized that differences in emotional sensitivity, as measured by Davitz's test (1964), would be positively related to the number of sympathetic arousals, increases in the level of conductance, and negatively related to the number of shocks administered to the performer.

Increased responsibility for administering the shock to the performer and the feedback of verbal pain cues hypothesized to be related to increases in the level of conductance throughout the whole experiment, to the number of changes in conductance at the time of the administration of the shock to the performer, and the magnitude of the changes in conductance at the time of the administration of the shocks to the performer.

It was found that the **Verbal** condition was related to higher numbers of sympathetic arousals given at the time the shock was administered. This finding was related to S. Berger's (1962) findings and to the two phase model of sympathetic behavior suggested by Paskal and Aronfreed (1965). A significant relationship between the change in the level of conductance and the number of shocks administered was found.
This suggested that the subject may have been aroused solely by being asked to witness the administration to aversive stimulation to the subject. However, cognitive-perceptual patterns of emotional sensitivity, as assessed with Davitz's measures, were not found to be related to the experimental measures of sympathetic behavior. It was suggested that these scores may have been determined by factors not necessarily related to the factors under consideration.
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INTRODUCTION

Lacey's (1959) review demonstrated the versatility of various psychophysiological techniques for assessing emotional arousal within a social setting. Recent research using these techniques indicates that exposing subjects to the aversive consequences of the administration of punishment to a performer is capable of inducing vicarious emotional arousal in the observing subject parallel to that being experienced by the performer. A number of studies have indicated that vicarious arousal is mediated by personality variables within the subjects (Haner and Whitney, 1960) and the feedback of behavioral pain-cues from the performer (Berger, 1962 and Barnett and Benedetti, 1960). Instructional sets have also shown to be effective in producing arousal (Craig and Weinstein 1965).

Other research has indicated that arousal may be the result of sympathetic awareness of another's distress.\(^1\) (Paskal and Aronreed, 1965) Sympathy then could have motivational consequences in producing behavior directed at eliminating the source of cues to distress and consequently reducing the observer's emotional arousal. Milgram (1963; 1964a; 1964b; 1965a and 1965b) developed an experimental paradigm to study the effects of authoritarian persuasion on subjects' willingness to administer increasingly painful

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\(^1\) The word sympathetic as used in this paper refers to the relationship between persons which allows the communication of emotional states, rather than referring to the autonomic portion of the nervous system.
shocks to a performer. Milgrim indicated that the subjects were emotionally aroused as a consequence of the responsibility for administering the shock. While this study did not focus on the sympathetic act, it is obvious that this experimental paradigm could be used to study the relationship between emotional arousal and sympathy.

Sensitivity to emotional arousal in others seems important in determining the amount of emotional arousal produced in a subject as a consequence of exposure to cues indicating the aversive consequences of the administration of punishment to a performer. Church (1959) demonstrated that rats which had been sensitized to the distress cues of other rats subsequently exhibited more emotional responses to the emotional reactions of other rats, than unsensitized rats. Generalizing from this research, it could be possible to hypothesize that subjects that are more capable of assessing the cues to an emotional state of another will become more aroused when these cues are presented.

The testing of this hypothesis traditionally has been hampered by the difficulty of finding an instrument that would provide an adequate measure of emotional sensitivity. Previous tests have been criticized as being open to the effects of suggestion or being based on similarity, projection, and cultural stereotypes rather than emotional sensitivity. (Hastrof and Bender, 1952; Lindgren and Robinson, 1953; and Taft, 1953) However, there has been some research that has focused on the subject's ability to verbally describe emotional states in others which has produced several reliable, objective
tests that could be used as measures of emotional sensitivity. (Davitz, 1965) As these tests seem to avoid earlier criticisms, they might be used to relate individual differences in emotional sensitivity to levels of physiological arousal, and behavioral measures of an overt sympathetic response.

It was hypothesized that individual differences in emotional sensitivity and physiological arousal would be related and that emotional arousal could serve to instigate a sympathetic response. Furthermore, if the emotional state of the performer is to be effective in producing arousal in the observer, the observer must have some cognitive-perceptual awareness of the performer's status. Therefore, emotional sensitivity and sympathetic behavior should be related. Thus emotional sensitivity could be hypothesized to be related to induced changes in the observer's level of arousal which should serve as in instigation for a sympathetic response.
Review I

Research Background; This paper examines the propositions that accurate perception of the emotional state of another person would serve as an important determinant of the degree of the perceiver's physiological arousal and that this emotional arousal would serve to instigate an act designed to alleviate the distress of the other person. Sympathy is expected to be the product of two processes, emotional sensitivity and the propensity to act in favor of the other person. In order to gain some understanding of the meaning of emotional sensitivity, physiological arousal, and sympathetic behavior, the various approaches which have been used previously to measure and manipulate them were surveyed.

Emotional Sensitivity

There have been three general approaches to the measurement of emotional sensitivity: (a) those based on sensitivity to emotional cues in facial expressions, (b) those assessed by sensitivity to verbal emotional cues, and (c) those based on the subject's ability to predict another person's behavior.

I. Sensitivity to emotional cues in facial expressions.

Felecky (1914) made one of the first attempts to measure emotional sensitivity by testing a subject's ability to identify emotions portrayed in photographs. In this study photographs were taken of her as she tried to enact various emotions, including anger, hate, horror, etc. The pictures were rated by subjects, with emotional sensitivity scores
corresponding to the percentage of correct responses. Responses were chosen from a list of one hundred ten emotional terms including some false leads. Results suggested that emotions could be rated at a better than chance level. However, it is possible that the test stimuli were a direct product of Felecky's perception of cultural stereotypes of emotional expression. Further, since Felecky was the only model used, inferences based on this data may be specific to this actor.

To avoid some of these problems, Boring and Titchener (1923) developed a series of test faces. These were constructed by combining a set of standardized parts, much like a jig-saw puzzle. Thus, a sneering face could be built by using a sneering nose, a sneering mouth, and a sneering eye. This method avoided the criticism of being actor-specific, although Boring and Titchener still relied on cultural stereotypes to develop the raw stimuli. Attempts were made to isolate the important variables of emotional expressions and identification of emotions, such as which part of the face was best for communicating anger to the observer. The results of this study were equivocal due to the highly artificial nature of the model.

Later research (Buzby, 1924; Jarden 1926; Fernberger, 1927, 1928; Kanner, 1931), using the above techniques, offered a variety of criticisms of earlier research. Buzby suggested using groupings of synonymous emotional labels, including the correct one, so that the subject could be given credit even though the correct term was not identified. Kanner also attempted to discover the method that the subjects used in
determining what emotion was being expressed. Most of the subjects indicated that they tried to duplicate the performer's facial expression or posture in order to infer from their own bodily cues which emotion was being expressed by the actor. Fernberger provided descriptions of events preceding the development of emotions expressed in these pictures. Using this method the role of suggestion in increasing the probability of a correct response was demonstrated.

Coleman (1949) emphasized that, while there was a wide range of cultural and individual differences in the facial expression of emotions, facial expressions played a secondary role to the language mechanism in the expression of emotions. Further, in the real life situation, the individual used a series of global observations about the behavior and the situation of the performer rather than just facial cues. Other methodological limitations of earlier studies involved the highly artificial nature of the test stimuli; the vague meaning of the emotional terms used in the research; and the tendency to equate the "correct" emotion with the actor's intention.

Coleman (1949), in an effort to avoid these problems, recorded the behavior of two subjects in different laboratory situation designed to evoke emotional states with a movie camera. The situations ranged from crushing a snail to experiencing an electrical shock. The criticism of obtaining performer-specific findings was avoided, and the ongoing process of emotional expression was examined. The subjects attempted to match the pictures with descriptions of the
conditions in which they were taken. The situations were
designed to elicit a wide range of emotional behavior. However,
these situations only succeeded in producing a continuum of
response from pleasant to unpleasant. Thus while individual
emotional expression seems to be idiosyncratic, most of the
models' behavior seemed to be stereotyped. Therefore success­
ful performance on this instrument does not imply necessarily
the ability to judge a variety of idiosyncratic emotional
expressions.

Engen, Levy, and Schlosberg (1957) developed the "Light­
foot Series" by taking pictures of an actor portraying several
types of emotional behavior. Subjects matched the photographs
with the descriptions of the scenes. This instrument was
designed to discover whether or not subjects could rate a
performer in terms of three dimensions put forth by Schlosberg;
Pleasantness-unpleasantness, Attention-rejection, and Activ­
tion level, although it could be used to measure visual,
emotional sensitivity.

II. Sensitivity assessed by responses to verbal cues.

Davitz (1964) conceived of emotional sensitivity as
including the detection of cues about emotional states and the
use of these cues to label the emotion. Davitz and his
colleagues developed three techniques to assess emotional
sensitivity: a test of sensitivity to vocal expressions, a
test of knowledge of verbal characteristics, and a test of
the ability to identify the emotional states implied in a
written metaphor. (Davitz, 1964)
Beldoch (in Davitz, 1964, p.32), postulated that the ability to recognize emotions in a tape-recorded sample of verbal cues would be positively related to the ability to recognize emotions in artistic drawings and the ability to identify emotions in musical compositions. Correctness was defined as agreement with the intent of the creator or the speaker. Tests of emotional sensitivity were developed for these three modes of communication. Intercorrelations showed a clear positive inter-relationship between these tests. This data supported the idea of a general ability to identify emotional expression that transcends an ability in a particular medium. However, there is still a considerable amount of variance unaccounted for by this general ability.

P. Levy (in Davitz, 1964, p.43) postulated that the ability to express emotional meaning would be related to one's ability to perceive emotional meanings in their own expressions and the expressions of others. Levy found that there was a significant positive relationship between the three abilities. These results seemed to indicate that the performances on the test were due to a common ability to communicate, rather than separate, discrete abilities.

Both of these studies seem to indicate that the ability to communicate emotions and to be sensitive to cues to emotional meanings demands stable, consistent ways of organizing and responding to internal and environmental cues. These patterns of cue-utilization may be based on personality, cognitive-perceptual, or physiological factors.

In order to test the hypothesis that these stable modes
of communication and cue-utilization were based on personality factors, Davitz (1964, p.57) correlated the sensitivity to vocal stimuli with a battery of personality tests. The results indicated that the 33 personality variables measured by these instruments were independent of the ability to identify vocal expressions of emotional meanings. The results of this test are quite similar to those obtained by C. Patterson (1962). The findings were taken to indicate that there are no specific "kinds" of people, as described by the paper-and-pencil personality tests employed that are especially sensitive to expressions of emotional meanings.

In an effort to demonstrate some of the perceptual and cognitive correlates of emotional sensitivity, Davitz ran an intercorrelation matrix on these variables. (1964, p.60). He used an index of the subject's auditory discrimination, the Beldoch's sensitivity to emotions in vocal samples, and the Raven Progressive Matrices Test. To measure the cognitive aspect of emotional sensitivity, Davitz developed a scale that indicated the subject's ability to describe the characteristics of a verbally-expressed emotion, the Knowledge of Verbal Characteristics. The results suggested that at least a minimal ability to make gross distinctions among auditory stimuli was a prerequisite to emotional sensitivity. Also some minimal cognitive ability was necessary. This implied a multi-variable model where a specific level of functioning in several, relatively independent dimensions is required for adequate understanding and communication of emotions.

Thus the stable, uniform ways of organizing and responding
to internal and environmental cues to emotional states are partial dependence on cognitive and perceptual processes within the individual. As yet unexplored, is the question of whether or not physiological patterns of arousal are related to the utilization of cues to emotional meanings.

Davitz (1964, p.157) also produced a series of written metaphors designed to test the subject's sensitivity to written emotional cues. The subjects were given the Metaphors test, the Sensitivity to Verbal Stimuli test, and a test of sensitivity to facial cues. The resulting correlation between the Metaphors test and Beldoch's test (r = .48), indicated that the ability to perceive emotional states was somewhat independent of the modes of communication. The correlation between the Metaphors test and a facial facial cues test (r = .12) may indicate that the facial scores are determined more by the subject's ability to deal with artificial expressions or his susceptibility to suggestion than the ability to detect relevant cues to emotions.

Research in this area of verbal communication of emotions has produced several reliable, objective tests designed to measure sensitivity to emotional meanings. These tests seem to have some construct validity. The manner in which one deals with internal and environmental cues to emotional states seems to be determined by broad patterns of perceptual and cognitive functioning.
III. Sensitivity assessed by the ability to predict another person's behavior.

The visual, auditory, and verbal tests of emotional sensitivity operationally defined emotional sensitivity as the subject's ability to match emotional stimuli with a judge's perception of the situation. Another approach construes emotional sensitivity as the ability to predict another person's behavior. Typically, scores derived by this method reflect how accurately a subject is able to predict how a confederate would respond to a personality check-list. (Dymond, 1948).

In one study, Dymond (1949) attempted to measure emotional sensitivity by having subjects interact with each other during several group sessions, and then rate each other and themselves along a series of five-point personality scales. The sensitivity scores were derived from a series of comparisons between the subject's prediction and the other person's actual response. On the basis of the scores taken after a series of meetings, Dymond found that there was no significant improvement in the accuracy of the scores. This suggested that sensitivity might be relatively unaffected by short-term experience. But, when the data was examined for sex differences in accuracy over time, females seemed to have improved whereas males did not. This implied that the male subjects were relying on the use of cultural stereotypes in predicting the ratings of others, while the females were relying on another process. Perhaps it was one amenable to the effect of short-term experience.
One of the difficulties with this experiment is that its results are affected by the subjects' use of cultural stereotypes, projection, and implicit-personality theories. (Taft, 1955) For example a score might reflect which personality traits subjects throughout should go together, rather than the ability to predict other people's behavior. Further, since people are likely to predict that other people act in the same way as they themselves do, similarity between two subjects might make the accuracy of these predictions spuriously high. These factors may be helpful to the subjects in making predictions. However, the general nature of these factors might also inhibit the accuracy of the prediction of highly individual traits.

Hastorf and Bender (1953) attempted to correct for the distortion of projection and to examine the effects of similarity on the accuracy scores by using a modification of Dymond's method. Subjects marked a scale consisting of questions concerning the subject's feelings about social situations. Accuracy score reflecting the subject's ability to predict another person's behavior was calculated. In addition, a projection and a similarity score was determined. The projection score indicated the degree of agreement between the subject's score and the forecasted scores. The similarity score reflected the degree of congruency between the subject's own responses and the actual responses of the confederate. In an effort to eliminate the effect of the projection factors on the empathy score, a refined score was calculated by subtracting the projection score from the uncorrected
sensitivity score.

Hastorf and Bender (1953) found that the similarity and projection scores were related indicating that similarity might be a necessary condition for projection to occur. Further, the uncorrected sensitivity score and the similarity scores were related, showing that similarity might be responsible for a spurious increase in the accuracy of the prediction independent of the subject's emotional sensitivity. In addition, the refined and uncorrected sensitivity scores were found to be independent indicating that the uncorrected score may be determined more by projection and similarity than the refined score.

Lindgren and Robinson (1953) attempted to correct for the effect of cultural stereotypes in Dymond's method by developing a normative key indicating a series of stereotyped responses. This key was used to determine the degree the subjects were relying on cultural stereotypes.

In the first phase of the analysis, sensitivity scores were derived using Dymond's method. On the basis of this score the subjects were divided into two groups, the 'good' and the 'poor' empathizers. There was a high correlation between the poor empathizers classification and the degree of maladaptive responses to a personality inventory \( r = 0.74 \). In the second phase, the number of stereotyped responses the subject gave was subtracted from the sensitivity score in order to obtain a corrected sensitivity score. The subjects were then re-classified and the data was re-analyzed. The correlation dropped to \( r = 0.54 \) on the basis of this score, although it was
still significant. This finding lent some validity to the use of Dymond's method, but indicated the uncorrected sensitivity score might be due in part to the effects of the use of stereotypes in making predictions.
EMOTIONAL AROUSAL

A series of articles have appeared showing that vicarious arousal can be produced by having the subject observe a performer experiencing an aversive stimulation (Bandura and Rosenthal, 1966; Barnett and Benedetti, 1960; Berger, 1962; Craig and Weinstein, 1965; Dilollo and Berger, 1965; & Haner and Whitney, 1960). These studies have focussed on demonstrating that these situations are emotionally arousing; isolating the relevancy of behavioral feedback to emotional arousal; and determining what kinds of psycho-social factors are important in producing emotional arousal.

Bandura and Rosenthal (1966) were interested in the relationship between the level of arousal of the subject and the number of vicarious responses the subject made to a performer's distress. They manipulated both physiologically and psychologically the level of arousal of the subjects who were observing an aversive conditioning procedure. Arousal was induced physiologically by graded levels of injections of epinephrine, a sympathetic nervous system stimulant. Arousal was induced psychologically through having the subjects sign a legalistic statement releasing the experimenters from any liability and giving the subjects threatening instructions to the effect that they would be asked to go through the same experience as the performer.

The findings revealed that the subject's level of arousal produced by psychological stress, was a significant determinant of vicarious arousal as there was a positive relationship between the frequency of vicarious emotional responses and
the degree of induced stress. Physiologically induced arousal was negatively related to vicarious emotional responses. Bandura and Rosenthal (1966) related this finding to the hypothesis that high emotional arousal may reduce the efficiency of cue utilization. Bandura et al. (1966), also demonstrated the effectiveness of a feedback mechanism in producing increased amounts of vicarious arousal.

Barnett and Benedetti (1960) showed that instructions could be effective in producing emotional arousal. The subjects GSR reactivity was used as an index of emotional arousal. The data indicated that previously extinguished GSR's could be instigated to a needle which had been described to the subjects as showing the skin responses of a non-visible performer to an aversive stimulus. This study seemed to indicate the importance of instructions in producing vicarious emotional arousal.

Craig and Weinstein (1965) predicted that vicarious affective reactions could be differentially facilitated by instructional and social factors. These factors were the occurrence of a predicted failure within a social situation and the instructions were to the effect that the performer would be shocked contingent upon his failures. The performer's failures within the social context tended to elicit a greater number of emotional responses than did the performer's success within the same situation. Thus the data seemed to indicate that social factors such as success or failure can differentially facilitate the number of emotional reactions observed in a subject.
Using the same methodological procedure as Barnett et al. (1960) Haner et al. (1960) hypothesized that the number of vicarious emotional responses would be related to the personality of the observer. The subjects were divided into high and low anxiety groups defined in terms of the Taylor Manifest Anxiety Scale (MAS). The data seemed to show that both the high and low anxiety groups experienced an increase in basal level of conductance during the course of the experiment indicating that the situation was emotionally arousing. There also was some evidence to show that the highly anxious group when contrasted with the low anxiety group produced a greater number of GSR's when observing the performer experiencing aversive stimulation. While there was little difference between the two groups early in the trials, the two groups became more divergent suggesting that while both groups anticipated that they would be called upon to change places with the performer, this anticipating effected the highly anxious subject more than the non-anxious group.

Berger (1962) indicated that vicarious arousal would be influenced by manipulating the degree of corroborating feedback the observer received in the form of information about the performer's emotional state, supposedly in response to an aversive stimulation. It was found that arousal was greatest when the maximum amount of feedback, in terms of behavior cues from the performer, were presented to the observer. The data seemed to indicate the importance of the knowledge of the behavioral cues to the emotional state of
the performer in producing vicarious arousal in the subject.

DiLollo and Berger (1965) hypothesized that the reaction time of the subject would be related to the subject's arousal and the subject's arousal would be a function of the observer's exposure to the feedback of emotionally arousing cues. In the experimental situation, the observers were asked to register when the aversive stimulation was presumably given to the performer by pressing a button whenever an ammeter deflected. It was demonstrated to the subject that the timer-button controlled only a timing device and not the duration of the aversive stimulation. The performer provided behavioral cues by either moving or not moving. The results of the experiment indicated that the maximum amount of emotionally arousing cues was most effective in producing a reduction in the latency of the reaction time. This implies that the corroborative evidence was most effective at instigating vicarious arousal.
Sympathy

Sympathy is thought of in this paper as being related to two processes, emotional sensitivity and internal conditions yielding behavior aimed at meeting the needs and conditions that observer perceives in the performer. Tomkins and Izard (1965) also conceived of sympathy as involving the subject's awareness of the personal state of another, as well as wanting to further that state, even when there is no apparent reward. This awareness implies that the observer must be able to use cues to identify other people's emotional states. This model also suggests a process in the observer in which he reacts to the aroused state of the other as if it were happening to himself. Paskal and Aronfreed (1965) postulated that the sympathetic act was a social act consisting of two phases. The first phase consists of learning to respond affectively to the cues of another's distress. The second phase consists of learning responses instrumental in reducing the emotional cues emitted by another in order to reduce the arousal in the observer that these cues produced.

Paskal and Aronfreed (1965) attempted to experimentally validate the thesis that sympathy was the result of a two-staged social process. The experimental technique had three parts. In one, the distress state of the child could be conditioned to cues of distress in the model. In the second, the reduction of the distress in the child was associated with a model's sympathetic act to the child. In the last portion, the strength of the sympathetic disposition acquired by the subjects was tested. These conditions were run in a
series of random sequences in order to clarify the role of the model's distress cues and the source of the subject's motivation for the sympathetic response. The high frequency of sympathetic responses in the sequence where the subjects were allowed to learn to respond affectively to another person's distress cues and to adopt a previously cue-to-stress reducing behavior seemed to support the two-phase model of sympathy. Furthermore, all the subjects who indicated an awareness of the performer's distress cues and the instrumentality of the sympathetic act made many sympathetic responses. These findings seem to strongly support the view that the sympathetic act is based on an awareness of another person's distress cues. However, the postulated affective arousal, contingent on distress-cues from the performer, was not demonstrated by adequate physiological methods.

In another series of studies Milgram (1963, 1964a, 1964b, 1965a, and 1965b) investigated the various factors associated with the act of obedience. In these studies, Milgram attempted to delay the sympathetic act by exploiting the subjects' obedience to different sets of experimenters' demands and group pressures. Experimental conditions included varying the perceived distance of the source of commands, the distance of the performer, the geographic location of the research, and group pressure. Because these studies began at the point of the sympathetic response a great deal of data regarding the preceding processes of sympathy was ignored. However, since the experiment was designed to produce and then delay the sympathetic response, these studies
have some bearing on research concerning the sympathetic processes.

For example, in Milgram's (1965) first study, subjects served as observers and a confederate acted as the performer. The subjects were to administer in increasing amounts a shock to the performer each time the performer supposedly gave an incorrect response on a fake learning task. The performer who failed at pre-determined intervals gave feedback to the increasing painfullness of the shocks. Milgram predicted that the proximity of the source of the instructions to administer shocks to the performer and the geographic location of the experiment would effect the level of shock at which the subjects would refuse to continue shocking the performer. The proximity of the source was varied by either having the experimenter in a lab-coat present or by having the same instructions relayed to the subjects via a telephone. Milgram varied the geographic location of the experiment by either conducting it on Yale's campus or a business suite in town. The fact that the subjects were willing to postpone the sympathetic act upon the urging of some legitimate authority or in an effort to show respect for an academic background, led Milgram to conclude that the effects of sympathy were relatively weaker than the effects of obedience.

Using the same situation, Milgram (1964a and 1965b) hypothesized that degrees of group pressure would determine the eventual level of shock that the subject would administer to the performer. In one study (1964a), the subjects shocked the performer in the presence of two confederates calling for
increasingly more powerful shocks. These subjects' scores were compared with another group of subjects who made the decision in the presence of two neutral confederates. The mean level of shocks administered was higher for the group who made the decision in the presence of confederates advocating higher "shocks". This increase appeared to be due to the subjects' obedience to the group's pressure. To clarify further the role of group pressures, Milgram used the same situation but three different conditions of group-resistance to the experimenter's suggestion that it was necessary to shock the performer. The first condition was a control-group where the subjects made the decision in the presence of two neutral confederates. In the second, the subjects made the decision in the presence of two confederates who were refusing to shock the performer. In the third, the subjects made the decision in the presence of two confederates who were complying with the experimenter. The group of subjects who made the decision in the presence of the two non-complying confederates had the lowest mean level of administering shocks to the performer. This data indicated to Milgram the liberating effect of the disobedient group. These studies emphasize the importance of the social context in which the sympathetic act is made as this context can have the effect of either facilitating or inhibiting the act.

Milgram's results are open to other interpretations. For example, Bandura (1962) contends that watching a model exhibit aggressive behavior may facilitate the appearance of an aggressive response in observing subjects. Within this
framework, the experimenter and the participating confederates can be seen as providing a social model for the subject to imitate. The behavior of these models facilitates the subjects' response of giving a "shock". The increased means of these groups may therefore reflect only the effects of social facilitation on behavior rather than the effects of authority and group pressure. Conversely, the behavior of the resisting confederates may be seen as social facilitation for the response of not giving shocks rather than indicating the liberating effects of the disobedient groups. It should be pointed out, however, that either of these two frameworks produce the same predictions, i.e. that the source of the instructions and the social-context are important in determining the eventual level of shock administered to the performer.

Theoretical Implications

The literature reviewed above suggests that attempts to measure emotional sensitivity through devices requiring subjects to correctly identify emotions in facial expressions have failed to produce an adequate research method. It is difficult to control for the effects of suggestion induced both by the instructions and the list of emotional terms provided with the test. Further control has not been achieved of the effects in the test data of the artificial nature of the test stimuli, the vague meaning of the emotional labels, and the role of single actors portraying all of the emotions. Most of these tests have the subjects respond by matching the emotional stimuli with the experimental conditions during
which they were obtained. While data from these responses has the advantage of being objective and quantitative, there is no consensus about the meaning of this ability or its relevance to emotional sensitivity. Furthermore, since most of the actors knew that their responses were being recorded, these instruments were more likely to deal with cultural stereotypes of emotional expression rather than the idiosyncrasies that characterize individual emotional expressions and emotional sensitivity. In view of these difficulties, the measurement of emotional sensitivity in terms of the subject's sensitivity to visual cues seems dubious at best.

Equating emotional sensitivity with the ability to predict another person's behavior appears to have some serious drawbacks. The findings derived from this method seem to be open to the effects of cultural stereotypes, implicit personality theories, and projection. While there have been some statistical attempts to correct for these effects, these methods have to be accepted on the basis of only a few studies. Furthermore, there is some difficulty in relating both the experimental situation and the criterion to the processes involved with the emotional sensitivity that occurs in the "real" world.

On the other hand, research that has focused on the subject's ability to use verbal cues in order to label emotional states has produced several reliable, objective tests that can be used as measures of emotional sensitivity. These tests seem to have some construct validity. In addition the results of these tests seem to indicate that the ability to identify emotional states is related to a fairly stable
ability to deal with internal and environmental cues to emotions that may be determined by broad patterns of perceptual and cognitive functionings.

Studies using the various physiological techniques for assessing emotional arousal within a social setting have shown that arousal can be induced by social, instructional, and psychological factors. This arousal is in part a function of the amount of behavioral feedback from the performer that the subjects receive and the subject's personality. Emotional sensitivity has been neglected, as an important factor in producing this arousal. It should be included, however, because, one would expect that some cognitive-perceptual awareness of the performer's state would be a precondition for the emotional state of the performer to be effective in producing arousal in the observer. As emotional sensitivity is a necessary prerequisite for this appreciation, it seems that this variable should be related to the induced changes in the subjects' level of arousal.

Paskal and Aronfreed (1965) have suggested that a sympathetic act requires an awareness of another person's distress and a disposition to alleviate that distress. Milgram (1963) has shown that the sympathetic act can be retarded by such factors as the source of the authoritarian urging to administer aversive stimulation to a performer and the physical surroundings of the experiment. In doing this, Milgram developed an excellent experimental design for the study of the sympathetic act that could be applied to a wide variety of situations.
Conclusions

On the basis of this review of the previous research, it is possible to make a number of hypotheses about the relationships among emotional sensitivity, physiological arousal, and sympathy. It can be hypothesized that differences in emotional sensitivity as measured by Davitz's test (1964) will be related to differences in emotional behavior in a laboratory situation much like Milgram's (1963). More specifically, these scores should be positively related to the number of sympathetic arousals, and increases in the level of conductance, and negatively related to the number of shocks administered to the performer. Furthermore, these correlations should improve when the individual scores and groups under the experimental conditions are considered.

While being involved in the administration of aversive stimulation to a performer could be arousing to the subjects, arousal could also be the results of both psycho-social and behavioral factors. Since psycho-social factors have been shown to be important, it could be hypothesized that responsibility for administering aversive stimulation to a performer would be related to increases in the amount of emotional arousal and a decrease in the number of aversive stimulations administered to the performer. Similarly, since feedback from the performer has been shown to be important, it could be predicted that receiving verbal feedback from the performer regarding the painfulness of the noxious stimulus would increase emotional arousal and decrease the number of aversive
stimulations administered to the performer. Moreover, both of these experimental conditions would be related to an increase in the mean number of sympathetic responses given to the administration of aversive stimuli to the performer.
II METHOD

Subjects

Observer subjects were 20 male and 20 female volunteer University of British Columbia students solicited from third-year education and psychology courses. They had a mean age of 19.5 years and a median educational level of three years of university. The performer, a male graduate student paid assistant, was the same for all research groups.

Apparatus

A Grass Polygraph provided a continuous record of the observing subject's GSR reactivity. The subjects were seated in an arm-rest chair with their left arm on the rest in order to minimize movement. Silver electrodes \( \frac{3}{8} \)" in diameter were taped to the finger-print areas of the index and ring-finger of the left hand after the fingers had been cleaned with alcohol and covered with an electrolytic paste. Polarization between the skin and the electrode should be considered as a source of constant error both across subjects and experimental groups. It should be noted that changes in the resistance level overtime could be due to this change. A tape-recorder with a hidden microphone kept a continuous recording of the instructions as well as any chance remarks.

A tall wooden screen separated the observing subjects and the performer. It was placed on a table directly in front of the subjects hiding the performer and all the equipment from their view. The Grass recorder was standing behind the subject's chair where it could not be observed by the
subjects. The screen was fitted with a dial, the face of a Variac Transformer. This dial was stepped off in steps of five from zero to one-hundred and thirty-five. As the dial was turned, a rheostat caused a small light (5 watts) mounted directly above it to become brighter. This dial was described as indicating the amount of shock the performer received. At the beginning of the experiment, the dial was set at twenty-five and increases were made in steps of five. There were labels on the dial; 1) slight shock, 2) severe shock, and 3) danger, severe shock. These labels were placed at the beginning, middle and end of the arc of the dial adjacent to the numbers. A telegraph key, placed directly in front of the subject was described as administering a shock to the performer six seconds after it was depressed. Another light (five watts), which went on as the key was depressed, was described as indicating by flashing off when the shock was administered to the performer. An ammeter, mounted by the light, was described as also indicating, by flicking over, the moment when the performer was given the shock. The time intervals and the event-recorder on the polygraph were controlled by a Stoelting timer. (See Appendix 1 & 2 for diagrams of the room and screen).

**Performer's Task**

The performer was described as a paid volunteer who was willing to be paid on the basis of how many shocks he received during the experiment. In reality, the performer received no shocks. On experimental trials, where verbal cues were to be
given, supposedly in response to a noxious stimulus, the performer gave verbal cues in a prescribed manner.

Test of Emotional Sensitivity

Three tests of emotional sensitivity developed by Davitz (1964) were used. (See Appendix 3, 4 & 5 for copies of these tests). The subjects were not informed about the specific purpose of these tests.

Studies (Davitz, 1964) have indicated that the tests are significantly intercorrelated. These results indicate, that while the tests are partially redundant and sample common factors they each contribute some independent information about emotional sensitivity. The scores derived from each of these three tests were treated separately and added together in order to provide a single emotional sensitivity score.

The first test, Knowledge of Vocal Characteristics, required the subjects to describe the characteristics of a voice expressing a sequence of eight different emotions. The emotions were rated by the subjects on a series of five-point scales dealing with various physical aspects of speech such as rate or pitch. Accuracy scores were assigned on the basis of comparing the subjects' responses with a set of judges ratings provided by Davitz (1964, p.63).

The second test, Sensitivity to Vocal Stimuli, asked the subjects to identify emotions portrayed by five speakers on a tape-recording. (Davitz, 1964, p.64) Using the same three-sentence paragraph, the speakers tried to express each of the following emotions; affection, anger, boredom, cheerfulness, impatience, joy, sadness, satisfaction, and a neutral express-
ion. The subjects received an accuracy score based on his ability to accurately predict the intent of the speaker.

The third test, the Metaphors Test, had the subjects identify the emotions expressed in a written statement. There were sixty-three written statements for the subjects to judge. Responses were chosen from a list of emotions. The accuracy score was based on the subjects' ability to identify the intent of the person who made the statement.

Experimental Design

Two degrees of responsibility for inflicting pain and two different kinds of feedback of verbal cues of the performer's pain were combined in a $2 \times 2$ factorial design. The degrees of responsibility for inflicting pain on a performer were produced through instructions. In the Responsibility condition, the subjects were told that they were to determine at what level of intensity the shocks would be discontinued. Thus the subjects took the responsibility for administering aversive stimulation to the performer. The No-responsibility condition was created by the subjects' being told to depress the key by the experimenter and to merely "guess" when the performer had had enough. In this condition, the experimenter took the responsibility for administering the shock and determining the level of intensity of the shock.

The Verbal condition required the performer to respond at the moment of apparent shock with an "oh" or an "hmm" in an "abba" sequence. These verbal cues were omitted on the second, sixth, ninth, tenth, twelfth, and sixteenth trials
depending upon how far the subjects continued. During the **No-verbal cues** condition, the performer remained silent.

Subjects were randomly assigned to one of four experimental conditions. 1) **Responsibility-Verbal cues**; the subjects took the responsibility for depressing the key and determining the intensity of the shock and the performer gave verbal cues to pain. 2) **Responsibility-No-Verbal cues**; the subjects took the responsibility for administering the shock and determining the intensity, but the performer gave no verbal cues of pain. 3) **No-responsibility-Verbal cues**; the subjects were told to depress the key by the experimenter who took the responsibility for determining the intensity of the shock, the subjects were told to "guess" when the performer had discontinued taking the shocks, and the performer gave verbal cues to pain. 4) **No-responsibility-No-Verbal cues**; the experimenter took the responsibility and the performer gave no verbal cues of pain.

**Procedure**

The subject was met in the hall, brought in and seated in the experimental room. Introductions were conducted in the room. They were as follows: (Appendix 7)

Hello, I am Mr. Crockett, Dr. Craig's Laboratory assistant. This is John Taylor who has volunteered to come in today to receive a non-harmful shock. John is willing to be shocked for pay, the more shock he receives, the more pay. He will go as far as possible until it becomes so painful that he cannot continue. He has every right and opportunity to quit when he wishes to do, but will not be paid beyond that point.

The confederate then went behind the screen. Electrodes from
the Grass Polygraph were attached to the subject. The subject was told at that time that he could not receive any electrical shocks from the contacts as they solely provided a measure of physiological reactions. The subject was told that he would have to wait, "while we adjust the machine" and during this time he was asked to complete the first questionnaire.

knowledge of Verbal Characteristics (Appendix 3). Two minutes after the completion of this test, a total of about 12 minutes from the beginning of the experiment in all, a basal level of conductance was measured. This procedure permitted for adaptation of physiological activity to the experimental situation.

The subject was then given a criterion experience with an electrical shock in an effort to partially standardize the subject's experiences with electrical shocks, and also add a degree of credibility to the situation. The same set of electrodes that purportedly were used to shock the performer were used and obtained from the confederate's side of the screen. The subjects were told:

Since the experiment involves, to some extent, your ability to judge others' reaction to a shock, we would like you to experience one, non-harmful, shock so as to better equip you for this task. Do you agree to this?

The fingertip electrodes were attached and the dial that presumably indicated the level of shock they were to receive was hidden and manipulated. The subjects then were told:

I will explain to you later the exact experimental setup we have here, but for now, I am setting the dial at a non-harmful level. You will notice when I press the key I hold it down until the light goes off and the needle deflects, at that time you will be shocked.
After the subject was shocked, the electrodes were then returned to the performer's side of the screen.

For the benefit of the subject, these instructions were given to the performer:

John, will you place your fingers in these electrodes? You will notice that you can withdraw your fingers at any time. Please note when you do so. Throughout the experiment, will you please try to be as quiet as possible so as not to disturb the subject.

The subject then filled out the Sensitivity to Vocal Stimuli test. (Appendix 4)

The preceding instructions were given regardless of the experimental condition the subjects were assigned to. However the next group of instructions given to the subjects depended on which experimental group they belonged to.

You will be administering the shock in increasing amounts until you think that it is so painful for John that he cannot continue. The more shock you give him the more he will be paid. But if he withdraws and you continue he will not be paid even for the earlier shock trials. In order to maximise his pay, you should go as high as he does, but anticipate when he will withdraw his hand. John has agreed to go through with at least six increasing shocks so that you may start determining the intensity after the first six trials.

The following instructions regarding the experimental equipment were given to all the subjects irrespective of the experimental groups:

The Variac—Shock Generator with the dial you see here indicates the level of intensities of shock you may be administering. I will increase the intensity by 'small' but obvious steps. This light bulb will further indicate the intensity of the shock as it increases in brightness. The other light and the ammeter will indicate when John will be receiving the shock by the light going out and the needle deflecting. He will not be shocked until several seconds after you depress the telegraph key.
The Responsibility-inducing instructions were summed up by telling the subject: (See Appendix 6)

I will set this dial, resetting the machine and raising the intensity of the shock. At this time I would like you to say if you are willing to proceed with administering the shock. To sum it up, I will be setting increasing amounts of shock. You will be asked after the first six trials to determine whether or not John will be given this shock for each additional trial, remembering that John's pay is based on the amount of shock you supply him, but he will not be paid if you go beyond the point at which he withdraws.

Subjects assigned to the Non-responsibility conditions were told: (See Appendix 7)

I will administer the shock in increasing amounts beyond the point at which John withdraws. You will not know when he stops. Your task is simply to tell me before I reset the machine, each time, whether you think John is continuing or not, and then I will tell you to depress the key that delivers the shock to him. In other words, you must guess when it is so painful he will be unwilling to continue the experiment even for pay, and to press the key when I ask you. John has agreed to go through with at least six increasing shocks so that you may start guessing when he will quit after the first six trials.

The instructions describing the experimental equipment were then given to this group.

A summary of the Non-responsibility instructions was then given:

To sum it up, I will be administering increasing amounts of shock to John. The more shock he receives the more he will be paid. You are simply to tell me, before each trial, when you think he has had so much that he must quit, and then to press the key when I tell you to. You are to start predicting after the first six trials.

After the subject finished the experimental procedure, the subject completed the Metaphors Test (Appendix 5). Some of the subjects filled out a questionnaire (Appendix 8) regarding their subjective appraisal of the experiment.
Subjects who did not complete a questionnaire, were asked substantially the same questions as were included on the questionnaire.

**Physiological Data**

These readings were made in terms of resistance and converted to micromhos of conductance units (micromhos). While conductance units give fairly normal distribution, the statistical treatment used is based on the assumption of strict normality, so that the square root conversion was also made. The log of the conductance was also used. These transformations yield fairly normally distributed data and represent a statistical attempt at controlling for the effects of the initial value of the basal level of conductance on subsequent responses. (Woodworth & Schlosberg, 1958)

Skin conductance was assessed at a number of different times and in different fashions. The basal level of skin conductance was measured after an adaptation period averaging about twelve minutes. The highest level of skin conductance during the period of time the last shock was given was also measured. The amount of change between the basal level of skin conductance and the highest point of conductance during the last shock provided an index of the amount of emotional arousal produced in the subject by the observation of the shocking of the performer. The log of conductance level was also measured for the first two voluntary shocks the subjects gave. This provided an index of the amount of arousal in the
subject concomitant with the administration of aversive
stimulation to a performer.

Changes in the skin conductance of the subject were also
measured. In order to avoid the change in skin conductance
induced by physical movement of the other hand, a six-second
time lag was introduced between the depressing of the tele­
graph key and the actual administration of the shock to the
performer. Since Stewart, Stern, Winokur and Fredman (1961)
showed that there was approximately a 1.5 second latency in
skin conductance changes, positive changes in skin resistance
of 500 ohms or more occurring between 7.5 and 11.5 seconds
of the depression of the key were considered to be sympathetic
arousals to the administration of the shock to the performer.
The total number of these sympathetic arousals was recorded
for each subject. Since the number of sympathetic arousals
the subject gave correlated with the number of trials the
subject participated in ($r = .79$, $p < .025$) this frequency
count was transformed into the mean number of arousals.

In order to measure the strength of these sympathetic
arousals, a resistance reading was made at the start of the
time period for sympathetic arousals and a reading was made
for the point of least resistance. These readings were
transformed into log conductance and subtracted giving a
score representing the magnitude of change in the conductance
level.

Both the log of the conductance level and the log
of the change in the conductance level was also measured
during the first two trials of the mandatory period
of administration of shocks to the performer.

**Measurement of the Sympathetic Act**

For the purpose of this research, sympathy was operationally defined as the decision to discontinue shocking the performer in the Responsibility condition and in the Non-Responsibility condition it was defined as the act of "guessing" that the performer had withdrawn his finger from the electrodes. Thus the level of the last shock administered to the subject was used as a measure of the behavioral latency of the sympathetic act.

**Questionnaire**

Thirteen of the subjects were asked to describe themselves on a questionnaire in terms of how sensitive they felt they were to other peoples' emotional states on one direct scale, (i.e. I am (very, quite, fairly, moderately, a bit, not at all) sensitive to other peoples' emotional expressions.) and three indirect scales (e.g. to what extent do you enjoy jokes putting people in unpleasant situations in which they are upset?). This questionnaire also asked for their subjective appraisal of the experiment. Subjects who did not complete a questionnaire, were asked substantially the same questions as were included on the questionnaire. If at any time the subjects indicated that they did not believe that the performer was being shocked, their protocols were not used. Only two subjects out of 42 indicated this belief.
Table 1. Correlations between the scores on the rating scales on the questionnaire to the number of shocks administered.

<table>
<thead>
<tr>
<th>Scales</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Shocks Administered</td>
<td>-.205</td>
<td>.022</td>
<td>-.139</td>
<td>.097</td>
<td>-.16</td>
</tr>
</tbody>
</table>
RESULTS III

Questionnaire: On the questionnaire that was given to assess the subject's subjective appraisal of the experimental situation, four out of the thirteen of the subjects were willing to admit to any feelings of discomfort. Only one subject out of the thirteen tested felt the experiment was as little as mildly painful for the performer. Out of the 13 subjects, 12 subjects indicated that they felt the experiment was at least painful for the performer. These responses seem to indicate that the subjects believed that the performer was being shocked and give evidence to the subjective validity of the experimental situation.

It was predicted that the four sensitivity scales given on this questionnaire would be negatively correlated with the eventual level of shock administered to the performer. The obtained correlations are given on Table 1. It can be seen that none of the correlations of the individual scales were significant nor was the correlation between the combined score of all the four scales.

Emotional Sensitivity: It was hypothesized that there would be a significant, negative correlation between an emotional sensitivity scores based upon a combination of all Davitz's (1965) tests of emotional sensitivity and the number of shock administered to the performer. The obtained correlation \( r = .14, p < .05 \) was not in the expected direction nor was it significant. It was also hypothesized that there would be significant positive correlations between the emotional
Table 2. Intercorrelations between the Combined Measures of Emotional Sensitivity and the Experimental Variables.

<table>
<thead>
<tr>
<th></th>
<th>Number of Shocks</th>
<th>Mean of Sym. Arousals</th>
<th>Conductance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Sensitivity</td>
<td>.14</td>
<td>-.19</td>
<td>.005</td>
</tr>
<tr>
<td>Number of Shocks Administered</td>
<td>.14</td>
<td></td>
<td>.285*</td>
</tr>
<tr>
<td>Mean of Sympathetic Arousals</td>
<td></td>
<td></td>
<td>.199</td>
</tr>
</tbody>
</table>

*(p < .05)*
Table 3. Intercorrelations between the Combined Emotional Sensitivity scores and the Experimental Variables for the Verbalization Trials only.

<table>
<thead>
<tr>
<th>Emotional Sensitivity</th>
<th>Number of Shocks</th>
<th>Mean of Sym. Arousals</th>
<th>Conductance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-.03</td>
<td>-.24</td>
<td>.156</td>
</tr>
</tbody>
</table>
Table 4. Intercorrelations between Individual Measures of Emotional Sensitivity and the Experimental Measures.

<table>
<thead>
<tr>
<th>Knowledge of Verbal Char.</th>
<th>Mean of Sym. Arousals</th>
<th>Conductance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>.133</td>
<td>-.276*</td>
<td>.224</td>
</tr>
<tr>
<td>Metaphors Test</td>
<td>-.153</td>
<td>-.123</td>
</tr>
<tr>
<td>Sensitivity to Verbal Stimuli</td>
<td>.054</td>
<td>.097</td>
</tr>
</tbody>
</table>

*(p < .05)
sensitivity scores, the amount of change in conductance from the basal to the peak during the last shock, and the mean number of sympathetic arousals. Neither of these correlations \( r = .005 \) and \( r = -.09 \) was significant. (See Table 2)

An examination of the tests used in the emotional sensitivity scores showed that they were heavily loaded with verbally oriented material. If the emotional sensitivity scores were heavily determined by verbal abilities factors, it might be unrealistic to expect them to be related to more than the performance of the subject during conditions of verbal feedback. To examine this possibility the emotional sensitivity scores of only those subjects that received verbal feedback were correlated with the experimental measures. (See Table 3) While there was some improvement in correlations none of the resulting correlations was significant.

A combined score of all the tests of emotional sensitivity was used in the above analysis. However, one of these tests could be significantly better at predicting the subjects' behavior than the other two tests. Thus instead of adding non-redundant information about the subjects, the other scores could be instead contributing erroneous information. This possibility was examined by correlating all the individual scores with the behavioral measures. (See Table 4). While only one of the resulting correlation was significant, it was not in the expected direction. It is interesting to note that the Metaphor's Test's correlations in each case deviates from the expected direction. From this data it seems that
Table 5 Rank-order correlations between the Emotional Sensitivity scores and the Level of Conductance, Number of Shocks Administered to the Performer, and the number of the Sympathetic Arousals for each Experimental condition. *

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Level of Conductance</th>
<th>Number of Sym. Arousals</th>
<th>Number of Shocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>.34</td>
<td>-.24</td>
<td>.18</td>
</tr>
<tr>
<td>Responsibility-Non-Verbal</td>
<td>.43</td>
<td>-.34</td>
<td>.16</td>
</tr>
<tr>
<td>Non-Responsibility-Verbal</td>
<td>.09</td>
<td>.34</td>
<td>.45</td>
</tr>
<tr>
<td>Non-Responsibility-Non-Verbal</td>
<td>.09</td>
<td>-.26</td>
<td>.26</td>
</tr>
</tbody>
</table>

* (With an N=10, r=.552, p<.05)
<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>.001</td>
<td>.006</td>
</tr>
<tr>
<td>Verbalizations</td>
<td>1</td>
<td>.007</td>
<td>.044</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>.133</td>
<td>.836</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>.159</td>
<td></td>
</tr>
</tbody>
</table>

( F = 4.10, p < .05 for df = 1/36)
the individual test offer little improvement over the combined scores.

Since the data for these correlations was collected under four different conditions which were hypothesized to have an effect on emotional behavior doing an overall comparison of the data may cover significant differences. The rank-order correlation between the combined emotional sensitivity score and the various experimental measures was computed for each separate group. These correlations are summarized on Table 5. It can be seen from these tables that none of the correlations are significant and that they are similar to the overall correlations.

The analysis of variance of the emotional sensitivity scores indicated that there were no systematic sampling differences in the test scores across the experimental conditions. (See Table 6). However, differences in emotional sensitivity could reflect differences in the potential effectiveness of the experimental variables in producing change in the subjects. To correct for this possible effect, analyses of covariance were used to analyze the data. Thus the analysis of covariance was used to reduce the effects of individual differences in emotional sensitivity scores on the variables of the eventual level of shock administered to the performer and the mean number of sympathetic arousals.

**Sympathetic Arousal:**

Sympathetic arousals were defined as changes in conductance occurring 7.5 to 11.5 seconds after the key supposedly deliver-
Table 7 Means of the Sympathetic Arousal for the different conditions.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Verbal</th>
<th>Non-Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>76.3</td>
<td>71.6</td>
</tr>
<tr>
<td>Non-Responsibility</td>
<td>78.5</td>
<td>63.0</td>
</tr>
</tbody>
</table>
Table 8 Summary of the Analysis of Covariance between Emotional Sensitivity and Sympathetic Arousal.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>132</td>
<td>1.008</td>
</tr>
<tr>
<td>Verbalization</td>
<td>1</td>
<td>1,084</td>
<td>8.274**</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>249</td>
<td>1.893</td>
</tr>
<tr>
<td>Error</td>
<td>35</td>
<td>130.86</td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
ing a shock to the performer was depressed. However, the frequency of sympathetic arousals could be effected by magnitude of the basal level. To test this possibility, a correlation was done between the basal level of conductance and the mean number of sympathetic arousals. As this correlation was nonsignificant ($r = -0.005$) it seems that this measure is relatively unrelated to the initial value of the basal level.

It was hypothesized that responsibility for administering the shock to a performer and feedback of verbal cues of pain from the performer would increase the mean of the sympathetic arousals. Table 7 provides the means for the groups and the analysis of covariance is summarized in Table 8.

The feedback of verbal cues to pain condition was significantly related to the incidence of sympathetic arousals; however, neither the Responsibility nor the interaction affects was significant. Thus pain feedback was associated with a systematic increase in the number of arousals given by the subject.

It could be maintained, however, that the mere incidence of sympathetic arousals may not show true differences in the groups actual responses. For example, the groups may give the same number of responses, but the intensity of responses of one of the groups may far exceed the intensity of the other group's responses. Thus to supplement the analysis and to examine this possibility the log of the magnitude of change in the conductance level was recorded for all the subjects during the first two voluntary trials. It was
Table 9  Summary of the Analysis of Variance for the Log of the Changes in Arousal during the First Two Voluntary Trials.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>11.282</td>
<td>.510</td>
</tr>
<tr>
<td>Verbalization</td>
<td>1</td>
<td>12.338</td>
<td>.558</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>88.913</td>
<td>4.026</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>22.081</td>
<td></td>
</tr>
</tbody>
</table>
Table 10  Summary of the Analysis of Variance for the Log of the Changes in Arousal during the First Two Mandatory Trials.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>.002</td>
<td>.029</td>
</tr>
<tr>
<td>Verbalization</td>
<td>1</td>
<td>.055</td>
<td>.808</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>.145</td>
<td>2.132</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>.068</td>
<td></td>
</tr>
</tbody>
</table>
hypothesized that there would be a greater magnitude of change between the two log of conductance measures associated with the Responsibility and Verbal conditions or the combination of the two factors. The analysis of variance is summarized in Table 9. Neither the feedback of verbal cues nor the increase of responsibility was associated with a systematic difference in the strength of the sympathetic arousals given in these two trials. The interaction effect approached significance.

Since original differences in the intensity of the sympathetic arousals in the first two voluntary trials could be covered over by the effects of habituation and polarization, the magnitude of the differences between the two log scores for the first two mandatory trials were examined. Table 10 summarizes the analysis of variance of the change in the magnitude of the log conductance for the first mandatory trials during the period of sympathetic arousal. Neither the feedback of verbal cues nor the increase of responsibility was associated with differences in the strength of the sympathetic arousals given in these two trials. The interaction effect approached significance. It appears that original differences were not covered over by the effects of habituation, and polarization.

The effects of the Verbal condition appear to be to increase the number, rather than the intensity of the sympathetic arousals. Neither the Responsibility condition nor the interaction of the two conditions seemed to be associated with significant effects on either the number or the strength of the sympathetic responses.
Table 11 Means of the number of shocks administered to the performer for the different conditions.

<table>
<thead>
<tr>
<th></th>
<th>Verbal</th>
<th>Non-Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>69.0</td>
<td>72.5</td>
</tr>
<tr>
<td>Non-Responsibility</td>
<td>63.0</td>
<td>71.0</td>
</tr>
</tbody>
</table>
Table 12 Summary of the Analysis of Covariance between Emotional Sensitivity and the Number of Shocks Administered.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Adj. MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>221</td>
<td>.524</td>
</tr>
<tr>
<td>Verbalizations</td>
<td>1</td>
<td>302</td>
<td>.717</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>67</td>
<td>.159</td>
</tr>
<tr>
<td>Error</td>
<td>35</td>
<td>421.1</td>
<td></td>
</tr>
</tbody>
</table>
Table 13 Summary of the Analysis of Variance for the Changes in the Level of Conductance over Trials.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Subjects</td>
<td>39</td>
<td>2.350</td>
<td>1.032</td>
</tr>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>5.804</td>
<td>2.548</td>
</tr>
<tr>
<td>Verbalizations</td>
<td>1</td>
<td>.576</td>
<td>.252</td>
</tr>
<tr>
<td>Responsibility X Verbal.</td>
<td>1</td>
<td>3.390</td>
<td>1.488</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>2.277</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trials</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility X Trials</td>
<td>1</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Verbal. X Trials</td>
<td>1</td>
<td>0.007</td>
<td>0.007</td>
</tr>
<tr>
<td>Res. X Verbal. X Trials</td>
<td>1</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>0.913</td>
<td></td>
</tr>
</tbody>
</table>
Table 14 Means of the Level of Conductance for the different conditions.

<table>
<thead>
<tr>
<th>Verbal</th>
<th>Non-Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Value</td>
<td>Point of last shock</td>
</tr>
<tr>
<td>Non-Responsibility</td>
<td>4.564</td>
</tr>
</tbody>
</table>
The Number of Shocks Administered.

It was hypothesized that the responsibility for administering shocks and the feedback of pain cues would lower the number of shocks administered to the performer. Thus an increased amount of responsibility and feedback should be associated with a lower number of shocks being administered to the performer. The mean number of shock administered was lower for those groups receiving verbal feedback of pain cues compared to the groups receiving no verbal feedback (See Table 11). However, it can be seen from Table 12 that no significant effects were found to be associated with either of the Verbal or Responsibility conditions nor with the interaction.

Level of Conductance.

Measures of conductance were taken after the adaptation period but before the subjects started shocking the performer and during the time that the last shock was being administered. Thus it was possible to test the significance of the change in the level of conductance for the duration of the experiment. This addition of a third factor made the analysis of variance a three-factor, 2X2X2 model.

It was hypothesized that the responsibility for administering shocks and the feedback of pain cues would increase the amount of change in the level of conductance. The analysis of variance is summarized in Table 113, while Table 14 provides the means for the groups. While the effects associated with the Responsibility condition approached significance, the
Table 15 Summary of the Analysis of Variance of the Log of the Level of Conductance during the First Two Voluntary Trials.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>.382</td>
<td>.056</td>
</tr>
<tr>
<td>Verbalization</td>
<td>1</td>
<td>.027</td>
<td>.805</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>.391</td>
<td>.824</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>.474</td>
<td></td>
</tr>
</tbody>
</table>
Table 16  Summary of the Analysis of Variance for the Log of the Conductance Level during the First Two Mandatory Trials.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>.003</td>
<td>.024</td>
</tr>
<tr>
<td>Verbalization</td>
<td>1</td>
<td>.124</td>
<td>1.000</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>.404</td>
<td>3.258</td>
</tr>
<tr>
<td>Error</td>
<td>36</td>
<td>.124</td>
<td></td>
</tr>
</tbody>
</table>
effects associated with the Verbal condition were relatively weaker. On inspection of Table 14, it can be seen that the subjects experienced a systematic but non-significant increase in conductance regardless of the degree of Responsibility or the amount of feedback of pain cues. Thus it seems that the observation of the administration of aversive stimulation alone is enough to induce some change in the level of conductance of the subject.

This comparison, however, was done between two fairly remote periods of time. It could be argued that differences in the level of conductance which might have developed at the onset of the voluntary trials might be covered over by the effects of habituation and polarization by the time the last shock was administered. Thus the log of the level of conductance during the first two voluntary trials was recorded. It was hypothesized that the responsibility for administering shocks and the feedback of pain cues would be associated with high levels of conductance. The analysis of variance is summarized on Table 15. It can be seen from this table that neither the Verbal nor the Responsibility condition was associated with any differences in the level of conductance for these two trials.

Since original differences in the log of the conductance level which may have developed in the first two mandatory trials may have been covered over by habituation and polarization by the time the first two voluntary trials were given, an additional analysis was done on the log of the conductance during the first two mandatory trials. Table 16 summarizes
Table 17 Correlations between the Basal Level and the Level of the Last Shock Administered for the different conditions.

<table>
<thead>
<tr>
<th></th>
<th>Verbal</th>
<th>Non-Verbal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>.372</td>
<td>.765*</td>
<td>.415*</td>
</tr>
<tr>
<td>Non-Responsibility</td>
<td>-.415</td>
<td>-.032</td>
<td>-.115</td>
</tr>
<tr>
<td>Total</td>
<td>.104</td>
<td>.378</td>
<td></td>
</tr>
</tbody>
</table>

(* p < .05)

Overall = .285*
this analysis of variance. No significant effects were associated with either verbal feedback or the Responsibility conditions. The interaction effect approached significance. Thus it appears that there were no original difference in the log of the conductance level at the beginning of the trials.

It was predicted that the observation of the administration of aversive stimulation to a performer would be arousing to the subject and that this arousal may serve as an instigation to an overt sympathetic response. Thus the number of times the subject witnessed the administration of aversive stimulation to the performer, reflected by the level of shock administered to the performer, could be related to an increase in arousal.

While this correlation was significant, \( r = .285, p = .05 \), it was not in the expected direction, so a substantially different process may be occurring. Furthermore, it was hypothesized that this increase in conductance should be higher if the subject was directly responsible for the administration of the aversive stimulation, as the subject was, under the Responsibility condition. Since the feedback of pain cues should facilitate early arousal to the administration of the shock, it seems that the correlation should be lower under the Verbal condition. Table 17 shows that these contentions were supported by the data.

Perhaps the observation of the administration of a shock to a performer could be arousing to the subject, but that this increase in level of arousal was insufficient to instigate
an overt sympathetic response, or it could be that an increase in arousal is not a necessary condition for sympathetic behavior. However, it should be noted that this increase could also be due to extraneous effects of stimulation that occurred within the experimental context such as the light flashing, movement on the part of the subject, or the cognitive processes involved in decision-making.
DISCUSSION IV

The central tenet of this research has been that having subjects witness the administration of a noxious stimulus to a performer is instrumental in producing sympathetic arousal, general physiological changes, and overt sympathetic behavior. Furthermore, it was hypothesized that the broad patterns of perceptual and cognitive functioning assumed in Davitz's model of emotional sensitivity would be related to the subject's physiological arousal and behavior.

This research has shown that the feedback of pain cues in the Verbal condition of the experiment was associated with an increase in the mean of the sympathetic arousals. However, a difference in intensity of these arousals was not found. The first finding seems to confirm Berger's work that showed that the arousal induced by watching a performer being shocked was partially dependent on the amount of corroborating information given to the subjects by the performer. This finding also tends to confirm the research done by Paskal and Aronfreed (1965) on the importance of stress-producing cues in the instigation of sympathetic behavior in children and the research done by Church (1959) on the role of stress cues in the emotional behavior of rats. However, none of these systems provides an adequate model of the process whereby the feedback has an effect on the emotional behavior of a subject. Moreover, one could ask, what is the functional stimulus in the feedback? Is this merely a conditioned response to the feedback, inborn and genetic, a response to the objective
attributes of the stimulus such as loudness, or is this a response to the implied threat of reprisal in the communicated emotional state of the other, learned and modifiable?

A difficulty that affected both the sympathetic arousals and the changes in conductance scores is that it was impossible to control the cognitive activities of the subjects at the time the emotionally arousing stimulus was being presented. Both Bandura et al. (1966) and Milgram (1963) noted that the subjects would try to avoid thinking about the feedback of stress producing cues. Some of the subjects, these researchers reported, occupied themselves by reciting Latin verbs, thinking about their girl friends, or calculating sums. This self-induced cognitive behavior probably not only induces different changes in the conductance level of the subject, but also reduces the effectiveness of cue-utilization on the part of the subject. Unfortunately, this source of error was found to be almost impossible to control, both in previous research and the present study, but it does represent an area that need future improvement.

The results have some bearing on Milgram's studies (1963, 1964a, 1965a and 1965b), of this experiment which demonstrated that rather than be disobedient, upon the urging of a perceived authoritarian figure, the subjects would postpone the sympathetic act of discontinuing giving shocks to objecting performers. The present findings suggest that his position might need to be modified to say that only the single action of refusing to deliver any more shocks was delayed as the subjects may have been demonstrating sympathetic behavior,
i.e., arousal from the very first trial.

While the negative correlation between degree of arousal and the number of shocks administered was not in the expected direction, it was significant and indicated that the observation of the administration of painful stimulation to the performer could be one of the factors which was arousing to the subjects. Furthermore, the relatively higher correlation obtained when the subjects were directly responsible for the administration of the noxious stimulus suggests the effectiveness of the Responsibility condition. It is interesting to note that this correlation was significant despite the effects of habituation which should serve to decrease the amount of arousal over time. Thus it seems that changes in the level may be induced by being directly involved in causing another person's suffering. This data seems to confirm that the subjects were responding affectively to the distress of another which is postulated in Paskal and Aronfreed's (1965) "two-phased" model of sympathy. Moreover, this finding seems to confirm Milgram's observation that the subjects' behavioral arousal increased as the intensity of the shocks being administered to the performer increased.

While the change in conductance from the basal level to the peak of conductance during the last shock and the effects associated with the Responsibility condition approached significance, none of the effects reached the required level. There was no significant differences between the two experimental conditions in level of conductance during the first two mandatory trials or the first two voluntary trials. While it
was hypothesized that the emotional arousal as measured by
the level of conductance could serve to instigate a sympathe-
tic response, the results of this study have left the exact
source of the instigation of the sympathetic response unclear.
An alternative explanation is that it could be that the
involvement in shocking a performer in any manner and under
any condition is so maximally arousing as to disguise all the
distinction between the groups.

The lack of any significant findings in the analysis of
variance of the mean of the shocks administered to the perform-
er may be the consequence of a methodological problem. Subjects
were apparently unwilling to administer to the performer more
than a few shocks, which restricted the range of this score,
even though the subjects were told that the performer was
being paid on the basis of the number of shocks he received
and the shocks were described as "non-harmful". As the subjects
were free to choose their own "cut-off" point, these results
may be taken as indicating the number of shocks Milgram's
subjects might have given the performer, had they not been
persuaded to continue by an authoritarian figure.

An explanation for the lack of significant findings in the
analysis of variance for the means of the shocks administered
might be found in Paskal and Aronfreed's (1965) two-stage model
of sympathetic behavior. The first stage of this model consis-
ted of the subject learning how to respond affectively to the
cues of another's distress. The second phase consisted of
learning responses instrumental in reducing these cues. It would
appear that the experimental design did not allow them to learn the instrumental responses in reducing the performer's stress cues. It was assumed, incorrectly perhaps, that the subjects had previously learned to respond affectively to distress cues and that they realized that the instrumental act was discontinuing the shock. Furthermore, the act of asking the subjects if they had decided to shock the performer may have been perceived by the subject as urging him to continue or a social model for the behavior of administering aversive stimulation to the performer.

On the basis of these results it can also be said that the level of shock administered seemed to be too insensitive as a measurement technique of the latency of the sympathetic act to yield significant results. It would seem that more subtle measures, perhaps one based on different assumptions and using other techniques, are needed to detect differences in the latency of the sympathetic act produced by experimental factors.

The restricted number of shocks administered to the performer, if nothing else, at least indicate the seriousness with which the subjects approached the experimental situation. Furthermore, the results of the questionnaire seem to indicate that the subjects accepted the situation as valid. The low correlations between the questionnaire and the subject's behavior may be the result of the subjects marking the questionnaire in what they perceived as a socially acceptable manner.

The intercorrelation matrix between the emotional
sensitivity scores and the behavioral measures contained many low non-significant correlations. On the basis of these correlations it would seem that the combined emotional sensitivity score was a relatively poor predictor of minute or gross differences in the subjects' state of physiological arousal or their behavior in the present experimental situation. Nor does it appear that the individual scores on Davitz's test of emotional sensitivity are significantly better at predicting the subject's behavior. This conclusion was reinforced by the fact that, although these tests were heavily loaded with verbally oriented material, they were relatively little better at predicting the subjects' performance under solely Verbal conditions. Breaking the data down into the original groups in which the data was gathered to minimize the effects of the experimental variables did not improve these test's ability to predict the subject's behavior. One result of finding a lack of relationship between these scores and the experimental variables is to lead one to wonder if there are any internal structures that modify a subject's emotional behavior. Thus what may be important is whether or not the person is receiving behavioral feedback rather than how efficient the subject is at utilizing these cues in order to determine the emotional state of another. At the least, it points out, as Milgram's studies did (1963), that it is not enough to be able to know how much a person is "suffering" if the subject is unwilling to integrate this knowledge with the consequences of his present action. Similarly, as the results of the questionnaire points out, it is not enough to
know that the performer did "suffer" if this knowledge has no bearing on what the subject was doing during the time the performer was being shocked.

It is interesting to note that the Metaphors Test's correlations were low and deviated from the expected direction in almost every case and that the Knowledge of Verbal Characteristics Test's correlation was significant but not in the expected direction. Perhaps these findings and the general lack of significant findings using Davitz's (1965) test, indicate that while these tests attempted to avoid the problems that confounded the data derived by "traditional" means, they may not have been entirely successful and, indeed, created new problems. For example, the test material appears to be heavily verbally oriented, yet it is difficult to specify the relation of verbal intelligence to emotional sensitivity.

The data appears to suggest that a model similar to Davitz's (1965) multivariable model of sensitivity is needed. Thus it may be necessary to take into account not only the subjects' emotional sensitivity but his intelligence level, his propensity to help others from his past learning experiences, and the type of present feedback they are receiving when one is predicting their sympathetic behavior.

Generally then this study has not confirmed the presence of broad patterns of perceptual and cognitive functioning assumed in Davitz's approach to emotional sensitivity. However, there seemed to be some support for the idea that
the experimental factor of verbal feedback of pain cues can be instrumental in producing sympathetic arousals within the subjects. Furthermore, it seemed to suggest that the observation of aversive stimulation may produce general physiological changes within the subjects.
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Appendix 1. Diagram of room.

1. Polygraph
2. Experimenter's Seat
3. Subject's Seat
4. Telegraph Key
5. Timer
6. Variac Transformer
7. Performer's Seat
Appendix 2. Diagram of Screen.

1. Variac Transformer
2. Light indicating intensity of shock
3. Light indicating when shock is delivered to the performer
4. Amp Meter indicating when shock is delivered
Appendix 3 Sample of Knowledge of Verbal Characteristics Test.

Name_________________ Year in School__________
Sex_________________ Telephone________________

EMOTION_____________________

You are asked to describe the particular verbal characteristic of this feeling by placing an "x" at the point on the various scales suggested by this questionnaire that you think best describes this emotion as it is expressed in speech.

1. At what level of loudness is it usually spoken?

- Soft
- Loud

2. What is the pitch?

- Low
- High

3. Its usual timbre is?

- Resonant
- Blaring-

4. What is the rate at which it is spoken?

- Slow
- Fast
Appendix 3 (Continued)

5. The inflection is?
   
   Downward
   Upward

6. What is the rhythm that characterizes this type of speech?
   
   Regular
   Irregular

7. What is the usual enunciation?
   
   Slurred
   Clipped
Appendix 4 Sample of Sensitivity to Verbal Stimulus Test.

**SENSITIVITY TO VERBAL STIMULUS**

Name ____________________

Instructions: Each time you hear a sentence, choose the label from the list below that best describes the emotion being expressed by the speaker. Use only one label to describe the sentence. Thank you.

- anger
- sadness
- boredom
- joy
- satisfaction
- neutral
- impatience
- cheerfulness
- affection

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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Appendix 5  Sample of Metaphors Test.

Name______________ Sex____ Age____ Year in School____

THE METAPHOR TEST

Listed below are a number of statements. In each case, the person who made the statement was trying to express one of five different emotional meanings: anger, anxiety, joy, love, or sadness. Please read each statement and decide which emotional meaning is being expressed. Write the name of the emotion on the line at the left of each statement.

Anger
Anxiety
Joy
Love
Sadness

Remember, write the name of the one emotional meaning you think is expressed by each statement. Work rapidly and do not omit any items.

1. Here is a plane that's about to crash. It's in flames. There's nothing that can be done. It's completely out of control.

2. It's warm and soft. The masses of blot at the sides I associate with something furry. Someone lying down wrapped in a blanket or something. Probably two people although they are ill-defined.

3. A bear was just shot.

4. Two old ladies hissing at each other. They were having a fight and started to walk away from each other. Then it occurred to each simultaneously that the other might be watching her and so they both turned around simultaneously and are saying something vituperative. Maybe they both said at the same time, "You old witch".

5. Faded costumes, lying around. Probably belonging to a great dancer at the height of her career, but now she's old and so are they. They're
Appendix 5 (Continued)

of no use because they've gone out of style. They're only reminders of something that's past.

6. It looks like death and someone is crying. Like its smeared surface.

7. A fox. His hair is standing up because he might be shot by a hunter. He's going to be shot.

8. Two animals climbing up a mountain to get to each other. They're mates on opposite sides of a mountain.

9. Two little dogs stamping on each other.

10. Fragmentation.


12. This is a bat with holes shot in its face and it's coming toward the person who shot it with its teeth bared.

13. It looks like unstableness, instability. Looks like emotion, confusion. The person doesn't know what to do. He wants to put these things together but doesn't know how.

14. This is two women at a wild party after winning a reward for designing the best bow tie in the United States. They're bouncing a large replica of it on a blanket between them.

15. It expresses brightness. It looks adventurous.


17. A person lying prostrate with no urge to do anything.

18. A merging or union of two separate bodies.

19. Two people. Looks like they're at a party and having fun.

20. It looks like somebody or something that's lying there.
Appendix 5 (Continued)

21. It looks like a monster coming after me.

22. The colors are going from light to dismal, birth, life, then death.

23. A bat, a big black bat circling over my head coming closer and closer darting at my head.

24. A skeleton of a poor animal that was trapped and that just died and rotted there.

25. A large bird with outspread wings preparing to attack another bird in rivalry.


27. It looks like a birthday coloring. The kind of colors used for decorating for a party.

28. Two people flirting with each other, lips puckered. Standing on opposite sides of a table. It must be Spring because there is a pretty red butterfly.

29. A skin or pelt. A fine fur coat.

30. Two bears caught in a trap, bleeding all over. Look like mates.

31. A huge giant laughing uproariously. Seems to be throwing his head back and laughing.

32. Face of a cat, eyes slanted down, mouth open hissing. Phffft.

33. Looks like two animals trying to get together.

34. Because of the shades it looks empty and hollow.

35. A grimacing, evil, black cat staring at me.

36. A person sitting on a chair, laughing, sitting back, and saying, "Yay".

37. A moth whose wings are worn out, about to die. He's about had it.

38. It looks like a class that's hoping for high marks.
Appendix 5 (Continued)

39. Two creatures talking, having an animated conversation, interested in each other. Two snakes together meaning nearness. All these express two of a kind.

40. Colorful, light hearted. A lot of little figures scurrying around. An air of lightness and brightness.


42. These people are leaving their loved ones behind. They are waving goodbye.

43. Two puppies that are very close. Could be siblings.

44. Some sort of funny man, furrow in his brow, menacing look in his eyes. Some sort of helmet on his head, a war bonnet. A mustache looks like something worn at the turn of the century. A big superbly adorned face with a menacing look.

45. I see dancers and they are in the middle of a fantastic leap. They are Russian dancers. Two men and a woman in the middle. The men have their arms linked with the woman's arms which are extended to the side. Her head is thrown back revealing her high stiff collar. The men are wearing peaked fur caps and their legs are drawn up indicating that they have made a tremendous leap. The music is fast and wild and you really get a sense of movement.

46. Some kind of bird who flew up there because someone is after him.

47. They look like reindeer. There's a bridge and this side is at war with that side.

48. These people are dancing around doing some sort of a fancy step.

49. The colors seem to be free and not act in a pattern. Relaxed and bright.

50. Two green people. Two horrible things are emerging from their heads, from their minds. A kind of ectoplasm emerging from their brain pads. Two orange things, horrible nightmarish creatures.
Appendix 5  (Continued)

The green people seem to be frowning and the orange things smiling maliciously as if they know the harm they were doing to their owners. And the harm is pressing down.

51. I see a cat's mask glaring. The kind of mask one buys for Halloween.

52. Looks like dirty tears.

53. Two bears hugging each other.

54. Two little girls sitting across from each other with their knees touching, talking very friendly in a best-friend manner.

55. It looks like confusion.

56. A kind of insect which annoys me.

57. Two women facing each other. This looks as if they're about to haul off and hit each other. You can tell they're about to hit each other because their faces are close together. One is saying, "Yeah".


59. A being that's kind of deformed symbolizes the inner state of an individual. Aloneness. A kind of reaching out but not getting any place. Big wings trying to grasp but not really making it.

60. Two symmetrical sides seem to be coming together in a sort of unity.

61. I'm impressed with the rock-like hardness of these figures who seem diametrically opposed to each other across an insurmountable chasm.

62. The colors are gray, dark, and somber.

63. All sorts of crazy animals having a party.
Appendix 6 Instructions for Responsibility Groups

Group A: You will be administering the shock in increasing amounts until you think that it is so painful for John that he cannot continue. The more shock you give him the more he will be paid. But if he withdraws and you continue he will not be paid even for the earlier shock trials. In order to maximize his pay, you should go as high as he does, but anticipate when he will withdraw his hand. John has agreed to go through with at least six increasing shocks so that you may start determining the intensity after the first six trials.

The Variac-Shock Generator with the dial you see here indicates the levels of intensities of shock you may be administering. I will increase the intensity by "small" but obvious steps. This light bulb will further indicate the intensity of the shock as it increases in brightness. The other light and the ammeter will indicate when John will be receiving the shock by the light going out and the needle deflecting. He will not be shocked until several seconds after you press the telegraph key.

I will set this dial, resetting the machine and raising the intensity of the shock. At this time I would like you to say if you are willing to proceed with the administering of the shock.

To sum it up, I will be setting increasing amounts of shock. You will be asked after the first six trials to determine whether or not John will be given this shock for
Appendix 6 (Continued)
each additional trial, remembering that John's pay is based on the amount of shock you supply him, but he will not be paid if you go beyond the point at which he withdraws.

After this, the subject will remain hooked up to the recorder and the CS's (the needle and the light going off) will be presented for six more trials in order to determine the amount of conditioning.

If the subject indicates in his questionnaire that he did not believe that the confederate was being shocked, he will be asked at what time and how he arrived at his conclusion.

The subject will be thanked and asked not to reveal the nature of this experiment to any of his friends.
Appendix 7 Instructions for No-Responsibility Groups.

**Group C:** I will administer the shock in increasing amounts beyond the point at which John withdraws. You will not know when he stops. Your task is simply to tell me before I reset the machine, each time, whether you think John is continuing or not, and then I will tell you to depress the key that delivers the shock to him. In other words, you must guess when it is so painful he will be unwilling to continue the experiment even for pay, and to press the key when I ask you. John has agreed to go through with at least six increasing shocks so that you may start guessing when he will quit after the first six trials.

The Variac Shock Generator with the dial you see here indicates the levels of intensity of shock I will be administering. I will increase the intensity by small but obvious steps. This light bulb will further indicate the intensity of the shock as it increases in brightness. The other light and the ammeter will indicate when John will receive the shock by the light going out and the needle deflecting. John will not be shocked until several seconds after you depress the key.

To sum it up, I will be administering increasing amounts of shock to John. The more shock he receives the more he will be paid. You are simply to tell me, before each trial, when you think he has had so much he must quit, and then to press the key when I tell you to. You are to start predicting after the first six trials.
Appendix 7 (Continued)

After this, the subject will remain hooked up to the
recorder and the CS's (the needle and the light going off)
will be presented for six more trials in order to determine
the amount of conditioning.

If the subject indicates in his questionnaire that he
did not believe that the confederate was being shocked,
he will be asked at what time and how he arrived at his
conclusion.

The subject will be thanked and asked not to reveal
the nature of this experiment to any of his friends.
Appendix 8 Questionaire Regarding Subjective Feelings during the Experiment.

Name__________________________________________

1. How uncomfortable did you feel when your partner was being shocked?
   Not at all uncomfortable
   Almost ill

2. How intense was the final shock experienced by your partner?
   Quite mild and tolerable Intense and painful

3. Rate yourself to indicate the extent to which you are aggressive, or assertive in social situations in general.
   Very aggressive Passive

4. Humor generally describes situations inconsistent with our social expectations. To what extent do you enjoy jokes putting people in unpleasant situations in which they are upset (e.g. some sick jokes)?
   Very much Not at all

5. Rate yourself to indicate the extent to which you are hostile in social situations in general.
   Very hostile Not at all
Appendix 8 (Continued)

6. I am (very, quite, fairly, moderately, a bit, not at all) sensitive to other people's emotional expressions.

7. Briefly describe your reactions to the situation in general:

8. What criteria did you use for your decision about the shock?