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**THE REDUCTION OF NEGATIVE AFFECT IN HUMAN SUBJECTS:
A LABORATORY INVESTIGATION OF RATIONAL-EMOTIVE PSYCHOTHERAPY**

by

David Edward Burkhead

**A Dissertation
Submitted to the
Faculty of the School of Graduate
Studies in partial fulfillment
of the
Degree of Doctor of Education**

**Western Michigan University
Kalamazoo, Michigan
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CHAPTER I

PURPOSE OF THE STUDY

One purpose of counseling or psychotherapy is to reduce handicapping, negative emotions. Many therapeutic approaches have been devised to accomplish this goal. A relatively new approach, Rational-Emotive Therapy (RET), has been formulated by Albert Ellis, who believes that emotions can be controlled and changed most effectively by examining the irrational belief system underlying each negative emotional state. This aggressive, didactic form of therapy is aimed at teaching clients to adopt a more rational belief system. Although many principles underlying RET have been empirically studied, especially by psychological stress researchers, RET as a therapeutic approach has received little empirical investigation.

This study has four main purposes: (1) to examine the effect of expectancy in producing experimental anxiety, (2) to determine if a therapist, through his instructions to a client, can influence the client's internal belief system and thus manipulate experimental anxiety, (3) to determine if personal contact with a therapist is a necessary condition for reducing negative emotions, and (4) to examine the relative effectiveness of RET with extroverted and introverted personality types.

In this study, Ellis' theory will be tested by exposing subjects to the expectation of being shocked. The shock intensity will be set at a level previously designated by each subject as annoying but not painful. This situation provides no objective basis for a strong emotional response. Ellis believes, however, that if an emotional response does occur, an important influencing factor is the individual's irrational appraisals or expectancies concerning the situation. One purpose of the study is to examine the effect of expectancy in producing experimental anxiety.

It is assumed that each subject brings into the experiment his own unique belief system concerning electric shock. The experimenter will attempt to manipulate this belief system in two basic ways. One treatment will attempt to point out an individual's possible irrational, unrealistic beliefs about the situation in which he may expect but may not receive an electric shock. The experiment will try to reduce a subject's emotional response to the situation by pointing out his unrealistic, irrational overconcern about a shock intensity that the subject himself set and knows to be tolerable. It is hypothesized that once an individual realizes the nature of his irrational beliefs and begins to adopt a more realistic belief system, his emotional response (anxiety) will be reduced.

A second experimental treatment will attempt to strengthen any irrational beliefs that a subject might have concerning the situation in order to enhance anxiety responses. Statements

such as "how do you know whether you can trust the experimenter" and "what if you were to have an unfortunate reaction to the shock" will provide the negative therapy. Adding to and reinforcing a subject's irrational beliefs toward shock is hypothesized to increase or at least maintain a high level of anxiety throughout the experiment.

Electric shock was employed for convenience and control and because many people have irrational beliefs about the fear of shock. Of course many people have irrational beliefs concerning a wide range of objects from giving speeches to mothers-in-law. A competent RET therapist would use similar techniques whether he was trying to reduce his client's fear of giving speeches or his anxiety concerning the probability of receiving a mild shock. Thus, the experiment is believed to have external validity.

Another purpose of the study will be to compare the effectiveness of personal contact RET with a tape recording of RET. An important feature of RET, according to Ellis (1962), is that because of its cognitive, didactic nature, a client can learn RET and change his own behavior without the need of contact with a therapist. Studies (DiMascio and Brooks, 1961; Saper, 1968; Truax and Carkhuff, 1964) have found tape recordings and readings to be useful adjuncts to personal therapy. Such research challenges the beliefs of Rogers (1957) and Patterson (1969) that a personal relationship

with a therapist is both necessary and sufficient for behavioral change.

There is some evidence that RET may have limited applicability. DiLoreto (1969), for instance, found that RET was most successful with introverted students, but it was no more effective than a control group with extroverted students. Because of the important implications of this finding, extroversion-introversion will be an independent variable in this study. DiLoreto's study was conducted in a naturalistic setting, but in this research this variable will be studied in a laboratory situation under better controlled conditions.

CHAPTER II

BACKGROUND

This chapter begins with a review of basic Rational-Emotive Psychotherapy (RET) principles and examines existing RET empirical studies. Since RET emphasizes the importance of cognitive determinants of affective behavior, the next section reviews research studies that support the use of cognitive processes. The present experiment uses a psychological stress situation. Thus, a section of the chapter is concerned with cognitive factors underlying psychological stress. Because psychological stress often results in anxiety, the concept of anxiety is reviewed in detail, with special attention given to its measurement. The next section reviews research studies that have used physiological measures (especially GSR) to determine psychotherapeutic effectiveness in reducing anxiety.

Because the study compares a personal treatment with a taped treatment, relationship factors in psychotherapy are discussed. Also because RET is a didactic, directive psychotherapeutic approach, its effectiveness is compared with the more passive, relationship methods. The influence of personality factors in psychotherapy is reviewed, with emphasis on the independent variable of extroversion-introversion. As the study was conducted in a laboratory setting, the advantages of

this research design are compared with those of a more naturalistic design.

Rational-Emotive Psychotherapy

Rational-emotive psychotherapy (RET) is based on principles, some of which are two thousand years old. Ellis (1962) has applied these principles systematically to psychotherapy for the first time.

In the first century A.D., Epictetus (translated 1899) stated that "men are disturbed not by things but by the views that they take of them." Shakespeare rephrased this belief in Hamlet: "There's nothing either good or bad but thinking makes it so." A theoretical cornerstone of RET is this same idea, that people and things are not in themselves disturbing, but it is through telling ourselves that a situation is upsetting that we become upset.

Ellis (1962) believes that human responses are never directly determined by stimuli but rather involve some kind of internal, cognitive processing. He refers to this processing of his ABC Theory of emotional disturbances. A is the existence of a fact, an event, or the behavior or attitude of another person. C is the reaction of an individual (emotional disturbance or unhappiness) which is presumed to follow directly from A. However, it is not A which is the cause of C, but B, which is the verbalization of the individual about A, or his definition

or interpretation of A as awful, terrible, horrible, etc. The recognition of this relationship leads to the possibility of changing and controlling one's attitudes and behavior in reaction to circumstances.

In his therapy sessions, Ellis points out the clients' irrational self-verbalizations and belief systems which were probably previously unrecognized by the client. Ellis actively teaches his clients to restructure their philosophic beliefs and life situations, thereby changing their unrealistic, illogical thoughts, emotions and behaviors.

The central theme of RET is that man is a uniquely rational, as well as a uniquely irrational, animal; that his emotional or psychological disturbances are largely a result of his thinking illogically or irrationally; and that he can rid himself of most of his emotional or mental unhappiness, ineffectuality, and disturbance if he learns to maximize his rational and minimize his irrational thinking. It is the task of the psychotherapist to work with individuals who are needlessly unhappy and troubled, or who are weighted down with intense anxiety or hostility, and to show them (a) that their difficulties largely result from distorted perception and illogical thinking, and (b) that there is a relatively simple, though work-requiring, method of reordering their perceptions and reorganizing their thinking so as to remove the basic cause of their difficulties (Ellis, 1962, p. 36).

Matarazzo (1965) reviews RET in the Handbook of Clinical Psychology:

Employing an approach to interview therapy which to this writer is an interesting blend of the pragmatism of William James and Sullivan, the hardheadedness of Watson, the common sense of Adolph Meyer, and of course, the uniqueness of Ellis, this approach is so novel and appears so

deceptively practical that the writer hopes before too long, it too will have its adherents. [p. 411]

Surprisingly, despite its increasing popularity, there are few empirical studies which attempt to determine the effectiveness of RET. In a recent article, Ellis (1969) referred to three current studies (Carlson, Travers, and Schwab, 1969; DiLoreto, 1969; Velton, 1968) which support his theory.

Carlson, Travers, and Schwab (1969) have demonstrated in the laboratory that a persons' beliefs can influence his emotional responses. First emotional responses were induced by electric shock and measured by Galvanic Skin Response (GSR). Then, subjects were instructed that they either would receive no shock, a one in five chance of shock, or a one in a thousand chance of shock. The greater the stated probability of shock, the greater was the GSR. The significant relationship between the experimental instructions and the GSR gave support to the Rational-Emotive theoretical position that cognitions, beliefs, expectancies, or set can and do control emotions or feelings even when these are emotional responses to expected events that may not materialize.

In a study comparing three psychotherapeutic approaches (Client-Centered, Desensitization, and Rational-Emotive), DiLoreto (1969) found that Rational-Emotive therapy was the most successful with introverted students in reducing interpersonal anxiety. The study was conducted in a clinical setting with groups.

In a laboratory study, Velton (1968) tested the central tenet that it is the interpretations people place upon events that determine their affective responses. Subjects were asked to read silently, then aloud, statements designed to produce elation in one treatment group and depression in another. A third group was given neutral statements. It was hypothesized that reading elation and depression statements would produce the corresponding mood states. In five of the seven critical measures (one of which was the Multiple Affect Adjection Check List) of mood-relevant behavior, the treatments differed significantly in the predicted direction. The author concludes that

Insofar as the present experiment provided a test of the central tenet of rational-emotive and other semantic psychotherapies, and insofar as the results may be accepted, there is additional evidence that claims of Ellis (1957; 1962) and Phillips (1957) regarding the efficacy of their therapies may be taken seriously (Velton, 1968; p. 482).

Two additional clinical comparison studies (Dolgan, 1968; Ellis, 1957) support the Ellis theoretical position.

Ellis (1957) used his own case studies and compared the effectiveness of three different therapy techniques: orthodox psychoanalysis, psychoanalytically oriented psychotherapy, and rational psychotherapy. Ellis had utilized each of these approaches for a period of years. He matched 78 closed cases who had been under treatment with respect to diagnosis, age, sex and education. Each case was evaluated as to whether there had been (1) little or no progress (2) some distinct improvement

or (3) considerable improvement. It was found that individuals treated with orthodox psychoanalysis showed little or no improvement in 50 percent of the cases, distinct improvement in 37 percent, and considerable improvement in 13 percent. Those treated with psychoanalytically oriented therapy showed little or no improvement in 37 percent of the cases, distinct improvement in 45 percent, and considerable improvement in 18 percent. Those treated with rational psychotherapy showed little or no improvement in 10 percent of the cases, distinct improvement in 46 percent, and considerable improvement in 44 percent.

For his doctoral dissertation, Dalgan (1968) compared the effectiveness of three forms of systematic desensitization procedures with a modification of RET in reducing anxiety aroused in confrontation with phobic objects. According to behavioral ratings by trained judges, subjects exposed to RET demonstrated more decreases in fear than the desensitized groups.

Ellis is now beginning to receive increasing theoretical support from researchers in the area of psychological stress. Appley (1967), Arnold (1960), and Lazarus (1966) have recently been gaining a wide following for their theories on the cognitive determinants of affective behavior. These theories and the empirical evidence which support them are reviewed in the next section.

Cognitive Determinants of Affective Behavior

There is substantial theoretical and empirical support for the importance of cognitive determinants of emotion and other aspects of behavior. (Lazarus, 1966; Neisser, 1966).

Bruner, Goodnow and Austin (1956) state that:

The past few years have witnessed a notable increase in interest in and investigation of the cognitive processes. . . . Partly, it has resulted from a recognition of the complex process that mediate between the classical 'stimuli' and 'responses' out of which stimulus-response learning theories hoped to fashion a psychology that would bypass anything smacking of the mental. As 'S-R' theories came to be modified to take into account the subtle events that may occur between the input of a physical stimulus and the emission of an observable response, the old image of the 'stimulus-response bond' began to dissolve, its place being taken by a mediation model. As Edward Tolman so felicitously put it some years ago, in place of a telephone switchboard connecting stimuli and responses it might be more profitable to think of a map room where stimuli were sorted out and arranged before every response occurred, and one might do well to have a closer look at these intervening 'cognitive maps.' [p. 1]

Schachter and Singer (1962) have demonstrated in the laboratory the critical role of cognitive processes in the determination of emotional behavior. Four groups of subjects were given a drug presumed to be a vitamin supplement, but in actuality caused a strong autonomic response. One group was told to expect the correct emotional reaction, for example, pounding heart, shaking hand, and warm, flushed face. A second group was told nothing about the physiological reaction. A third group was given

misleading information about the reaction; for example, an itching feeling was to be expected. A fourth group received a placebo and was not told to expect any reactions.

Each of these groups was also exposed to two experimenters posing as subjects. One experimenter acted extremely euphoric and the other angry, apparently in reaction to his taking the drug. Through behavior ratings and self-reports it was determined that the three groups who received the drug did indeed have a greater emotional reaction than the placebo group. However, the interesting finding was that those subjects who were exposed to the angry experimenter were also angry. Those with the euphoric experimenter were euphoric. These reactions were especially true in those groups who were misinformed or not informed about the effects of the drug. In these groups there was no explanation for the emotional reaction, which was greatly influenced by the experimenter.

In the discussion section of the article Schachter and Singer write:

Given precisely the same state of epinephrine-induced sympathetic activation, we have, by means of cognitive manipulations, been able to produce in our subjects the very disparate states of euphoria and anger. It may indeed be the case that cognitive factors are major determiners of the emotional labels we apply to a common state of sympathetic arousal (1962, p. 397).

Valens (1967) studied the role of cognition in reducing anxiety. Male subjects were led to believe that their heart rates were changing in response to certain slides in a series

of semi-nude women. Subjects psychometrically classified as emotional made more use of the heart rate cues in developing preferences than did unemotional subjects. This supports Schachter and Singer's (1962) belief that the differences in the use of internal cues, rather than differences in automatic reactivity itself, may be implicated in "emotional response."

The importance of cognitive activity intervening between threat and response is demonstrated in Berkowitz's (1962) review of experimental literature on aggression. His study reveals that aggression is clearly not an inevitable response to frustration. Berkowitz began his study as a follower of Dollard and Miller's frustration-aggression theory. However, he soon recognized that a number of intervening variables would determine whether frustration would be followed by aggression. One such variable was the presence of internalized values against aggression. In the end of his review he reluctantly admits that "a person's reactions to a frustration depend to some extent at least on his interpretations of the thwarting situation" (1962, p. 50).

Along with Ellis, researchers in behavioristic psychology are recognizing the importance of cognitive processes. Katkin and Murray (1968) have reviewed research efforts to condition autonomic activity instrumentally. Results were found to be "ambiguous." The only consistent positive studies have used curarized animals. Based on these findings, Katkin and Murray

suggest that the desired control of autonomic activity might be more efficiently produced by proper reinforcement of both the somatic and cognitive mediators. This is, for those who want to control autonomic activity, an alternative procedure would be first to determine accurately the relationship between certain voluntary skeletal actions and their associated epiphenomenal autonomic response patterns, and then to reinforce the voluntary responses. "What we are suggesting here is simply a program to develop techniques for exploiting what has always been known to psychologists as well as laymen--that one can learn to control his 'involuntary behavior'" [p. 66].

Of course, operant techniques are extremely effective in changing behavior. The difficult question is what to reinforce or punish. It is the belief of this study that belief systems should be shaped until irrational beliefs have been replaced by a more rational, adaptive system.

Arnold (1960) used the term appraisal to define the cognitive process that intervenes between the stimulus and the emotional reaction. She believes that an individual "appraises" or evaluates the significance of the stimulus before responding. The particular emotional responses will depend upon the stimulus appraisal. Arnold states:

Without this link, we are at a loss to explain why the same perception results sometimes in one and sometimes another emotion and action (1960, p. 178).

Cognitive Processes in Psychological Stress

This experiment uses a psychological stress situation. This section will review cognitive factors underlying psychological stress.

Lazarus (1966) utilizes Arnold's concept of cognitive appraisal in his comprehensive study of psychological stress. He attempts to identify the cognitive processes which cause an individual to perceive a situation as stressful. He then identifies the coping processes (again mainly cognitive) through which an individual attempts to reduce or eliminate the stress.

Lazarus introduces the concept of threat as the key intervening variables in psychological stress analysis. Threat has two main properties. First it is anticipatory, involving expectations of future harm. Second, it depends on cognitive appraisals, such as perception, learning, memory and judgment.

The process of appraisal depends upon two classes of antecedents, factors in the stimulus configuration and factors within the psychological structure of the individual.

There are three main factors in the stimulus configuration that determine the appraisal of threat. The first factor concerns the balance of power between the harm-producing stimulus and the counter-harm resources. Generally speaking, when the balance of power favors the harm-producing stimulus, threat is increased (Janis, 1958; Schachter, 1959; Withey, 1962).

The second factor in the stimulus configuration is the imminence of the anticipated harm. Research has shown that as the harm-producing stimulus comes closer in time, threat increases (Hackett and Weisman, 1962; Mechanic, 1962).

The third factor concerns the ambiguity of the stimulus cues signifying harm. Ambiguity alone does not necessarily result in threat unless it occurs in a context where threat is appraised (Janis, 1962; Withey, 1962). However, under threatening conditions, stimulus ambiguity will increase anxiety (Dibner, 1958).

Personality factors also are important determinants in the appraisal of threat. There are basically three important factors which operate mainly as dispositions to appraise stimuli in a particular way. The first factor concerns the influence of motivation. This is a complex variable, because of the wide range of individual differences. Stimuli will be appraised as threatening to the extent that they block the achievement of important goals (Vogel, Raymond, and Lazarus, 1959).

A second personality factor is the influence of intelligence, education and sophistication. Research has shown that the lack of these intellectual resources often produces an unrealistic appraisal of the situation, sometimes increasing threat, other times the opposite (Janis, 1958).

A third personality factor, central to the present study, is the influence of general belief systems in threat appraisal. One

of the most common observations made about appraisal is that one tends to perceive what he expects to see. This phenomena is often called set. The word set is synonymous with words like expectancy or readiness and refers to a disposition to perceive a certain type of stimulus in a given situation at a particular time (isaacson, Hutt and Blum, 1965). Sets of a relatively simple nature can be aroused in a laboratory by instructing subjects so that they expect certain things to appear. Sets of far greater complexity are those which each of us carries around with him in the form of prejudices, interests, values, and beliefs (Munn, 1966). General expectancies or beliefs that an individual might hold regarding his environment, himself or life in general, can effect his appraisal of a strange or novel situation. For example, Davids (1955) found that individuals who scored high in the personality trait of alienation, tended to perceive their environment as hostile and dangerous in response to projective tests. Similarly, a high correlation was found between subjects high in trait anxiety and the subjects' readiness to express negative affects in interviews (Zimbardo, Barnhard, and Berkowitz, 1963). Cross-cultural studies cited by Lazarus (1967) demonstrate that cultural beliefs can influence affective responses in laboratory situation. The importance of an individual's belief system in the RET theoretical framework was presented at the beginning of this chapter.

Once a stimulus has been appraised as threatening, processes are then mobilized to attempt to reduce or eliminate the anticipated harm. They are called coping processes. (Cognitive activity again plays an important role.)

Cognitive activity associated with coping has been labeled secondary appraisal (Lazarus, 1966) to distinguish it from the cognitive processes (primary appraisal) which deal with threat appraisal. In essence, primary appraisal is concerned with the evaluation of impending harm, while secondary appraisal evaluates the consequences of any coping behavior.

In other words, in primary appraisal, the issue is how much am I in danger from a situation; with secondary appraisal, the issue concerns how much am I in danger from anything I do about the threat or to what extent will any particular action relieve the danger. Factors which influence primary appraisal were previously discussed. There are three classes of factors involved in secondary appraisal: (1) the degree of threat (2) the stimulus configuration and (3) personality factors.

In general, the greater the degree of threat, the more likely the coping reaction will be primitive and confused (Thackary and Pearson, 1968). An extremely threatening situation is likely to cause a high degree of anxiety and defensive reactions (Rokeach, Toch, and Rottman, 1960). These reactions often produce unrealistic, self defeating behavior. Of course, defensive reactions can aid in controlling anxiety, such as in

the case of parachute jumpers (Fenz and Epstein, 1962). A mildly threatening situation can often produce more adaptive forms of coping (Wheaton, 1959).

Three factors in the stimulus configuration are believed to effect the coping response. First, in order to directly cope with a threat, the threat must be located. Obviously, if the threat cannot be located, direct coping action such as attack cannot take place (Funkenstein, 1956). Avoidance or defense behavior is likely (Feshback and Feshbach, 1963).

The second factor in the stimulus configuration involves the common-sense principle: Other things being equal, a person chooses the coping action which he conceives as having the best chance of overcoming the threat and of which he is readily capable (Buss, 1963; Berkowitz, 1962).

The third factor involves those situational constraints which make it dangerous or unwise to express a desired form of coping. These constraints do not influence the coping action directly but serve to inhibit or encourage its expression. Society's taboo on aggression (Burnstein and Worchel, 1962), sex (Martin, 1964) and role expectations (Sorenson and Halpert, 1968) serve as examples.

Personality traits influence coping reactions in two general ways. First, they may influence appraisal indirectly by determining the importance of the situation. For example, if social approval is relatively unimportant to an individual,

social constraints will have little effect on his coping responses.

Second, coping is directly influenced by the innate capacities and preferred defensive reactions of an individual.

Four personality factors are believed to influence coping reactions: (1) pattern of motivation, (2) ego resources, (3) defensive dispositions, and (4) general beliefs about the environment and one's resources.

Motivations are not only influential in determining which stimuli are threatening and which are not but they also help to determine the choice of a particular coping response. An individual may be motivated to comply with external pressures, such as social conformity (Schachter and Singer, 1962) or by internalized values. Studies show, for example, that internalized motives such as desire for approval are capable of constraining aggression in a threatening situation (Hetherington and Weay, 1964).

A second determinant of coping is an individual's ego resources. Poorly defined terms such as ego strength attempt to indicate an individual's tolerance for stress. An example is one's capacity to control an impulse, such as aggression, when its expression might be dangerous. Studies (Black and Martin, 1955) have demonstrated the implications of concepts such as impulse control on coping responses.

A third important factor in coping is the tendency to use

various defense mechanisms. Evidence has shown that most individuals have a relatively stable defense system (Lazarus and Longo, 1953). However, defensive responses remain susceptible to influence from situational pressures (Breger, 1963).

The fourth factor influencing coping is the individual's belief system. Studies indicate that an individual's beliefs about his environment, (such as whether it is friendly or hostile), and his belief about himself (such as whether he is worthwhile or worthless) will determine whether he will attempt to master a situation or withdraw from it (Zimbardo and Formica, 1963). For example, individuals who are low in self-esteem will tend to be highly influenced by the opinions of others (Hovland and Janis, 1959) and tend to conform to social pressure rather than act independently (Crowne and Marlowe, 1964).

At first glance it might seem that cognitive processes have been given undue emphasis in stress appraisal. It is as if an individual is continually making rational judgments on how to cope with a situation. The psychological processes in a stressful situation are indeed cognitive, if by this it is meant that beliefs, expectations, perceptions, and evaluations as well as learning and memory underlie the response to a threat stimulus. But these cognitive processes do not imply conscious awareness, good reality testing, or good adaptation. A belief may be irrational, a perception inaccurate, a coping solution to a threatening situation immature and unsuccessful.

Still they are cognitive structures and processes. The tendency is to say that emotions cause people to act irrationally. This is because negative emotions accompany threat, and it appears that the emotions "cause" the irrational behavior that often follows threat. However, it is not the emotion that is responsible although emotion might be a source of interference in adaptive thought. The "cause" is the appraisal of a situation as being threatening and the cognitions that underlie the effort to adjust to it. The correlation between the threatening stimulus and the emotional response make it easy to confuse cause and effect, especially since the emotional state is the most obvious feature of the psychological event.

Thus, irrational behavior does not come primarily from the intervention of emotions in thought processes, but rather from the fact that threat places the psychological system in jeopardy, and that the alternatives available to the person are tied to his sets, motives, attitudes, beliefs, and abilities. A person may choose to behave in ways which may appear to everyone else to be self-defeating. But because of his past experiences, his particular belief system, or his perceived lack of resources, he cannot choose a more adaptive response.

The Concept of Anxiety

Definition

Anxiety is a common response to psychological stress. It is

an important variable in the areas of learning, motivation, personality, and psychopathology. It is believed to be a major causative factor for a wide variety of handicapping psychological and psychosomatic symptoms (Spielberger, 1966). It follows that anxiety reduction is considered to be an important therapeutic goal for most practitioners.

Anxiety was chosen as a dependent variable in this because it is

. . . an emotional problem that is delimited enough to allow generalization from the findings and to have implications for further study in the broader field of counseling and psychotherapy (Paul, 1966, p. 9).

Most usages of the term anxiety define it as an unpleasant affective state (McReynolds, 1967). While most definitions of anxiety are in agreement that anxiety is essentially fear, a subtle distinction between fear and anxiety is often made in terms of the source of impending danger. Fear is a response to an objective, external threat, while anxiety is a feeling of impending danger toward an unidentified threat.

More appropriately to the present study is the position of Lazarus (1966) who defines anxiety as a coping reaction to threat, which is produced either when the harmful stimuli cannot be located or when it is ambiguous. Emotions are nothing more than the observable manifestations of how a person decides to cope with threat. If avoidance impulses occur, the affect is fear; if attack impulses occur, the affect is hostility, etc. Anxiety is similar to fear because the basic impulse is avoidance.

However, no clear coping action is observed because of the ambiguity of the threat. In other words, anxiety occurs when an individual cannot decide how to cope with threat.

There exists a great deal of confusion in psychology as to whether anxiety causes a coping response or whether it is part of the coping response itself. A well established view (Brown, 1961; Dollard and Miller, 1950) treats anxiety as an independent variable, capable of motivating behaviors such as attack or avoidance in order to reduce threat. This view was discredited in the research reviewed earlier because it is simplistic and ignores the importance of cognitive processing. When cognitive factors are recognized as important, they become the independent variables, with anxiety becoming the dependent variable as an indication that an individual has reacted to a stimulus as being threatening.

As an example, Lazarus (1966) refutes the common belief that anxiety causes defensive reactions.

It is not the anxiety or the impulse itself that should be treated as "causing" the defense, but the threat that is engendered by the impulse when the individual has appraised it as dangerous. To speak as though anxiety were responsible is to move the effect to a position of causality. Anxiety is the response to threat. We think it is misleading to posit that anxiety motivates behavior. In fact, if it acts as a signal, it doesn't, strictly speaking, motivate behavior. It is the threat that motivates it. Something defensive must be done simply because the psychological system is in jeopardy. No other explanation is needed. [p. 69]

State versus trait anxiety

The concept anxiety has been used more or less indiscriminantly to refer to two very different constructs. (Spielberger, 1966). It is useful to distinguish between anxiety as a state and anxiety as a trait. (Cattell and Scheier, 1960; McReynolds, 1968; Zuckerman and Lubin, 1965). State anxiety is a transient response to a known set of conditions. Trait anxiety refers to relatively stable response patterns which are not related to external stimulus conditions. In trait anxiety the reaction is designated as an independent variable useful in predicting other behaviors. In state anxiety the conditions that inspire the reaction are involved (Lazarus, 1966).

As a personality trait, anxiety refers to the degree to which individuals are disposed to manifest state anxiety in response to various forms of stress (Johnson and Spielberger, 1968). Spielberger (1966) has pointed out that individuals who are high in trait anxiety will more frequently experience state anxiety than those of low trait anxiety, but they will not necessarily experience state anxiety more intensely. In any given situation, the anxiety-prone individual is more likely to experience anxiety, but the intensity of his feelings will be a function of the situation and his personal characteristics (Levitt, 1967).

Measurement of Anxiety

If anxiety is to serve adequately as an experimental variable, the necessary techniques must exist for its identification and measurement. Otherwise, it is nothing more than a convenient literary expression. The studies that are reviewed in this section have relevance to the problem of choosing a means for measuring anxiety.

Four different classes of measures have been used to determine level of anxiety: (1) self-reports of anxiety, (2) motor-behavioral reactions, (3) changes in the adequacy of cognitive functioning and (4) physiological changes. The review will concern itself with physiological and self-report measures.

In this experiment, anxiety was measured in terms of Galvanic Skin Response. The Galvanic Skin Response (GSR) is one of the most commonly used psychophysiological measures. Its popularity is in part due to its extreme sensitivity and ease with which it can be recorded. However, because it is a very general response variable, extreme caution must be exercised when inferring the psychological factors which might cause the response. By itself the GSR can indicate only that a subject has responded. It gives no information as to whether the response is one of anger, anxiety, or elation. However, anxiety stands out among other states as one which is related frequently to autonomic responsivity (Martin, 1961).

From his extensive review of autonomic response data, Cattell (1966) concludes that autonomic responses can be accounted for by three factors: (1) a general autonomic factor, (2) an adrenergic pattern, and (3) a para-sympathetic pattern. The general autonomic activity factor appears to be identical to Cattell's anxiety state response, while the other patterns seem quite distinct from anxiety.

One would suspect that since autonomic activity is a general response, when one organ responds, the others should also, and in a comparable degree. However, among the various physiological measures, such as GSR and heart rate, there has existed a very low degree of correlation (Lacey, 1959; Martin, 1961).

The most common explanation for this low correlation is that each individual shows a wide variation of responses to the same stimulus. As mentioned previously, not only do individuals appraise and cope with threatening situations differently, but they also differ in their physiological make-up (McReynolds, 1968). Intra-individual studies have demonstrated a higher correlation among psychophysiological measures (Malmstrom, Opton, and Lazarus, 1965; Opton, Rankin and Lazarus, 1965).

Although there is disagreement about the nature of anxiety and the most valid measures of it, there is considerable evidence that skin conductance, which reflects changes in sympathetic nervous system activation, is associated with states of emotional arousal or mobilization (Baker and Taylor, 1954; Dykman et. al., 1959).

Duffy and Lacey (1946) found that conductance rose as subjects began a task and then fell as they relaxed and made progress. Schlosberg (1954) reported a beautifully inverted U relationship between hand steadiness and GSR as well as simple auditory reaction time and GSR. Malmö (1957), on the basis of construct validity, believes that GSR is a reliable measure of the arousal variable. He reports, for example, that under standard conditions of stimulation, psycho-neurotics are more reactive than controls. Anxious patients were the most responsive of all.

Granted that skin conductance is a valid indicator of emotional intensity, its use as a measure of anxiety in particular should be justified in terms of the nature of the threatening stimulus. A stimulus, sufficient and specific enough to produce an emotional response caused by the appraisal of impending harm, should be used in order to justify calling increased GSR "anxiety."

Electric shock has been found to be such a stimulus (McReynolds, 1968). Subjects have unique anxiety "thresholds." Reactions to a set voltage of electric shock may range from no effect to extremely unpleasant (Clark and Bindra, 1956; Wolff and Jarvik, 1963). In order to create the necessary "experimental anxiety," it is necessary that each subject set his own "highly annoying, but not painful" shock level.

In this experiment, fear of shock, rather than anxiety,

might be the variable being measured (Hodges and Spielberger, 1966). But whatever this emotional state is called, it might still be a measure of what Ellis (1962) refers to as general "upsetness." One of the goals of RET is to reduce "upsetness" whether it be labeled anxiety, fear, hostility, etc. Of course, it would be beneficial to know what emotion is being elicited by the electric shock, as different emotions might respond more favorably to RET. Upsetness should be enhanced because the subject has no control over the onset of shock (Bowers, 1968; Mandler and Watson, 1966).

High physiological arousal does not always lead to unpleasant emotions. Mandler (1967) mentions the roller coaster phenomenon as an example. People riding roller coasters experience increased heart rates and GSR's but continue to enjoy this activity. A partial explanation was previously given by Schacter and Singer's (1962) study. Namely, that arousal is one thing, but it is the person's appraisal of the situation that determines his particular emotional response. A person's favorable emotional response to the roller coaster is due to his favorable perception of the situation and his certainty that it will have a favorable outcome. Presumably, he knows where the roller coaster is going to go and he believes that he is going to get there in the end. In other words, there is no helplessness, no disorganization and under these conditions arousal leads to a positive affective state. It only produces the negative affective state if there is in fact helplessness.

The relationship between physiological anxiety measures and self-reports of anxiety has not always been clear. A majority of studies have found that trait anxiety (as measured by various personality tests) does not predict situational anxiety as measured by GSR. For example, Barry and Martin (1967) found no relationship between scores on the Saranson Test Anxiety Scale and GSR conditioning under stressful or nonstressful conditions. Similar findings have been reported for the IPAT Anxiety Scale (Bauman and Straughan, 1969) for the Taylor Anxiety Scale (Beam, 1955; Bitterman and Hotzman, 1952; Katkin, 1965) and for the MA scale on the MMPI (Katkin and McCubbin, 1969).

However, a recent study by Fenz and Dronsejko (1969) found individual differences in trait anxiety (measured by a revised version of the Taylor Manifest Anxiety Scale) to be a relevant variable in the prediction of autonomic arousal.

The next section will review research studies that have used physiological measures (especially GSR) to determine psychotherapeutic effectiveness in reducing negative emotions.

Related Studies of Psychotherapy

Among the criteria for effectiveness of psychotherapy advanced in the literature is that one should have (a) measures before the therapy began and (b) measures after the therapy (Dittman, 1966). Few studies of psychotherapy meet these criteria (Cross, 1964; Eysenck, 1952, 1969).

Four different classes of measures have been used to determine anxiety reduction in psychotherapy studies: (a) self-reports of anxiety, (b) motor-behavioral reactions, (c) changes in the adequacy of cognitive functioning and (d) physiological changes. This review will concern itself with physiological measures.

Because of the advantages (previously noted) in using psychophysiological measures, it is perhaps surprising to find their infrequent use in psychotherapy research. Ford (1959) states that most researchers would prefer to use these methods. However, the nature of most treatment settings, with the therapist's obligation to his client and the clients concern with immediate problems, have made it impractical to study psychotherapy in a laboratory setting.

A notable exception has been the Behavior psychologists, who have for years used the laboratory to demonstrate the effectiveness of their techniques in reducing maladaptive behaviors. For example, well-controlled laboratory studies have been used to verify the effectiveness of Wolpe's (1958) desensitization theory (Davison, 1968; Lang and Lazovik, 1963; Lang, Lazovik and Reynolds, 1965; Paul, 1966, 1967).

Studies that have been concerned with anxiety reduction per se, have varied in terms of precision and specificity of both independent and dependent variables. Haggard (1947) was the first to study psychotherapeutic outcomes in the laboratory setting. Using the GSR induced by electric shock as his dependent

variable, he investigated the effectiveness of three types of therapy (1) catharsis-information, in which subjects would express their feelings or ask whatever questions they wished, (2) experimental extinction and (3) rest. Catharsis-information was found more effective than the other two. However, the opportunity to express feelings about the experiment and obtain information about the experiment was demonstrated to be ineffective in extinguishing GSR's.

A study by Levinson, Zax and Cowen (1961), is similar to Haggard's, in that a conditioned GSR was used to measure the dependent variable, but a loud buzzer was successfully substituted for electric shock. The investigators predicted that the GSR would be reduced most by therapy (explorations of subject's reactions and feelings to the conditioning trials), successively less by talk (conversation about school, majors, etc.) and least by time control (20 minutes of solitary rest in another room). Scores reflecting the difference between GSR in the conditioning and extinction trials were computed and summed for each experimental treatment. While all the differences were in the order predicted, they failed to attain significance. The authors felt this might be attributed to considerable intersubject variability.

Gordon, Martin, and Lundy (1959) attempted to measure anxiety during hypnotically-induced states akin to repression, suppression, and verbalization. While there was never an

absolute reduction in anxiety in the 45 minute experimental session during which each subject alternately repressed, suppressed, and verbalized a parental conflict, there was a tendency for the GSR curve to level off during verbalization. This finding suggests that verbalization of one's difficulties produces greater anxiety reduction than either repression or suppression.

Martin, Lundy, and Lewin (1960), in comparing GSR scores during three types of interviews (a regular client-centered session, a session in which the subjects talked to a tape recorder, and a session with a therapist who responded by non-verbal means only), found decreasing amounts of intra-interview change in anxiety correlated with verbalization of conflict areas. The regular group showed the greatest decrease over sessions in intra-interview change in anxiety, with the taped group showing the least GSR decrease.

Cohen, Silverman, and Burch's (1956) demonstration of the sensitivity of the GSR to varied manipulations also supports the fairly consistent finding that discussing traumatic material reduces anxiety. They found that cathartic and interpretive techniques reduced the GSR to individual words, while repressive techniques produced either no change or an increase in GSR responsivity.

Dittes (1957) reported that "conventional psychotherapy" was effective in reducing GSR's accompanying "Embarrassing

Sex Statements." Permissive psychotherapists produced the most effective results. After reviewing the studies by Dittes and Cohen, Silverman, and Burch, Lacey (1959) concludes that reduction of GSR depends mainly on whether the therapist is viewed as being aggressive or permissive. Since the more gentle permissive therapist was found to be the most effective in reducing GSR's, it would appear that the non-permissive aggressive, Rational-Emotive approach might not be effective in the present study.

Piorkowski (1967) compared three therapy treatments (distraction, catharsis, and rationalization) as to their effectiveness in reducing anxiety (GSR) created in subjects by viewing the film "Death on the Highways." All three treatments did not significantly differ from a control group (no treatment) in reducing anxiety measured on both the GSR and an anxiety differential test. She concluded:

Thus, it appears that in an anxiety-arousing situation which is focal and primarily external, the dissipation of anxiety is primarily a function of time following the removal of the anxiety-arousing stimulus. . . . Whether this particular finding is limited to the specifics of this study, that is, to the particular anxiety-arousing stimulus used, to the specific kinds of treatment employed, and to the subjects in question (S's were high school students) can only be answered by further experimentation. [p. 284]

Thus, the experimental work in the area of anxiety-reduction has produced ambiguous results. Most of these studies have used some sort of "discussion-of-feelings" approach. Few other

techniques have been investigated.

Zytowski (1966) reviews the outcomes of psychotherapy studies in the laboratory setting and concludes that this type of investigation appears promising, but its full potential is not yet established. He also concludes that:

When GSR or similar physiological measures were used to indicate anxiety, they appeared more reliable than other measurements, such as performance or self-report types. [p. 239]

Relationship Factors in Psychotherapy

This study compares a personal psychotherapy treatment with a similar tape recorded treatment to determine if personal contact is a "requisite condition" for emotional change. There is much empirical support (both pro and con) for the requisite condition hypothesis.

Gardner (1964) conducted an exhaustive review of the literature on the psychotherapeutic relationship and concluded that the quality of the relationship correlates with client progress.

In more recent years, there has been a great deal of empirical evidence correlating the therapeutically facilitative conditions of empathy, positive regard, genuineness, self-disclosure and concreteness to constructive personality change (Berenson, and Carkhuff, 1967; Carkhuff and Berenson, 1967; Rogers, 1967; Truax and Carkhuff, 1967).

Felfel and Eells (1963) and Kamin and Caughlan (1963) have found that patients perceive the human characteristics of a therapist, such as warmth and friendliness, as being most influential in helping them with their problems.

However, other research studies have demonstrated that behavioral changes can occur without contact with a therapist. Frank et al., (1963) studied 109 outpatients who received only a placebo. In a follow-up study, three years later, many patients continued to report improvements. Many improvements had taken place merely by going to the clinic before the placebo was administered. Lorr, McNair and Weinstein (1963) found in short-term psychotherapy that a placebo was as effective in reducing patient anxiety as was psychotherapy or a tranquilizing drug. In addition, Frankenhaeuser et al., (1963) found significant changes in pulse rate, blood pressure, mood, etc. as a result of administration of placebos alleged to be either depressants or stimulants.

Gonyea (1963) found that the quality of a therapeutic relationship as defined by Fiedler's composite Q Sort of the Ideal Therapeutic Relationship was not related to successful counseling outcome.

Rogers (1957) listed six necessary conditions for behavior change: (1) personal contact must exist between the therapist and the client; (2) the client must be incongruent; (3) the therapist must be congruent; (4) the therapist must show

unconditional positive regard toward the client; (5) the therapist must show empathic understanding of the client's internal frame of reference; (6) the client must perceive conditions (4) and (5).

Shertzer and Stone (1968) also describe core conditions which underlie successful counseling--empathy, rapport, understanding, acceptance. They state that all counseling theories agree that the relationship is a necessary condition of bringing about change in a client.

Patterson (1969) mentions four necessary and sufficient conditions for psychotherapy: (1) empathic understanding, (2) nonpossessive warmth, (3) genuineness, and (4) concreteness of specificity. Patterson believes that if a therapist is not fulfilling these conditions, then he is not conducting psychotherapy. In fact, he defines counseling or psychotherapy as "a method of behavior change in which the core conditions (the relationship) are the sufficient conditions for change to occur."

Ellis (1969), in responding to Patterson's article, believes Patterson's definition of psychotherapy to be extremely narrow.

He (Patterson) assumes, without evidence, that interpersonal inadequacy can only be overcome in a relationship with a therapist. There are several indications (Ellis, 1965; Wolpe and Lazarus, 1966) that it can also be ameliorated by nonrelated encounters with others, by audio-visual teaching, by operant conditioning and other forms of

behavior therapy, by reading and lectures, by drugs and shock treatment, and by a variety of other means.
[p. 39]

Research has found that a therapist need not be present for behavior change. DiMascio and Brooks (1961) observed a woman who was informed that she could be seen and heard by a therapist in the next room, but that she would probably never see or hear the therapist (who was nonexistent). The woman believed that this method helped her to formulate her ideas and was a valuable experience although it was not as helpful as contact therapy. Her therapist agreed that this technique had improved the treatment.

Truax and Carkhuff (1964) had clients listen to tape recordings of "good" therapy to demonstrate how clients could better explore their feelings. This method was found to be a valuable aid in both individual and group psychotherapy.

For his doctoral dissertation, Saper (1968) tested the thesis that bibliotherapy could be useful in encouraging therapeutic movement during non-directive group counseling. Subjects who read showed significantly greater movement than those who did not, as measured by the Therapist Judgment Scale. Content analysis indicated that those who read demonstrated greater involvement, problem solving, and insight than those who did no reading.

Although Ellis believes that the importance of the counseling relationship has been overemphasized, reviews of RET by Patterson

(1966) and Arbuckle (1967) attribute much of Ellis' success with clients to relationship factors. Ellis does not deny the importance of relationship factors, but points to the usefulness of other facilitative techniques.

The next section examines the psychotherapeutic effectiveness of directive (such as Ellis) versus passive (relationship) methods.

Relationship vs. Directive Psychotherapy

Patterson (1969) accuses Ellis of teaching instead of conducting psychotherapy. He seems to be deploring Ellis' directive, didactic methods while at the same time many of his relationship colleagues are finding directive confrontation techniques to be empirically more effective than a more passive approach.

Apparently such a trend was emerging at the beginning of this decade as Metzner (1961) observes that "increasing importance is being given to active-directive and supportive therapy and less to insight-interpretive therapy." [p. 22]

Truax et al. (1968) have found that there is greater client improvement during psychotherapy with therapists high in persuasive potency than with therapists relatively lower in persuasive potency. Persuasive potency was also found to operate independently of other personal characteristics of the therapist such as empathy and warmth.

Active therapists are more successful in sustaining verbalization rates in their clients (Lennard and Bernstein, 1960), while therapist passivity is associated with decreased client satisfaction as evidenced by discontinuance of treatment, broken appointments, and client complaints (Heller, Davis, and Myers, 1966).

A rapidly growing body of research evidence has been able to differentiate a dichotomy of high and low functioning therapists based on objective tape ratings of empathy, positive regard, genuineness and concreteness. Recent studies (Anderson, 1968; Berenson et al., 1967 a, 1967 b; Holder et al., 1967) have shown that high functioning therapists confront their clients more frequently and constructively than low functioning therapists. Confrontation was defined as the therapist's pointing out a discrepancy between his own and his client's way of viewing a situation. Also a greater proportion of their clients revealed deeper levels of self-exploration compared with clients of low level therapists.

O'Leary (1969) studied therapist activity on improving client grade-point average. She found that counselors of the improved group expressed their opinions more frequently, more often suggested a plan of action, were more expressive and concrete, talked more per minute, had interviews in which there were more total lines of talk, and less frequently asked the students to express their opinions than the counselors of the unimproved group.

Pierce and Drasgow (1969) found that clients self-explored themselves at significantly higher levels with conflict attention than they did with reflection. Conflict attention is a technique advocated by Carkhuff and Berenson (1967) and Kell and Mueller (1966) in which a therapist confronts the client with what he has not said or implied "between the lines," or with any of the implications of what he has said at deeper levels of meaning. Based on their findings, the researchers recommend that therapists change from a passive, reflective role to an active, aggressive one.

These studies clearly indicate that the more active, directive approaches to psychotherapy (such as RET) have been found to be more effective than the more traditional passive approaches.

Personality Factors in Psychotherapy

Bergin, 1966; Carkhuff and Truax, 1966 have reviewed the literature pertaining to psychotherapy research and concluded that psychotherapy generally causes clients to become better or worse than comparable people who receive no therapy. This is the well-known increase in variance finding. A logical conclusion from this finding is that some counselors with their approaches are meeting the needs of some clients and not others. Thus, counseling research should begin to deal with client

variability and with the problem of matching client needs and counseling treatment (Whiteley, 1967).

Thorenson and Kunce (1968) support Whiteley:

Realistic appraisal of the art and science of counseling today impels the counselor to consider seriously a multi-variate research strategy orientation. Inherent to this formulation are the assumptions that clients (the material) can be classified and that types of individuals may react differentially to various counseling styles and techniques (specific procedures) to produce different kinds of outcomes (products). Unless we recognize identifiable counseling styles and client syndromes we are unlikely to show positive outcomes, since a given counseling procedure may affect different clients in dissimilar ways. [p. 275]

It is doubtful that RET will be equally effective with all clients and with all kinds of problems. Conversely, it is likely that clients of a certain personal-social make up will respond more favorably to this type of therapy.

The personality dimension of extroversion-introversion has been used only once in a study designed to measure the effectiveness of psychotherapy. In this study, DiLoreto (1969) found that RET was more successful with introverted students in reducing interpersonal anxiety than client-centered psychotherapy, desensitization, or a control group. Client-centered psychotherapy was found to be more successful than the other approaches with extroverted students.

Naturalistic Versus Experimental Research Designs

In psychotherapy research there exists a great deal of controversy over the relative merits of utilizing a naturalistic or an experimental approach. Bordin (1965) repeats the familiar clichés: "Only when we bring phenomena under precise control as in the laboratory can true knowledge be gained," versus "Of what use is precision when it is obtained by reduction to the trivial?" He agrees with Auld (1964) that both naturalistic and experimental studies are needed in our present state of knowledge. In naturalistic studies, Auld believes that the researcher is more likely to find the right variables to study and their relative importance. However, experiments may tell us more about how to interpret results.

Bordin (1965) lists three rules to be followed when conducting psychotherapy research in the laboratory. First, the researcher should:

Start from and keep in central focus the natural phenomena which arouse our curiosity and about which we wish to know more or to verify our present ideas. Second, the degree to which you can safely depart from the naturalistic setting is proportional to the amount you already know about the phenomena in question. Third, if it is not based on prior knowledge, simplification should be accompanied by the early establishing of empirical bridges between the simplification and the naturalistic phenomena to which it is intended to refer. [pp. 497-8]

Cowen (1961) believes the need for experimental studies derives primarily from the fact that naturalistic psychotherapy

is seriously limited by the extraordinary complexity of the variables involved, most of which remained uncontrolled. Major potential contributions of the experimental method include:

(1) more rigorous control of extraneous variables, (2) greater refinement of experimental design, and (3) greater breadth and precision of measurement of relevant criterion functions.

Each of these factors are important as researchers aspire to pinpoint more specifically what transpires in the complex psychotherapeutic process.

CHAPTER III

METHOD

Sample

The subjects were volunteers from eight undergraduate education classes. With the permission of instructors, the experimenter visited each classroom to ask for volunteers. The experimenter explained that volunteers would be asked to fulfill two requirements. First, each would take a 55 minute personality test, the Myers-Briggs Type Indicator (MBTI), and receive a full interpretation of the results after the completion of the experiment. These test scores were used to determine if volunteers would qualify for the second requirement, a one and one-half hour laboratory experiment. Each class was told that there was about a 60 per cent chance that they would qualify for the experiment. They were told only that the experiment involved a new type of psychotherapy and that a few electric shocks would be given. Approximately 30 per cent of each class volunteered. Volunteers were not paid, and of course were not penalized for failure to participate.

Volunteers who scored in the bottom 30 per cent or top 30 per cent of the extroversion-introversion scale of the MBTI were selected for the experiment. A total of 64 subjects were

selected, 32 men and 32 women. Subjects were randomly assigned, by a throw of dice, to the three treatment groups and the control group. It was necessary to assign the last few subjects to groups in order to maintain a balance between sex and personality type in each group.

Equipment

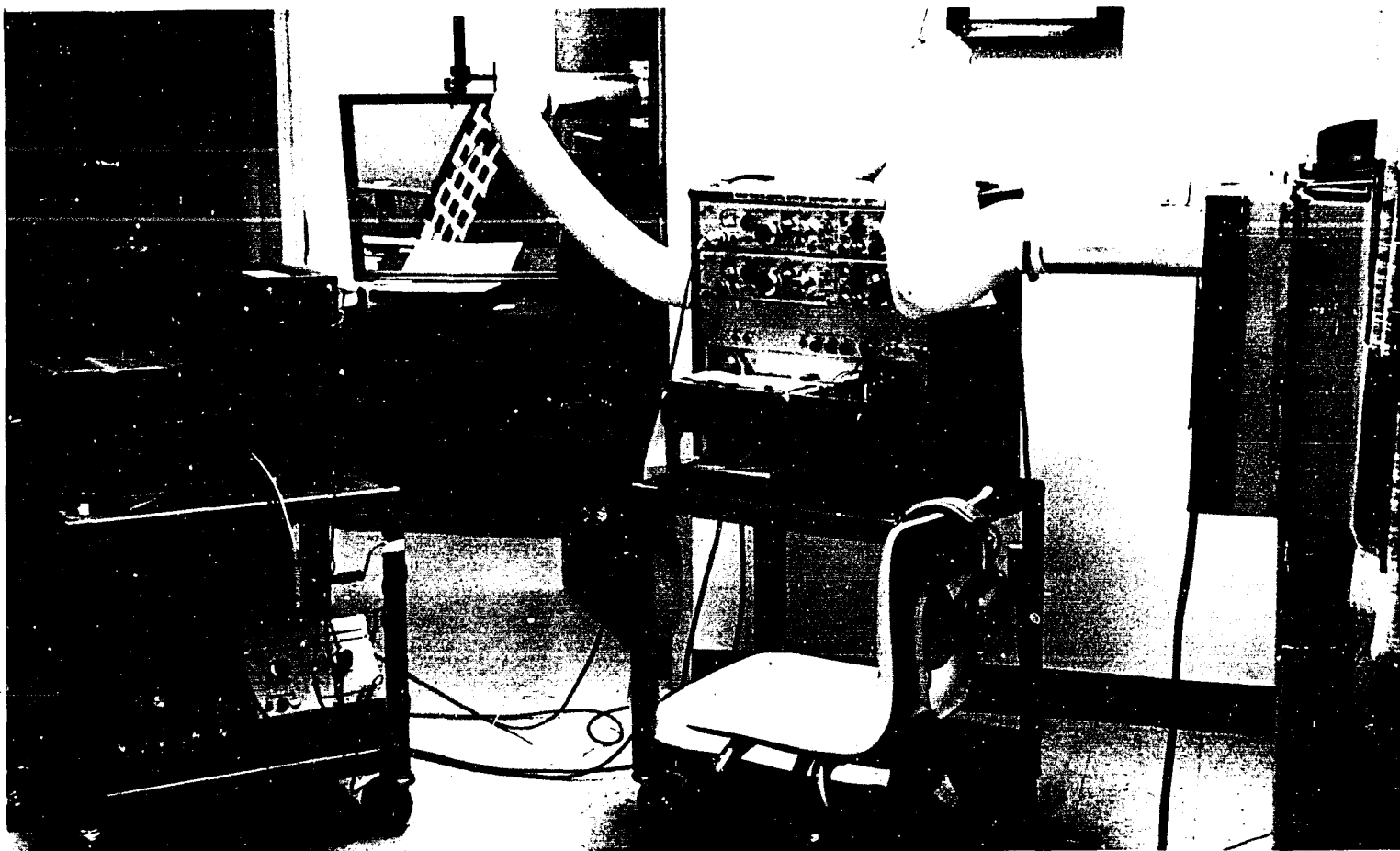
The equipment and recording devices were located just outside the room where the therapy was conducted (See Figure 1). The room was maintained at a temperature ranging between 70 and 75 degrees Fahrenheit and a relative humidity level which never exceeded 40 per cent. Each subject was separated from the experimenter and the equipment, and was constantly monitored through a one-way chromed plate glass window.

The GSR was recorded on a Grass Model 79 2-channel polygraph with low level DC preamplifier and Driver amplifier. The third channel was equipped with a constant time marker as well as a stimulus marker. A Heath Signal Generator was used to produce a tone. A Hunter timer was used to control the deviation of the tone. A microphone, audio-amplifier, and head phones were used to communicate with each subject.

A scientific Prototype Shielded Shock Source produced 0.02 second electric shock. Following a recommendation by Kimble (1961), the tone was set at 0.5 seconds.



FIGURE 1



Tests

Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) is a forced-choice, self-report inventory for use with normal subjects (Buros, 1965). It is based on Jungian Theory of personality types. The test has four dimensions: Judgement-Perception, Thinking-Feeling, Sensation-Intuition, and Extroversion-Introversion. Theoretically, these dichotomous dimensions are combined to produce various personality types.

The test was first developed more than 25 years ago and has undergone revision in 1962. It has been subjected to many studies for validity and reliability (Buros, 1965).

Although the entire test was taken and interpreted for each subject, only the Extroversion-Introversion sub-test was used in the study. The E-I dimension appears to be the most stable with a reliability of .73 with high school students and .82 with college students (Stricker and Ross, 1962).

Multiple Affect Adjective Check List

The Multiple Affect Adjective Check List (MAACL) was designed by Zuckerman and Lubin to fulfill a need for a test measuring verbalizable, situational, affective states. The test consists of 132 emotions or feelings, which are listed in alphabetical order. The test measures three clinically relevant negative

affects: anxiety, hostility and depression. The test comes in two forms. In one form, the subject must check those adjectives that describe how he generally feels. In the second form, he checks those adjectives descriptive of his present "now" status. Thus, the test can be used to measure both state and trait emotions. Both forms were used in this study. The "now" form was changed to read "at this point in the experiment."

Considerable data (Zuckerman and Lubin, 1965; Zuckerman, Lubin, and Robins, 1965) attest to the reliability and validity of the instrument. Measures of reliability were only available for the anxiety scale. Both general and state internal reliabilities were high (.72 and .85 respectively). Retest reliability for the general form remained high (.68), while the state retest reliability was a low .31. Because of the nature of state anxiety, this low reliability was expected.

Correlations between clinical observations and interview data have been rather high (.40 to .70) especially with anxiety and depression. However, a problem is posed by the high intercorrelations among the three scales. The high intercorrelation indicates that the MAACL might be measuring a common underlying trait.

Suggested uses of the MAACL include "testing the effects of psychotherapy, drugs or other types of therapy" (Zuckerman and Lubin, 1965, p. 21). The use of the MAACL follows Spielberger's (1966) and Lazarus and Opton's (1966) recommendation

that "some combination of introspective reports and physiological-behavior signs be required in order to define unambiguously the presence of anxiety states in humans" (p. 14). The use of both physiological (GSR) and self-report measures will also identify those subjects who defensively deny affective disturbances on paper and pencil tests, but who usually show a greater autonomic response (Lazarus and Alfert, 1964).

Pseudoconditioning

In the experiment, the GSR responses of subjects to a tone were produced without pairing a shock with the tone. This procedure is called pseudoconditioning. Pseudoconditioning refers to the phenomenon in which repetition of an unconditioned stimulus can alone (without pairing a conditioned and unconditioned stimulus) result in a response not previously conditioned to the unconditioned stimulus. Most research efforts in pseudoconditioning have used animals.

Over thirty years ago, researchers (Miller, 1939; Razran, 1936; Grant, 1939; Hilgard and Humphreys, 1938) found that pseudoconditioning can easily be produced with humans through verbal instructions. For example, a GSR conditioned response will often drop out entirely if the experimenter merely says "OK, no more shocks (unconditioned stimulus), I just want to try the tone (conditioned stimulus) a few more times." If the subject really believes the experimenter and ceases to

expect a shock following the tone, the conditioned GSR response will almost immediately reach extinction (Cook and Harris, 1937; Mowrer, 1938).

Thus, the pairing of conditioned and unconditioned stimulus is not necessary with humans to produce a conditioned response. If a subject believes that the experimenter is credible, verbal instructions will be sufficient for pseudoconditioning to occur.

Procedure

Subjects were reminded that the experiment involved electric shock, and they had the option at any time of terminating the experiment. Each subject was questioned as to physical limitations (e.g. heart trouble, high blood pressure, pregnancy) which might have precluded their taking part in the experiment.

The subject completed the Multiple Affect Adjective Check List (MAACL) "In General" form which measured trait affective states. The MAACL required about five minutes to complete.

Following Lykken's (1959) recommendations, zinc GSR electrodes, separated from the skin by means of a corn plaster and zinc sulfate contact paste, were taped to the first and fourth fingers of the subject's left hand. To induce electric shock, Grass EEG gold plated electrodes were attached to the left forearm near the elbow, two inches apart, by means of Grass EEG electrode paste and an ACE bandage. The subject then entered the stimulus shielded room and was instructed to relax in a chair while the electrodes were connected to the appropriate

terminals. The subject was given head phones through which he received further instructions. The experimenter then left the room, and through the microphone, instructed the subject to relax.

The experimenter then began a shock work-up. This consisted of presenting the subject with an electric shock beginning with five volts and increasing its strength in five volt increments. The experimenter continued to raise the shock level until the subject reported the intensity to be "highly annoying, but not painful." No actual shocks were given for the remainder of the experiment.

The subject was then told to relax. He was informed that a tone would sound intermittently during the next few minutes, but he was to pay no attention to the tone. The purpose of sounding the tone was to bring about adaptation. Also during this time the polygraph was calibrated.

When it has been determined that the subject had adapted to the tone, and no longer showed a GSR response to it, the following instructions were read in order to bring about pseudoconditioning.

This part of the experiment involves a few electric shocks, the intensity of which you have just determined. No shocks will be given that are stronger than the intensity level you have previously set. A tone will sound, and immediately following the tone, there is a one in five chance that you will receive a shock. For each tone, the chance of shock will always be the same, one in five. This means that you might receive a shock on every tone, or you could receive no shocks at all. Do you understand? —

Three tones were sounded approximately 45 seconds apart,

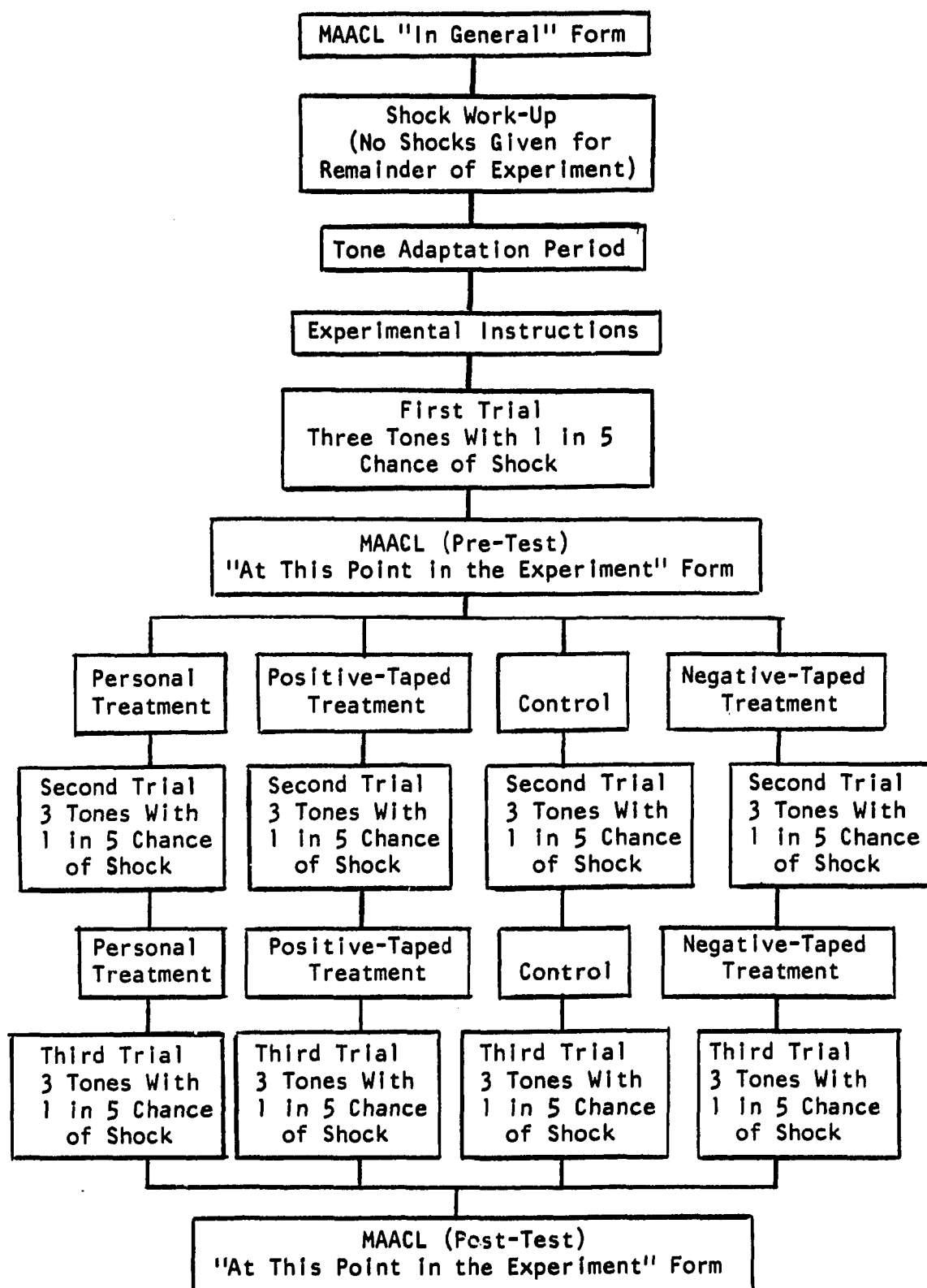
and the GSR responses to each tone were recorded. Each subject was then given the MAACL to measure his affective status "at this point in the experiment." The test took approximately five minutes to complete. These GSR responses and MAACL scores established the baseline for the experimental treatments.

Upon completion of the MAACL, each subject either received three minutes of RET from a therapist who entered the room, listened to a three minute tape recording of positive or negative RET through his head phones, or read a magazine for three minutes. (See Appendix A for a transcript of the taped treatments.) The personal RET treatment was given by a graduate student under the supervision of a counseling psychologist who had been trained in RET by Albert Ellis. Personal RET was identical to positive taped RET with the exception of some initial questioning with regards to the subject's present feelings. The same therapist conducted all treatment sessions.

After the three minute treatment period, each subject again received the above instructions, followed by three tones, again with the one in five probability of shock. The next minute again was devoted either to personal RET, taped RET, or control conditions. A final series of three tones followed.

Each subject then completed the MAACL, again measuring how the subject felt "at this point in the experiment." When the MAACL was completed, the subject was told that the experiment was finished, and the GSR and shock apparatus were removed. The subject was then interviewed to explore his reactions toward

TABLE 1.
DIAGRAM OF EXPERIMENTAL PROCEDURES



the various facets of the experiment. GSR and MAACL responses were discussed in detail. The experimenter explained the nature and purpose of the experiment, and all questions were answered. However, each subject was falsely told that he was lucky not to have received a shock, as there was indeed a one in five chance of shock. The shock was supposedly automatically controlled by three timers and was not under the control of the experimenter. This fabrication was to prevent future subjects from discovering that no shocks would be given. The experimenter's final task was to give each subject a complete interpretation of MBTI. (See Table 1 for a diagram of the experimental procedure.)

Design

The basic design for this experiment, was a 4×2 analysis of variance, using both GSR and MAACL difference scores. GSR difference scores were obtained by subtracting second trial GSR's from first trial GSR's, and by subtracting third trial GSR's from first trial GSR's. MAACL anxiety, hostility, and depression difference scores were obtained by subtracting MAACL post tests from pre tests. Through the use of difference scores, initial differences among the four groups were minimized.

The design allowed for a comparison of the main effects of treatment groups, subject personality type, and their interactions. Significant differences between the groups were determined by the Newman-Keuls method as described in Winer (1962).

Subjects were randomly assigned to the three groups, except for sex balancing. Within each treatment group S's were assigned to a box depending on their introversion-extroversion status.

The three therapy treatment groups and the control group were the manipulated or active independent variables. Assigned independent variables were sex and introversion-extroversion.

Two dependent variables were used: Galvanic Skin Response scores, and MAACL scores. The S's subjective evaluation of his feelings of anxiety and his feelings toward the therapist and the treatment were informally obtained at the end of the experiment.

CHAPTER IV

RESULTS

This chapter presents the findings of the study in five sections: (1) GSR difference scores, which represent differences before and after therapy in GSR scores, (2) GSR raw scores, (3) MAACL difference scores, which represent differences before and after therapy in MAACL scores, (4) MAACL raw scores, and (5) sex as an independent variable. Raw scores will be presented graphically, while difference scores will be statistically analyzed in addition to a graphic presentation. The analysis of difference scores from pre to post treatment on both GSR and MAACL measures provides the most stringent test of treatment effects, and partially controls for initial differences among groups. The analysis of the independent variable of personality type will be covered within each of the first four sections.

GSR Difference Scores

In order to determine whether the treatments were differentially successful in either increasing or decreasing GSR's, a 2 x 4 analysis of variance was performed using mean difference scores. Difference GSR scores were analyzed in two ways: (1) the difference between scores on the second trial and the first

trial (1-2), and (2) the difference between scores on the third trial and the first trial (1-3). Through the use of difference scores, initial differences among the groups were minimized. Analysis of covariance was rejected as a statistical technique because there was no known variable effecting initial differences among the groups.



Figure 2 presents the mean GSR difference scores for the four groups. As expected due to adaptation, the GSR's for all groups were less by the third trial as compared with the second trial. Figure 2 and Table 2 indicate that GSR's were substantially reduced by both personal RET and positive taped RET. The control GSR's produced little differences, and NT difference scores increased.

The 2 x 4 analysis of variance (Table 3) compares differences between the groups and the extroversion-introversion dimension. The extroversion-introversion variable had little effect on the GSR scores producing an uncommon F ratio of .00. The differences between the groups were highly significant ($p < .001$) in both 1-2 and 1-3 comparisons. The interaction between extroversion-introversion and the treatments was insignificant.

A Newman-Keuls comparison of individual group means (Table 3) revealed highly significant differences ($p < .01$) between the positive (P and PT) and negative (NT) treatments for both 1-2 and 1-3 comparisons. Difference scores comparing the second trial with the first trial (1-2) also found significant

TABLE 2.
COMPARISON OF GSR MEAN DIFFERENCE SCORES
FOR THE FOUR GROUPS

TRIALS COMPARISON	TREATMENTS			
	Personal	Positive Taped	Control	Negative Taped
First-Second	-.13	-.11	+.01	+.14
First-Third	-.23	-.24	-.05	+.04

 FIRST - SECOND TRIAL
 FIRST - THIRD TRIAL

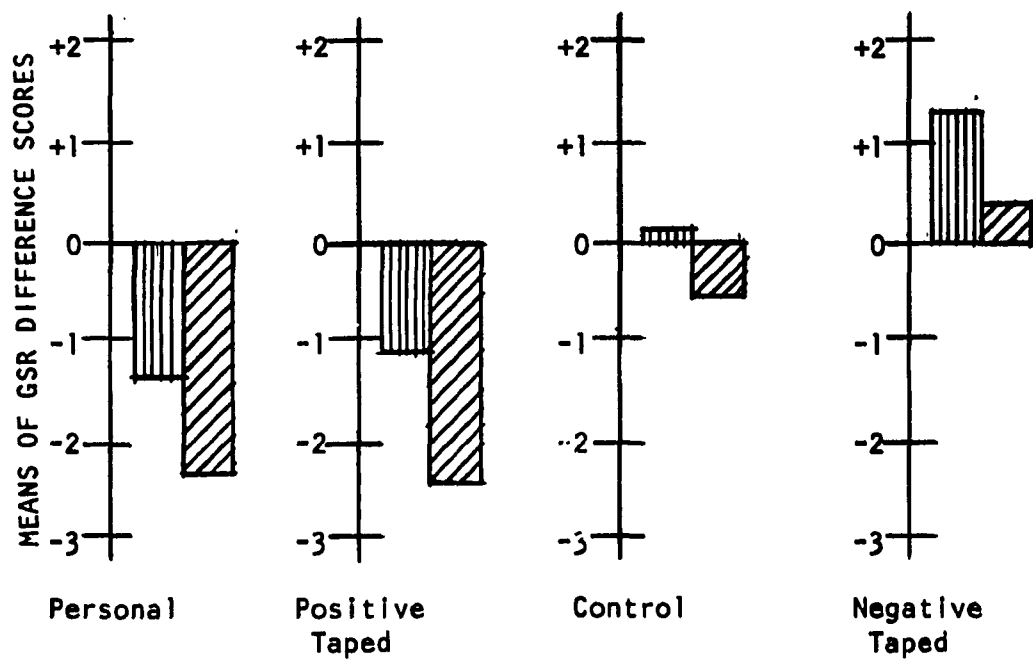


FIG. 2. Comparison of GSR Mean Difference Scores for the Four Groups.

TABLE 3.

ANALYSIS OF VARIANCE COMPARING
THE SECOND TRIAL WITH THE FIRST
TRIAL USING GSR DIFFERENCE SCORES

Source of Variance	df	MS	F	Comparison Between Treatment Means			
Personality Type (A)	1	.000	.00				
Treatments (B)	3	.246	6.83***	P	PT	C	NT
A X B	3	.033	.92			**	**
Within	56	.036		PT			**
				C			**
				NT			

**p<.01
***p<.001

ANALYSIS OF VARIANCE COMPARING
THE THIRD TRIAL WITH THE FIRST
TRIAL USING GSR DIFFERENCE SCORES

Source of Variance	df	MS	F	Comparison Between Treatment Means			
Personality Type (A)	1	.000	.00				
Treatments (B)	3	.290	6.44***	P	PT	C	NT
A X B	3	.003	.07			*	**
Within	56	.045		PT			**
				C			
				NT			

*p<.05
**p<.01
***p<.001

differences ($p < .01$) between the control group and the three treatment groups. In fact, the only two treatments that were not significantly different were the P and PT groups. Mean difference scores comparing the third trial with the first trial (1-3) found significant differences ($p < .05$) between the controls and the P and PT groups. However, the control group was not significantly different from the NT group. The P and PT groups again were not significantly different.

GSR Raw Scores

Figure 3 and Table 4 present the mean amplitude GSR scores for the four groups in the three trials. The four groups were exposed to the four conditions described as personal RET (P), positive taped RET (PT), negative taped RET (NT), and a control. Each trial was an average of GSR responses to three tones. The GSR amplitude was measured from .5 seconds after the sound of the tone to the highest point during the next five seconds.

As was expected, the one in five probability of receiving a shock after the tone was very effective in increasing GSR responsiveness. Merely instructing each subject that a shock might follow the tone increased the GSR from zero (during the tone adaptation period) to the high levels found in Figure 3. Thus, pseudoconditioning was an effective means with which to increase autonomic responsivity (anxiety).

Table 4 shows that there was little directional difference

TABLE 4.
MEAN GSR RAW SCORES FOR TREATMENT GROUPS
IN THE THREE TRIALS

PERSONALITY TYPE	TREATMENTS											
	Personal			Positive Taped			Control			Negative Taped		
Introverts	.53	.43	.30	.71	.54	.48	.61	.66	.57	.42	.52	.47
Extroverts	.50	.32	.26	.74	.69	.49	.30	.28	.24	.52	.69	.54
Combined	.52	.37	.28	.72	.61	.48	.45	.47	.40	.47	.61	.50
	1	2	3	1	2	3	1	2	3	1	2	3
	GSR TRIALS											

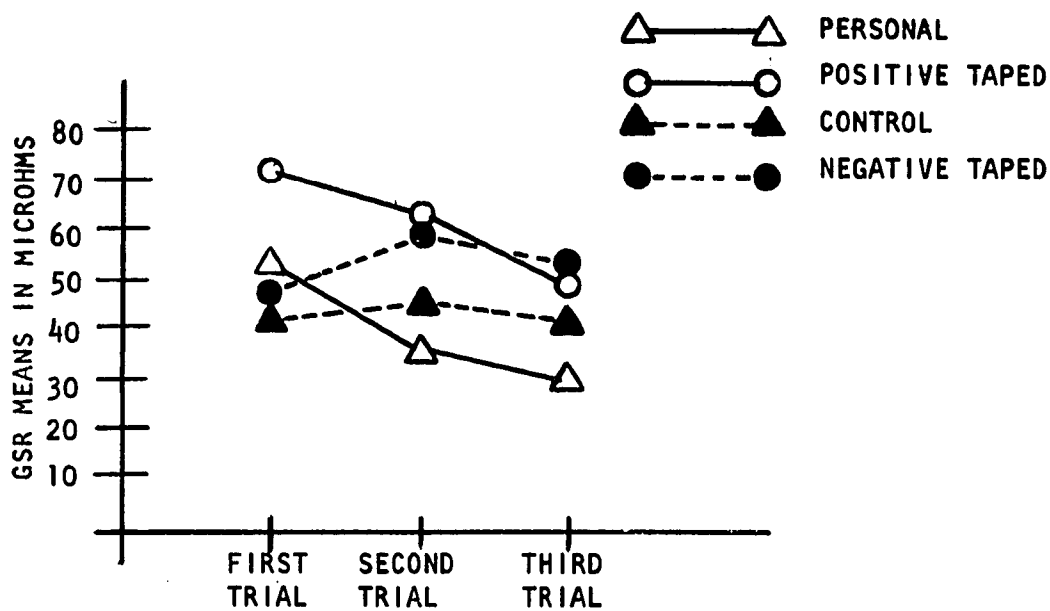


FIG. 3. Mean GSR Raw Scores for
Treatment Groups in the Three Trials.

over the three trials between introverts and extroverts. The only notable difference was that the introverted control subjects produced higher GSR responses than control extroverts. When introverted and extroverted subjects were combined, PT GSR scores were found to be noticeably higher than the other groups on the initial trial. Figure 3 indicates that both P and PT GSR's dramatically decreased on the second and third trials. Control GSR's increased slightly on the second trial but lowered by the third trial. The NT GSR's had a sharp rise from the first to the second trial. From the second to the third trial there was a large decrease in GSR. However, the NT GSR for the third trial was still larger than that for the initial trial.

Figure 4 and Table 5 compare the number of subjects in the four groups whose GSR's decreased during the second and third trials. As might be expected due to adaptation, more subjects had GSR decreases during the third trial as compared with the second trial. GSR's were noticeably reduced in both P and PT groups compared with the control group. During the second trial, the number of the GSR reductions in the NT group was substantially less than the controls. However, the NT GSR reductions were only slightly less than the control group by the third trial.

MAACL Difference Scores

During the experiment, each subject completed three MAACL

TABLE 5.

COMPARISON OF NUMBER OF SUBJECTS IN THE
FOUR GROUPS REDUCING GSR'S FROM THE
FIRST TO SECOND TRIALS AND
FROM THE FIRST TO THIRD TRIALS

	Personal	Positive Taped	Control	Negative Taped
Reduction Increase	13 3	11 5	7 9	4 12

FIRST - SECOND TRIAL

	Personal	Positive Taped	Control	Negative Taped
Reduction Increase	14 2	14 2	8 8	7 9

FIRST - THIRD TRIAL

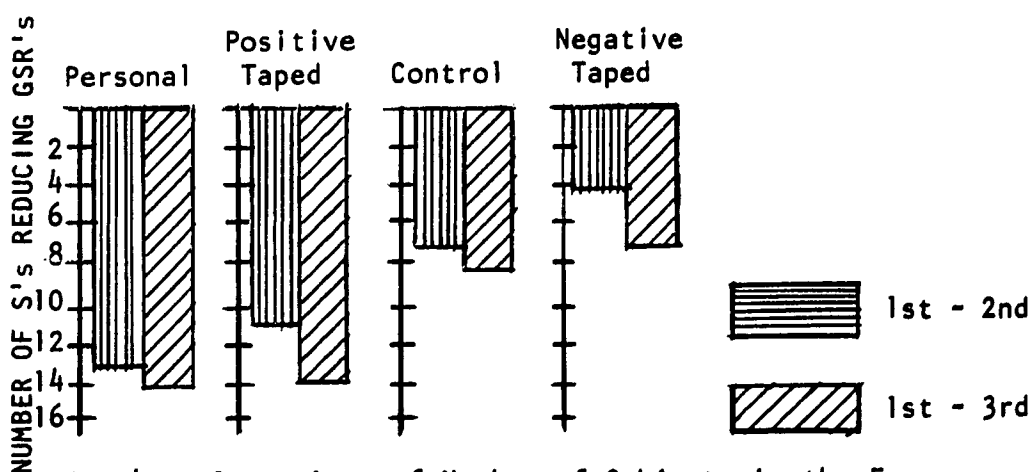


FIG. 4. Comparison of Number of Subjects in the Four Groups Reducing GSR's From the First to Second Trials and From the First to Third Trials.

forms. The first form, given when the subject first entered the laboratory, measured general or trait anxiety, hostility, and depression. The second form was given after the first trial, but before the treatments. It measured state anxiety, hostility, and depression and served as a baseline for measuring experimental affective change. The third form was given at the end of the treatments and had instructions identical to the second test. A comparison between the second and third tests was a measure of treatment effectiveness. A comparison of the first and second test showed whether the experimental situation produced affective changes from the subject's "general" affective state.

In order to determine whether the treatments were differentially successful and significantly different in either increasing or decreasing the affective states of anxiety, hostility, or depression, a 2×4 analysis of variance was performed using mean difference scores. The difference scores were obtained by subtracting post-treatment MAACL scores from pre-treatment scores.

Figure 5 and Table 6 present the mean difference anxiety, hostility, and depression MAACL scores for the four groups. Figure 5 indicates that the treatment conditions had their greatest influence on anxiety, producing the largest decrease in the positive treatments and largest increase in the negative treatment. Mean difference scores in hostility and depression

TABLE 6.
COMPARISON OF MEAN DIFFERENCE (PRE-POST) MAACL SCORES
FOR THE FOUR GROUPS

AFFECTIVE STATE	TREATMENTS			
	Personal	Positive Taped	Control	Negative Taped
Anxiety	-4.3	-3.6	-1.4	+3.4
Hostility	-1.0	-1.1	-0.1	+2.6
Depression	-2.4	+0.3	-0.3	+2.5

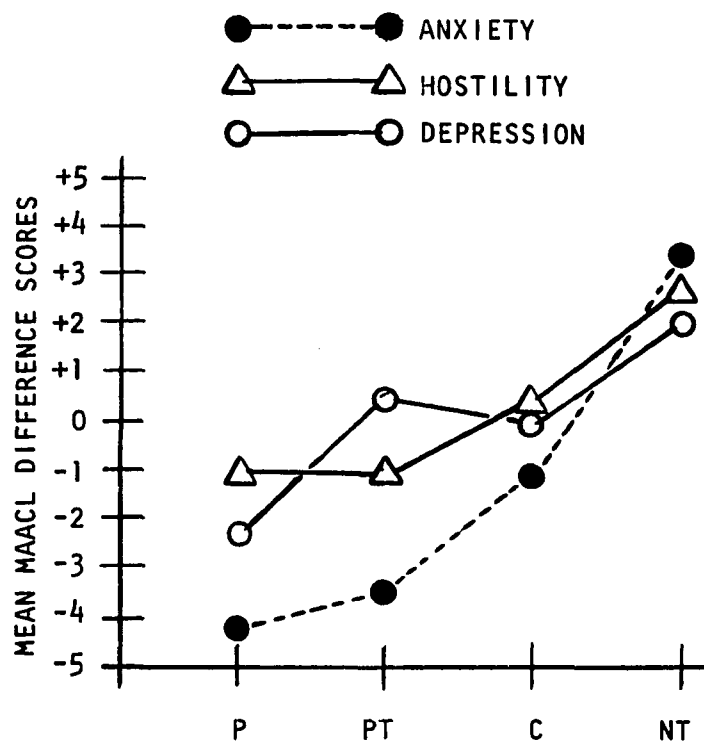


FIG. 5. Comparison of Mean Difference (Pre-Post) MAACL Scores for the Four Groups.

were remarkably similar in both the control and NT groups, but differed with the P and PT groups. The P group reported a significantly greater depression reduction than the PT group.

A 2 x 4 analysis of variance (Table 7) found the extroversion-introversion variable to have little effect on anxiety MAACL scores. However, there was a significant difference ($p < .0005$) among the four groups. A Newman-Keuls test (Table 7) found significant differences ($p < .01$) between the NT group and the other three groups. The P and PT groups reported significantly ($p < .05$) greater anxiety reductions than the control group.

Table 8 presents a 2 x 4 analysis of variance for MAACL hostility scores. The extroversion-introversion variable again was not a significant factor, but there were significant differences ($p < .005$) among the four groups. A Newman-Keuls test (Table 8) showed significant differences ($p < .01$) between the negative and positive treatments, and between the NT and the controls ($p < .05$). The P and PT groups did not differ significantly from the control group.

A summary of the analysis of variance from depression MAACL scores is presented in Table 9. Extroversion-introversion again was found to be an insignificant variable, and once again the differences among the groups was highly significant ($p < .001$). Unlike the emotions of anxiety and hostility, depression reduction was significantly ($p < .05$) greater with the P group compared with

TABLE 7.

ANALYSIS OF VARIANCE COMPARING MAACL ANXIETY
PRE AND POST TESTS USING DIFFERENCE SCORES

Source of Variation	df	MS	F	Comparison Between Treatment Means			
Personality Type (A)	1	.6	.07				
Treatments (B)	3	187.8	20.41***	P	PT	C	NT
A X B	3	13.4	1.46	P		*	**
Within	56	9.2		PT		*	**
				C			**
				NT			

* $p < .05$
 ** $p < .01$
 *** $p < .0005$

TABLE 8.

ANALYSIS OF VARIANCE COMPARING MAACL HOSTILITY
PRE AND POST TESTS USING DIFFERENCE SCORES

Source of Variation	df	MS	F	Comparison Between Treatment Means			
Personality Type (A)	1	3.1	.34				
Treatments (B)	3	48.7	5.46***	P	PT	C	NT
A X B	3	6.2	.70	P			**
Within	56	8.9		PT			**
				C			*
				NT			

* $p < .05$
 ** $p < .01$
 *** $p < .005$

TABLE 9.
ANALYSIS OF VARIANCE COMPARING MAACL DEPRESSION
PRE AND POST TESTS USING DIFFERENCE SCORES

Source of Variation	df	MS	F
Personality Type (A)	1	4.2	.45
Treatments (B)	3	65.9	6.95***
A X B	3	.4	.04
Within	56	9.5	

* $p < .05$

** $p < .01$

*** $p < .001$

Comparison Between
Treatment Means

	P	PT	C	NT
P		*	*	**
PT				*
C				*
NT				

both the PT group and the control group. In fact, controls reported slightly greater depression reductions compared with PT subjects. As was the case with the other affective states, significant differences existed between the NT group and the other groups ($p < .01$ with the P group and $p < .05$ with the PT and control groups).

MAACL Raw Scores

Trait emotions

On the "in general" MAACL (which supposedly measures trait emotions), introverts were almost twice as anxious, hostile, and depressed compared with extroverts (see Figure 6). However, introverts did not differ from extroverts on the two state MAACL tests.

Anxiety

The experimental situation dramatically increased anxiety MAACL scores (Figure 7 and Table 10). This was determined by comparing "general" anxiety means with pre-test anxiety means. The anxiety pre-test was a modified MAACL which instructed each subject to check those adjectives which described his feelings "at this point in the experiment." It measured state anxiety. Due to the high "general" anxiety level of introverts, they demonstrated less of an increase compared with extroverts between the general anxiety level and the pre-test level.

FIGURE 6.

COMPARISON OF MEAN GENERAL (TRAIT) MAACL RAW SCORES
FOR EXTROVERTS AND INTROVERTS IN THE FOUR GROUPS

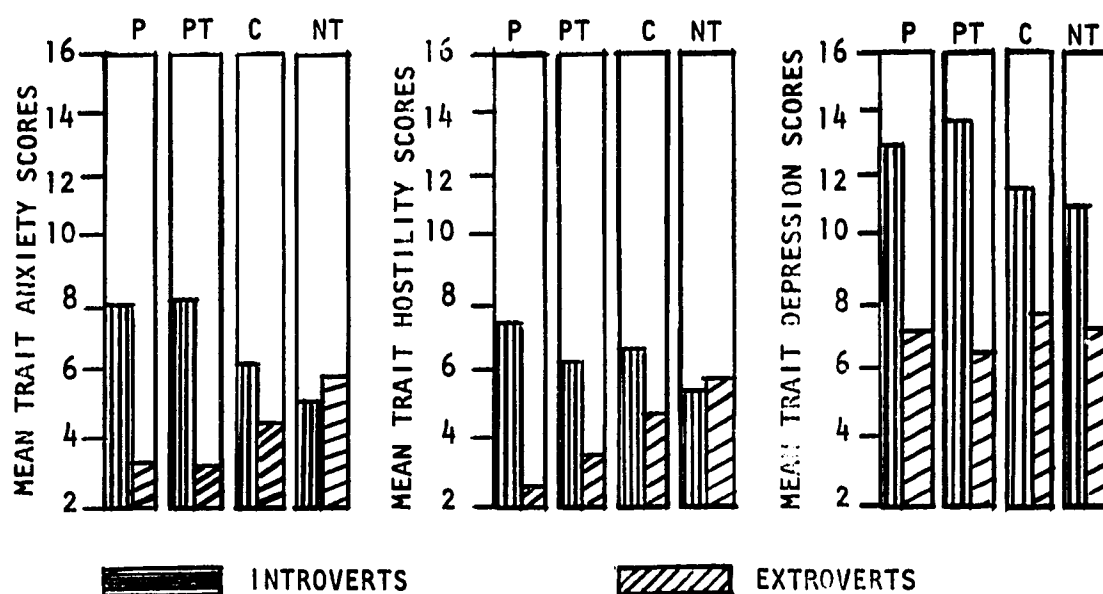


TABLE 10.

COMPARISON OF GENERAL, PRE AND POST MEAN MAACL
ANXIETY RAW SCORES FOR THE FOUR GROUPS

PERSONALITY TYPE	TREATMENTS											
	Personal			Positive Taped			Control			Negative Taped		
Introverts	8.1	11.6	6.3	8.0	8.9	5.4	6.1	6.0	5.6	5.1	8.5	12.3
Extroverts	3.8	9.8	6.6	3.1	7.5	4.6	4.3	8.8	6.3	5.8	8.9	11.8
Combined	5.9	10.7	6.4	5.6	8.2	5.0	5.2	7.4	5.9	5.4	8.7	12.0
	Gen	Pre	Post	Gen	Pre	Post	Gen	Pre	Post	Gen	Pre	Post

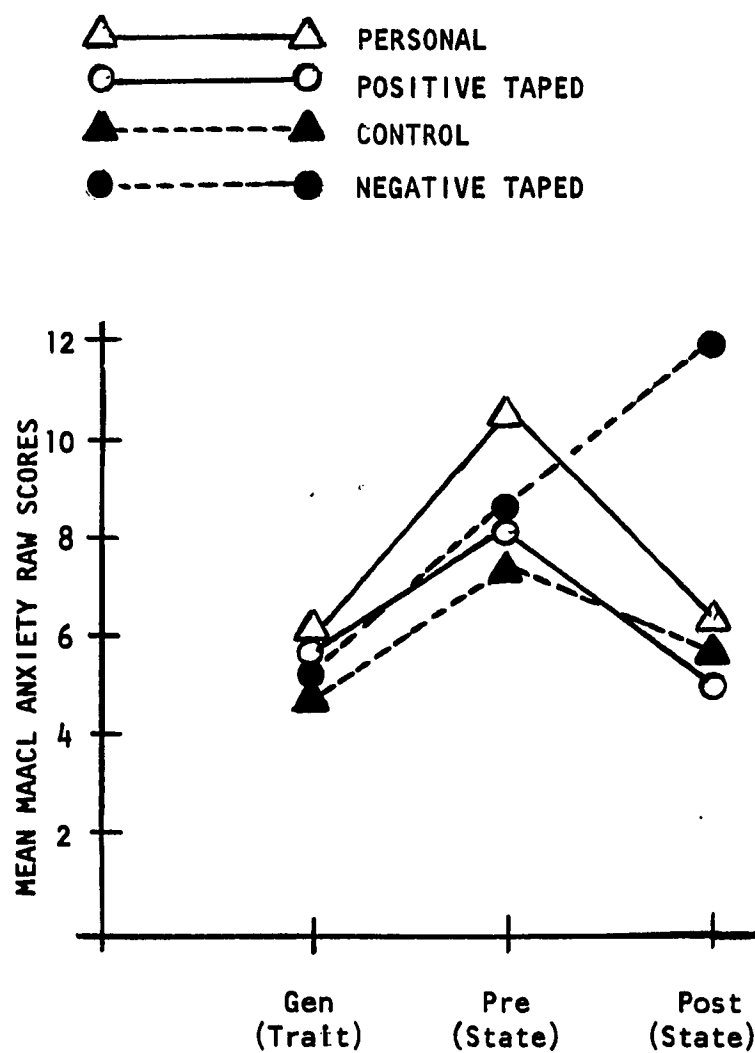


FIG. 7. Comparison of General, Pre and Post Mean MAACL Anxiety Raw Scores for the Four Groups.

State anxiety levels for both personal and positive taped groups were substantially reduced between the time of the pre and post tests. In fact, their post test anxiety level was similar to their general anxiety level. The negative taped group reported large anxiety increases between the pre and post-tests. Figure 7 shows the control group to have a greater anxiety reduction compared with the NT group, and less anxiety reduction compared with both the personal and positive taped groups. The introverts in the control group did not have an appreciable reduction in anxiety (Table 10). However, control extroverts were almost identical to the personal RET and positive taped groups in the amount of anxiety reduction.

Hostility

The experimental situation was able to dramatically increase MAACL hostility scores (compare general hostility means with pre-test means). As in the case with anxiety, this increase was greater with extroverts due to their initial low level of general hostility.

As indicated in Figure 8 and Table 11, both P and PT groups reported similar hostility reductions. The NT group reported large increases in hostility, while the control group retained the same level of hostility over the pre and post-test periods. Although the control group reported no change in hostility with the combined introversion-extroversion subjects, introverted

TABLE 11.

COMPARISON OF GENERAL, PRE AND POST MEAN MAACL
HOSTILITY RAW SCORES FOR THE FOUR GROUPS

PERSONALITY TYPE	TREATMENTS											
	Personal			Positive Taped			Control			Negative Taped		
Introverts	7.6	9.4	8.8	6.1	7.3	6.4	6.5	7.6	6.6	5.4	7.9	9.9
Extroverts	2.8	7.5	6.1	3.5	6.4	5.0	4.6	7.5	8.5	5.6	7.1	8.1
Combined	5.2	8.4	7.4	4.8	6.8	5.7	5.6	7.6	7.6	5.5	7.5	9.0

Gen Pre Post Gen Pre Post Gen Pre Post Gen Pre Post

△ ——— △ PERSONAL
○ ——— ○ POSITIVE TAPED
▲ - - - - ▲ CONTROL
● - - - - ● NEGATIVE TAPED

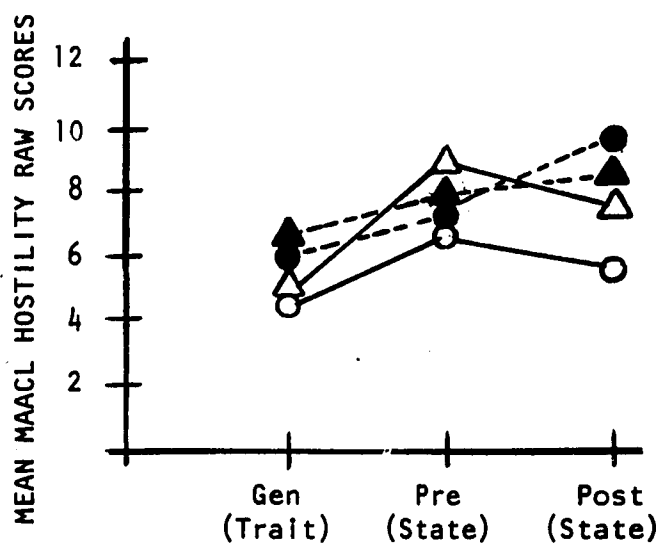


FIG. 8. Comparison of General, Pre and Post Mean MAACL
Hostility Raw Scores for the Four Groups.

control subjects paralleled the P and PT groups' hostility decrease, while extroverted control subjects followed the NT groups' hostility increase (Table 11).

Depression

The experimental situation was able to substantially increase MAACL depression scores. A reduction of depression was reported by the P group, while the PT group reported a slight increase in depression (Figure 9 and Table 12). The control group reported a slight depression decrease during the pre- and post-tests. NT depression scores rose dramatically over the same period.

Figure 10 and Table 13 compare the three affective states measured on the MAACL in terms of the number of subjects who showed a reduction in these emotions in each of the treatment groups. Fifteen of sixteen subjects in the P and PT groups reported anxiety reductions. Anxiety reduction was reported by twelve of sixteen controls while only two of the NT group reported reductions. The PT group had the greatest number of hostility reductions, twelve of sixteen. The P treatment was no more effective than the control group with nine reported reductions. Ten of the NT group increased in hostility. The P treatment was substantially more effective than both the PT and control groups in the number of subjects who reduced feelings of depression. In fact, the PT treatment was no better

TABLE 12.

COMPARISON OF GENERAL, PRE AND POST MEAN MAACL
DEPRESSION RAW SCORES FOR THE FOUR GROUPS

PERSONALITY TYPE	TREATMENTS											
	Personal			Positive Taped			Control			Negative Taped		
Introverts	12.9	17.4	15.1	13.9	12.1	12.8	11.4	12.1	12.2	10.8	12.6	15.6
Extroverts	7.1	14.3	11.6	6.5	10.1	10.0	7.8	14.9	14.3	7.5	11.4	13.6
Combined	10.0	15.9	13.4	10.2	11.1	11.4	9.6	13.5	13.2	9.1	12.0	14.6
	Gen	Pre	Post	Gen	Pre	Post	Gen	Pre	Post	Gen	Pre	Post

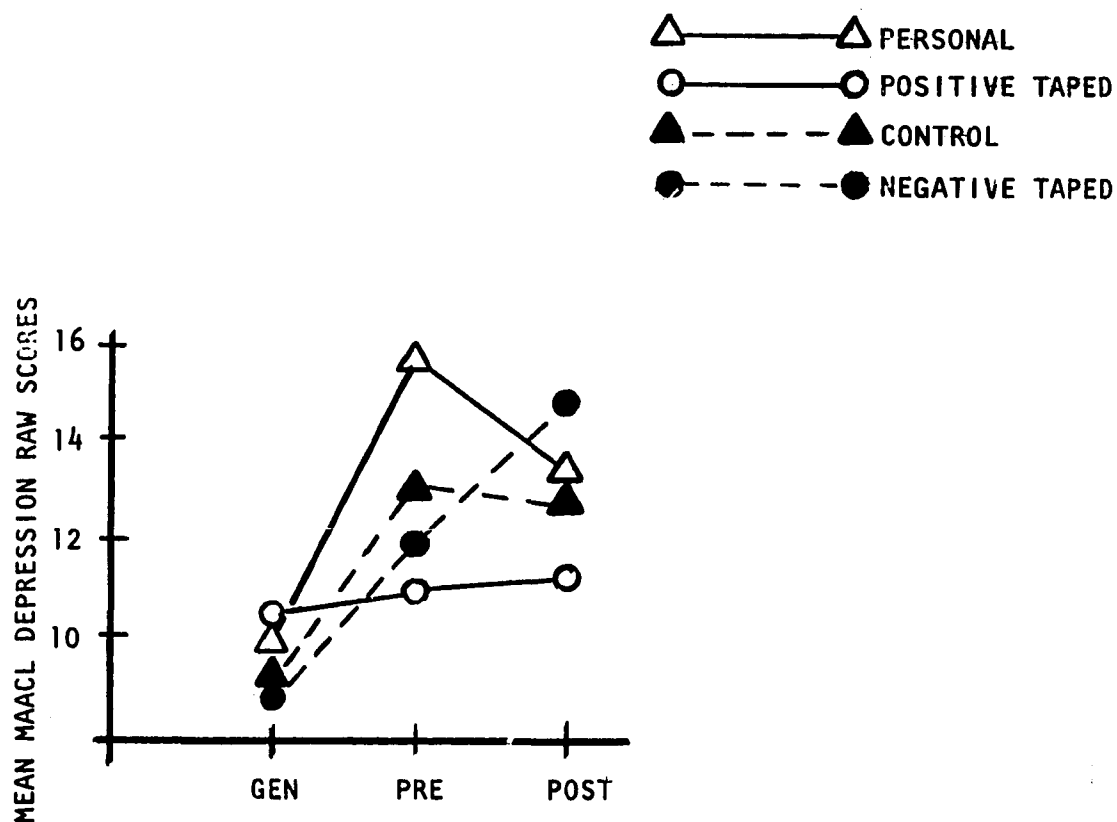


FIG. 9. Comparison of General, Pre and Post Mean MAACL
Depression Raw Scores for the Four Groups.

TABLE 13.

COMPARISON OF NUMBER OF SUBJECTS IN THE FOUR GROUPS
REDUCING MAACL AFFECTIVE STATES (PRE-POST TEST)

ANXIETY

	Personal	Positive Taped	Control	Negative Taped
Reduction	15	15	12	2
Increase	1	1	4	14

HOSTILITY

	Personal	Positive Taped	Control	Negative Taped
Reduction	9	12	9	6
Increase	7	4	7	10

DEPRESSION

	Personal	Positive Taped	Control	Negative Taped
Reduction	13	9	9	4
Increase	3	7	7	12

ANXIETY

HOSTILITY

DEPRESSION

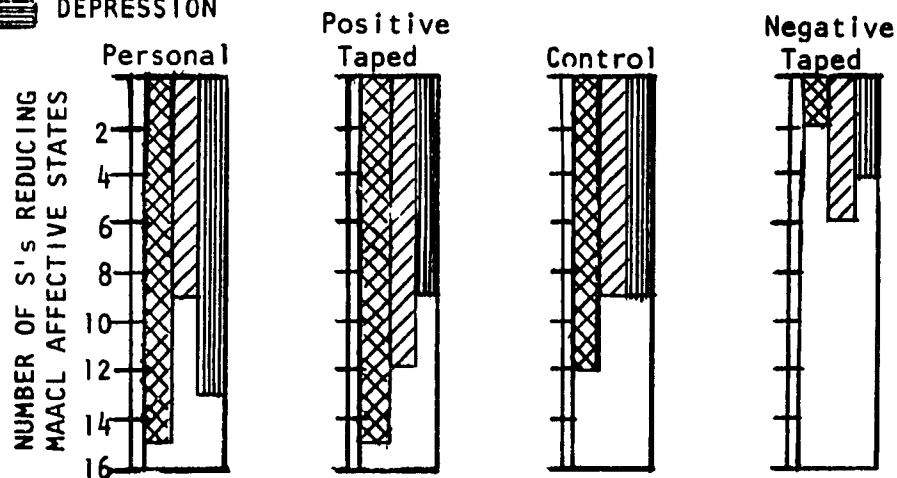


FIG. 10. Comparison of Number of Subjects in the Four Groups Reducing MAACL Affective States (Pre-Post Test).

than the control group with each reporting nine reductions in depression. The NT group reported only four such reductions.

In summary, reductions in affective states were remarkably similar with each treatment group. In general, the P and PT affect scores were noticeably reduced, with hostility scores lowest with PT subjects and depression scores lowest with P subjects. With each affective state, the control group reported more reductions than increases. The NT group consistently reported affective increases.

Sex as an Independent Variable

Extroversion-introversion proved to be an insignificant variable in the study, and so too was the sex variable. The effect of sex showed no consistent trend, and the GSR and MAACL data often contradicted one another. This was the case with the P group where the male subjects had a slightly greater GSR reduction compared with females, but were less effective than females in reducing anxiety on the MAACL. One other contradiction involved the NT group. A sex comparison between the second and first GSR trials revealed no differences. However, comparing the third and first GSR trials (Table 14), females demonstrated a greater GSR reduction than males. However, on the MAACL, NT females reported a greater anxiety increase. In the PT group, women demonstrated greater anxiety reduction than men on both the GSR and MAACL. Also with the

TABLE 14.

COMPARISON OF SEX DIFFERENCES FOR THE FOUR GROUPS
WITH MEAN GSR AND MAACL SCORES

SEX	TREATMENTS			
	Personal	Personal Taped	Control	Negative Taped
Female	-.10	-.15	+.01	+.14
Male	-.16	-.07	.00	+.13

First - Second GSR Trial

SEX	TREATMENTS			
	Personal	Personal Taped	Control	Negative Taped
Female	-.18	-.30	-.07	.00
Male	-.27	-.18	-.03	+.06

First - Third GSR Trial

SEX	TREATMENTS			
	Personal	Personal Taped	Control	Negative Taped
Female	-4.6	-3.9	-1.0	+3.9
Male	-3.9	-3.2	-0.2	+2.9

Pre - Post MAACL Anxiety Means

SEX	TREATMENTS			
	Personal	Personal Taped	Control	Negative Taped
Female	-0.7	-0.9	-0.5	+2.8
Male	-1.2	-1.4	+0.3	+2.5

Pre - Post MAACL Hostility Means

SEX	TREATMENTS			
	Personal	Personal Taped	Control	Negative Taped
Female	-2.4	+0.4	+0.1	+3.1
Male	-2.5	+0.1	-0.7	+1.9

Pre - Post MAACL Depression Means

control group, the females were better at reducing anxiety on both dependent measures.

CHAPTER V

DISCUSSION

Psychotherapists meet hourly with clients who are experiencing psychological stress. It would seem logical that experimental psychologists who have for years studied stress would have much to offer the psychotherapist. One of the more recent theories of psychological stress (Lazarus, 1966) emphasizes the importance of cognitive processes. A recent psychotherapeutic approach, Rational-Emotive Psychotherapy (RET) by Ellis (1962), takes a similar viewpoint.

This chapter will interpret the experimental results of Chapter IV through an integration of the psychological stress theories of Lazarus and Ellis' Rational-Emotive theory. Such an integration should give additional clarity, perspective, and meaning to RET.

The chapter is divided into seven sections: (1) the appraisal of threat, (2) manipulation of cognitive beliefs, (3) secondary appraisal and coping responses, (4) defensive responses, (5) the nature of experimental responses, (6) interpretation of independent variables and (7) the relationship of RET to other psychotherapy approaches.

The Appraisal of Threat

As was pointed out in Chapter II, in order for negative emotions to occur, each subject must appraise a situation as being terrible, awful, dangerous, etc.

According to Lazarus (1966), there are many factors which influence threat appraisal, only one of which is the belief system. However, Ellis holds that a person's belief system is the most important factor. Society indoctrinates each of its members to adopt its values and beliefs. It is therefore not surprising to find that most individuals reflect their societies' beliefs and, more specifically, the beliefs of their family and peers. Some of the more common beliefs tend to be highly irrational, and if adopted, could easily lead to anxiety and self-defeating behavior.

The irrational appraisal of threat is the major cause of anxiety and neurotic behavior. Psychoneurotic disorders typically develop when the individual makes an evaluation of certain common life stresses as dangerous and threatening, resulting in anxiety (Coleman, 1964). Neurotic defensive patterns develop to cope with the threat and anxiety.

In this experiment a condition was created in the laboratory which was assumed to approximate a state of anxiety. In such a setting, subjects' cognitive belief systems could be effectively manipulated. Individuals in our society learn to fear shock. Of course, if an electric shock is painful or dangerous, a fear

response is realistic. But in this experiment, fear responses occurred to shocks that were merely annoying but not painful. Since no shocks were given following the tone, the experimental situation also demonstrated that the mere expectation of shock can significantly increase anxiety. This is an example of pseudoconditioning.

It may reasonably be assumed that the experimental situation was appraised by most subjects as threatening. This assumption is supported by the dramatic increase in GSR from tone adaptation to the first trial. Support is also evidenced from MAACL scores. Each of the MAACL affective states increased in intensity from the "general" measurement to the "experimental situation" measurement.

In this experiment, the subject must have appraised the one in five probability of receiving a shock as a threat. He must have seen this situation as potentially harmful, dangerous, etc. in order to produce the observed increases in GSR and MAACL scores.

The importance of the concept of appraisal was demonstrated in the responses of two subjects who did not appraise the experimental situation as threatening. Both subjects stated that since the shocks were not painful, there was no reason to get themselves upset. This attitude was reflected in their almost non-existent GSR responses and low MAACL scores. In other words, these two subjects exhibited very rational beliefs about the situation. They appraised the situation realistically. Does this mean that

the other 62 subjects were irrational in this situation? Apparently so, although there was certainly a wide range in degree of responsivity among these subjects. The data (both GSR and MAACL results) clearly show that the vast majority of subjects had a negative emotional response to the probability of shock. However, these subjects varied widely in the degree of intensity of their responses. Perhaps some variation is due to individual physiological differences in the case of the GSR. Or perhaps it is due to different propensities of the individuals to be defensive on the MAACL. These explanations are probably all partially valid. However, the most reasonable explanation is that some individuals appraised the situation as more threatening than did others, and this appraisal was reflected on the two dependent measures. Thus, it appears that if an individual has irrational beliefs about a situation, these beliefs will influence every appraisal of the situation that he makes. Irrational beliefs will lead an individual to misperceive or mis-appraise a harmless situation as being threatening.

Manipulation of Cognitive Beliefs

If these assumptions concerning appraisal are true, and if a personal belief system greatly influences one's appraisals, then it follows that the most efficient means for changing appraisal of a situation, is to work directly at changing his belief system.

This was the main purpose of this study: to manipulate the belief system of subjects, thereby changing their appraisal of a situation, thus resulting in emotional change. In two treatments, personal RET (P) and positive taped RET (PT), the subjects' irrational beliefs about the experimental situation were attacked. It was predicted that their appraisal of the situation would become more realistic and rational, resulting in a decrease of negative emotions. A negative taped RET (NT) group received a treatment designed to reinforce the subjects' irrational beliefs concerning the situation. It was predicted that subjects would then begin to appraise the situation as threatening and result in an increase or at least the maintenance of negative emotional behavior. A group of controls read a magazine during the experiment treatment time. It was predicted that their appraisal of the situation would undergo little change, and that at most, negative emotional responses would reduce slightly due to adaptation to the experimental situation. Results measured by GSR's and the MAACL confirmed the predicted expectations.

Comments from subjects after the experiment help to explain the findings of the study. The vast majority of subjects who received positive treatments, (P) and (PT) groups, stated that the therapist had reduced their anxiety level. All subjects agreed with the therapist's statements, while only one subject reported that the statements were of little value in reducing anxiety.

Approximately one-third of the positive treatment subjects reported that the therapist merely repeated information which they were presently using. In other words, they believed that they were not appraising the experimental situation irrationally. Their reports appear to be accurate as they were consistent with relatively low GSR and MAACL responses. However, it is interesting that even these "rational" subjects had dramatic GSR increases on the first trial.

The remaining two-thirds of the positive treatment subjects reported that their appraisal of the situation was unrealistic, and that the therapist was very influential in modifying this appraisal. Many subjects reported that although they had begun to realize that the situation was not dangerous, it was still difficult to eliminate anxiety. Ellis (1962) would agree with these subjects, that anxiety reduction is not easy. It takes time and work. The human does not readily change life-long beliefs and habitual coping responses. However, our therapist was successful in a short period of time. A probable explanation is that the study focused on only one threatening situation. If we had focused on a more general problem, such as interpersonal anxiety (DiLoreto, 1969), additional therapeutic time may have been required for emotional change.

It is speculated that most subjects receiving positive treatment were apparently unaware of their own self-talk and irrational beliefs about the experimental situation. Their belief systems seemed to operate on an unconscious level. These unconscious

beliefs influenced their appraisals which in turn resulted in an intense emotional response. When the therapist pointed out the subjects' irrational beliefs, the subjects were able to make a more realistic reappraisal, thereby reducing their anxiety.

The NT treatment was effective in reinforcing and increasing a subjects' irrational beliefs. The result was a reappraisal or verification of the experimental situation as being threatening and dangerous, and an increase in negative affective responses.

At first glance, it might seem that dangerous is too strong a term. Adjectives such as afraid, panicky, and terrified were seldom checked on the MAACL. More commonly checked adjectives were tense, worrying, and nervous. However, when the magnitude of the GSR's are considered (especially on the second trial), it would seem that subjects must have been appraising the situation as dangerous. A defensive reaction perhaps explains why the high GSR response is not always reflected in the check list.

From the second trial to the third trial, there was a sharp affective drop with NT subjects. While adaptation may be a logical explanation, on informal inquiry after the experiment, many subjects reported their belief that there would be no shocks by the seventh tone. Despite the anxiety decrease from the second trial to the third trial, the anxiety level on the third trial was still slightly greater than that on the first trial. The anxiety responses of NT subjects were greater than the controls throughout the experiment.

The control subjects received no treatment, and they reduced anxiety only slightly during the experiment. Controls differed from the treatment groups in one interesting aspect. Many of them reported that they tended to guess when the shock might occur. Their guesses were easily discernable from the magnitude of the GSR's on a particular tone. This guessing game was probably more prevalent in the control group because the subjects in it had been given no ideas to consider by the therapist. The treatment groups were probably thinking about the therapist's instructions and had little time for guessing.

This study showed that a subject's emotional behavior can be influenced by an experimenter manipulating or changing the subject's belief system. This observation should have a profound impact on psychotherapy whose purpose is generally to change emotional behavior. It would appear that those psychotherapeutic approaches that tend to ignore belief systems and the importance of cognitive processes are overlooking a valuable means by which emotional and behavioral change can take place. In fact, it may be the most efficient and effective way to change emotional behavior.

Secondary Appraisal and Coping Responses

In Chapter 11, secondary appraisal was defined as an individual's perception of his ability to cope with a threatening situation. If an individual feels that he has the means to

escape from, or even reduce the threatening situation, his emotional response will decrease. It also follows that an individual who perceives himself as having no adequate coping response to a threat will experience an increase in negative emotion.

It is suggested that the experimental treatments were able to influence each subjects' secondary appraisal of available coping responses. Thus, in the P and PT treatments subjects were "taught" that they could easily stand the experimental situation. Many subjects reported that they began to believe that if they were to receive a mild shock, it was not that important. They began to think that it "was no big deal." Thus, they appraised that they would easily be able to cope with the one in five shock probability. The NT group apparently led themselves to believe that there was little they could do to cope with the perceived threatening situation. The NT therapist gave his subjects no realistic coping suggestions. It therefore appears that NT subjects appraised that they had no adequate coping response to the shock probability and had no alternative but to suffer and wait it out.

Thus, the results of the study seem to be consistent with the cognitive appraisal theory. Positive treatment subjects who appraised that they had adequate coping responses to the situation were able to reduce negative emotions, while NT and control subjects, who apparently appraised that no adequate

coping response was available, generally maintained or increased negative affect.

Defensive Responses

Anxiety can also be reduced by defensive reappraisal. If a subject was able to successfully employ defense mechanisms, his appraisal of a situation as threatening was altered, and his anxiety subsequently subsided.

One of the most common defenses used by subjects was denial. Many subjects reported that they tried not to think about the shock when the tone sounded. As might be expected, this defensive maneuver was successful for some and not others.

Several subjects were able to completely deny their affective reactions on the MAACL but not on the GSR. These subjects denied feeling anxious, hostile, or depressed at any time during the experiment. When confronted with conflicting GSR responses, the subjects expressed disbelief at the magnitude of their responses which were similar to those found by Lazarus and Alfert (1964). They reported that subjects who scored highest on the Denial scale of the MMPI gave high GSR responses to a shock situation while showing few anxiety responses on the Nowlis Anxiety Check List.

As was mentioned in Chapter II, physiological measures generally have a low correlation with pencil and paper tests. A .27 correlation existed between GSR scores and the anxiety

MAALC scale in this experiment. Subject defensiveness provided a partial explanation for the low correlation between the criterion measures.

The Nature of Experimental Responses

Anxiety is a central concept in the understanding of neurotic behavior. When a stimulus is found to be realistically threatening, we tend to speak of fear rather than anxiety. Although the term is rather loosely defined in the literature of psychopathology, anxiety is generally used to refer to a fear reaction pattern when it is made in the presence of stimuli which are not intrinsically threatening (Maher, 1966).

Anxiety can occur as the result of both primary and secondary appraisal. In this experiment, each subject irrationally appraised the probability of mild electric shock as threatening. Thus, according to Maher's definition of anxiety, the subjects responded with anxiety and not fear.

Lazarus (1966) defined anxiety as a coping response to an ambiguous threat. In this experiment the shock was indeed ambiguous since the subjects did not know when they would actually receive the shock. It was the constant waiting for the shock that was probably anxiety producing. In fact, many subjects reported desiring to receive a shock just to relieve the tension that developed.

The problem of differentiating between fear and anxiety is complicated further when secondary appraisal and coping processes

are considered. With fear, an action tendency of withdrawal is evident. With anxiety, there is usually confusion on how to cope with threat, even though there is some tendency toward withdrawal. Subjects in the experiment seemed to show confusion as to how to cope with the threat of shock. This might indicate anxiety instead of fear. Some subjects may have wished to withdraw from the experiment. (They were told at the beginning of the experiment that they could leave at any time.) Since no subjects did leave, it must be assumed that the threat was not great enough to overcome the situational constraints against leaving.

High intercorrelations (.46 between anxiety and hostility; .61 between anxiety and depression; and .82 between hostility and depression) among the three MAACL scales reveal that the test is only partially successful in separating the three affects. The possibility of a common underlying trait is also raised by the intercorrelations. The high correlation between hostility and depression can perhaps be explained in that depression is often the result of hostility which is self-directed.

Thus, whether a subject was feeling anxiety, fear, hostility or depression was difficult to determine. Certainly the information could not be obtained from GSR scores. The MAACL scores gave some indication. But while the MAACL supposedly measured hostility and depression, fear responses (such as fearful and terrified) were labeled anxiety on this check list.

Interpretation of Independent Variables

In Chapter II, Lazarus (1966) theorized and cited evidence for his position that personality factors are important in both primary and secondary appraisal. However, he concluded that many personality factors remain unknown. Because of the significant results of DiLoreto's study, the personality dimension of extroversion-introversion was included as an independent variable in the study.

It will be recalled that extroversion-introversion factors did not influence differences in the criterion measures in terms of statistical significance. The lack of significant differences on this variable may be due to a number of factors. When DiLoreto found RET to be more effective in reducing anxiety with introverts compared with extroverts, he was working with groups in a college counseling center. Also DiLoreto's subjects were seeking counseling to help resolve a common problem (interpersonal anxiety), while subjects in this study were not seeking counseling. Their anxiety was experimentally induced. The most obvious difference between DiLoreto's research and this study was the difference in treatment time. DiLoreto saw his subjects for a total of ten hours over a ten week period. The present study involved only four minutes of treatment.

In this study, introverts tended to report slightly greater (but not significant) anxiety reductions than extroverts, especially on the MAACL. The sex variable did not contribute

to significant differences in the criterion. Slight differences in the treatment groups were observed when females were compared with males. An inspection of MAACL scores indicated that a slightly greater anxiety reduction occurred with female subjects. Had the treatments been continued for a longer period, the differences on these variables might have been significant. Additional research on these variables is needed.

The Relationship of RET to other Psychotherapy Approaches

The findings of this study indicate that therapists not utilizing RET principles should begin to appraise their methods of conducting psychotherapy. Most therapists would agree that their ultimate psychotherapeutic objective is behavior change. In this study, RET was found to be an effective agent in producing this change. Based on evidence from this study, it would appear that therapists would do well to focus on a client's appraisal and belief system as a valuable clinical tool.

Behavior therapists have been very effective in changing behavior without concerning themselves with such matters as threat appraisal, cognitive belief systems, and coping processes. However, it is possible that many of the changes that clients make in behavior therapy are the result of changes in the client's belief system. One can only speculate how much more effective behavioristic techniques would be if used in combination with RET. It seems reasonable, that with these combined techniques,

clients would begin to develop some insight into their behaviors. With insight, clients could begin to take responsibility for their behaviors.

However, it is not enough just to achieve insight into why a particular behavior occurs. A therapist must also direct his client to examine if his appraisal of threat is accurate and rational. In addition, the client must determine if his appraisals of available coping responses are rational, attainable, and not self-defeating.

The use of RET might also reduce the possibility of symptom reoccurrence or substitution which is a major unproven criticism of the behaviorists. Once a client is able to understand the cognitive appraisals that underlie his behavior, he will be less likely to develop different symptoms with the same underlying causes.

Thus, if a client wants to rid himself of a handicapping symptom, it would seem reasonable to first change the client's belief system, which helped to create and maintain the symptom. The only result can be a more permanent, stable adjustment for the client. When anxiety arises in the future, he need only ask himself, "Am I appraising this situation irrationally?" The client begins to act as his own therapist and does not need to run to others everytime he is faced with anxiety.

This is not to say that a client will never again experience anxiety. But once a client realizes the irrationality of his appraisals, it will be very difficult for him to maintain anxiety.

There is a popular belief that a therapeutic relationship is both necessary and sufficient for behavior change. Perhaps the therapeutic relationship alone can help some clients. But why not make additional use of proven therapeutic techniques such as operant conditioning, desensitization, and RET? To state that a therapeutic relationship is both necessary and sufficient to bring about behavioral change is an extremely narrow, inefficient viewpoint.

Rather than concentrate on obtaining and maintaining the "proper" relationship, it might be more beneficial to focus mainly on helping a client to change his belief system and thus his behaviors. Once a client perceives that the therapist is interested in him and is able to give the needed help, a facilitative relationship may be a consequence. After all, the client comes to a therapist because his feelings and behaviors are causing problems. It could be very frustrating for the client if the therapist's main goal is to build a relationship, while the client only wishes to rid himself of handicapping feelings and behaviors. This is not to minimize the importance of a "good" relationship (whatever it is), but certainly there is more to "good" psychotherapy.

This study demonstrated that taped RET was just as effective as personal RET in reducing negative emotions. Relationship theorists may however explain the PT anxiety reductions in terms of a man-machine relationship. Theoretically a subject could form a relationship with a tape recorder as well as with a

therapist. Since NT subjects demonstrated and reported emotional increases, these subjects apparently formed a negative man-machine relationship. Thus, all emotional change can be explained in relationship terms. However, these abstract concepts are not particularly useful in describing what actually happens to change emotions. Reductionistic theories such as RET begin to more fully explain these changes.

It was not the purpose of this study to prove or disprove the importance of relationship factors in behavior change. With only four minutes of contact with a subject, the therapist could hardly be expected to form a therapeutic relationship. In this short period of time, the "personal" therapist was only able to demonstrate some concern for the subject's situation and to receive some subject feedback. Perhaps even this limited personal contact explains why the P group reported slightly greater MAACL anxiety reductions than the PT group, and reported a significant reduction in depression compared with PT subjects.

The study did demonstrate that a personal relationship is not always necessary for emotional change. A tape recording was just as effective under this circumstance. The use of a tape recording appears to be particularly valid with didactic therapies such as RET. Further research studies are needed to discover if tape recordings can be a valuable adjunct to other therapeutic approaches. With today's increasing pressures for a therapist's time, the tape recording might be an effective way to alleviate some of this burden.

The study has six basic conclusions: (1) that the appropriate manipulation of expectancy can produce a negative emotional response in a laboratory setting, (2) that a therapist can manipulate a subject's cognitive belief system to either decrease or increase negative emotional responses, (3) that therapeutic procedures in a laboratory setting, based on RET principles, are highly effective in reducing negative emotions, (4) that personal contact with a therapist is not a necessary condition for reducing negative emotions, (5) that RET procedures were equally effective in reducing negative emotions with both extroverts and introverts, and (6) that many of the theoretical and empirical findings in psychological stress research can be applied to Rational-Emotive Psychotherapy.

CHAPTER VI

SUMMARY

One purpose of counseling or psychotherapy is to reduce handicapping, negative emotions. Many therapeutic approaches have been devised to accomplish this goal. A relatively new approach, Rational-Emotive Therapy (RET), has been formulated by Albert Ellis, who believes that emotions can be controlled and changed most effectively by examining the irrational belief system underlying each negative emotional state. This aggressive, didactic form of therapy teaches clients to adopt a more rational belief system. Although many principles underlying RET have been empirically studied, especially by psychological stress researchers, RET as a therapeutic approach has received little empirical investigation.

This study had four main purposes: (1) to examine the effect of expectancy in producing experimental anxiety, (2) to determine if a therapist, through his instructions to a client, can influence the client's internal belief system and thus manipulate experimental anxiety, (3) to determine if personal contact with a therapist is a necessary condition for reducing negative emotions, and (4) to examine the relative effectiveness of RET with extroverted and introverted personality types.

Experimental anxiety was induced by the expectancy of

receiving an electric shock and was measured by Galvanic Skin Response (GSR) and the Multiple Affect Adjective Check List (MAACL). A tape recording of RET was compared to RET with a live therapist to determine the influence of personal contact upon therapeutic effectiveness. The Myers-Briggs Type Indicator was used to verify a previous finding that RET is significantly more effective with introverts and compared with extroverts.

Subjects were placed in a small room where stimuli could be controlled while their GSR was continuously measured on a polygraph. The expected shock level was predetermined by each subject as annoying, but not painful; without being paired with a tone and prior to adaptation to the tone. Experimental anxiety was created by exposing subjects to tones with the expectancy of a one in five probability of shock.

Subjects were randomly assigned to three treatment groups and a control group. One treatment group received RET from a therapist who was in personal contact with the subject. The other treatment groups received tape recordings of therapy, a positive tape (PT) designed to attack and change the subjects' irrational beliefs and a negative tape (NT) designed to reinforce the subjects' irrational beliefs. A control group read a magazine during the treatment period.

An analysis of variance found the treatments to be significantly ($p < .001$) different on both the GSR and MAACL. On the GSR, both personal (P) and PT groups experienced a

significantly ($p < .01$) greater anxiety reduction than controls, while NT GSR's were significantly ($p < .01$) higher than controls. NT subjects also reported significantly ($p < .01$) increased anxiety, hostility, and depression on the MAACL as compared with the other groups. Personal subjects reported a significantly ($p < .05$) greater MAACL depression reduction than the other groups. The P, PT, and controls were not significantly different on the MAACL hostility scores but the NT group had a significant increase in hostility. P and PT subjects reported significantly ($p < .05$) greater anxiety reductions on the MAACL as compared with the controls.

The PT groups experienced as much anxiety reduction (both MAACL and GSR) as the personal group. Thus, personal contact was not a "requisite condition" for emotional change. The independent variables of personality type (Extroversion-Introversion) and sex were insignificant throughout the study.

The study has six basic conclusions: (1) that the appropriate manipulation of expectancy can produce a negative emotional response in a laboratory setting, (2) that a therapist can manipulate a subject's cognitive belief system to either decrease or increase negative emotional responses, (3) that therapeutic procedures in a laboratory setting, based on RET principles, are highly effective in reducing negative emotions, (4) that personal contact with a therapist is not a necessary condition for reducing negative emotions, (5) that RET procedures

were equally effective in reducing negative emotions with both extroverts and introverts, and (6) that many of the theoretical and empirical findings in psychological stress research can be applied to Rational-Emotive Psychotherapy.

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APPENDIX A

RATIONAL-EMOTIVE PSYCHOTHERAPY TAPED TREATMENTS

FIRST POSITIVE TAPED SESSION

You have been placed in a situation which is for most people extremely anxiety producing. But what exactly has created your anxiety? Most people would say that it is the fear of shock that might follow the tone. Thus when you hear the tone, you become anxious. But it is not the tone itself which causes your anxiety. Rather it is your own self talk about the shock, your ideas or beliefs about the shock. You tell yourself that the shock is awful, terrible, horrible, dangerous, etc. Thus, you choose, by your own beliefs or self-talk, to define this situation as awful. You could just as easily define the situation as merely annoying or at most somewhat unpleasant.

Here is an example of how the way in which you define a situation can influence your emotions. Suppose you step out of an elevator and suddenly a stick strikes you across the shins. What's your immediate reaction? Probably anger. Then you look up and find that the man with the stick is blind. You then feel pity or perhaps guilt. But what happened to your anger? It is how you defined the situation at that time that determined your feelings.

It is the same situation with the shock. If you define the tone with its shock probability as a terrible, dangerous situation, then you will have an intense emotional reaction. If you define the situation as merely annoying and unpleasant, you will

not have such a strong emotional reaction. In this experimental situation, an intense emotional reaction would only be understandable if you knew that the shock would be damaging, burning or lethal. People are going to naturally avoid such situations. However, you know that the shock used in this experiment is not dangerous because you have set its level of intensity yourself. Up until now, you have been over concerned about a shock that you yourself originally defined as "annoying, but not painful" and that is far from being dangerous.

In a few minutes, the experimenter will be giving you another series of tones. Remember you know intensity of the shock and you know that it is neither painful nor dangerous. And remember, if you do receive a shock, it might be annoying, but certainly you can easily stand it. With this new attitude, that the shock is really not that bad, that you can easily stand it, you will find yourself becoming increasingly relaxed when the tone sounds. (2 minutes, 45 seconds)

SECOND POSITIVE TAPED SESSION

After this second series of tones, most people find that any shocks they may have received were really not that bad. In fact, many people actually look forward to receiving a shock so that they can prove to themselves that receiving a mild shock is no big thing, and that they can easily stand it.

I am certain that if you were able to see how irrational your thoughts about the terribleness of shock really are, then you were able to reduce your emotional reaction. In a few minutes, you will again receive some tones which may be followed by a one in five chance of shock. Remember if you still fear shock, you must realize that your overconcern is rooted in your own negative self talk, in your telling yourself that shocks are dangerous, that if you did get shocked, you wouldn't be able to stand it.

Again, remember if you do receive a shock, it might be annoying or unfortunate, but certainly you can easily stand it. With this new attitude, that the shock is really not that bad, that you can easily stand it, you will find yourself becoming increasingly relaxed when the tone sounds. (1 minute, 10 seconds)

FIRST NEGATIVE TAPED SESSION

You have been placed in a situation which is, for almost all people, extremely anxiety producing. Your upsetness is certainly understandable because this situation could be, as you think about it, possibly dangerous. For example, it might be very possible, for the equipment to malfunction and you could receive a very painful, burning shock after the tone. As you sit and think about this, every time the tone sounds, you will automatically have an intense emotional reaction.

You probably wish that you knew what the experiment was all about. Because you don't know the purpose of the experiment, you don't know what to expect next, and this is naturally upsetting. You don't know if you can really trust the experimenters, if they really know what they are doing. They might be playing tricks on you. They might be trying to see how brave you are, or how much pain you can stand. They might really turn the shock up and give you a really painful shock. Many horrible things could happen when you think about it. Besides, just how competent are the experimenters. Something might go wrong with the instruments even if they mean well. And what if they couldn't turn the shock off? Also it is upsetting not knowing how you might react to the shock. What if you had an unfortunate reaction to it?

This is an especially horrible situation because you are really trapped in the experiment, held down, connected by wires.

You probably wonder how you ever got yourself into such a mess. Even though you originally set the shock at a level that was merely annoying, as you now think more and more about that shock, you realize that it is more than annoying. In fact, it is really painful. Thus, it is understandable that you are feeling more and more anxious as you think about this situation. For not only might you be physically hurt, but the waiting for the shock to happen makes the situation even worse. It's very terrible to have to wait time after time for that tone to sound and to see if that painful shock will follow. Soon the experimenter will begin another series of tones. (2 minutes, 30 seconds)

SECOND NEGATIVE TAPED SESSION

Now that you have been exposed to another series of tones with its high probability of shock, I am certain that you will agree that this is indeed a very upsetting experience. If you only knew when the shock was coming, you could probably prepare for it. But since you don't, almost everyone in this situation becomes more and more anxious. Most subjects also agree that the shock is much more painful than they had originally anticipated. Of course it isn't just pain that you must worry about. Because you don't know when the shock is coming, when the shock does come, it startles or scares you. Along with the fact that the experimenter might make a mistake or might try to trick you, the unpredictability and painfulness of the shock are the factors that make this a most upsetting, anxiety-producing situation.

Another series of tones with the high one in five probability of shock will now begin. (1 minute, 5 seconds)

APPENDIX B

TABLE OF RAW SCORES

APPENDIX B
TABLE OF RAW SCORES
Key for Raw Score Tables

Letter	Letter Designation
A	First Tone - First GSR Trial
B	Second Tone - First GSR Trial
C	Third Tone - First GSR Trial
D	First Tone - Second GSR Trial
E	Second Tone - Second GSR Trial
F	Third Tone - Second GSR Trial
G	First Tone - Third GSR Trial
H	Second Tone - Third GSR Trial
I	Third Tone - Third GSR Trial
J	MAACL Trait Anxiety
K	MAACL State Anxiety Pre-Test
L	MAACL State Anxiety Post-Test
M	MAACL Trait Hostility
N	MAACL State Hostility Pre-Test
O	MAACL State Hostility Post-Test
P	MAACL Trait Depression
Q	MAACL State Depression Pre-Test
R	MAACL State Depression Post-Test
X	Unmeasurable GSR Response

PERSONAL GROUP RAW SCORES

INTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	X	.80	.50	.90	.60	.35	.30	.25	.35	5	15	7	6	10	10	7	21	21
2	.70	1.2	.75	.80	.40	.65	.37	.00	1.2	15	15	7	4	9	10	18	20	20
3	.65	.55	.50	.55	.55	.50	.70	.55	.70	14	16	8	12	9	10	12	18	16
4	.40	.25	.25	.17	.25	.25	.25	.15	.12	8	14	6	10	11	10	20	19	13
5	.33	.23	.25	.14	.12	.14	.17	.15	.13	11	12	11	11	11	10	19	17	19
6	1.0	.90	.90	.85	.35	.50	.50	.40	.00	4	5	3	5	7	6	11	12	12
7	.20	.40	.55	.55	.55	.50	.20	.35	.20	7	11	3	9	9	4	10	17	9
8	.40	.25	.25	.50	.10	.08	.02	.02	.15	1	5	5	4	9	10	6	15	11

EXTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	.08	.08	.05	.13	.13	.09	.05	.09	.05	0	18	12	1	12	5	1	15	9
2	.35	.35	.20	.30	.35	.35	.40	.35	.20	3	10	6	2	5	9	3	12	13
3	.45	.28	.05	.15	.13	.00	.20	.10	.00	1	12	8	1	5	7	3	15	12
4	1.2	.80	.70	.40	.60	.70	.50	.60	.60	5	9	6	1	9	3	4	15	12
5	.50	.65	.55	.40	.40	.40	.40	.45	.25	6	8	6	3	6	8	15	15	14
6	1.0	1.4	1.0	.60	.70	.40	.50	.25	.12	5	5	5	8	7	7	13	17	15
7	X	.45	.70	.40	.60	.15	.25	.45	.30	1	2	2	2	4	4	4	5	4
8	.25	.18	.25	.13	.10	.08	.00	.05	.06	9	14	8	4	12	6	14	20	14

POSITIVE TAPED GROUP RAW SCORES

INTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	.70	.60	.85	.60	.50	.20	.40	.35	.05	8	15	9	6	12	12	14	18	19
2	.18	.30	.15	.30	.25	.02	.03	.00	.00	8	10	4	6	10	10	14	16	15
3	1.1	.95	.80	.80	.30	.20	.23	.15	.25	12	11	5	9	7	7	18	11	13
4	.30	.90	.70	.25	.60	.32	.20	.22	.15	9	17	14	9	14	12	17	22	21
5	1.5	1.3	1.6	1.5	1.4	1.6	1.5	1.4	1.8	0	0	0	0	0	0	1	0	0
6	.40	.30	.20	.45	.20	.35	.35	.10	.02	11	8	2	7	2	0	26	8	10
7	.35	.50	.65	.65	.60	.55	.55	X	.80	7	4	3	4	6	4	9	7	9
8	.90	.95	.80	.30	.30	.65	.70	.15	.57	9	6	6	8	7	6	12	15	15

EXTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	1.0	1.4	.50	.60	.80	.90	.90	.50	.50	0	6	9	0	7	7	1	9	14
2	.55	.40	.70	.30	.30	.35	.30	.25	.25	7	11	9	2	11	11	7	17	16
3	.45	.30	.30	.35	.30	.25	.10	.25	.10	7	10	5	9	8	5	14	13	11
4	.75	.48	.30	.40	.55	.20	.30	.15	X	0	0	0	0	2	0	3	1	1
5	.50	.65	.75	.75	.80	.70	.90	.65	.10	3	9	8	5	8	4	5	8	11
6	.40	.30	.35	.40	.35	.25	.40	.30	.30	4	16	5	3	5	6	7	14	12
7	2.0	2.0	1.9	1.5	2.9	2.4	1.8	1.2	1.5	2	3	0	3	3	2	3	6	3
8	.75	.60	.35	.35	.50	.25	.35	.22	.30	2	5	1	6	7	5	12	13	12

CONTROL GROUP RAW SCORES

INTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	.85	1.6	.45	1.3	1.5	.80	.80	.30	.35	7	11	11	8	10	11	14	19	19
2	1.2	1.1	1.3	1.6	2.0	.60	1.9	1.8	.50	9	6	7	6	8	6	15	9	12
3	.50	.50	.57	.80	.65	.65	1.0	.90	.70	1	4	2	5	4	4	5	12	9
4	.35	.35	.20	.60	.25	.30	.20	.04	.10	4	6	5	5	9	7	16	15	15
5	.30	.20	.05	.22	.06	.10	.32	.08	.04	10	7	6	14	12	8	8	11	13
6	1.5	.60	1.2	.80	1.2	.65	1.4	.30	.90	1	5	4	2	6	5	4	8	9
7	.17	.30	.15	.30	.30	.40	.35	.35	.35	15	6	6	9	6	7	23	16	14
8	.27	.60	.42	.22	.20	.35	.22	.07	.60	2	3	4	3	6	5	6	7	6

EXTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	.20	.20	.15	.30	.20	.30	.20	.08	.13	4	11	9	3	12	8	6	18	17
2	1.0	.15	.10	.65	.40	.05	.65	.30	.15	3	8	6	3	9	8	6	14	13
3	.40	.50	.30	.25	.10	.08	.10	.00	.00	5	10	6	8	8	11	10	14	13
4	.60	.40	.30	.25	.05	.04	.03	.03	.00	8	14	8	3	7	8	10	15	18
5	.25	.15	.15	.35	.10	.25	.35	.40	.35	1	4	3	3	5	6	6	11	11
6	.20	.20	.20	.30	.33	.35	.35	.23	.45	4	3	2	5	4	3	9	11	8
7	.35	.25	.30	.28	.15	.30	.20	.40	.35	2	4	5	4	8	8	5	12	13
8	.17	.30	.33	.38	.55	.53	.13	.28	.57	7	16	11	8	9	16	10	24	20

NEGATIVE TAPED GROUP RAW SCORES

INTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	.10	.25	.20	.43	.35	.15	.20	.05	.40	4	9	11	5	7	8	11	14	12
2	1.5	1.2	1.7	1.1	1.0	1.3	1.8	1.1	1.3	4	7	20	2	5	17	12	11	24
3	.40	.45	.40	1.2	.75	.65	.75	.55	.30	5	4	9	6	8	9	8	14	14
4	.03	.07	.05	.10	.15	.05	.00	.00	.00	3	7	11	3	7	8	6	14	15
5	.05	.06	.04	.04	.04	.04	.04	.04	.06	10	13	13	9	10	9	18	12	16
6	.30	.30	.30	.45	.45	.45	.55	.40	.45	7	7	10	11	10	10	16	16	17
7	.35	.25	.40	.45	.55	.60	.50	.10	.05	2	11	14	4	8	8	5	9	11
8	.40	.50	.60	1.2	.70	.40	1.0	1.1	.50	6	10	10	3	8	10	10	13	16

EXTROVERTS

Subject	Raw Scores																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	.60	.60	.50	.80	.90	.30	.90	X	.30	3	4	8	3	3	6	7	7	8
2	1.5	1.6	1.7	1.5	1.8	3.0	.90	1.4	2.0	7	13	19	8	13	20	12	23	34
3	.45	.45	.50	.60	.55	.60	.65	.30	.55	7	7	7	6	6	6	7	4	8
4	.70	.50	.60	1.0	.70	.60	.30	.30	.30	2	6	7	2	4	1	4	10	7
5	.35	.30	.25	.50	.50	.40	.50	.60	.75	4	14	11	8	6	9	13	7	7
6	.20	.25	.20	.15	.14	.12	.16	.12	.16	11	9	14	8	10	9	10	15	19
7	.25	.35	.30	.70	.75	.65	.85	.50	.45	7	9	18	5	9	8	3	12	15
8	.15	.10	.10	X	.16	.06	.10	.08	.06	5	9	10	5	6	6	4	13	11