THE EFFECT OF PERSONALITY TYPE ON SYSTEMATIC DESENSITIZATION AND STRUCTURED GROUP INTERACTION IN REDUCING EXAMINATION ANXIETY

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THESIS

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ABSTRACT

THE EFFECT OF PERSONALITY TYPE ON SYSTEMATIC DESENSITIZATION AND STRUCTURED GROUP INTERACTION IN REDUCING EXAMINATION ANXIETY

By Francine Toder Weinstein

This study investigated the effect of certain personality types, i.e., introverts and extraverts, as measured by the Eysenck Personality Inventory, on the outcome of two counseling techniques termed group systematic desensitization and structured group interaction, in reducing test-taking anxiety among college students. Outcome measures included: Test Anxiety Rating Scale, Test Anxiety Inventory, S-R Inventory of Anxiousness and Thayer Activation-Deactivation Adjective Check List.

It was hypothesized that:

I. Introverts treated by group systematic desensitization will demonstrate significantly less test anxiety than extraverts.

II. Extraverts treated by structured group interaction will demonstrate significantly less test anxiety than introverts.

III. All subjects treated by either group systematic desensitization or structured group interaction will demonstrate significantly less test anxiety than no-treatment control subjects.

IV. All subjects treated by either group systematic desensitization or structured group interaction will demonstrate significantly less test anxiety than no-contact control subjects.

V. There will be no significant difference between the anxiety level of test anxious college students assigned to the no-treatment control group and those assigned to the no-contact control group.

Fifty-six volunteer subjects, rated high on test-taking anxiety, were selected from an introductory psychology class with an enrollment of 550 students. Subjects were selected according to classification on the Eysenck Personality Inventory and scores on the Test Anxiety Inventory and the S-R Inventory of Anxiousness. Subjects were stratified and randomly assigned to one of four groups: 1. systematic desensitization; 2. structured group interaction; 3. no-treatment control; and 4. no-contact control.

Subjects received five one-hour sessions in groups of four. Group systematic desensitization treatment was based on principles presented by Wolpe (1958). Structured group interaction treatment was specifically developed by the author for extraverted subjects. According to the theoretical rationale suggested by Pavlov (1957) and expanded by Eysenck (1965) and others, this treatment was verbal in nature, emphasizing planned small group discussion and several activities such as practice in taking examinations, role-playing and self-control exercises. Subjects in the no-treatment control group (wait control) received attention in the form of telephone contact and two interviews. No-contact control subjects provided baseline data. These subjects had no knowledge of their direct participation in the study. Both groups were tested along with all students, before treatment, during class time in their psychology course. After the five-week treatment period, anxiety instruments were administered. Treated subjects took the Test Anxiety Rating Scale (8 point scale) and the Thayer Activation-Deactivation Adjective Check List into their final examination, completing them immediately after taking the examination. The Test Anxiety Inventory and the S-R Inventory of Anxiousness were completed by all groups following treatment.

A 2X3 and a 2X4 analysis of variance with planned comparisons was computed. Results supported Hypotheses III, IV and V. Those receiving both treatments were found to have a lower post-treatment anxiety level than no-treatment controls and no-contact controls. The two control groups did not produce significantly different post-experiment levels of anxiety. Hypotheses I and II were generally not supported. The structured group interaction treatment was somewhat more effective with extraverts than introverts. However, group systematic desensitization was clearly not more effective for introverts than extraverts.

The possible detrimental effect of using a group procedure with introverts was discussed along with possible inadequacies of assessing introversion-extraversion. Additional studies exploring the interaction effects of subject characteristics and treatment types were suggested. Physiological and observer indices of test anxiety were recommended along with self-report measures.

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By

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INTRODUCTION

In the field of counseling the practitioner's goal is to provide help to his client enabling him to function more effectively regarding interactions with the physical and interpersonal environments. One hopes that the client is less troubled at the termination of his interaction with the helping person than he was when he first sought professional help. The particular approach utilized to help a client as well as the ultimate goals set for him has, in the past, been a function of the counselor's philosophy, academic orientation and training and oftentimes his personality.

Allegiance to a specific counseling theory, such as Rogerian, psychoanalytic or behavioral, was based on the above determinants and led to the assumption that the chosen approach was the best, most comprehensive, most scientifically based and most comfortable to use. The result was that neither individual differences between clients, nor differences in presenting problems, were considered as variables relevant to treatment. The significant factor in choice of treatment remained the counselor and his theoretical bias. The fact that no one method has ever demonstrated its superiority in treating all kinds of clients with all kinds of problems (Truax and Carkhuff, 1967; Kiesler, 1966) had not been withstanding.

If the fields of counseling and psychotherapy wish to become more scientific, more rigorous and controlled, experimentation is needed.

Recently, the literature in counseling and psychotherapy has indicated the necessity for examining the major variables that affect

counseling outcome. The "uniformity myth" assumption has been attacked by Kiesler (1966) who feels that we have no basis for assuming that clients at the start of treatment are more alike than they are different. In fact, Kiesler feels the reverse to be true, that a remarkable range of initial client differences exists and has been ignored. He adds,

> "If psychotherapy is differentially effective depending on initial patient differences, as the evidence strongly suggests, then it seems clear that research should take these differences into account. This would imply the use of a design with at least two experimental groups, dichotomizing patients by one or more patient variables shown to relate to subsequent outcome. . . ." (P. 115)

By dispelling the patient uniformity myth the basic research question can be more adequately specified and studied. We will no longer ask, "Does counseling do any good?" but, "Is counseling more effective with one type of individual than another?"

A major task of this research is to differentiate clients seeking counseling on the continuum of personality type. If a client could be dichotomized on a particular dimension, e.g., personality type--introvert or extravert, it could possibly lead to more definitive statements about counseling effectiveness.

However, in spite of the possible benefit of learning that one type of counselee benefits more than another from counseling, the problem of specifying what is meant by "counseling" or which "counseling technique" to use remains to be dealt with.

Not one of the most widely used theoretical formulations, e.g., Rogers, Freud or behavior therapy, has been found to maximally benefit all patients. Yet this is not surprising when we understand a major source of difference between these schools that has often been overlooked. The founders of these different schools based

their initial observations on very different types of patients. If the different theoretical formulations were derived from experience with different classes of patients, why then should the choice of a particular counseling technique not be specific to the client domain (Paul, 1967), for example, distressing behavior and/or relatively stable personal-social characteristics (introversion-extraversion)? Perhaps the relevant research questions can be further specified to read, "Which counseling treatment will be most effective with which type of client?"

Another major task of this research is to determine which counseling technique will provide maximal benefit to each type of client. A review of the theory of personality type and its relationship to counseling or psychotherapy treatment led to this investigation. The choice of a particular counseling technique depends on not only the "stable personal-social characteristics" of the individual (personality type--introvert, extravert) but on the "distressing behavior" which the client wishes to reduce (Paul, 1967, p. 110). For this reason it becomes crucial to select a treatment which most effectively eliminates or reduces the distressing behavior. In this research the central problem for which the clients are seeking help is test-taking anxiety. Selection of the best treatment will be determined by experimental evidence.

In summing the intent of this research two factors emerge as central and an experimental manipulation of these may lead to an answer to the question, "What treatment . . . is most effective for this individual with that specific problem. . . ?" (Paul, 1967, p. 111.) The first crucial variable is the counseling treatment, a technique which has been shown to be effective with test-taking

anxiety, and in addition, a technique which, according to theoretical rationale, would seem to favor each personality type. The second variable to be investigated is personality type. The rationale for employing one technique with introverts and a different technique for extraverts will be presented.

Test-Taking Anxiety

In the present research the target behavior, at which treatment is aimed, is test-taking anxiety. This problem was experienced by otherwise normal college students who function satisfactorially in non-testing situations. However, the effect of test anxiety on these individuals is debilitating and, in this respect, because it is illogical, resembles the effect of more widespread neurotic anxiety reactions. The fact that the college student who experiences test anxiety must continue to take examinations, compounded by the knowledge that his status in college may depend on his examination performance, does little to dispel his fears and very possibly reinforces them.

In trying to help the test anxious individual in the college setting the counselor should seek a method which is short term and specific to the target problem. These conditions are feasible and realistic in a psychiatrically normal or non-psychopathological population. But choosing the best technique for reducing anxiety is not a simple matter since this goal is implicitly or explicitly stated in every psychotherapy approach and is central in most current theories. The guidelines, "short term," "specific to target problem," and research findings in anxiety and test anxiety studies help to limit the choice of a counseling technique. Since neither Freudian

nor Rogerian approaches tend to be "short term" or "specific to the target problem" we turn to examine the learning theory, behavior therapy, approach.

The development and endurance of the anxiety response has been explained in terms of learning by Wolpe (1966), a major contributor to the behavior therapy approach. Eysenck (1955, p. 30) discusses anxiety as an unadaptive response and shows how it leads a neurotic behavior which he defines as ". . . a persistent habit of unadaptive behavior acquired by learning."

Anxiety is a central concept in maladaptive learning and neurosis, and reduction in anxiety responses is a major goal of behavior therapy. Wolpe (1966, p. 180) defines anxiety as ". . . a sympathetic dominated pattern of antonomic response." Reducing anxiety and eliminating neurotic behavior is seen as a matter of unlearning.

If we accept the concept of learning as central in the development and maintenance of anxiety, and therefore test-anxiety, we must turn to the question of possible differences between test anxious individuals in their ability to learn and in the speed with which they learn. We cannot assume that, if anxiety and its reduction involves learning, relearning or unlearning, then all test-anxious individuals will respond similarly. This would be the "patient uniformity myth."

Initial client differences should not be disregarded in the choice of a test-anxiety reduction technique. The most immediate concern, then, is to identify those individual differences which may influence improvement since it is possible that the therapeutic technique which will benefit one type of individual may

not benefit, or in fact may have a deleterious effect, on another type of person.

Personality Type

The concept of personality does not readily lend itself to one substantive definition. Personality is defined in as many ways as there are theories of personality. Hall and Lindzey (1957, p. 9) suggest that ". . . personality consists of what . . . is most typical and deeply characteristic of the person."

Pavlov's physiological theory of types is a theory of personality which stresses the influence of innate neural patterns on subsequent behavior.

Personality type is one dimension along which individuals have been found to vary. A number of theories as well as research findings suggest that differences in this characteristic affect a person's speed of learning, depth of learning, responsiveness to his environment, activity level, etc.

The initial research and theoretical formulation leading to the recognition of personality type differences was not based on observation of humans, but was based on animals. Pavlov's physiological experimentation with dogs led him to the realization that not all his dogs responded in the same way in the laboratory even under the same conditions.

He found that some dogs were calm and responsive, learned to follow directions quickly and generally were good subjects in his experiments. Other dogs seemed to be more active and lively with a shorter attention span and greater distractability. Both of these types, however, were found to function adequately in the

experimental situation and were described as "balanced" or "equilibrated" types. Two additional types generally performed poorly as subjects. These dogs were described as "unequilibrated" or "unbalanced," the first being weak and nervous and the second strong, but obstinate or unruly.

These observations led him to the formulation of a "physiological" theory of personality which stressed the importance of physiological predisposition underlying behavior.

Two processes which are basic to the theory of types are excitation and inhibition. Excitation is conceived to be an active process, involving expenditure of energy, and is responsible for the formation of positive or "excitatory" reflexes. It refers to the arousal of the cortex and the general facilitation of the processes of learning, remembering and performing. Inhibition, on the other hand, is basically a conservative process in that it prevents an excitation type of response from occurring. It is a process in the central nervous system which interferes with the ongoing perceptual, cognitive and motor activities of the organism. It is involved in such phenomena as the formation of inhibitory reflexes and experimental extinction.

Based on his laboratory observations and his knowledge of physiology, Pavlov attempted to "type" his dogs. He first identified two groups, strong and weak, based on the strength of the excitatory process, i.e., according to the working capacity of the cerebral cells. The strong group was subdivided into equilibrated (balanced, i.e., a state of equilibrium) and unequilibrated (unbalanced) depending upon the relative intensity of the excitatory and inhibitory processes. The mobility (the dimension of lability-

inertness) of the process further divided the strong equilibrated dogs into quiet and lively ones. Thus, four basic types emerged which paralleled the classic Greek temperaments (see Figure 1):

equilibrated	unequilibrated
strong - quiet = phlegmatic	strong = choleric
strong - lively = sanguine	weak = melancholic

Pavlov observed that his unequilibrated dogs were subject to nervous system problems analogous to human neurosis. He further noted differences between the quiet and lively equilibrated dogs in terms of their behavior in experimental situations. These differences were felt to be related to innate physiological predispositions. The strong-quiet dog seemed to have greater excitatory potential and the strong-lively dog, greater inhibitory potential.

While it is important to keep in mind that the above characterizations were formulated on subhumans, Peters (1966, p. 236), a follower of Pavlov, points out that ". . . the canine typology has its greatest value as a paradigm which can enrich our understanding of human behavior."

Pavlov (1957) suggested that his four types correspond to human types and that while this is the only reaction system available to animals, humans have developed a second signaling system through the use of language and speech. The first and second signaling system have provided another basis for dividing humans into artistic, thinking and intermediate types. The last category is formed by an equal contribution from both signaling systems.

Pavlov's main contribution with respect to types seems to have been in offering an explanation for individual predispositions. The implications of excitatory vs. inhibitory potential and their

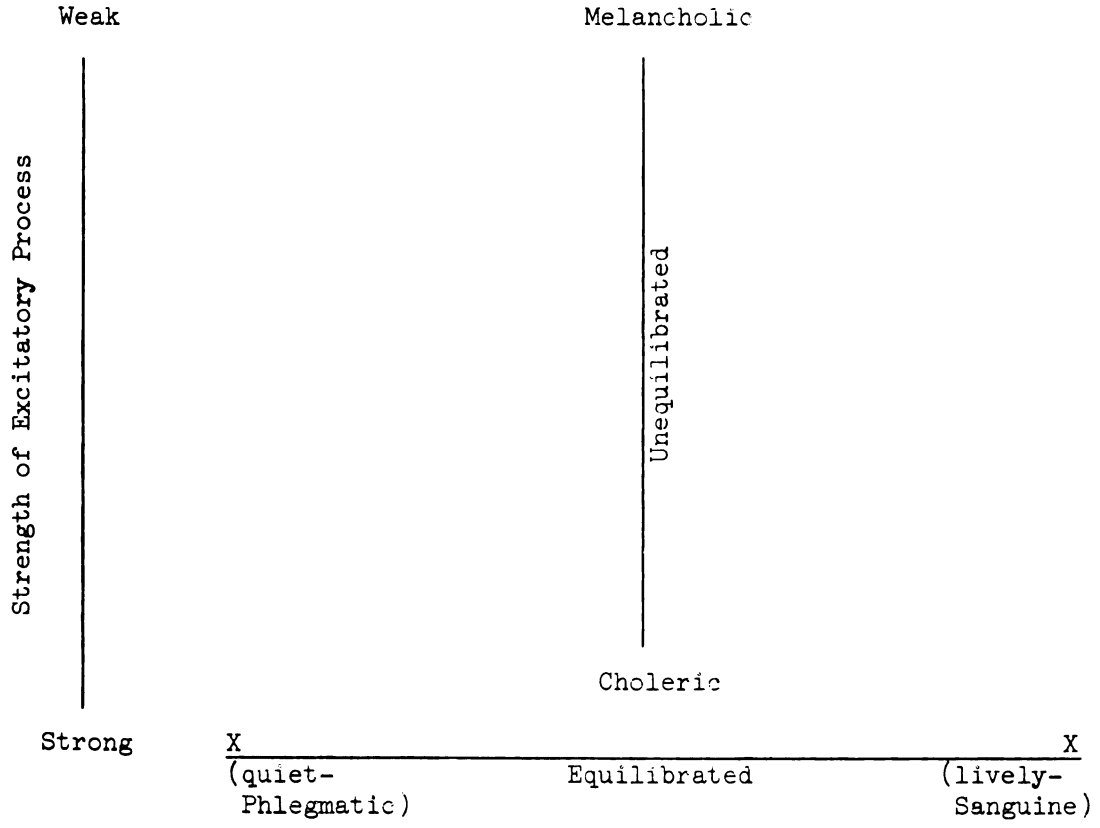

Figure 1.
Pavlov's physiological typology

effect on conditionability and learning in humans was subsequently investigated by psychologists with the hope of relating personality types to physiological types. Eysenck (1965) cited the results of experimental studies of introversion-extraversion. Eysenck (1947) indicated the commonality of the introversion-extraversion theories of Jung, Bingham and Pavlov. There was agreement on the following points:

1) the I shows a higher degree of cerebral activity;
2) the E shows a higher degree of behavioral activity;
3) the I shows a tendency to self control;
4) the E shows a tendency to lack self control;
5) the I has a more subjective outlook;
6) the E has a more objective outlook. The E's attention is controlled by objective conditions more than subjective, internal conditions.

Relationship of Personality Type to Psychopathology

Introvert and extravert personality types have been differentiated along many psychological subdimensions including types of behavior exhibited and types of psychopathology manifested. Eysenck, who has been interested in psychopathology, attempted to relate variations in cortical activity to forms of human neurosis. His view of neurosis was in terms of the over-excitability of the autonomic nervous system, the sympathetic branch, i.e., that part of the nervous system concerned with involuntary processes which are activated to deal with stress. The predominance of cortical excitation or inhibition in a person became a basis for classification along two dimensions:

1. Normal-neuroticism
2. Introversion-extraversion

He made certain deductions from Pavlovian theory which he combined with Hullian theory. Hullian theory of conditioning-

extinction states the following: (a) drive reduction serves as a reinforcement; (b) reinforcement leads to an increment in excitatory tendency to repeat the reinforced R; (c) excitatory tendency is greater than the inhibitory tendency for learning to occur.

Eysenck then hypothesized from Pavlovian-Hullian theory that with individuals in whom the excitatory-inhibitory balance is tilted in the direction of strong excitation and weak inhibition, conditioned responses should be formed quickly and easily and should be difficult to extinguish. In individuals where there is weak excitation and strong inhibition, conditioned responses should be formed slowly and with difficulty and should be easy to extinguish. The notion of conditionability is central to the speed and firmness of learning and unlearning (or relearning), central to the classification of individuals as introverts and extraverts and consequently, of key importance to this study.

The nervous system then, according to Eysenck, predisposes man to a response tendency emphasizing exceptionally strong excitatory potential, exceptionally strong inhibitory potential, or, more usually, an intermediate position between these extremes.

Independence of Personality Type and Neuroticism

In the realm of conditioning and learning innumerable studies have been conducted comparing introverts and extraverts. Although much of Eysenck's work has concentrated on the psychopathological conditions related to neurosis and either strong excitation (Type: Introvert; Neurotic condition: neurasthenia) or strong inhibition (Type: Extravert; Neurotic condition: hysteria), the present study is concerned with non-neurotic introverts and extraverts. The

question of independence of neuroticism from introversion-extraversion has been raised in the literature. If the two concepts are not independent then extrapolation of the introvert-extravert concept to "normal" individuals is unwarranted.

Cyril Franks (1952) performed a classical conditioning experiment (eye-blink reflex) to test the hypothesis, "If conditionability is related to I-E then within the normal group there should be no correlation between conditioning and a test of neuroticism but a significant negative correlation between conditioning and a test of extraversion." His findings, that extraverts tended to condition much less well than introverts, and that conditionability is related to introversion-extraversion and not to neuroticism, supported his hypothesis.

Relationship of Personality Type to Conditionability and Learning

Irene Martin (1963) studied the relationship between galvanic skin response and conditionability. She noted a relationship between "reflex sensitivity" and ease of conditioning, and deconditioning, in her subjects. Her results ". . . draw attention to the fact that there may be general characteristics of an 'individual's' responsiveness to conditioning stimuli which affect the course of conditioning" (p. 189). In a Pavlovian framework these "general characteristics" would seem to be personality type-introvert/extravert.

Additional support can be found for the personality type-conditionability relationship in the verbal conditioning experiments of Holmes (1967) and Costello (1967). Holmes found a significant relationship between rapid pupillary constriction, superior performance

in verbal conditioning and introverted personality traits measured by peer rating and self report. Costello (1967) studied the relationship between the personality variables, introversion-extraversion and neuroticism, as measured by the Eysenck Personality Inventory, and the conditioning of the connotative meaning of words. His results indicated a significant difference between introverts (N=10) and extraverts (N=10) in the ease with which the connotative meaning of words will be conditioned. He did not find that conditionability was related to neuroticism.

Introverts and extraverts appear to differ along the dimension of physiological sensitivity, conditionability and psychopathological conditions. The following studies offer an extension of the introversion-extraversion dichotomy in social and behavioral terms.

Social and Behavioral Studies of Personality Type

Mowrer's (1966) concept of socialization facilitates the understanding of the relationship between nervous system functioning and the development of introvert-extravert types. Since socialization is seen to depend on conditioning, individuals with strong excitatory and weak inhibitory potential, who would be expected to form strong and stable conditioned responses, would also tend to be strongly socialized. Those in whom inhibitory potential is strong and excitatory potential weak would be expected to form weak and unstable conditioned responses and also be weakly socialized. According to Eysenck, "The former group would thus tend to develop introverted behavior traits (persistence, high level of aspiration, reliability) while the latter group would tend to develop extraverted behavior traits" (Eysenck, 1961, p. 27).

Eysenck suggests outcome of behavior in the following formula where: Outcome = f (predisposition x stress). The reactions or responses of an individual are affected by innate individual differences, conditionability, and environmental happenings, experience.

Wolpe (1966) found, on the basis of experimental evidence, that the nature and degree of stress needed to evoke a significantly high degree of anxiety varied according to pre-existent factors in the individual; similar to the findings in experiments with animals. While he did not define the nature of the pre-existent factors, it would seem that Eysenck's adaptation of Pavlovian-Hullian theory offers an adequate explanation.

Much of the research and study of introversion and extraversion has focused on neurotic behavior as related to psychological type. But the study of types as it relates to normal behavior has been a much neglected area. Yet the independence of introversion-extraversion from neuroticism may have already been established.

The Relationship of Introversion-Extraversion to Normal Behavior

Cyril Franks (1961, p. 46) feels that ". . . an excitation-inhibition postulate should be tenable in accounting for many of the behavior differences observed in normal introverts and extraverts." The normal introvert tends to possess the excitatory phenomena of hesitancy, conscientiousness, sensitivity and responsiveness to his environment while the normal extravert, high inhibition, is characterized by impulsiveness, less degree of conscientiousness and lack of sensitivity to his environment.

Eysenck (1965, p. 19) characterizes the social behavior of the introvert and extravert as following: "The typical extravert is

sociable, likes parties, has many friends, needs to have people to talk to and does not like reading or studying by himself. He craves excitement, takes chances . . . acts on the spur of the moment and is generally an impulsive individual. . . . He prefers to keep moving and doing things." The introvert is seen as serious, reserved, introspective, orderly, reliable, thoughtful and quiet.

The picture Eysenck presents seems to emphasize the outer-directedness of the extravert and the inner-directedness of the introvert. In this respect it closely resembles Jung's (1923, p. 27) conception. Jung states that ". . . [when] the most frequent and essential decisions and actions are determined, not by subjective values, but by objective relations, one speaks of an extraverted attitude. . . . [For the introverts] the subjective determinants are the decisive ones."

J. A. Gray (1967), a British psychologist studying the research being carried on by Pavlov's followers in the U.S.S.R., links the Pavlovian concept of excitation with the Western concept of arousal. The introvert, possessing a predominance of cortical excitation, is in a state of heightened arousal as determined by low auditory and pain thresholds. The arousal state of the extravert is low.

In behavioral terms this would seem to imply that the introvert has greater sensivitity to stimuli and that the extravert is inattentive to subtle stimuli. For the introvert little outside stimulation is necessary while the extravert requires external environmental stimulation for optimal functioning.

Applied Experimental Studies of Personality Type

Applied research based on the work and study behavior of introverts

and extraverts add additional support to the qualities discussed by Eysenck, Jung, and Gray.

Robert Cooper (1967) studied the relationship between personality type, work behavior, absenteeism and tolerance for monotonous tasks in an industrial plant in Great Britain. He found that extraversion as measured by the Eysenck Personality Inventory correlated positively $p<.05$, with work absences and negatively with length of service. Using the Eysenck Personality Inventory he predicted that at the end of a twelve month period the employee turnover would reflect a preponderence of extraverted individuals. His results indicated a significant difference ($p<.01$) between those employees who remained, introverts, and those who left, extraverts. He explained these findings in terms of individual differences in arousal affecting the degree of stimulation needed from the environment. Extraverts, because of their low arousal level, required more stimulation than would be obtainable on a routine or monotonous factory job.

Cooper's findings, based on differences between the functioning of introverts and extraverts, were supported by Estabrook's (1966) research in an entirely different context. She was concerned with the difference between the study habits of introverts and extraverts. Using the Maudsley Personality Inventory and a twelve item study habits questionnaire with one hundred thirty undergraduates, she sought to determine whether personality factors influence the choice of a place to study. Her results do indicate significant differences in study style and preferences between extraverts and introverts. Some examples follow: Extraverts wanted to spend study breaks with other people significantly more than introverts. They preferred to study in large study halls since they

needed the visual presence of other people. These individuals seemed to need some form of auditory and visual stimulation to keep from losing interest and alertness. The similarity of this finding to the other studies of arousal is striking and it becomes quite clear that to help a college population with test anxiety perhaps more than one technique is necessary. In further support of this notion could one summarize the preceding paragraphs by stating that both physiological and behavioral differences between personality types, introvert and extravert, do exist.

It has been suggested in the literature that different forms of psychotherapy might benefit different individuals. If there were a way of classifying individuals and empirically evaluating such a classification, one could assign counselees to that treatment which would provide maximum improvement for them. With such a system the number of successful terminations might be significantly higher than presently exists. (See Eysenck, 1952, 1961.)

Treatment

Systematic Desensitization

It was mentioned earlier that a learning theory approach would seem to be appropriate in reducing anxiety, i.e., maladaptive, learned responses, since it is considered to be "short term" and "specific to the target problem," criteria which are very important in the college counseling setting.

Students of behavior therapy, be they supporters or critics, are aware that it is not a homogenous technique but a variety of methods based on several related theories of learning. One particular technique, systematic desensitization, appears to be an

appropriate means for reducing test anxiety. Wolpe, its originator, and many others, e.g., Paul (1966); Lang (1965); Lazarus (1963); Katahn (1966); have demonstrated its success with high anxious individuals.

Wolpe's technique is specifically concerned with eliminating maladaptive responses such as phobic and anxiety responses. In cases where high anxiety is a central concern, the desensitization method would be employed to bring about the gradual deconditioning of anxiety responses. Wolpe (1958, p. 71) explains the underlying principle as follows: "If a response antagonistic to anxiety can be made to occur in the presence of anxiety-evoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety responses, the bond between the stimulus and the anxiety responses will be weakened."

Wolpe's notions are based on experimental laboratory findings and linked to the concept of reciprocal inhibition first observed in animals and later in humans. It was found that a feeding response was incompatible with anxiety responses. That is, it tended to decrease anxiety responses when presented to a high anxious subject. Generally, with human subject, feeding is not practical nor useful. Therefore, relaxation came to be substituted for food as an inhibitor of anxiety.

In the process of systematic desensitization the subject is often taught to relax according to Jacobson's technique of relaxation therapy. Jacobson (1938) trained his clinical patients in a technique of progressive relaxation which involved the training of the body musculature to relax, to oversome both physical and psychic tension. Wolpe felt that ". . . deep muscle relaxation

has autonomic effects antagonistic to those of anxiety" (Wolpe, 1958, p. 35).

To briefly explain how he utilized the relaxation one can examine the systematic desensitization procedure: teaching relaxation, having the patient imagine anxiety producing situations according to an individually constructed hierarchy of anxiety laden thoughts ranging from weak to intense. Each anxiety-laden item on the hierarchy is said to be desensitized when imagining it no longer evokes an anxiety response, i.e., the patient continues to report that he feels relaxed while imagining the previously anxious thought.

Experimental studies of systematic desensitization. Much of the early research in systematic desensitization was in the form of case studies and concentrated on phobic disorders (Wolpe, 1958, 1961; Rachman, 1959). These studies lacked controls, lacked explicit criteria and focused on neurotic patients. Their relevance is therefore limited except that they paved the way toward experimental designs, using non-clinical populations and broadened the range of target behaviors treated to include a number of specific fears including test anxiety (Paul, 1966; Paul and Shannon, 1966; Katahn, 1966).

Lang and Lazovik (1963) were the first to bring the technique of systematic desensitization to the campus for use with snake phobic undergraduates. Their second study was very similar to, but improved upon the first by providing criterion measures of success of treatment using the Fear Survey Schedule and the Fear Thermometer, both self report inventories.

In 1965 Lang, Lazovik and Reynolds added a "no-treatment" control and pseudotherapy group to their systematic desensitization

snake phobic treatment group. The purpose of these additions was to ascertain whether improvement resulting from treatment could be attributed to desensitization proper, which assumes that the response to the imaginal situation resembles that of the real situation, to relaxation alone, or simply to suggestion to change. The pseudotherapy group (N=10) consisted of relaxation training but no desensitization to snakes. The no treatment controls, consisting of 11 snake phobic normal college students, received no treatment at all. Muscular relaxation and hierarchy building, without desensitization proper (pseudotherapy), did not result in a reduction in fear behavior while the systematic desensitization technique (N=44) produced a significant decrease in phobic behavior.

One additional finding seems to be pertinent to our study. The authors found that some individuals improved no more than did the controls in the systematic desensitization treatment. They suggested that all the subjects might have improved if there had been more sessions. They alluded to the relationship between personality and conditionability when they said, ". . . it is also possible that there are personality differences between those who profit and those who do not" (p. 401). This possible relationship offers a rationale for a major hypothesis in the present study; that one particular personality type will respond most effectively and rapidly to systematic desensitization.

Other studies have also attempted to delineate the components of the systematic desensitization treatment. Davison (1965, 1968) attempted to measure the effect of desensitization without relaxation. His other three groups included desensitization with relaxation, relaxation alone and a control. The combination of desensitization

with relaxation produced greater improvement than the other three groups. In a similar experiment Rachman (1965) exposed spider phobic college students to the treatments which Davison employed. He attributed the success of systematic desensitization with relaxation to the process of reciprocal inhibition (Wolpe) as opposed to extinction, classical conditioning (Pavlov).

The argument of reciprocal inhibition vs. extinction, as the process which is responsible for the reduction in anxiety, is of long standing but its resolution has great importance to this research and the assumptions it makes regarding the best treatment procedure for introverts and extraverts.

The development of anxiety can be explained in terms of Pavlov's notion of conditioning. This is a process whereby a conditioned stimulus eventually elicits the response which the unconditioned stimulus previously elicited. The classical example follows: food (UCS) causes a dog to salivate (R). A bell is rung when the food is presented (CS + UCS); the dog salivates (UCR).

Classical conditioning also uses the concept of extinction which, to use the above example, suggests that the bell (CS) will not continue to cause the dog to salivate (R) indefinitely. After many trials in which no food is presented, the association between the bell and the salivary response will be weakened and finally the response will not be made. This is extinction.

Wolpe does not accept the notion of extinction since he feels that mere repetition of anxiety responses does not result in their weakening. He argues that anxiety R's can be eliminated by opposing other incompatible responses to them; therefore the inhibition of

anxiety responses is thought of in the conceptual framework of counter-conditioning rather than extinction.

Lomont's (1967) research contributed to the counter-conditioning position. His research focused on the question of whether the efficacy of systematic desensitization is due to the contiguity of muscular relaxation with anxiety stimulus visualization. He used two treatment groups; systematic desensitization with relaxation and a procedure similar to systematic desensitization but without relaxation. The latter method corresponds to the extinction procedure involved in systematic desensitization. His results indicated significantly greater fear reduction in the counter-conditioning than extinction method.

Lomont speculated that "the conditioning of a new relaxation response to visualized anxiety stimuli generalizes more than does any reduction of fear responses to visualized stimuli by extinction" (p. 24). What this means in terms of the study to follow is that conditioning and re-conditioning, not extinction, are responsible for improvement.

The concept of conditioning provides that individuals posessing strong excitation-weak inhibition, introverts, should condition quickly and easily and should be difficult to extinguish. Those in whom there is weak excitation-strong inhibition, extraverts, should condition slowly and with difficulty and should be easy to extinguish. Therefore, in our research on text anxious students it is hypothesized that the introvert group will profit more from systematic desensitization than the extravert group. The introverts would seem to be more easily and rapidly conditioned through the process of counter-conditioning, than extraverts.

Relationship of systematic desensitization to personality type. There is a great deal of support for the above hypothesis in the research which follows. M. Wolpin (1966) used the Maudsley Personality Inventory in an experiment concerned with identifying factors in reducing fear and avoidance behavior. He had the impression that the lower the extraversion score (high introversion) the more reasonable any of the procedures seemed to a given subject and the more willing they were to go along with the experiment which used the systematic desensitization technique. He suggested the possibility that ". . . scores on the E scale may predict more willingness to comply or conform" (p. 36). Referring to visual imagery, a factor in his study, he hypothesized that the more introverted subjects may have had more practice with visual imagery as they may live in phantasy more. Again, this might have implication for greater success of the systematic desensitization procedure with introverts since this process depends on one's ability to use imagery. Costello's (1957) research with psychoneurotic introverts and extraverts concurs. He found that vivid, i.e., strong, images characterize the introvert while weak, i.e., unstable, images characterized the extraverted subjects. Introversion-extraversion classification was determined by the Maudsley Personality Inventory.

The importance of the role of visual imagery is stressed by Wolpe (1966). In order for desensitization to take place in reality the imagined fear stimulus should be as vivid and powerful as the fear stimulus to which the behavior was originally conditioned. Strong and accurate visual imagery is crucial to the process of systematic desensitization and this quality seems to be characteristic of the introverted individual. According to Hain, Butcher and

Steincon (1966) the possible failure of the desensitization technique may be a function of patients who are poor visualizers or those whose images are not accompanied by the appropriate emotions.

In addition to the importance of strong and clear images is the ability to discriminate or differentiate between stimuli, i.e., visual images. McLaughlin and Eysenck (1966) found that introverts were better able to maintain discrimination between stimuli than extraverts, a condition which they attributed to differences in physiological arousal. Their hypothesis, that introverts are in a state of higher cortical arousal than extraverts and therefore have a higher discrimination ability, was supported by experimentation.

Group systematic desensitization. While the early systematic desensitization studies focused on a one-to-one relationship between counselor or therapist and client, later studies began to experiment using systematic desensitization with small groups. Lazarus (1961) modified the systematic desensitization procedure for use with groups of phobic individuals. A second treatment, which he used for comparison, was group interpretation. At the end of treatment there were 13 successes, 5 failures (N=18) with the systematic desensitization group procedure and 2 successes and 15 failures (N=17) with the group interpretation, success being conceived as a non-anxious response to a previously phobic stimulus.

Paul and Shannon (1966) combined group desensitization with group discussion and compared it to individual systematic desensitization, individual insight oriented psychotherapy and "attention placebo" in the treatment of interpersonal performance, speech, anxiety. While no difference was found between the effectiveness

of individual and group systematic desensitization, group systematic desensitization subjects showed a significantly greater anxiety reduction than the insight therapy or control groups.

Katahn, Strenger and Cherry (1966) used a procedure similar to Paul and Shannon's systematic desensitization and group discussion in working with test anxious college students. Measures of test anxiety indicated significant decreases for the treated subjects in a pre-post counseling comparison. O. Kandas (1967) found the group systematic desensitization procedure also effective in reducing the test anxiety of elementary school children.

Based on the findings of studies presented above for the effectiveness of group systematic desensitization, the present study will employ group systematic desensitization procedures.

Procedural and innovative studies of systematic desensitization. Since systematic desensitization has been found to favorably compare with other forms of treatment, there has been a trend toward studying factors within the treatment itself, without direct comparison to other forms of treatment. Several of these studies suggest innovations and alterations in procedures.

The questions of symptom substitution, or relapse, and generalization of effects following systematic desensitization have been experimentally examined.

Rachman (1966) found that relapse following treatment for spider phobia was minimal. He also found that there was an immediate reduction of fear from the imaginal to the real situation. Paul (1968) indicated similar results based on a two year followup of social-evaluative anxiety treated by group desensitization. Relapse

was experimentally investigated and was not found to have occurred over the two year period. In fact, additional improvement over the followup period was noted. Paul also observed a tendency toward generalization of effects as measured by an increased participation of treated subjects in interpersonal and social activities over the two year post-treatment period.

Cooke (1966) attempted to explore the relationship of anxiety level to effectiveness of desensitization treatment. His results, based on a study of rat-phobic college women, indicated that the initial level of anxiety, high or low, did not differentially affect "real-life" desensitization. Both high and low anxious Ss showed significant decreases in fear. The latter finding has implications for the present study in which only high anxious subjects were used.

Emery and Krumboltz (1967) demonstrated the effectiveness of a standard anxiety hierarchy in the systematic desensitization treatment. The efficacy of the standard hierarchy with groups led to its adoption in the present study.

In the past systematic desensitization was generally limited to the treatment of specific fears. More recently it has been adapted for use with "free-floating" or pervasive anxiety. In two such studies the relaxation procedure was modified by extending its use beyond the experimental situation.

Zeisset (1968) designed a procedure called "relaxation plus application" to be used by those individuals having pervasive anxiety and for whom building a specific hierarchy would not be possible. Following treatment of psychiatric in-patients, Zeisset found "relaxation plus application (RPA) to be as useful as desensitization alone. The RPA

> ". . . consisted of progressive relaxation training followed by illustration and discussion of the use of relaxation in everyday activities, with particular emphasis on stressful, interpersonal situations." P. 20.

Cautela (1966) adds "thought stoppage" to relaxation as a procedure to be followed by the S whenever he feel anxious. In addition he employs reassurance and assertive training as adjuncts to the desensitization treatment. He reports success based on a limited number of case studies.

The above studies emphasize the active role of the subject outside of the treatment room. The following study carries this notion a step farther. Migler and Wolpe (1967) report the results of a case in which the S feared public speaking. The innovative procedure, referred to as "automated self-desensitization," allowed the subject to carry out the relaxation and desensitization treatment at home by means of a special tape recording device using the S's own voice. A followup showed success based on the S's ability to give a speech without experiencing much anxiety.

Summary. In summary, the relationship between introversion-extraversion and systematic desensitization has been presented through a review of theory and literature. It has become increasingly plausible that different personality types, e.g., introvert or extravert, might respond differently to systematic desensitization treatment.

All of the foregoing leads to a summarizing statement of our first research problem: A major purpose of this investigation is to study the influence of personality type, introvert-extravert, on the outcome of counseling using Wolpe's reciprocal inhibition technique with test-anxious college students.

The expected success of introverts using the desensitization technique deals with only one half of the introvert-extravert typology. Our attention is now turned to a possible treatment method for reducing test anxiety which would be most successful with extraverted individuals.

Structured Group Interaction

Relationship of structured group interaction to personality type. It has already been established that indivduals whose cortical cell functioning leans in the direction of high inhibition-low excitation, extraverts, will condition slowly and poorly and extinguish rapidly. In terms of learning new responses it would seem that extraverts would profit less than introverts. If, in addition, we follow Wolpe's notion of counter-conditioning or relearning, we have reason to suspect that those same individuals who condition poorly will re-condition more slowly and that the learning of new responses which does take place will not be retained. Systematic desensitization, therefore, probably would not be as successful in reducing test-anxiety for extraverts as for introverts.

According to Gray, and the theory of physiological arousal presented earlier, the extravert is chronically under-aroused, requiring external, environmental stimulation for optimal functioning. You will recall that Cooper found extraverts needed a variety of tasks in an industrial plant and that they tended to leave their jobs when environmental stimulation was low. Similarly, Estabrook's research on study habits suggested auditory and visual stimulation and the presence of other people as necessary prerequisites for the maintenance of maximal interest by the extraverted student.

In The Cause and Cures of Neuroses (1965, p. 19), Eysenck characterizes the extravert as ". . . sociable . . . needs to have people to talk to and does not like reading or studying by himself . . . he prefers to keep moving and doing things."

Development of a treatment program for extraverts. Experimental studies of introversion-extraversion (Eysenck and Rachmann, 1965) indicate that the extravert, as compared to the introvert, has a higher I.Q. vocabulary ratio and higher sociability. This might suggest a form of treatment including verbal discussion, requiring small group interaction and activity; one which will interest and involve the student in such ways as role playing.

The treatment program discussed by Lazarus (1965) combined relaxation and desensitization with role playing (rehearsal) of the feared situation. Perhaps a treatment such as this, which combines the advantages of relaxation training, establishing a hierarchy of feared situations along with an activity such as role playing of feared situations to involve and stimulate group members, would be beneficial to extraverts.

In behavioral terms, the extravert is described with the following words by Eysenck (1965, p. 16): sociable, outgoing, talkative, responsive, easygoing, lively, carefree, leadership. This portrays an individual who needs approval and support from others, an individual whose attempts at positive test-taking behavior might possibly be shaped by reward and reinforcement from a counselor and group members. The effect of social support and sanction by peers would seem to be great particularly for the extraverted individual.

It should be easier for the extravert to learn in a group,

interactive situation where emergent behaviors are suggested, observed and reinforced. To maximize the extravert's interest and motivation the counseling sessions should be concentrated and intensive. They should aim at identifying and finding ways to reduce test anxiety, as well as trying out these behaviors both inside and outside of the counseling room. Adaptive behavior would be positively reinforced while maladaptive behavior, or no attempt at self-improvement would be punished (negative reinforcement).

The above analysis suggests the possibility that extraverts would respond more favorably, i.e., greater reduction in test anxiety, to structured group interaction than to systematic desensitization.

Hypotheses To Be Tested

1. Introverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than extraverts following treatment with the systematic desensitization method.
2. Extraverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than introverts following treatment with the structured group interaction method.
3. Systematic desensitization and structured group interaction treatment groups will show significantly less test anxiety than will be found in the no-treatment control group.
4. Systematic desensitization and structured group interaction treatment groups will show significantly less test anxiety than will be found in the no-contact control group.
5. There will be no significant difference between the anxiety level of test anxious college students assigned to the no-treatment control group and those assigned to the no-contact control group.

Summary

This chapter has presented the need for multivariate designs which examine the major variables affecting counseling outcome. Two variables were explored in relation to a particular counseling problem, test-taking anxiety. It was suggested that the choice of a particular counseling technique may depend not only on the counselee's "distressing behavior," e.g., test-taking anxiety, but on "stable personal-social characteristics" of the client, e.g., personality type.

The possible effect of personality type, introvert-extravert, on counseling outcome was explored by reviewing relevant theoretical and experimental studies. The relationship between introversion-extraversion and choice of treatment was presented. A review of the systematic desensitization treatment research indicated its effectiveness in reducing anxiety. It was hypothesized, however, that different personality types might respond differentially to treatment by systematic desensitization.

A new treatment mode, structured group interaction, was developed for extraverts since theoretical and experimental evidence seemed to indicate that systematic desensitization might not be as effective with extraverts as introverts.

In summary, there seemed to be a two-fold problem. The purpose was to study: a) the influence of personality type on the outcome of counseling with "test-anxious" college students using; b) 1. Wolpe's systematic desensitization technique and; 2. structured group interaction. The two independent variables were: (a) personality and (b) treatment.

Chapter II

METHOD

Introduction

This study was designed to investigate the effect of personality type on two methods of treatment for test-taking anxiety. The two independent variables were: 1) personality type, introvert-extravert; and 2) counseling technique, systematic desensitization and structured group interaction.

The secondary objectives were to compare the specific effects of treatment with: 1) those effects produced by attention, interview, promise of treatment and telephone contacts; 2) those effects produced by the passage of time, maturation or extraneous influences. To accomplish these goals a no-treatment, attention, control group and a no-contact, baseline, control group were included in the experimental design (see Figure 2).

Fifty-six subjects who rated themselves high on test-taking anxiety and who volunteered for treatment were selected from an introductory psychology class at Michigan State University with an enrollment of 550 students. The students were selected according to classification on a personality inventory, the Eysenck Personality Inventory, and two measures of anxiety, the Test Anxiety Inventory and the S-R Inventory of Anxiousness.

Subjects were assigned to one of four groups, two of which were treatment groups, systematic desensitization and structured group interaction, and two of which were control groups, no-treatment control and no-contact control. Each group was subdivided according

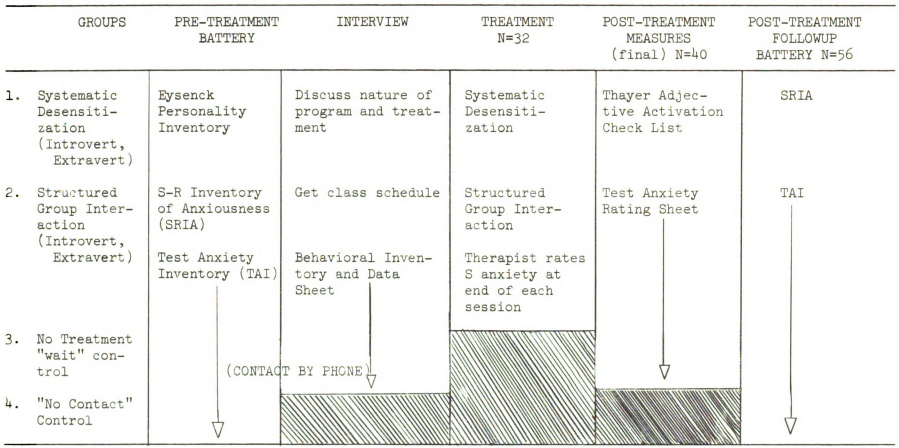

FIGURE 2
Experimental Design and Procedure

to personality type, introvert-extravert, as measured by the Eysenck Personality Inventory.

At the end of a five week treatment period a battery of anxiety instruments were administered in order to determine the comparative effectiveness of the two treatments in reducing test-taking anxiety.

Instruments

Pre-Treatment Battery

The pre-treatment battery, consisting of three instruments, was administered during one class session of an introductory psychology course during the week preceding midterms. The battery included a personality scale: The Eysenck Personality Inventory-Short Form (Eysenck and Eysenck, 1964) and two anxiety scales: the S-R Inventory of Anxiousness (Endler, Hunt and Rosenstein, 1962) and a revision of the Test Anxiety Inventory (Emery, 1966; Thoresen, 1966).

The Eysenck Personality Inventory-Short Form is a twelve item scale based on the Eysenck Personality Inventory, an improved version of the Maudsley Personality Inventory. The Inventory yields two independent scores, Neuroticism (N) and Extraversion (E). Classification as introvert or extravert in the present study was determined by the E score. On a seven point scale (0-6), those with scores of 0, 1, 2 were identified as introverts; those with scores of 4, 5, 6 were identified as extraverts. (A copy appears in Appendix A.)

The S-R Inventory of Anxiousness provides a situation by mode system for the classification of anxiety responses. This self-report inventory has eleven situational scales reflecting three kinds

(factors) of situational fears--i.e., inanimate dangers, threats to interpersonal status and achievement goals, and a residual factor. For each situation there are fourteen modes of (anxiety) response, divided among three factors: distress, exhilaration and autonomic responses. Scores are obtainable for each of the eleven situations and each of the fourteen modes of responses. Scores summarizing the three situational and three mode of response scores are also accessible. The first situational factor, "threats to interpersonal status and achievement goals," reflecting situations such as "entering a final exam," "entering a competitive contest before spectators," "being interviewed for an important job," has particular relevance to the present study. (See Appendix A.)

The other anxiety scale included in the pre-treatment battery, the Test Anxiety Inventory, consists of thirty-four statements reflecting test-taking anxiety (Thoresen, 1966). This instrument is a revision of an earlier scale used by Emery (1966). The subject is asked to rate each item on a five point scale of intensity of anxiety feelings ranging from "rarely or never" to "always or almost always." The range of possible scores is from 34 to 170. (See Appendix A.)

Followup Battery

At the completion of treatment the battery of scales administered included both anxiety inventories described above. Two additional instruments, designed to measure test-taking anxiety, were administered to the treatment groups and no-treatment control group only. A revision of the Fear Thermometer (Emery, 1966) called the Test Anxiety Rating Sheet (Thoresen, 1966; Neuman, 1968) measured

self-reported anxiety level at several different points, i.e., just before the exam, at the beginning, middle, near the end and after completion of the exam. Anxiety level was determined for each point in time by student rating of an eight point scale ranging from "completely relaxed" to "very intense anxiety, extremely disturbing." (See Appendix A.)

The Thayer Activation-Deactivation Adjective Check List (Thayer, 1964) is a self descriptive adjective check list on which a subject is asked to rate his feelings, at the time he takes the test, on a four point scale. Factor analyses conducted by Thayer (1967) yielded four factors, which summarized the descriptive adjectives. These factors were found to have highly significant correlations with the physiological variables, heart rate and galvanic skin response. On the basis of prior study (Neuman, 1968), scores on two of the factors--"General Deactivation" and "High Activation"--were calculated and used in this research. (A copy of this instrument is located in Appendix A.)

Subjects

There were a total of fifty-six subjects who participated in this experiment. They were selected from an introductory psychology class with an enrollment of 550 students. Two criteria were used for selection of subjects: high test anxiety scores on the pre-treatment battery and voluntary participation.

The sample was comprised of twenty-six females and thirty males. The fifty-six subjects were classified either as introvert (N=28) or extravert (N=28), based on scores received on the Eysenck Personality Inventory.

While the largest number of subjects had freshman status, N=44, all other undergraduate classes were represented. There were 9 sophomores, 2 juniors and 1 senior. Also, these students were drawn from a variety of academic majors since introductory psychology is a required course in most undergraduate curricula.

Treatment Counselors

The two treatment counselors in this study were advanced doctoral students in the Guidance and Counseling program at Michigan State University. Both counselors were twenty-four year old males. One held a Master's degree in Clinical Psychology and the other held a Master's degree in Guidance and Counseling. Both had two years of supervised experiences with individual and group counseling as practicum students at the Michigan State University Counseling Center. Each had experienced some personal counseling. Neither of the counselors had been previously employed as a professional counselor.

They were selected as counselors for this study on the basis of their interest in learning the techniques which were to be used and because of their flexible schedules.

The Therapist Orientation Sheet developed by Gordon Paul, University of Illinois, was administered to the treatment counselors. The results indicated a similarity in their therapeutic orientation. There also appeared to be close agreement between the two in respect to the specific counseling techniques employed. (See Tables 1 and 2.)

Neither counselor had prior experience with the treatment methods, systematic desensitization and structured group interaction. Therefore, training sessions, discussed below, were conducted prior

TABLE 1

THERAPIST ORIENTATION SHEET
THERAPISTS' RESPONSES

1. Activity-frequency:
   Active ___ :XX : ___ : ___ : ___ Passive
   (Talkative) (Non-talkative

2. Activity-type:
   Directive ___ : X : X : ___ : ___ Non-directive

3. Activity-structure
   Informal X : ___ : ___ : X : ___ Formal

4. Relationship-tenor:
   Personal XX: ___ : ___ : ___ : ___ Impersonal
   (Involved) (Detached)

5. Relationship-structure:
   Unstructured ___ : X : X : ___ : ___ Structured

6. Relationship-atmosphere:
   Permissive XX: ___ : ___ : ___ : ___ Non-permissive

7. Relationship-therapist actions:
   Planned ___ : X : X : ___ : ___ Spontaneous

8. Relationship-client dynamics:
   Non-conceptualized ___ : X : ___ : X : ___ Conceptualized

9. Goals-source:
   Therapist ___ : X : ___ : X : ___ Client

10. Goals-formalization:
    Planned ___ : X : ___ : X : ___ Unplanned
    (Formalized) (Unformalized)

11. Therapist Comfort and Security:
    Always Secure ___ : X : ___ : X : ___ Never Secure
    (Comfortable) (Uncomfortable)

12. Client Comfort and Security:
    Never Secure ___ : ___ : XX: ___ : ___ Always Secure
    (Uncomfortable) (Comfortable)

13. Client Personal Growth
    Not inherent ___ : ___ : X : X : ___ Inherent

14. Therapeutic Gains-self understanding (cognitive insight):
    Important ___ : X : ___ : X : ___ Unimportant

15. Therapeutic Gains-emotional understanding (affective awareness):
    Unimportant ___ : X : ___ : X : ___ Important

16. Therapeutic Gains-"symptom" reduction:
    Important X : X : ___ : ___ : ___ Unimportant

17. Therapeutic Gains-social adjustment:
    Unimportant ___ : ___ : ___ : ___ : XX Important

18. Therapeutic Gains-confidence in effecting change:
    Confident ___ : XX: ___ : ___ : ___ Unconfident

TABLE 1--Continued

19. Learning Process in Therapy:
Verbal-conceptual___:_XX:___:___:___Non-verbal-affective

20. Therapeutically Significant Topics:
Historical___:___:___:_X_:_X_Current

21. Therapeutically Significant Topics:
Client-centered___:_X_:___:_X_:___Theory-centered

22. Therapeutically Significant Topics:
Ego functions_X_:_X_:___:___:___Super-ego, Id

23. Theory of Motivation:
Unconscious___:___:_XX:___:___Conscious

24. Curative Aspect of Therapist:
Personality___:___:___:_XX:___Training

TABLE 2

THERAPIST ORIENTATION SHEET
FREQUENCY OF USE OF SPECIFIC TECHNIQUES
BY EACH THERAPIST

	Technique	Frequency				
		Almost Always		50-50		Never
25.	Reflection and Clarification of Feelings:				XX	
26.	Reflection and Clarification of Content:		XX			
27.	Reflection and Clarification of Behavior:	XX				
28.	Questioning of Feelings:		X	X		
29.	Questioning of Content:		X	X		
30.	Questioning of Behavior:	X	X			
31.	Interpretation of Feelings:			X	X	
32.	Interpretation of Content:	X	X			
33.	Interpretation of Behavior:	XX				
34.	Suggestion (not hypnosis):		XX			
35.	Reassurance:			XX		
36.	Information & Advice Giving:	X			X	
37.	Attentive Listening:	X	X			
38.	Modeling Techniques (examples):		X	X		
39.	Positive Attitude-Confidence:		X	X		
40.	Warmth and Understanding:		XX			
41.	Reinforcement (Approval-Disapproval):	XX				
42.	Conditioning, Counter-Conditioning:	X			X	
43.	Free Association:				XX	
44.	Auxiliary Techniques (Hypnosis, Medication):					XX
45.	Other (Please specify):	X				

to the first treatment session and continued on a weekly basis throughout the five week project for purposes of clarification and evaluation.

Counselor Training

The first systematic desensitization training session, two hours in length, was held the week before treatment began at which time the counselors and the experimenter viewed systematic desensitization video tapes of test anxiety which were used for counselor training at Michigan State University's College of Education Guidance Laboratory. This training session was held in the same room in which systematic desensitization treatment would take place.

Instruction was given in relaxation training using an audio tape based on Jacobson's technique (1938). This tape was the one subsequently used in systematic desensitization treatment in the present study. The rationale for the systematic desensitization technique was discussed in terms of theory (Wolpe, 1958), and practice (Lang and Lazarus, 1963; Paul, 1966). Test anxiety hierarchy building was discussed and a standard hierarchy was provided to serve as a model for developing modified group hierarchies during the first session. (See Appendix B.)

The four remaining counselor training sessions were approximately fifteen minutes each and were held a day or two before each subsequent systematic desensitization treatment group was conducted. Construction of the modified hierarchies and methodological problems such as the placement of easy chairs, tape recorder, etc., were focused on in the second session.

The third session covered ways to recognize tenseness in the S and ways to determine whether a S had fallen asleep, as well as a

means for awakening him. The fourth session, held before the fourth meeting of the systematic desensitization groups and the fifth session held the following week both covered progress in desensitization proper. Difficulties arising from slow subjects, and particular hierarchy items, were discussed.

Training in the structured group interaction procedure required five sessions, similar in length to the systematic desensitization training sessions. The first one consisted of discussion of the rationale for this method and counselor familiarization with the session outline guides developed specifically for this treatment. Each of the five session outline guides served as the focus for one counselor training session. Copies of these outlines are included in Appendix C.

Treatments

Each subject was assigned to one of eight treatment groups, to the no-treatment control group or to the no-contact control group. The entire treatment period consisted of the five weeks between midterm and final examinations during the spring, 1967 school term. Those subjects assigned to one of the treatment groups received five one-hour sessions. Thus, counselors and treatments were made comparable in terms of exposure time.

Systematic Desensitization

This treatment was based on Wolpe's (1958) principles adapted for group use by Lazarus (1961). Four systematic desensitization groups were formed, each with four members. Two groups included only introverts and the other two groups consisted of only extraverts. Each treatment counselor met with both personality types. In brief,

the treatment consisted of the following: introduction to the technique and group members, relaxation training, hierarchy construction and desensitization proper.

Session one. The first session was broken down into three parts. The first ten minutes included an orientation to the treatment's rationale and procedure. (See Appendix B.) The next fifteen minutes focused on the group members and included introductions to background information about themselves and their test anxiety problem. The next twenty minutes were spent learning the technique of progressive muscle relaxation. The subjects were told that muscular relaxation was incompatible with tension and anxiety and that if they were able to remain calm and relaxed they would not experience anxiety during an examination.

The subjects, sitting in upholstered chairs, were instructed to close their eyes and concentrate on the audio tape being played. The audio tape, in a very soothing male voice, instructed them to listen to and then carry out the procedure. The subjects were taught to tense and then relax muscle groups throughout the body, head and face. The tape was used extensively during the first and second sessions and for short periods of time in later sessions when the subjects were able to relax almost immediately.

During the remaining fifteen minutes of Session 1, the concept of "hierarchy building" was introduced. The standard test anxiety hierarchy (see Appendix B) was distributed and the items discussed. Subjects were told that they could modify this list to reflect their individual needs. They could add items, delete items and rank the items from "most anxiety producing" to "least anxiety producing."

At the close of the session the subject was asked to take the standard hierarchy with him. He was reminded to return the following week with his modified, individualized hierarchy.

Session two. The general procedure of the second through fifth session of the systematic desensitization treatment included a relaxation period followed by desensitization. At the beginning of the second session the individualized hierarchies were briefly discussed and then collected by the counselor. The relaxation tape was played and the subjects went through the alternate tensing and relaxing of the gross-muscle groups. The goal was deep relaxation for all members. Individual attention by the counselor was given to anyone experiencing difficulty in relaxing a particular muscle.

The remaining time in Session 2 permitted the desensitization procedure to cover a few items on the new group hierarchy representing the combined hierarchies of the four group members. For example, "The teacher announces and discusses a course examination (to be held in 3 weeks) with the class." The subject was told to visualize the situation represented in this least anxiety producing item while in a completely relaxed state. The item was read by the counselor while the subject sat in a comfortable position with closed eyes. He was instructed to signal, by raising his right index finger only, any feeling of tension while visualizing an item, at which point the counselor asked the student to stop visualizing and continue relaxing. Desensitization to an item was said to have taken place when the student could visualize it twice, free of muscle tension, for a period of thirty seconds each.

Sessions 3-5 spent less time on relaxation and more time

on desensitization of anxiety producing thoughts. Approximately four items were desensitized in each of these sessions. All the sessions proceeded at a rate dictated by the individual who was slowest to desensitize on any item. That is, moving on to a new item in the hierarchy required that all group members were "successfully desensitized" to the preceding item. While the slow student received the counselor's individual attention, the other group members continued to relax. At the end of the fifth session desensitization to the hierarchies had been completed for all systematic desensitization groups.

Session three. Approximately one-third of the third session was spent practicing the relaxation response while listening to the audio tape. After a few minutes the counselor turned the tape off and continued the relaxation instruction himself. When all group members appeared to be relaxed, the hierarchy item which was last to be desensitized the preceding week was presented. Approximately three new items were covered in the third session. The particular items varied with the group hierarchy adopted by each desensitization group. Some examples of items from a particular hierarchy covered during this session were: "Studying for an important examination that is one week away; Studying for an important examination that is two days away." No new items were attempted when the end of the session was ten minutes away. The purpose of this procedure was to insure that adequate time was available for all Ss to be desensitized to the item. This procedure was followed in all sessions.

Session four. The fourth session required less time for relaxation, approximately seven to ten minutes. The procedure was carried

out by the counselor instead of the audio tape since the specificity and detail of the taped instruction was no longer felt to be necessary. Four or five new items were covered in this session. Examples from one hierarchy included: "It is the day of the exam--one hour left until exam time; Entering the room where the exam is being given and sitting down."

At the end of Session 4 and the last session, subjects seemed to need a few minutes to become re-oriented, stretch and chat with one another and the counselor. The conversation never dealt with the desensitization but with classes, the upcoming weekend or other light topics.

Session five. The fifth and final session required about five minutes for relaxation. Again, instruction was given by the counselor. Items which were completed by one group during this session included: "You're working on an extra long question and don't have time to do it; Everyone is leaving and you're only half through the exam." The last ten minutes of this session, following desensitization of the last item on the hierarchy, were spent explaining to the subjects that they would be asked to fill out two questionnaires immediately following their final examination in introductory psychology.

Structured Group Interaction

This method of treatment was developed as an alternative to systematic desensitization. It was hypothesized that extraverted subjects would respond favorably and derive benefit from a more "stimulating" treatment than systematic desensitization, a treatment that would hold their attention and engage their interest. It was based on the theoretical rationale which indicated the necessity for

providing the extravert with external stimulation due to his low level of arousal. To create the optimal conditions necessary for this slow-to-learn type of individual it was felt that this treatment needed to be verbal in nature (requiring discussion), necessitating interaction (small groups) and activity (e.g., examination-taking practice, creating and rehearsing new roles).

This approach was different from traditional group counseling in terms of its organization, structure, length, breadth of treatment and underlying philosophy. The structured group interaction procedure attempted to limit the problem to a specific situation, e.g., high test anxiety, and it kept the specified problem the central focus and task of the treatment by providing session outlines (see Appendix C). It was felt that this structure, provided by the session outlines, would facilitate changes in student behavior in a shorter time (5 sessions) than would traditional group counseling. The treatment, however, did provide flexibility within its framework. That is, the focus of the treatment was on changes in behavior or action. It was concerned with learning or relearning adaptive responses in relation to the problem of anxiety experienced in taking examinations.

Four structured group interaction groups were formed, each having four subjects. Two of the groups were comprised of introverts and the other two, extraverts.

Session one. The first of the five, one hour, weekly sessions was predominantly concerned with adjusting to the group, identification of the test-taking problem elements and the development of a group hierarchy of maladaptive test-taking behavior common to the

four members. The last step was identical with that utilized by the group systematic desensitization method described above.

The second, third and fourth meetings comprised the core of the structured group interaction sessions. Each session capitalized on the group members' preceding week's experiences, self-help attempts and completion of prescribed homework designed for a particular counselee by his group and counselor. Each of these sessions had an overall theme.

Session two. The second session focused on simulated test-taking and concomitant maladaptive behaviors. The first ten minutes were spent talking about what the anxiety, felt during an examination, was really like. This served as an introduction to the practice examination which followed. During the exam the counselor observed and noted the subject's maladaptive test-taking behaviors. The remainder of the session was spent discussing the subject's reaction to the test, his self-observations and the counselor's observations. Suggestions were offered by group members for coping with the anxiety and changing the behavior. Specific details of Session 2 are found in Appendix C.

Session three. The third session emphasized role-taking, i.e., creating a role for the ideal test-taking self. It began with a ten minute review of the week's activities including ways in which subjects had tried out suggestions offered the previous week. Some subjects had brought index cards which they had filled out between sessions. These cards summarized distracting thoughts which interfered with their ability to relax.

The next ten minutes concentrated on the role of physical

relaxation. Alternate tensing and relaxing of muscle groups was explained by the counselor and carried out by the subjects. It was suggested that the exercises be carried out and practiced at home and in anxiety-producing situations.

The next thirty minutes dealt with ways in which a group member could perform optimally during a test. The need for creating a new, more positive role as test-taker was discussed. Fifteen minutes was provided for each S to design his new role and write down the new behaviors. Reading roles, sharing and reacting to one another's role followed. Near the end of the session subjects were asked to give some thought to the role of study methods in creating test anxiety, since this would be the focus of Session 4. (Specifics of Session 3 may be found in Appendix C.)

Session four. The fourth session stressed the preparation for examinations, i.e., studying, as an element in test-taking anxiety. This session essentially provided study methods or skills. The goal was to bring specific problems to light for each individual and identify remedies which could be tried outside of the session and be adopted to replace maladaptive methods. This topic was particularly well received since final exams were only 1-2 weeks away. As in the other sessions, the importance of trying out the suggestions between sessions, actually attempting to modify behavior, was a crucial element. (See Appendix C for a detailed outline of Session 4.)

Session five. The fifth session did not introduce any new concept but tried to cement the gains and iron out persisting problems. This hour, scheduled a few days before final examinations, served to

reinforce the groups' newly gained confidence. At the end of this session Ss were requested to fill out two questionnaires immediately following their final examination in introductory psychology. (See Appendix C for details of Session 5.)

No-Treatment Control

The no-treatment control group was comprised of eight students randomly selected from the pool of Ss who rated themselves high on test-taking anxiety and who volunteered for treatment. Four were designated as introverts and four were designated as extraverts based on their scores on the Eysenck Personality Inventory. The anticipation of treatment and attention in the form of telephone contact, interview, and promise of treatment differentiate this group from the other, no-contact, control group.

The no-treatment control differs from the two experimental treatment groups only in receipt of actual treatment (see Figure 2, page 33). The contacts with individuals in both the treatment and the no-treatment control groups, pre- and post-counseling, were identical. That is, all of these individuals received the pre-treatment battery, interview and telephone contacts. (See Figure 2.)

No-Contact Control

The no-contact control group was comprised of sixteen subjects, eight introverts and eight extraverts. These subjects took the pre-treatment battery at the time it was administered to the 550 student introductory psychology class. Although they requested counseling, they received no further contact from the experimenters. They were randomly selected from the 56 Ss who had been chosen for the present study on the basis of high test-taking anxiety and their desire for

treatment. The members of this group were unaware of their participation in the study. The post-experiment test battery was administered to them by mail under the guise of an unrelated research effort to be carried out by an unknown person. (See Appendix D.) The attention factor was thereby minimized, permitting comparisons with the no-treatment control group.

Procedure

One large section of an introductory psychology course, 550 students, was given a battery of tests during a one-hour class period. These included: Eysenck Personality Inventory, S-R Inventory of Anxiousness and Test Anxiety Inventory. At that time the "program of help for test anxious students" was explained as follows:

> Today you are being asked to complete an attitude battery in conjunction with a study being conducted by some members of the College of Education. The concern of the study is with students who experience anxiety, that is strong emotional reaction and stress while taking examinations. While some anxiety is both natural and desirable, too much anxiety interferes with performance on exams.
>
> You as an individual may or may not experience excessive fears of examination situations. If you do, we may be able to help you to overcome them, but in any case your responses will be most helpful to us.
>
> A program has been started to help students overcome their excessive fear of taking tests. It will be made available to a large number of students. Programs similar to this have been started at other universities and the results have been encouraging. Students have become much less tense and anxious in taking exams.
>
> If you are interested in obtaining help put an "x" in the top box on the first page of the attitude battery. If you do not feel you have a need for this kind of help put an "x" in the other box.
>
> While we would like to offer help to all of you who request it, our facilities and staff are somewhat limited and some of you may not be included in the program at this time. Those of you who will be offered this opportunity will be contacted by phone within a few days.

> Please make certain to put your name, student number, and local phone number on all of the answer sheets as well as the top page of this battery. Needless to say, your answers to the questions in the battery will be kept strictly confidential.
>
> Thank you for your cooperation.

The names of students who volunteered and who, in addition, had high test anxiety scores on the S-R Inventory of Anxiousness and Test Anxiety Inventory were compiled. The no-contact control group (N=16) was drawn randomly from this list and set aside. The remaining individuals were contacted by the experimenter by telephone and asked to come to a meeting at which time they would be asked to fill out a class schedule and a background questionnaire.

The telephone conversation proceeded as follows:

> Hi, may I speak to _____?
> Hi, _____.
> I'm calling for Mrs. Weinstein of the College of Education who spoke to your psychology class yesterday.
> You indicated that you wanted to learn how to be less anxious and tense when taking examinations. A meeting has been planned to discuss how we can help those of you who requested help.
> It will take place on Tuesday evening, April 25 in room 304 of the Natural Science Building, from 7:00-8:00 p.m. This is a very good chance to get the help you asked for and need. Can we count on you to be there?

At the time of the meeting the "program" was elaborated in the following way:

> The purpose of this meeting is to explain more precisely the details of the program for which you volunteered.
>
> The emotional reactions which you have as a result of your previous experiences with testing situations often lead to feelings of anxiety or tenseness that are really inappropriate. Since you have learned to fear taking tests, the goal of this program is to help you learn to react more appropriately to testing situations. We are going to help you learn not to be too anxious when faced with taking a test. This will allow you to be more calm and relaxed in taking tests.
>
> You are asked now to fill out a questionnaire and a time schedule so that we can arrange for the five one-hour sessions. You will receive help in small groups so that we can accommodate

most of you. However, since demand is sometimes greater than supply, some of you may have to wait until a later time for help.

Since you have volunteered to participate in this program, it will be necessary for you to come to all five sessions. You must not miss any, since you will not derive full benefit nor will this be fair to those who are investing time to help you and those who were turned away because of limited facilities.

You will be assigned to a group on the basis of your class schedule. You will be notified by phone of the time the session will take place.

Thank you for coming today.

After this session the names of the 40 individuals who were to participate in the study were separated into two groups based on their personality type classification, introvert or extravert. Each group (N=20) was randomly assigned to the systematic desensitization treatment (N=8), the structured group interaction treatment (N=8), or the no-treatment control (N=4). The systematic desensitization and structure group interaction treatment groups were split in half and one each of these systematic desensitization and structure group interaction subgroups (n=4) were assigned at random to the treatment counselors. Figure 3 explains the assignment to groups.

The class schedules were coordinated and a common meeting time was selected for those individuals who were assigned to the treatment groups. The eight students assigned to the no-treatment control group were called by phone and informed that "limited facilities and staff made it impossible for them to receive help now and that if a future program were conducted they would have priority to participate in it."

The systematic desensitization and structured group interaction treatment groups commenced the week following midterms. These groups met for five one-hour, weekly sessions terminating during the last

Treatment Counselor	Treatment Groups				Control Groups			
	S.D.		S.G.I.		N.T.C.		N.C.C.	
	I	E	I	E	I	E	I	E
1	4	4	4	4	4	4	8	8
2	4	4	4	4				
	N=16		N=16		N=8		N=16	

S.D. = Systematic Desensitization
S.G.I. = Structured Group Interaction
N.T.C. = No Treatment Control
N.C.C. = No Contact Control
I = Introvert
E = Extravert

FIGURE 3
Subject Assignment to Experimental Conditions

week of classes before final exams. At the end of each session the counselor filled out a rating sheet of each student's anxiety level. The Therapist Ratings of Client Anxiety Sheet can be found in Appendix A.

Within a week of treatment termination, all subjects in systematic desensitization, structured group interaction, no-treatment control and no-contact control groups were readministered the S-R Inventory of Anxiousness and the Test Anxiety Inventory. Subjects in both treatment groups and in the no-treatment control were administered the post-test-only measures, Thayer Activation-Deactivation Adjective Check List and Test Anxiety Rating Sheet immediately following their final examination in the introductory psychology course.

Summary

Chapter II attempted to define the specific ways in which the major hypotheses of this study could be explored. The hypotheses suggested that introverts and extraverts would be differentially affected by treatment, systematic desensitization and structured group interaction, for reducing test-taking anxiety.

Fifty-six high test anxious students, as measured by the Test Anxiety Inventory and the S-R Inventory of Anxiousness, were designated as introverts or extraverts, as measured by the Eysenck Personality Inventory and were selected on a voluntary basis from an introductory psychology class of 550 students. They were randomly assigned by personality type to one of four experimental conditions: systematic desensitization treatment, structured group interaction treatment, no-treatment control or no-contact control. Two

treatment counselors were assigned randomly to both methods of treatment.

Subjects assigned to systematic desensitization and structured group interaction groups met for five one-hour sessions. A detailed description of the treatments was presented in this chapter. The subjects assigned to the no-treatment control group received attention in the form of interview, telephone contact and encouragement, but received no actual treatment. No-contact control subjects were not aware of their participation in the study.

Following the five-week experimental period, all subjects filled out the Test Anxiety Inventory and the S-R Inventory of Anxiousness. In addition, the 30 treated individuals were asked to fill out the Thayer Activation-Deactivation Adjective Check List and the Test Anxiety Rating Sheet immediately following their final examination in introductory psychology.

Chapter III

RESULTS

Introduction

This chapter presents the results of three analyses of variance and appropriate t tests based on the post-experiment data representing four test anxiety measures, the dependent variables: Test Anxiety Inventory, S-R Inventory of Anxiousness, Thayer Activation-Deactivation Adjective Check List and Test Anxiety Rating Sheet.

The independent variables were personality type as measured by the Eysenck Personality Inventory and treatment. Hypotheses investigated were as follows:

I. Introverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than extraverts following treatment with the systematic desensitization method.

II. Extraverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than introverts following treatment with the structured group interaction method.

III. Systematic desensitization and structured group interaction treatment groups will show significantly less test anxiety than will be found in the no-treatment control group.

IV. Systematic desensitization and structured group interaction treatment groups will show significantly less test anxiety than will be found in the no-contact control group.

V. There will be no significant difference between the anxiety level of test anxious college students assigned to the no-treatment control group and those assigned to the no-contact control group.

The effect of counselor, personality type independent of treatment, and treatment independent of personality type, was also examined since the three analyses of variance provided this supplemental information.

Following the last session, the post-treatment measurements were taken. The original sample size had been reduced from fifty-six to fifty-three. Two individuals had withdrawn from treatment groups after attending only one session: one a female extravert assigned to a systematic desensitization group and the other a male introvert in a structured group interaction group. The third individual, a no-contact control male, had withdrawn from the university during the experimental period.

All fifty-three subjects completed the Test Anxiety Inventory and the S-R Inventory of Anxiousness. In addition, the systematic desensitization, structured group interaction and no-treatment control groups filled out the Thayer Adjective Activation Check List and the Test Anxiety Rating Sheet. These four instruments provided indices of comparative improvement following treatment for test-taking anxiety.

Performance of all fifty-three subjects on two inventories and thirty subjects on the four inventories comprised the core of the results. One further piece of data was provided by the Therapist Rating of Subject Anxiety. These data were kept on a weekly basis for all treatment subjects and were treated qualitatively and graphically. They were used to supplement the statistical analyses, analyses of variance, based on the above four criterion measures.

Three analyses of variance designs were selected and programmed for the IBM 7070 computer. The first design, 2X2X2 was computed for

post-experiment treatment group data and the independent variables: counselor, treatment and personality type. The second design, a 2X3 analysis of variance by planned comparison, was performed on post-experiment treatment and no-treatment control test data. The planned comparison design is a technique which focuses specifically on predetermined research questions that need to be tested. Since the primary goal of this study was to examine the interactive effect of treatment and personality type instead of treatment main effect or personality main effect, a planned comparison design which would provide these specific comparisons was chosen. (See Hays, 1965, p. 474 for details of the analysis of variance by planned comparison.)

The third analysis of variance, a 2X4, also utilized the planned comparison approach to provide results specific to the interactive hypotheses. It differed from the 2X3 analysis above only in respect to the addition of the no-contact control group data.

In the present study a significant difference at the .05 level on more than one-third of the dependent variables was needed to indicate partial support for any hypothesis.

Group Assignment

The initial assignment of all subjects to the four groups, systematic desensitization, structured group interaction, no-treatment control and no-contact control, was performed randomly for introverts and extraverts separately. Randomization was also the basis for assignment to subgroups of four subjects within each treatment group. Furthermore, both treatment counselors randomly drew one each of the following: introvert-systematic desensitization; extravert-systematic desensitization; introvert-structured group interaction; extravert-structured group interaction.

While it may be assumed that no significant initial differences existed prior to treatment between the level of test anxiety of different groups of subjects because of the process of randomization, an analysis of variance was performed on pre-treatment data (Test Anxiety Inventory and S-R Inventory of Anxiousness). The results, supporting the "no-difference" assumption, may be found in Appendix E.

Counselors

The academic training and experience of both counselors appeared to be similar. The Therapist Orientation Scale (see Chapter II) completed by both counselors supported a similarity in basic approach and specific technique of counseling. There was, however, no basis for assuming that both counselors would be equally effective with each treatment (Systematic Desensitization-Structured Group Interaction) or personality type (Introvert-Extravert). Furthermore, to determine the possibility of interaction between counselor, personality type and treatment, a 2X2X2 analysis of variance was performed on the post-treatment mean scores for systematic desensitization and structured group interaction treatments. The 2X2X2 analysis of variance tables (Appendix E, Tables 1-10) compared the performance of systematic desensitization and structured group interaction groups across personality type and counselor. No significant difference was found between the overall effectiveness of the counselors, using as the dependent variable the six sub-scales of the S-R Inventory, the Test Anxiety Inventory, the Thayer factors and the Test Anxiety Rating Sheet. These tables also indicated that neither counselor was more effective

in treating one particular personality type; that is, no statistically significant personality by counselor interactions were found. A more detailed discussion is found in Appendix E.

In light of the supporting evidence for no-significant differences attributable to counselors' differential effectiveness, all further analyses used combined counselor data. This procedure increased n size from four to eight for each sub-group, e.g., subjects who were classified Introverts who received Systematic Desensitization.

Effectiveness of Treatment

Two of the hypotheses which underlie the present study were concerned with the relative effectiveness of the treatments, systematic desensitization and structured group interaction, as they were affected by subjects' personality type. The expectation was that introverts would "improve" more than extraverts exposed to the systematic desensitization treatment. Conversely, extraverts were expected to "improve" more with the structured group interaction treatment than introverts. These interactive hypotheses were reflected in Tables 1-10 (see Appendix E) as the "personality x treatment" source of variance. The tables were based on the 2X2X2 analysis of variance performed on post-experiment data for systematic desensitization and structured group interaction treatment groups. Ten different analyses were required, each corresponding to a particular dependent variable, e.g., Test Anxiety Inventory, S-R Inventory of Anxiousness (6 factor scores), Thayer Activation-Deactivation Adjective Check List (2 factor scores), and Test Anxiety Rating Sheet.

None of the ten analyses supported the hypothesized interactions.

(See Tables 1-10 in Appendix E and Table 3 below.) That is, the interaction between introversion-extraversion and systematic desensitization-structured group interaction was not statistically supported.

TABLE 3

PERSONALITY X TREATMENT INTERACTION
2X2X2 ANALYSIS OF VARIANCE
PERSONALITY BY TREATMENT BY COUNSELOR

Instrument	F	Means			
		SD		SGI	
		I	E	I	E
TAI	.72	105.63	104.63	121.63	111.75
SR factor 1	.65	193.88	177.00	239.50	199.63
factor 2	2.35	81.25	103.25	103.75	100.63
factor 3	1.27	42.38	38.75	57.63	45.25
factor 4	1.01	142.63	136.25	184.00	151.75
factor 5	4.20	83.25	94.25	118.88	103.13
factor 6	.32	91.63	91.00	98.13	90.75
Thayer-HA	2.29	8.13	7.50	12.13	7.75
GD	.25	17.63	18.13	19.88	19.00
TAR	.19	12.63	12.50	14.00	12.75

SD = Systematic Desensitization
SGI = Structured Group Interaction
I = Introvert
E = Extravert

A comparison of the hypothesized interaction between personality type (introvert-extravert) and treatment group (systematic desensitization, structured group interaction)--no-treatment control--included in the 2X3 analysis of variance by planned comparison indicated only one out of a possible 11 statistically significant difference ($p<.05$) for the S-R Inventory of Anxiousness Factor 5. (See Table 4.)

TABLE 4

PERSONALITY X TREATMENT INTERACTION
2X3 ANALYSIS OF VARIANCE
INTROVERT-EXTRAVERT X SYSTEMATIC DESENSITIZATION-STRUCTURED GROUP INTERACTION-NO TREATMENT CONTROL

Instrument	F	Means					
		SD		SGI		NTC	
		I	E	I	E	I	E
TAI	.76	105.63	104.63	121.63	111.75	117.50	136.00
SR-Situation 1	.12	33.13	31.13	40.38	36.63	42.50	48.75
factor 1	.82	193.88	177.00	239.50	199.63	243.25	258.00
factor 2	2.60	81.25	103.25	103.75	100.63	99.50	111.50
factor 3	1.02	42.38	38.75	57.63	45.25	58.75	51.50
factor 4	1.06	142.63	136.25	184.00	151.75	178.25	191.00
factor 5	4.45*	83.25	94.25	118.88	103.13	117.25	126.75
factor 6	.27	91.63	91.00	98.13	90.75	105.75	104.25
Thayer-HA	2.20	8.13	7.50	12.13	7.75	10.00	17.25
GD	.19	17.63	18.13	19.88	19.00	21.25	13.75
TAR	.13	12.63	12.50	14.00	12.75	16.75	25.25

NTC = no-treatment control
$p<.05$*

In the present study Hypothesis I was specifically concerned with the interaction of introversion-extraversion and systematic desensitization.

Hypothesis One

Hypothesis I stated that "Introverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than extraverts following treatment with the systematic desensitization method." To test this specific prediction, eleven t tests were performed. One t value reached the $p<.05$ level of significance, indicating a significant difference in the direction predicted (see Table 5). Therefore, Hypothesis I was rejected.

TABLE 5

MEAN SCORES AND t TEST FOR INTROVERTS AND EXTRAVERTS RECEIVING SYSTEMATIC DESENSITIZATION TREATMENT

Instrument	t	Means	
		I	E
TAI	.09	105.63	104.63
SR-Situation 1	.20	33.13	31.13
factor 1	.53	193.88	177.00
factor 2	2.44*	81.25	103.25
factor 3	.78	42.38	38.75
factor 4	.43	142.63	136.25
factor 5	1.38[a]	83.25	94.25
factor 6	.28	91.63	91.00
Thayer-HA	.22	8.13	7.50
GD	.11	17.63	18.13
TAR	.06	12.63	12.50

$p<.05$*
$<.10$[a]

Hypothesis Two

Hypothesis II stated that "Extraverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than introverts following treatment with the structured group interaction method." To test this specific prediction it was necessary to perform eleven t tests. Examination of Table 6 indicates that on all eleven analyses the mean for extraverts is lower than the mean for introverts and that extraverts' scores were significantly lower than introverts for the structured group interaction treatment on four measures of test-taking anxiety.

Hypothesis Three

The third hypothesis stated that the level of test anxiety for those individuals who received treatment would be lower than the anxiety level for untreated individuals. A 2X3 analysis of variance

TABLE 6

MEAN SCORES AND t TEST FOR INTROVERTS AND EXTRAVERTS RECEIVING STRUCTURED GROUP INTERACTION TREATMENT

Instrument	t	Means	
		I	E
TAI	1.06	121.63	111.75
SR-Situation 1	.89	40.38	36.63
factor 1	.58	239.50	199.63
factor 2	.19	103.75	100.62
factor 3	2.05*	57.63	45.25
factor 4	2.19*	184.00	151.75
factor 5	3.33***	118.88	103.13
factor 6	1.43[a]	98.13	90.75
Thayer-HA	2.36*	12.13	7.75
GD	.10	19.88	19.00
TAR	.72	14.00	12.75

p<.05*
<.01**
<.005***
<.10[a]

in the form of planned comparisons was performed on all post-experiment inventories (Test Anxiety Inventory, S-R Inventory of Anxiousness, Thayer Activation-Deactivation Adjective Check List and Test Anxiety Rating Sheet) for treatment groups, systematic desensitization and structured group interaction, and for the no-treatment control group. The purpose of the planned (orthogonal) comparisons was to arrange the data into portions pertaining to hypotheses that were meaningful to the interpretation of the experiment. Comparisons were tested instead of using the overall F test. These 2X3 analyses of variance (see Appendix E, Tables 21-31) served as an extension of the 2X2X2 analyses (presented above) through inclusion of the no-treatment control group. Thus, it was possible to compare the treatment groups systematic desensitization and structured group interaction, to the

no-treatment control group in terms of the effectiveness of actual treatment received. The results offer support for Hypothesis III.

The treatment-no-treatment control comparison for all instruments is summarized in Table 7 (below).[1]

TABLE 7

TREATMENT-NO-TREATMENT CONTROL
ORTHOGONAL COMPARISON AND MEAN SCORES
(2X3 ANALYSIS OF VARIANCE)
PERSONALITY BY TREATMENT

Instrument	F	Means		
		SD	SGI	NTC
TAI	7.74**	105.13	116.69	126.75
SR-Situation 1	14.40***	32.13	38.50	45.63
factor 1	11.46***	185.44	219.57	250.63
factor 2	.90	92.25	102.19	105.50
factor 3	3.55	40.56	51.44	55.13
factor 4	4.86*	139.44	167.75	184.63
factor 5	9.70***	88.75	106.56	122.00
factor 6	2.80	91.31	94.44	105.00
Thayer-HA	11.32***	7.81	9.94	13.63
GD	.44	17.88	19.44	17.50
TAR	20.74***	12.56	13.38	21.00
		N=15	N=15	N=8

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

It is important to keep in mind that the no-treatment control is one of two types of controls employed in this study. This group comes close to the treatment groups in experimental procedure with the exception of treatment per se. No-treatment controls were phoned, interviewed and promised treatment, a form of encouragement. Therefore, any significant differences found between the treatment groups and no-treatment controls would be attributable to treatment alone and not to the "attention" factor. All instruments confirmed

the expectation. The Test Anxiety Inventory and the Test Anxiety Rating Sheet were significant at the $p<.01$ and $<.005$ level, respectively. An examination of the means (Table 7) points out the superiority of treatment over no-treatment, that is, lower mean test anxiety scores for treated individuals.

The S-R Inventory of Anxiousness and the Thayer, both factored tests, provided partial support for the hypothesis. Situation 1, the test-taking situation also included in factor 1, factor 1 and 5 of the S-R Inventory of Anxiousness were significant at $p<.005$. Factor 4 was significant at $p<.05$. One factor of the Thayer, HA (High Activation) discriminated between the treated and non-treated subjects at $p<.005$. (See Table 7.)

In the case of those factors which did not indicate a difference that was statistically significant at $p<.05$, inspection of group means (Table 7) connoted a trend similar to those factors which reached significance with the exception of the Thayer-Factor GD.

Hypothesis Four

The no-contact control group served as the baseline in this study. Its subjects received neither treatment nor "attention." One would, therefore, expect that any difference found between treatment groups and no-treatment controls would be further accentuated when treatment groups were compared to the no-contact controls. To test this notion, eight 2X4 analyses of variance by planned comparisons were carried out (see Appendix E, Tables 32-39). Since the no-contact controls did not take the Thayer or the Test Anxiety Inventory we cannot compare their scores to the other groups on these instruments.

All but two of these comparisons (Table 8) were found to be significant.

TABLE 8

TREATMENT-NO CONTACT CONTROL
ORTHOGONAL COMPARISON (2X4 ANALYSIS OF VARIANCE)
PERSONALITY TYPE BY SYSTEMATIC DESENSITIZATION-STRUCTURED GROUP INTERACTION-NO CONTACT CONTROL

Instrument	F	Means		
		SD	SGI	NCC
TAI	2.38	105.13	116.69	117.56
SR-Situation 1	4.59*	32.13	38.50	39.56
factor 1	12.06***	185.44	219.57	242.63
factor 2	1.37	92.25	102.19	104.58
factor 3	6.48*	40.56	51.44	55.25
factor 4	5.54*	139.44	167.75	179.76
factor 5	11.25***	88.75	106.56	117.81
factor 6	7.11*	91.31	94.44	106.31
		N=15	N=15	N=15

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

An additional planned comparison was concerned with the effectiveness in reducing test anxiety of both treatment groups (systematic desensitization, structured group interaction) as compared to both control groups (no-treatment control, no-contact control). The results of this "experimental-control" planned comparison may be found in Table 9. In seven of the eight analyses a significant difference in favor of the experimental groups emerged.

Hypothesis Five

Hypothesis V postulated that no differences would be found between the no-treatment control and the no-contact control. The results of a no-treatment control, no-contact control comparison (Table 10) supported the hypothesis.

TABLE 9

BOTH TREATMENT-BOTH CONTROL
ORTHOGONAL COMPARISON (2X4 ANALYSIS OF VARIANCE)
PERSONALITY BY TREATMENT

Instrument	t	Means	
		Treatments	Controls
TAI	8.15**	110.91	122.16
SR-Situation 1	16.20***	35.32	42.60
factor 1	17.51***	202.51	246.53
factor 2	1.69	97.22	105.04
factor 3	7.65*	46.00	55.19
factor 4	7.92*	153.60	182.20
factor 5	16.83***	97.66	119.91
factor 6	7.70*	92.88	105.66
		N=30	N=23

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

TABLE 10

NO-TREATMENT CONTROL-NO-CONTACT CONTROL
ORTHOGONAL COMPARISON AND MEAN SCORES (2X4 ANALYSIS OF VARIANCE)
PERSONALITY BY TREATMENT

Instrument	F	Means	
		NTC	NCC
TAI	.03	126.75	117.56
SR-Situation 1	4.64*	45.63	39.56
factor 1	.24	250.63	242.63
factor 2	.00	105.50	104.58
factor 3	.00	55.13	55.25
factor 4	1.00	184.63	179.76
factor 5	.31	122.00	117.81
factor 6	.03	105.00	106.31
		N=8	N=15

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

In only one of the eight analyses was a statistically significant difference found. Inspection of the F values and mean scores for

the seven other comparisons reveal that the differences between the no-treatment control and no-contact control groups were extremely small.

Supplementary Findings

Treatment Comparison

When the present study was undertaken, there was no basis for predicting that one particular treatment, e.g., systematic desensitization or structured group interaction would be more effective than the other in reducing test anxiety, independent of the S's personality type. However, an orthogonal comparison of systematic desensitization X structured group interaction was carried out and the results of the 2X3 analysis of variance by planned comparison (see systematic desensitization-structured group interaction treatment comparison, Tables 21-31, Appendix E) indicated that systematic desensitization appeared to be the more effective treatment regardless of the subject's personality type. This finding was indicated on the Test Anxiety Inventory and Situation 1, Factors 1, 3, 4, 5 of the S-R Inventory of Anxiousness. The Thayer Activation-Deactivation Adjective Check List and the Test Anxiety Rating Sheet did not indicate this trend. Table 11 summarizes the experimental treatments comparison by providing F ratios and mean scores for the systematic desensitization and structured group interaction treatments.

Therapist Rating of Client Anxiety

Each week following the group session the counselors rated the subjects' anxiety level on a five point scale (5=high and 1=low). It was hoped that a positive relationship would be found between counselor ratings and the statistical results and that both types of data would support Hypotheses I and II.

TABLE 11

SYSTEMATIC DESENSITIZATION-STRUCTURED GROUP INTERACTION ORTHOGONAL COMPARISON (2X3 ANALYSIS OF VARIANCE) INTROVERT-EXTRAVERT X SYSTEMATIC DESENSITIZATION-STRUCTURED GROUP INTERACTION-NO-TREATMENT CONTROL

Instrument	F	Means	
		SD	SGI
TAI	5.15*	105.13	116.69
SR-Situation 1	6.54*	32.13	38.50
factor 1	7.20*	185.44	219.57
factor 2	1.63	92.25	102.19
factor 3	6.30*	40.56	51.44
factor 4	5.15*	139.44	167.75
factor 5	12.28***	88.75	106.56
factor 6	.23	91.31	94.44
Thayer-HA	2.83	7.81	9.94
GD	1.00	17.88	19.44
TAR	.27	12.56	13.38
		N=15	N=15

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

Individual subject scores for every session were averaged for each group. Group mean scores were then averaged across counselors. Thus, one score was obtained for each treatment by personality group, e.g., systematic desensitization-introvert, systematic desensitization-extravert, structured group interaction-introvert, structured group interaction-extravert, for all five sessions.

The Therapist Rating of Client Anxiety Graph (Figure 4) illustrates weekly post-session changes in anxiety level of counselees by personality and treatment group. Systematic desensitization seemed to be the more effective means of reducing test-taking anxiety, independent of personality type. Structured group interaction appeared to be more beneficial (lower level of anxiety) for extraverts than for introverts.

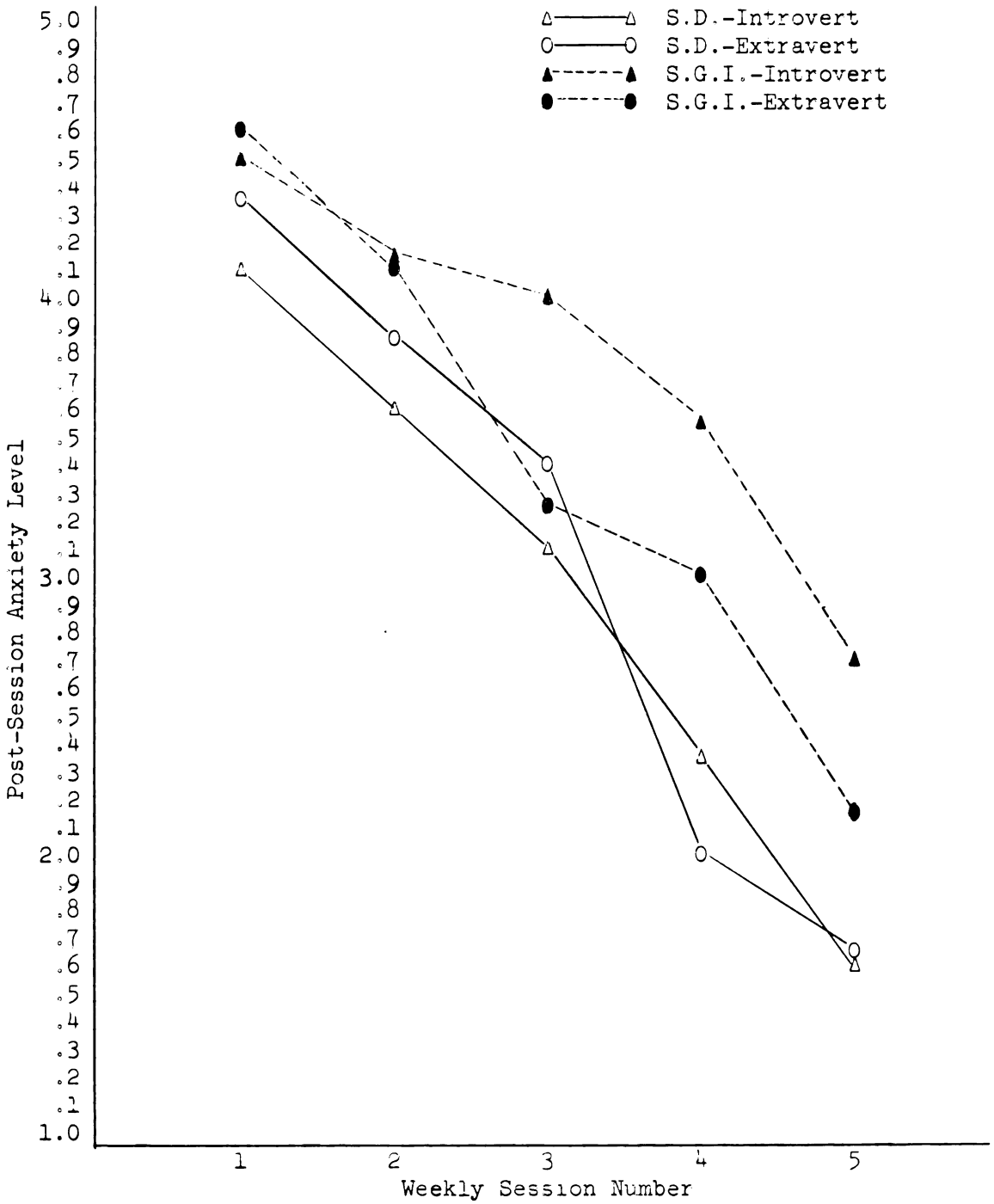

FIGURE 4
Therapist Rating of Client Anxiety

Personality Main Effect

It was anticipated that personality type, introvert-extravert, independent of treatment would not be responsible for a significant difference in the anxiety level of Ss following treatment.

Results of the "personality type main effect" based on the 2X2X2 analysis of variance (Tables 1-10) indicated no significant difference between systematic desensitization and structured group interaction groups on the "personality main effect" source of variance. The F ratios and mean scores are presented in Table 12, below.

TABLE 12

PERSONALITY MAIN EFFECT
2X2X2 ANALYSIS OF VARIANCE
COUNSELOR BY PERSONALITY BY TREATMENT

Instrument	F	Means	
		I	E
TAI	1.08	113.63	108.19
SR-factor 1	3.96	216.69	188.31
factor 2	1.33	92.50	101.94
factor 3	4.25	50.00	42.00
factor 4	2.27	163.31	144.00
factor 5	.13	101.06	98.68
factor 6	.45	94.88	90.88
Thayer-HA	4.07	10.13	7.63
GD	.02	18.75	18.56
TAR	.28	13.31	12.63

Summary

Three of the five hypotheses of this study were supported statistically and therefore accepted. These were concerned with the effectiveness of treatment as compared to the no-treatment control, Hypothesis III; effectiveness of treatment as compared to the no-contact

control, Hypothesis IV and comparison of the "attention" control group (no-treatment control) and the "baseline" control group (no-contact control), Hypothesis V.

Hypotheses I and II, predicting a treatment-personality type interaction, received little support. Hypothesis I focused on the systematic desensitization treatment and suggested that introverts would show less anxiety at the end of treatment than extraverts. One finds that this did not receive much statistical support. On the basis of results for eleven t tests, only one t value reached the $p<.05$ level of significance, indicating a significant difference in the direction predicted (Table 5, page 64). There was an overall similarity of mean scores for introverts and extraverts exposed to systematic desensitization treatment.

Although Hypothesis II, suggesting the greater effectiveness of the structured group interaction treatment with extraverts, was not supported statistically for all inventories, examination of the mean scores (Table 6, page 65) reveals a trend in this direction. In all eleven analyses the mean for extraverts was lower than that for introverts exposed to the structured group interaction treatment. The results of eleven t tests (Table 6) revealed three t values which were significant at $p<.05$ and one t value at $p<.005$. In all four cases the mean extravert score was significantly lower than the mean introvert score, findings which support the prediction in Hypothesis II.

Although a "treatment main effect" was not hypothesized, the systematic desensitization treatment produced lower anxiety levels than the structured group interaction treatment on all eleven measures and significantly lower scores on six of the eleven measures. Table 11 summarizes the systematic desensitization-

structured group interaction treatment (orthogonal) comparison.

The greater overall effectiveness of the systematic desensitization treatment was also indicated by the Therapist Rating of Client Anxiety data (Figure 4).

Chapter IV

DISCUSSION

Introduction

The present investigation studied the effects of personality type on two methods of treatment for reducing test-taking anxiety in college undergraduates.

Systematic desensitization was chosen as one treatment since it has been found to be successful in reducing interpersonal anxiety (Paul, 1966; Paul and Shannon, 1966) and test-taking anxiety (Katahn, Strenger and Cherry, 1966) in college students. In addition, systematic desensitization had the advantage of being relatively short term and easily taught to treatment counselors because of its specificity and preciseness. The alternate method of treatment, structured group interaction, was designed to have the same positive features.

The rationale for the use of two modes of treatment rested on the presupposition that these treatments would be differentially effective as a function of subject personality type. The direct comparison of the two treatment groups was not felt to be a major goal of this study. It was anticipated that each treatment would help to reduce test anxiety and that both treatments would be successful when compared to control procedures. These expectations incorporated into Hypotheses III and IV were upheld by the results in this study.

The Treatment--Control Hypotheses

Comparisons of the two treatment groups with the two control groups (no-treatment control and no-contact control) gave a clear indication, on seven of eight measures, of the effectiveness of the two treatment procedures.

The treatment-control comparison was further contrasted by the introduction of the no-treatment control group to rule out the non-treatment-specific elements of contact and attention. When both treatments were compared to this control group, ample support was found for the efficacy of both treatments. It appeared that both systematic desensitization and structured group interaction provided something more than that which was effected by motivation to change and promises of help.

Thus, Hypothesis III that systematic desensitization and structured group interaction treatment groups will show significantly less text anxiety than will be found in the no-treatment control group was supported.

The second treatment-control comparison was designed to test Hypothesis IV that systematic desensitization and structured group interaction treatment groups will show significantly less test anxiety than will be found in the no-contact control group. The results provided support for Hypothesis IV.

The expectation that attention, promise of help and face-to-face contact would not be enough in itself to bring about a lowered level of test anxiety was tested in Hypothesis V. Hypothesis V stated that there will be no significant difference between the anxiety level of test anxious college students assigned to the no-treatment control goup and those assigned to the no-contact control group. As predicted, no significant differences were found on five of six measures.

The one measure on which the groups were significantly different was Situation 1 of the S-R Inventory of Anxiousness. This particular measure is specifically concerned with the test

anxiety situation and the S's mode of response when exposed to it. It is this measure which was probably the most relevant of the ten anxiety producing situations of the S-R Inventory of Anxiousness. It might have been anticipated that this significant difference would favor the no-treatment control group because of greater awareness of available help at a future time. However, comparison of the group means indicated a lower anxiety level for the no-contact control group.

One possible explanation for this finding is that the no-treatment controls were more sensitized to their test-taking anxiety as a function of the interviews, phone calls, and finally the disappointment of not receiving help. This awareness of the need for help may have been more pronounced on the surface than it was for the no-contact control group who continued to focus on and cope with their test anxiety as they had previously done, unaware of any involvement in a program of help for test-taking anxiety.

Interaction

Systematic Desensitization Treatment

The primary concern of this study was with the relative effects of treatment. Hypothesis I stated that introverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than extraverts following treatment with the systematic desensitization method. This hypothesis was not supported by the results. Introverts and extraverts were found to derive approximately the same amount of benefit from the systematic desensitization method.

The theory upon which Hypothesis I is based suggested that

introverts learn more rapidly and enduringly than extraverts because of a higher level of cortical excitation, or as Gray (1967) suggests, a higher level of arousal. Gray operationally defined this as "lower auditory and pain thresholds." A positive relationship between heightened arousal and sensitivity to sound and pain was suggested. Supporting evidence was reported by Gray (1967) for a connection between a lowered sensory threshold and heightened arousal, the highly aroused individual being very attentive to stimuli. The introvert, then, would be expected to be more alert and sensitive to the environment than the extravert. Furthermore, as emphasized in Chapter I, the introvert would not need to depend on the external stimulation which extraverts require and would find the systematic desensitization treatment sufficiently stimulating. The extraverts, on the other hand, would find systematic desensitization repetitive and non-stimulating because of the lack of peer verbal contact and interaction, as well as the repetitive features of relaxation training and hierarchy construction.

It may be that when systematic desensitization treatment is carried out individually on a one-to-one basis, the above rationale holds. However, the present study applied the systematic desensitization treatment to small groups, not single individuals, a factor which was not considered when Hypothesis I was proposed.

It is suggested that this group procedure converted the systematic desensitization treatment into one which would favor extraverts more than introverts. By placing the introverted individual in a group situation, his highly aroused state, which normally serves to facilitate learning, passes the optimal level. This might result, not in maximal readiness for treatment and concentration, but in

distraction caused by the competing stimuli of the task and the presence of other individuals. Gray (1967) provided support for this notion. He found that introverts perform on a vigilance task more efficiently in isolation, while extraverts performed better in a group. He attributed this to the fact that the initial anxiety level of introverts is characteristically higher than extraverts.

Although systematic desensitization in groups may be thought of as a number of independent treatments in a group setting, this is not entirely true. Leon (1967, p. 73) characterizes group desensitization in the following way: "A close look at the actual treatment reveals that relaxation training and hierarchy building are group procedures; desensitization is still essentially an individual procedure carried out in a group setting." If the introvert performs best (Gray, 1967) and studies most effectively alone and away from others (Estabrook, 1966), it is not surprising that he will derive less than maximal benefit from a group treatment procedure. The extraverts, on the other hand, had the advantage of the presence of others. Though little actual verbal or physical contact among group members and counselor took place, eye contact and extraneous sounds such as breathing and body movement made the presence of others felt. It provided the additional stimulation necessary for the optimal functioning of the extravert at the expense of overstimulation and, consequently, distraction of the introverts.

In a recent article, Davison (1968) discussed some practical limitations of the systematic desensitization treatment. One such limitation possibly affecting the outcome of this treatment with introverts was the level of relaxation reached by subjects. It is very likely that functioning in a group exerted an inhibitory

influence on the introverts, preventing them from achieving a level of deep muscular relaxation. This might cause even a low item on the anxiety hierarchy to be met with an anxiety response since the relaxation level was not sufficient to match the intensity of the felt anxiety. Wolpe (1958) suggested that successful treatment would result from an inhibition in avoidance behavior. Therefore, the level of avoidance must be reduced by relaxation before approach, or coping with an anxiety stimulus, can take place.

In light of the above discussion it is not surprising that most of the mean scores for introverts and extraverts were not significantly different. One significant difference (S-R Inventory of Anxiousness, Factor 2, Inanimate Personal Danger), however, favored the introverts as predicted. A second difference reached the .10 level of significance. This difference also favored the introverts. "Distress, disruption and avoidance associated with physiological components" was significantly greater for extraverts than introverts.

Structured Group Interaction Treatment

Hypothesis II stated that extraverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than introverts following treatment with the structured group interaction method. This hypothesis was partially supported by the results. Extraverts were found to have a significantly lower anxiety level than introverts on several measures, factor 3 and 4 of the S-R Inventory of Anxiousness and the High Activation factor of the Thayer at $p<.05$ and factor 5 of the S-R Inventory of Anxiousness at $p<.005$. An additional measure, factor 6 of the S-R Inventory of Anxiousness was significant at $p<.10$.

Although several differences did not reach the required level of statistical significance, it is nevertheless important to note that on all eleven measures the mean score for extraverts was lower than the mean score for introverts. This pointed to a definite trend favoring extraverts exposed to structured group interaction.

The above data are positive indications of the effectiveness of the structured group interaction treatment with extraverts, but they are by no means conclusive. An examination of the nature of the structured group interaction treatment, its rationale and procedure, sheds some light on this problem.

It will be recalled that the structured group interaction treatment was specifically designed for use with extraverts based on theory and previous research. The elements which seemed to be essential were: 1.) group as opposed to individual treatment; 2.) verbal interaction; and 3.) activities designed to arouse the extraverts' interest and motivation. Whether these elements were maximized and translated fully into the actual treatment is difficult to ascertain. Since this was a new treatment it had obvious imperfections which need to be identified and eliminated. As with any technique, replication and continued use is an aid in reducing flaws and increasing effectiveness. The problem can be seen as one of undetermined reliability and validity of the treatment.

Suggested modification of the structured group interaction treatment. One way in which the structured group interaction treatment may be altered is by varying the number, type, or order of presentation of the activities. For example, the simulated test-taking activity might have been more effective during the final session or in an actual examination room setting. Perhaps the

nature of the activites could be based on the specific needs of the particular group.

Future studies employing this treatment might attempt to vary the amount of verbal interaction providing more or less freedom of peer verbal exchange and greater or lesser counselor participation and direction.

An alternate explanation for the less than optimal success of structured group interaction with extraverts is found in the Pavlovian concept of "cortical inhibition," which suggests that extraverts learn slowly and arduously. Perhaps a five week treatment period in which only four hours were devoted to treatment was not long enough. Extraverts tend to be a gregarious lot and may require additional time before they can settle down to something as "unexciting" as learning how to better cope with their test-taking anxiety.

The five week treatment period was chosen so that duration of exposure to treatment would be a constant factor in both treatments, systematic desensitization and structured group interaction.

The activities chosen to be an integral part of the above treatment were: simulated test-taking, role-taking and study skills. Each required one session. In retrospect it is unlikely that "role-taking," a central notion in George Kelly's (1955) theory of personal constructs, could be communicated and provide maximal benefit to extraverts in one hour. Since the extravert is characterized as being less sensitive to his internal functioning and less prone to subjective evaluation than introverts, creating a new role might be a more lengthy or difficult procedure for extraverts than introverts.

Also, study skills, emphasized in Session 4, would probably

be learned more rapidly by introverts. Therefore, only one hour devoted to study skills might be disadvantageous to extraverts.

All of the above discussion demonstrates the need for a longer structured group interaction treatment period which might result in greater reductions in test anxiety for extraverts.

Supplementary Findings

Treatment Main Effect

A comparison of the effectiveness of systematic desensitization and structured group interaction was made across personality type. It was not expected that one treatment would demonstrate its superiority as a means of reducing test anxiety. However, on all eleven measures systematic desensitization produced lower anxiety scores, and six of the eleven scores were significantly lower at or beyond the .05 level. There are a number of reasons why these results may have been found.

One factor has already been discussed above and pertains to the arbitrary limit of five weeks set on the structured group interaction treatment. This type of treatment resembles traditional group counseling in a number of ways: verbal interaction and discussion, group support and sanction and a trained counselor to guide the group's progress. However, group counseling usually does not have a time limit placed on it, and in those cases which are exceptions, the number of sessions is usually greater than five. Structured group interaction might profitably use group counseling as a guideline in respect to length of treatment, since the two approaches do have a number of other common elements.

Systematic desensitization. Systematic desensitization has proven itself to be a rapid and efficient means of eliminating or reducing a specific maladaptive response. The results of many experimental studies focusing on specific disorders, including phobias (e.g., Lazarus, 1961; Lang and Lazovik, 1963; Rachman, 1966) and interpersonal anxiety (e.g., Paul, 1966, 1967; Paul and Shannon, 1966), demonstrated its potential usefulness. The method has been refined, more precisely operationalized, and even dichotomized and studied in its component parts (Lomont, 1967; Davison, 1968; Rachman, 1965). The effectiveness of the systematic desensitization treatment in the present study owed itself partially to the efforts of past researchers.

However, the results of this study did not offer complete support for the greater effectiveness of the systematic desensitization treatment over the structured group interaction treatment. Both treatments resulted in significant decreases in anxiety level when compared to controls, thus indicating the possible unrefined usefulness of structured group interaction.

Gordon Paul (1968, p. 7), in a discussion of this study at the 1968 Annual Meeting of the American Educational Research Association, suggested that the target problem, e.g., test anxiety, and not personal characteristics of the subject, e.g., personality type, dictate the choice of treatment. This point appeared contradictory to the need for specifying the client domain presented by Paul in an earlier paper (1967, p. 110). In the 1968 talk he went on to say that "if a conditioned anxiety reaction to an identifiable stimulus complex is the target, then current research evidence would support systematic desensitization as the indicated treatment procedure regardless of other personal characteristics of clients."

Structured group interaction. If the clear superiority of systematic desensitization as a means to treat test anxiety is not indicated (as was the case in this study), then structured group interaction may be viewed as a useful, if less effective, alternate approach. Gordon Paul (1968, p. 9) further suggested that the effectiveness of systematic desensitization may have been ". . . underestimated since the only other group procedure which has, historically, resulted in improved academic performance and lowering of anxiety has been 'study skills' instruction." The learning of study skills was only one element in the structured group interaction treatment. Other adaptive responses and positive learning experiences were provided through activities such as role-taking and simulated test-taking.

While systematic desensitization stresses anxiety reduction, structured group interaction goes one step further by suggesting a more suitable response to replace the previous anxiety response. ". . . the reduction of anxiety makes the client 'teachable'; the modification of other attitudes, behaviors and skills may still require specific learning experiences" (Paul, 1966, p. 93). Practice test-taking, role-taking and study skills, elements in the structured group interaction treatment, appear to meet this criterion.

Personality Main Effect

Although it was not hypothesized, it was nevertheless expected, that reduction of test anxiety would not be attributed to a subject's personality type, regardless of treatment. No significant differences were found between the performance of extraverts and introverts on any of 10 measures supporting the above expectation of no differences.

Extraverts did not show a lower level of anxiety following treatment than introverts. This finding added support to the finding that neuroticism and introversion may be independent concepts. (See Chapter 1, p. 11) If, as has been postulated, introverts are more "disturbed" as a group than extraverts, then one might expect introverts not to respond as rapidly as extraverts to any treatment. Therefore, post-experiment measures of anxiety level might be expected to indicate lower scores for extraverts than introverts regardless of the specific treatment method. This was not found. Furthermore, if anxiety is more characteristic of introverts than extraverts, then it is difficult to explain the fact that in the introductory psychology class, from which all subjects were selected for participation in this study, there were a greater number of students requesting and needing help who had extraverted scores on the Eysenck Personality Inventory.

The Eysenck Personality Inventory. In the present study the classification of introverts and extraverts was not arbitrarily set by finding the median score and calling those below it "introvert" and those above it "extravert." An individual had to have scored 0, 1, or 2 on the instrument to be classified as introvert and 4, 5, or 6 to be classified as extravert. To separate these groups more clearly, those with the middle score of 3 were not included in the study. Thus, the often-made criticism, that an extravert in one sample might be an introvert in another group, was minimized in the present study.

The Eysenck Personality Inventory has been widely used in research, particularly in behavior therapy studies and with college

students. It has been found to yield scores which were stable, i.e., no change in E score after treatment (Rachman, 1965) and valid (Vingoe, 1966). Vingoe asked 58 college students to rate themselves on a seven point introversion-extraversion scale. They also completed the Eysenck Personality Inventory. Introvert and extravert criterion groups, based on self ratings, were found to be significantly different from each other. The self ratings were in agreement with classification on the Eysenck Personality Inventory.

The short form of the Eysenck Personality Inventory was chosen for this study since it required little time to administer. Eysenck and Eysenck (1964) reported that it correlated .79 (N) and .71 (E) with the longer form of the inventory.

The above qualifications were necessary since a number of key hypotheses in this research rested on a valid definition of introversion and extraversion.

The Dependent Variables

The usefulness of a number of the instruments employed in this study must be examined. The interpretation of the results has been made extremely arduous by the fact that from eight to eleven analyses representing four instruments were necessary to test each hypothesis. For example, eleven tests were required to compare the means of introverts and extraverts exposed to the structured group interaction treatment. With this large number of measures it was most difficult to obtain unequivocal support for any hypothesis.

The value of the various criterion measures employed and their relevancy to this study are explored in the following section.

The S-R Inventory of Anxiousness

The S-R Inventory of Anxiousness was designed for use with a college student population. It attempts to measure anxiety reaction to eleven situations, social and nonsocial, which are familiar to most freshmen and sophomores. The fourteen modes of response to each situation are representative of positive and negative excitement or drive.

Research (Endler, et al., 1962) with the S-R has provided estimates of reliability using the split half method, yielding a total score coefficient of .95 and a range of .62-.90 for the eleven situations; .64-.93 for the 14 modes of response. Validity was established by comparing the S-R to the Mandler-Sarason Test Anxiety Questionnaire (+.66) and Taylor Manifest Anxiety Scale (+.46).

Factor analytic studies yielded six factors, three summarizing the eleven situations and three summarizing the 14 modes of response. Some of these factors appeared less directly relevant to the present study than others.

A number of points should be kept in mind about the present study. It was an attempt to treat test-taking anxiety. No predictions were made about resulting reductions in generalized anxiety nor was it expected that non-anxious responses would be transferred to non-test situations. Only one of the eleven situations pertains directly to test-taking. It is included in Factor 1, a synthesis of elements "threatening interpersonal status." If one views "entering a final exam" as a situation in which one will be evaluated and possibly fail, the similarity to other items comprising Factor 1 (e.g., being interviewed for an important job, entering a competitive

contest before spectators, getting up to give a speech, etc.) can be seen. The individual whose fear of "test evaluative" situations is reduced might also respond with less anxiety in similar evaluative situations. Therefore, Situation 1 and Factor 1 appear to be relevant to the present study.

Factor 2, "inanimate personal danger," appears to be a too distant extrapolation from test-taking anxiety and one which probably would not differentiate treated and untreated individuals, nor discriminate between treatment. The results supported this view. Factor 2 did not yield one statistically significant difference on any of the three analyses of variance.

Factor 3, "ambiguous," had the lowest factor loading and least clear meaning of the situational factors. However, it did offer statistical support to the hypotheses in this research. Although it looks like there is no commonality between "starting off on a long automobile trip" and "going into a psychological experiment," the latter might represent an evaluative situation. This factor, then, also appeared to have some relevancy to the present research, but its value would probably be increased if a situation score rather than a factor score were computed.

Factors 4 and 5 included most of the variance for the mode of response dimension. "Autonomic reactions" (Factor 4) included such items as heart beats faster, perspire, mouth gets dry, experience nausea, etc. These are feelings which very aptly describe the test-anxious individual before, during and possibly after an examination. These are reactions which treatment attempted to replace with more adaptive, calm responses.

"Distress, disruption and avoidance with associated physiological

components," Factor 5, seemed to describe the reactions which cause the test-anxious individual to seek help. The items representing this factor are: emotions disrupt action, want to avoid situation, become immobilized and get an "uneasy feeling." The results based on this factor were found to be statistically significant in the direction predicted.

Factor 6, "exhilaration, enjoyment and approach," appeared to have some relevancy. If a decrease in avoidance precedes an increase in approach it might be anticipated that at the end of a treatment period those receiving help would tend to approach the test situation more positively than untreated Ss. However, it would not be expected that a significantly greater approach response would be associated with a particular treatment, at least not after only five weeks. This is perhaps a long enough period in which to reduce avoidance but it would seem that "enjoy the challenge" or "seek experiences like this" would take a longer time to cultivate. The results of the analyses of variance supported the above explanation. The only significant differences were found between treated and untreated individuals.

The Thayer Activation-Deactivation Adjective Check List

The Thayer provides a unique approach to the measurement of anxiety. It is a self-report paper and pencil test which has been found to correlate with a number of physiological measures. Since physiological measures were not directly available for determining the subjects' anxiety level immediately following a final examination, it was felt that this instrument would be the best alternative. It is also an instrument developed specifically for the test-taking

situation and in which setting, reliability and validity coefficients were obtained (Thayer, 1967).

The results of factor analytic studies yielded four scores, two of which were applicable to this study. High Activation (HA) included the following adjectives: clutched up, jittery, stirred up, fearful and intense. General Deactivation (GD) included: at rest, still, leisurely, quiescent, quiet, calm and placid.

The results of the present study showed that HA was effective in demonstrating a significantly lower level of activation for treated individuals than untreated individuals but it could not discriminate between the two treatments. GD was not found to be a useful measure in the present study. In interpreting the partial effectiveness of HA and the ineffectiveness of GD, the previous discussion of the S-R Inventory of Anxiousness mode of response factors applies. HA closely resembles the "distress, disruption and avoidance" factor of the S-R. Both seem to represent negative excitement or drive. Both provided similar results.

The GD factor appears to have something in common with the S-R exhilaration factor. Although the former refers to a calm, placid state and the latter a positive excitement state, both represent the opposite of a tense, anxious condition, i.e., negative excitement state. In terms of the avoidance-approach model previously discussed, both represent the latter phase which would not likely be realized in a short time period. Perhaps a followup several months after treatment, at which time the instruments were readministered, would provide data based on Thayer GD and S-R Factor 6 supporting the hypotheses of this study.

Test Anxiety Inventory

This instrument resembles the Fear Survey Schedule (Lang and Lazovik, 1963) in terms of goal and format. However, the Fear Survey Schedule was developed to measure the intensity and range of responses to phobic stimuli while the Test Anxiety Inventory was designed to assess the intensity and range of responses to test anxiety stimuli. In both, a subject responds to anxiety producing stimuli items on a one-to-five scale reflecting level of disturbance. Both tests have been employed in and modified through research, mainly in behavior therapy studies (Emery, 1966; Leon, 1967; Neuman, 1968).

The Test Anxiety Inventory proved to be a useful index of test-taking anxiety in the present study. It provided results that were in agreement with the measures which were shown to be most relevant to the present study: S-R Situation 1, Factor 1, 4, and 5 and Thayer HA.

Test Anxiety Rating Sheet

The Test Anxiety Rating Sheet (TAR) is an eight point scale measuring intensity of anxiety felt before, at the beginning, in the middle, near the end and after the exam. Subjects were asked to fill out the form immediately following the exam. It discriminated between treatment and control group subjects at $p<.005$.

The lack of significant results in support of the interactive Hypotheses I and II may be explained in a variety of ways, e.g., insensitive or invalid instruments, ineffective treatments or erroneous hypotheses. The TAR did not support Hypotheses I and II. An explanation for this finding seems to rest on a recent observation

by Davison (1968). He suggests that anxiety measurements, to be accurate reflections of the fear which inhibits behavior, must be taken before or during the behavior. The TAR, administered following the examination, may actually reflect relief or exhaustion, more than likely the S's condition at that moment. It is doubtful that the S was able to accurately assess the way he was feeling at very specific points during the exam, in retrospect. So fine a discrimination of time and feelings was unlikely, especially since the individual was presumably attending to something else.

Summary and Implications for Future Research

The results of the present study demonstrate that group systematic desensitization and structured group interaction are feasible procedures for treating test-taking anxiety. All of the instruments employed to measure anxiety gave complete or partial support to the hypotheses comparing treated and untreated individuals. However, in respect to the interaction hypotheses and the two treatment comparisons, either the instrument did not effectively discriminate or the treatments were not differentially effective. Fewer significant differences were found than were predicted. Possible explanations for these results were discussed in terms of two factors: weak instruments and/or imprecise treatments.

Hypothesis I, predicting the greater effectiveness of systematic desensitization with introverts than extraverts, did not receive support, partially as a function of the possible negative effect of a group procedure for introverted individuals.

Hypothesis II, predicting the greater effectiveness of structured group interaction with extraverts than introverts, was not

fully supported by the data. One factor discussed in connection with this finding was the negative influence of a time-limited treatment period of five weeks. Extraverts, who are characterized as slower learners than introverts, may require additional treatment time. Five sessions have been found to be adequate in systematic desensitization studies. However, there is no rationale based on past research for applying a five hour limit to structured group interaction.

The four instruments, representing eleven measures of anxiety level, were discussed in terms of their reliability, validity, appropriateness and specific value to this study. The purpose of the four tests and the therapist rating of client anxiety was to provide a measure of relative improvement as determined by lowered levels of test-taking anxiety.

Three possible ways of assessing improvement have been identified (Davison, 1968): cognitive, physiological and observable. Those self-report tests which asked Ss to indicate how they felt about various anxiety-producing stimuli while in a non-anxiety-producing situation might be viewed as cognitive. Such instruments are the Test Anxiety Inventory, S-R Inventory of Anxiousness and Test Anxiety Rating Sheet. The Thayer Activation-Deactivation Adjective Check List is also a self-report test, but unlike the others, it has been found to correlate with physiological indices (skin conductance and heart rate). It might be considered a quasi-physiologic measure.

The Therapist Rating of Client Anxiety provided measurement of subjects' anxiety level through observation.

The present study attempted to measure post-treatment level

of test anxiety in as comprehensive a manner as possible by recognizing the necessity of sampling behavior in the three available ways outlined by Davison. However, direct physiological and observational measures were not taken in the anxiety-producing situation. It is suggested that subsequent examination of this study's hypotheses incorporate direct observation of subjects and actual physiological measurement into the design.

Throughout the discussion, various ways of improving upon the treatment have been suggested. Future research might consider some of these alternative approaches as independent variables. For example, the effect of personality type on systematic desensitization might be investigated using both individual and group systematic desensitization procedures. Another recommendation for future study is to determine the effectiveness of structured group interaction with introverts and extraverts when length of treatment is manipulated, e.g., five weeks, ten weeks, unlimited number of sessions. It is also proposed that varying the activities and extent of interactions within the structured group interaction treatment might produce a more effective approach to treating test-taking anxiety in a college student population. An additional possibility to explore is the extention of structured group interaction activities, such as simulated test-taking, into the actual test-taking situation.

In the present research the independent variable, personality type, was defined by the Eysenck Personality Inventory. This instrument provided only one operational definition of introvert and extravert. However, other ways of assessing introvert and extravert more directly might be sought. One way to dichotomize introverts

extraverts might be in terms of the actual behaviors which have been found to characterize these personality types. For example, observing the way individuals respond to a given situation(s) might provide a more accurate or valid approach to measuring the concept of introversion-extraversion than may have been possible with the paper and pencil test used in this study.

A suggestion for future study is the utilization of an instrument other than the Eysenck Personality Inventory for the assessment of introversion and extraversion. Two such instruments, the Myers-Briggs Type Indicator (Briggs and Meyers, 1962) and the Contact Personality Factor Test (Cattell, King and Schuettler, 1954) provide operational definitions of introversion-extraversion which differ from those employed by Eysenck.

The Meyers-Briggs Type Indicator is based upon the Jungian theory of types. Introversion-extraversion is one of four dichotomous dimensions measured by this self-report inventory. In terms of Jungian theory, extraversion would be defined by an orientation toward the outer world of people and things. Introversion would be defined by an orientation to the inner world of concepts and ideas.

Another definition of the concept of introversion-extraversion is provided by the Contact Personality Factor Test. This instrument attempts to measure peoples' needs for contact with other people in their work. It is primarily designed for use in job selection and placement.

The Eysenck Personality Inventory used in the present study provides a measure of social introversion or social mixing.

The three instruments above provide different ways of describing introverted and extraverted behavior. The way in which the concept

of introversion-extraversion is defined, e.g., orientation toward people or ideas, social mixing or need for contact with people on the job, may affect the classification of a person as introverted or extraverted. For example, an individual might function quite well independently on the job (introvert) but require a great deal of interaction and stimulation from other people in a social situation (extravert).

If the interaction hypotheses failed to be validated because of an inadequate definition of introversion-extraversion, the above suggested modification in operationally defining these personality types might tend to substantiate the personality-treatment relationship.

The rationale for the present study was based on Pavlov's theory of cortical excitation and inhibition. It was also based on the notion of specificity of treatment with respect to the counseling problem, e.g., examination anxiety.

Introverted and extraverted personality types, based on the principle of cortical excitation, in interaction with counseling treatment was not supported by the results of this study. However, one should not conclude that the hypothesized relationship does not exist.

There is a need for further investigation of various factors which may have been responsible for the study's failure to produce the desired results. One factor that might be studied is the experience level of the treatment counselors. In the present study both counselors were inexperienced with both methods. Thus, while level of experience was comparable for the two counselors, it may have been insufficient for producing the anticipated results. What would be

the effect of using counselors experienced with both treatments as opposed to counselors lacking experience with either treatment? One implication for future research, then, is the experimental manipulation of counselor experience level to determine its effect on the personality type by treatment interaction.

Another suggestion for future study is an examination of the effect of counselor personality type on the interaction: client personality type X treatment. In the present study the counselors' personality type was unknown. For example, would introverted counselors produce a lower level of test anxiety for introverted subjects exposed to systematic desensitization than for extraverted subjects exposed to systematic desensitization? Would introverted counselors produce a lower level of test anxiety for introverted subjects than they would for extraverted subjects across both treatments?

Another research question might focus on the set or expectancy of subjects participating in the study toward the counselor's experience or personality type. For example, subjects might be told certain information about the counselor's training and personality or behavior before the first session. How would this information and the resultant "set" affect the outcome of a personality type-treatment study?

Exploration of counselor preference for one particular treatment method such as systematic desensitization as opposed to structured group interaction might be fruitful. Similarly, a study of counselor preference for counseling one personality type, e.g., extraverts as opposed to introverts, might be undertaken. Information on counselor preferences was not obtained in this study. It might be that counselors who prefer to work with extraverts would be more

effective in counseling these individuals than they would be in counseling introverts, regardless of the treatment employed.

Although the present study did not offer much support for the hypothesized interaction between personality type and treatment, it has generated a number of research questions which may ultimately demonstrate this personality-treatment relationship.

SUMMARY

In the field of counseling a variety of techniques have been employed to treat clients' problems. The results of research have demonstrated that certain treatments, specific to a particular type of problem, are more effective than others. It has been suggested that other variables, such as stable counselee characteristics, may also be considered as important factors in the choice of a counseling treatment.

The purpose of the present study was to investigate the effect of specific personality types, introverts and extraverts, on the outcome of two counseling techniques, systematic desensitization and structured group interaction, in reducing test-taking anxiety among college students.

On the basis of Pavlov's theory of cortical excitation and inhibition and research evidence demonstrating the effectiveness of behavioral techniques with anxiety-type problems, it was hypothesized that:

I. Introverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than extraverts following treatment with the systematic desensitization method.

II. Extraverts, as measured by the Eysenck Personality Inventory, will show significantly less test anxiety than introverts following treatment with the structured group interaction method.

Fifty-six subjects, rated high on test-taking anxiety and volunteering for treatment, were selected from an introductory psychology class with an enrollment of 550 students. The students were selected according to classification on a personality inventory

and two measures of test-taking anxiety. They were randomly assigned to one of four groups, of which two were treatment groups, systematic desensitization and structured group interaction. Two other groups, no-treatment control and no-contact control, received no treatment. Each group was subdivided according to the student's personality type, introvert or extravert.

Those subjects assigned to one of the treatments received five one-hour sessions in groups of four. The systematic desensitization treatment was based on Wolpe's (1958) principles adapted for group use by Lazarus (1961). The structured group interaction treatment was developed as an alternate to systematic desensitization for providing the greatest possible benefit to the extraverted individual. According to theoretical rationale, this treatment needed to be verbal in nature (requiring discussion), necessitating interaction (small groups) and activity (e.g., examination-taking practice, creating and rehearsing new roles). Weekly session outlines were designed to provide needed structure.

The no-treatment control group received attention in the form of telephone contact, interviews and the anticipation of treatment. The no-contact control group served as a baseline measure since its subjects had no knowledge of their participation in the study. Both groups were tested pre- and post-treatment.

Three additional hypotheses were designed to investigate the specific effects of treatment as opposed to those produced by attention or simply the passage of time.

III. Systematic desensitization and structured group interaction treatment groups will show less test anxiety than will be found in the no-treatment control group.

IV. Systematic desensitization and structured group interaction treatment groups will show less test anxiety than will be found in the no-contact control group.

V. There will be no significant difference between the anxiety level of test-anxious college students assigned to the no-treatment control group and those assigned to the no-contact control group.

At the end of a five week treatment period, a battery of anxiety instruments were administered to determine the comparative successfulness of the two treatments, as these were affected by personality type, in reducing test-taking anxiety.

Analyses of variance by planned comparisons and appropriate t tests were used to test the five hypotheses.

The results supported Hypotheses III, IV and V. Those receiving both treatments were found to have a lower post-treatment anxiety level than no-treatment controls and no-contact controls. The two control groups did not produce significantly different post-experiment levels of anxiety. The above findings were discussed in terms of the ineffectiveness of the attention factor in reducing the level of test-taking anxiety.

The interactive hypotheses, I and II, received little support. The problem of interpreting results based on eleven measures of anxiety was discussed. Some of these indices were found to have greater relevancy to the present study than others.

The greater effectiveness of structured group interaction with extraverts than introverts was indicated but not totally supported. It was suggested that the treatment's effectiveness might be increased

by extending the treatment period, varying the order and intensity of the activities and re-examining the interactive process.

Introverts did not seem to derive more benefit from systematic desensitization than extraverts. This finding was explained in terms of the possible detrimental effect of group procedures with introverts. It was suggested that future research focusing on the influence of personality type on systematic desensitization might compare individual systematic desensitization with group procedures.

In conclusion, the present study seems to indicate the feasibility of employing systematic desensitization and structured group interaction treatments for reducing test-taking anxiety among college students. Although the effect of personality type or mode of treatment was not clearly demonstrated, future research incorporating some of the suggestions discussed might provide more definitive results.

REFERENCES

References

Briggs, K. and Myers, I. Myers-Briggs Type Indicator (Published test), Educational Testing Service, Princeton, N.J., 1962.

Cattell, R., King, J. and Shuettler, A. Contact Personality Factor Test (Published test), Institute for Personality and Ability Testing, Illinois, 1954.

Cautela, J. A behavior therapy approach to pervasive anxiety. Behavior Research and Therapy, 1966, 4, 99-109.

Cooke, G. The efficacy of two desensitization procedures: An analogue study. Behavior Research and Therapy, 1966, 4, 17-24.

Cooper, R. Extraversion and some aspects of work behavior. Personnel Psychology, 1967, 20 (1), 45-57.

Costello, C. Control of visual imagery in mental disorder. Journal of Mental Science, 1957, 103, 840-849.

Costello, C. Extraversion, neuroticism and the classical conditioning of word meaning. Psychonomic Science, 1967, 8 (8), 307-8.

Davison, G. The influence of systematic desensitization and graded exposure to imaginal stimuli in the modification of phobic behavior. Dissertations Abstract, 1966, 26 (10), 6165.

Davison, G. Systematic desensitization as a counterconditioning process. Journal of Abnormal Psychology, 1968, 73 (2), 91-100.

Emery, J. Using Desensitization to Reduce Undue Test Anxiety in College Freshmen. Unpublished Doctoral Dissertation, Stanford, California, Stanford University, 1966.

Emery, J. and Krumboltz, J. Standard vs. individualized hierarchies in desensitization to reduce test anxiety. Journal of Counseling Psychology, 1967, 14, 204-209.

Endler, N. McV., Hunt, J. and Rosenstein, A. An S-R Inventory of Anxiousness. Psychological Monograph, 1962, 536, #17.

Estabrook, M. and Sommer, R. Study habits and introversion-extraversion. Phycholcgical Reports, 1966, 19 (3), 750.

Eysenck, H. Dimensions of Personality. Kegan, Paul, et al., London, 1947.

Eysenck, H. The effects of psychotherapy: An evaluation. Journal of Consulting Psychology, 1952, 16, 319-324.

Eysenck, H. The dynamic theory of anxiety and hysteria. Journal of Mental Science, 1955, 101, 28-49.

Eysenck, H. Learning theory and behavior therapy. Journal of Mental Science, 1959, 105, 61-75.

Eysenck, H. The Structure of Human Personality, N. Y., Wiley, 1960.

Eysenck, H. (Ed.), Handbook of Abnormal Psychology, Basic Books, N.Y., 1961.

Eysenck, H. and Eysenck, S. An improved short questionnaire for the measurement of extraversion and neuroticism. Life Sciences, 1964, 3 (1), 1103-1109.

Eysenck, H. and Rachman, S. Causes and Cures of Neuroses, San Diego, Knapp, 1965.

Franks, C. Conditioning and personality: A study of normal and neurotic subjects. Journal of Abnormal and Social Psychology, 1952, 53, 143-50.

Franks, C. Conditioning and abnormal behavior, in Eysenck (Ed.) Handbook of Abnormal Psychology, Basic Books, N.Y., 1961.

Gelder, M. and Wolff, H. Desensitization and psychotherapy in the treatment of phobic states: A controlled inquiry. British Journal of Psychiatry, 1967, 113, 53-73.

Gray, J. Strength of the nervous system, introversion-extraversion, conditionability and arousal. Behavior Research and Therapy, 1967, 5 (3), 151-170.

Hain, J., Butcher, R. and Stevenson, I. Systematic desensitization therapy: An analysis of results in 27 patients. British Journal of Psychiatry, 1966, 112, 295-307.

Hall, C. and Lindzey, G. Theories of Personality, N.Y., Wiley and Sons, 1957.

Hays, W. Statistics for Psychologists, N.Y., Holt, Rinehart, and Winston, 1965.

Hilgard, E. and Marquis. Conditioning and Learning, Appleton, Century, Crofts, N.Y., 1961.

Holmes, D. Pupillary responses, conditioning and personality. Journal of Personal and Social Psychology, 1967, 5 (1), 98-103.

Jacobson, E. Progressive Relaxation. University of Chicago Press, Chicago, Illinois, 1938.

Jung, C. Psychological Types, Harcourt, Brace, N.Y., 1923.

Kandas, O. Reduction of examination anxiety and stage fright by group desensitization and relaxation. Behavior Research and Therapy, 1967, 5, 275-281.

Katahn, M., Strenger, S. and Cherry, N. Group counseling and behavior therapy with test anxious college students. Journal of Counseling Psychology, 1966, 30 (5), 44-49.

Kelly, G. The Psychology of Personal Constructs, Norton, N.Y., 1955.

Kiesler, D. Some myths of psychotherapy research and the search for a paradigm. Psychological Bulletin, 1966, 65 (2), 110-136.

Lang, P. and Lazovik, A. The experimental desensitization of a phobia. Journal of Abnormal and Social Psychology, 1963, 66, 519-525.

Lang, P., Lazovik, A. and Reynolds, D. Desensitization; suggestibility and pseudo-therapy. Journal of Abnormal Psychology, 1965, 70, 395-402.

Lazarus, A. Group therapy of phobic disorders by systematic desensitization. Journal of Abnormal and Social Psychology, 1961, 63, 504-510.

Lazarus, A. The treatment of chronic frigidity by systematic densensitization. Journal of Nervous and Mental Diseases, 1963, 136, 272-278.

Lazarus, A. Behavior therapy incomplete treatment and symptom substitution. Journal of Nervous and Mental Diseases, 1965, 140 (1), 80-86.

Leon, H. Reciprocal Inhibition: An Evaluation of Group Procedures with "Normal" Snake Phobic Subjects. Unpublished Doctoral Dissertation. Knoxville, Tennessee, University of Tennessee, 1967.

Lomont, J. Reciprocal inhibition or extinction. Behavior Research and Therapy, 1965, 3 (4), 209-219.

Lomont, J. and Edwards, J. The role of relaxation in systematic conditioned responses. Behavior Research and Therapy, 1967, 5 (1), 11-26.

Martin, I. A Note on reflex sensitivity and formation of conditioned responses. Behavior Research and Therapy, 1963, 1, 185-190.

McLaughlin, R. and Eysenck, H. Visual masking as a function of personality. British Journal of Psychology, 1966, 57 (3-4), 393-396.

Migler, B. and Wolpe J. Automatic self-desensitization: A case report. Behavior Research and Therapy, 1967, 5 (2), 133-135.

Mowrer, O. Abnormal reactions or actions? (An autobiographical answer). Introduction to General Psychology: A Self Selection Textbook, William Brown Co., Inc., Dubuque, Iowa, 1966.

Neuman, D. Professional and Subprofessional Counselors Using Group Desensitization and Insight Procedures to Reduce Examination Anxiety. Unpublished Doctoral Dissertation, E. Lansing, Michigan, Michigan State University, 1968.

Paul, G. Insight vs. Desensitization in Psychotherapy. Stanford, Stanford University Press, 1966.

Paul, G. and Shannon, D. Treatment of anxiety through systematic desensitization in therapy groups. Journal of Abnormal Psychology, 1966, 71 (2), 124-135.

Paul, G. Strategy of outcome research in psychotherapy. Journal of Consulting Psychology, 1967, 31 (2), 109-118.

Paul, G. Two year followup of systematic desensitization in therapy groups. Journal of Abnormal Psychology, 1968, 73 (2), 119-130.

Paul, G. Systematic desensitization in groups: Reducing examination anxiety. Discussant paper presented at symposium: Systematic Desensitization in Groups: Reducing Examination Anxiety, American Educational Research Association, Chicago, 1968.

Pavlov. Experimental Psychology and Other Essays, Philosophical Library, N.Y., 1957.

Peters, J. Typology of dogs by the conditional reflex method: A selective review of Russian research. Conditioned Reflex. A Pavlovian Journal of Research and Therapy, 1966, 1 (4), 235-250.

Rachman, S. Treatment of anxiety and phobic reactions by systematic desensitization psychotherapy. Journal of Abnormal and Social Psychology, 1959, 58, 259-263.

Rachman, S. Studies in desensitization I: The separate effects of relaxation and desensitization. Behavior Research and Therapy, 1965, 3, 245-252.

Rachman, S. Systematic desensitization III: The speed of generalization. Behavior Research and Therapy, 1966, 4, 7-16.

Rachman, S. Systematic desensitization. Psychological Bulletin, 1967, 67, 93-103.

Thayer, R. Development and Validation of a Self-Report Adjective Check List to Measure Activation-Deactivation. Unpublished Doctoral Dissertation. Rochester, N.Y., University of Rochester, 1963.

Thayer, R. Measurement of activation through self-report. Psychological Reports (Monograph Supplement 1-V20), 1967, 20, 663-678.

Thoresen, C. Unpublished Test, Department of Counseling, Personnel Services and Educational Psychology, Michigan State University, 1966.

Truax, C. and Carkhuff, R. Toward Effective Counseling and Psychotherapy, Adline Publishing Co., Chicago, 1967.

Vingoe, F. Validity of the Eysenck E scale as determined by self ratings in normals. British Journal of Social and Clinical Psychology, 1966, 5 (2), 89-91.

Weinberg, N. and Zaslove, M. Resistance to systematic desensitization of phobias. Journal of Clinical Psychology, 1963, 19, 179-181.

Wolpe, J. Psychotherapy by Reciprocal Inhibition, Stanford, Stanford University Press, 1958.

Wolpe, J. The systematic desensitization treatment of neurosis. Journal of Nervous and Mental Diseases, 1961, 132 (3), 189-203.

Wolpe, J. The conditioning and deconditioning of neurotic anxiety, in C. Spielberger (Ed.) Anxiety and Behavior, Academic Press, N.Y., 1966.

Wolpin, M. and Raines, J. Visual Imagery, expected roles and extinction as possible factors in reducing fear and avoidance behavior. Behavior Research and Therapy, 1966, 4, 25-37.

Zeisset, R. Desensitization and relaxation in the modification of psychiatric patient's interview behavior. Journal of Abnormal Psychology, 1968, 73 (1), 18-24.

APPENDICES

APPENDIX A

INSTRUMENTS:

- EYSENCK PERSONALITY INVENTORY
- S-R INVENTORY OF ANXIOUSNESS
- TEST ANXIETY INVENTORY
- THAYER ACTIVATION-DEACTIVATION ADJECTIVE CHECK LIST
- TEST ANXIETY RATING SHEET
- THERAPIST RATING OF CLIENT ANXIETY

EYSENCK PERSONALITY INVENTORY

Name_____

Student Number_____

ATTITUDE QUESTIONNAIRE

There are no correct or incorrect answers. If you feel an item is true for you, put an X in the Yes column. If it is not true for you, put an X in the No column.

		YES	NO
1.	Do you like plenty of excitement and bustle around you?		
2.	Does your mood often go up and down?		
3.	Are you rather lively?		
4.	Do you ever feel "just miserable" for no good reason?		
5.	Do you like mixing with people?		
6.	When you get annoyed do you need someone friendly to talk to about it?		
7.	Would you call yourself happy-go-lucky?		
8.	Are you often troubled about feelings of guilt?		
9.	Can you usually let yourself go and enjoy yourself a lot at a gay party?		
10.	Would you call yourself tense or "highly strung?"		
11.	Do you like practical jokes?		
12.	Do you suffer from sleeplessness?		

Key

Introversion-Extraversion Items: 1, 3, 5, 7, 9, 11.

An S-R Inventory of Anxiousness

"You are entering a final examination in an important course"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

1. Heart beats faster	1 Not at all	2	3	4	5 Much faster
2. Get an "uneasy feeling"	1 None	2	3	4	5 Very strongly
3. Emotions disrupt action	1 Not at all	2	3	4	5 Very disruptive
4. Feel exhilarated and thrilled	1 Very much	2	3	4	5 Not at all
5. Want to avoid situation	1 Not at all	2	3	4	5 Very much
6. Perspire	1 Not at all	2	3	4	5 Perspire much
7. Need to urinate frequently	1 Not at all	2	3	4	5 Very frequently
8. Enjoy the challenge	1 Enjoy much	2	3	4	5 Not at all
9. Mouth gets dry	1 Not at all	2	3	4	5 Very dry
10. Become immobilized	1 Not at all	2	3	4	5 Completely
11. Get full feeling in stomach	1 None	2	3	4	5 Very full
12. Seek experiences like this	1 Very much	2	3	4	5 Not at all
13. Have loose bowels	1 None	2	3	4	5 Very much
14. Experience nausea	1 Not at all	2	3	4	5 Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

"You are going into an interview for a very important job"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

15. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
16. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
17. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptiv
18. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
19. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
20. Perspire	1	2	3	4	5
	Not at all				Perspire much
21. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequentl
22. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
23. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
24. Become immobilized	1	2	3	4	5
	Not at all				Completely
25. Get full feeling in stomach	1	2	3	4	5
	None				Very full
26. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
27. Have loose bowels	1	2	3	4	5
	None				Very much
28. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are alone in the woods at night"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

29. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
30. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
31. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
32. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
33. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
34. Perspire	1	2	3	4	5
	Not at all				Perspire much
35. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
36. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
37. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
38. Become immobilized	1	2	3	4	5
	Not at all				Completely
39. Get full feeling in stomach	1	2	3	4	5
	None				Very full
40. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
41. Have loose bowels	1	2	3	4	5
	None				Very much
42. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are entering a competitive contest before spectators"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

43. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
44. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
45. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
46. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
47. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
48. Perspire	1	2	3	4	5
	Not at all				Perspire much
49. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
50. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
51. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
52. Become immobilized	1	2	3	4	5
	Not at all				Completely
53. Get full feeling in stomach	1	2	3	4	5
	None				Very full
54. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
55. Have loose bowels	1	2	3	4	5
	None				Very much
56. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

"You are starting out in a sail boat onto a rough sea"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

57. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
58. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
59. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
60. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
61. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
62. Perspire	1	2	3	4	5
	Not at all				Perspire much
63. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
64. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
65. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
66. Become immobilized	1	2	3	4	5
	Not at all				Completely
67. Get full feeling in stomach	1	2	3	4	5
	None				Very full
68. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
69. Have loose bowels	1	2	3	4	5
	None				Very much
70. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are going to a counseling bureau to seek help in solving a personal problem"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

71. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
72. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
73. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptiv
74. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
75. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
76. Perspire	1	2	3	4	5
	Not at all				Perspire much
77. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequentl
78. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
79. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
80. Become immobilized	1	2	3	4	5
	Not at all				Completely
81. Get full feeling in stomach	1	2	3	4	5
	None				Very full
82. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
83. Have loose bowels	1	2	3	4	5
	None				Very much
84. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are getting up to give a speech before a large group"

PLEASE DO NOT MAKR THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

85. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
86. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
87. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
88. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
89. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
90. Perspire	1	2	3	4	5
	Not at all				Perspire much
91. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
92. Enjoy the challange	1	2	3	4	5
	Enjoy much				Not at all
93. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
94. Become immobilized	1	2	3	4	5
	Not at all				Completely
95. Get full feeling in stomach	1	2	3	4	5
	None				Very full
96. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
97. Have loose bowels	1	2	3	4	5
	None				Very much
98. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are crawling along a ledge high on a mountain side"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

99. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
100. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
101. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
102. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
103. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
104. Perspire	1	2	3	4	5
	Not at all				Perspire much
105. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
106. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
107. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
108. Become immobilized	1	2	3	4	5
	Not at all				Completely
109. Get full feeling in stomach	1	2	3	4	5
	None				Very full
110. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
111. Have loose bowels	1	2	3	4	5
	None				Very much
112. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are going into a psychological experiment"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

113. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
114. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
115. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
116. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
117. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
118. Perspire	1	2	3	4	5
	Not at all				Perspire much
119. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
120. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
121. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
122. Become immobilized	1	2	3	4	5
	Not at all				Completely
123. Get full feeling in stomach	1	2	3	4	5
	None				Very full
124. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
125. Have loose bowels	1	2	3	4	5
	None				Very much
126. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are going to meet a new date"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reactions or attitude for each of the following 14 items.

127. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
128. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
129. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
130. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
131. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
132. Perspire	1	2	3	4	5
	Not at all				Perspire much
133. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
134. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
135. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
136. Become immobilized	1	2	3	4	5
	Not at all				Completely
137. Get full feeling in stomach	1	2	3	4	5
	None				Very full
138. Seek experience like this	1	2	3	4	5
	Very much				Not at all
139. Have loose bowels	1	2	3	4	5
	None				Very much
140. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

An S-R Inventory of Anxiousness

"You are just starting off on a long automobile trip"

PLEASE DO NOT MARK THIS BOOKLET

Mark on the ANSWER SHEET one of the five alternative degrees of reaction or attitude for each of the following 14 items.

141. Heart beats faster	1	2	3	4	5
	Not at all				Much faster
142. Get an "uneasy feeling"	1	2	3	4	5
	None				Very strongly
143. Emotions disrupt action	1	2	3	4	5
	Not at all				Very disruptive
144. Feel exhilarated and thrilled	1	2	3	4	5
	Very much				Not at all
145. Want to avoid situation	1	2	3	4	5
	Not at all				Very much
146. Perspire	1	2	3	4	5
	Not at all				Perspire much
147. Need to urinate frequently	1	2	3	4	5
	Not at all				Very frequently
148. Enjoy the challenge	1	2	3	4	5
	Enjoy much				Not at all
149. Mouth gets dry	1	2	3	4	5
	Not at all				Very dry
150. Become immobilized	1	2	3	4	5
	Not at all				Completely
151. Get full feeling in stomach	1	2	3	4	5
	None				Very full
152. Seek experiences like this	1	2	3	4	5
	Very much				Not at all
153. Have loose bowels	1	2	3	4	5
	None				Very much
154. Experience nausea	1	2	3	4	5
	Not at all				Much nausea

PLEASE RECORD YOUR ANSWERS ON THE ANSWER SHEET

Name_____

Date_____

TEST ANXIETY INVENTORY

This form is composed of statements regarding your feelings of tension and stress (anxiety) in taking an important test. After each question circle the letter which best describes your present feelings. Think back to your most recent important test on which you experienced tension and stress. Work quickly and don't spend much time on any one question. Your first impression of each question is most important. Now go ahead, work quickly, and remember to answer every question.

Mark your answers on the answer sheet as indicated below.

Rarely or Never	Infrequently	Occasionally	Frequently	Always or Almost Always
R=1	I=2	O=3	F=4	A=5

1. While studying for a test I feel tense and nervous.	R	I	O	F	A
2. I feel tense when I see the words "midtern" and "final" on a course outline when studying.	R	I	O	F	A
3. My thoughts become confused and jumbled when I am taking a test.	R	I	O	F	A
4. Right after taking a test I feel that I have had a pleasant experience.	R	I	O	F	A
5. I get anxious when I think about a test coming up.	R	I	O	F	A
6. I have no fear of taking a test.	R	I	O	F	A
7. Although I am nervous just before starting the test, I soon settle down after starting on the test and feel calm and comfortable.	R	I	O	F	A
8. I look forward to taking a test.	R	I	O	F	A
9. When the instructor announces a test in class I can feel myself getting tense.	R	I	O	F	A
10. My hands tremble when I am taking a test.	R	I	O	F	A
11. I feel relaxed while taking a test.	R	I	O	F	A
12. I enjoy preparing for a test.	R	I	O	F	A
13. I am in constant fear of forgetting what I have studied.	R	I	O	F	A
14. I get anxious if someone asks me something about course material that I do not know.	R	I	O	F	A
15. I face the prospect of taking a test with confidence.	R	I	O	F	A
16. I feel I am in complete possession of myself while taking a test.	R	I	O	F	A
17. My mind is clear when taking a test.	R	I	O	F	A

18. I do not dread taking a test. R I O F A

19. I perspire just before starting a test. R I O F A

20. My heart beats very fast just as I start an important test. R I O F A

21. I experience considerable anxiety while sitting in the exam room just before the test has started. R I O F A

22. Certain parts of my body feel very tense and rigid while taking a test. R I O F A

23. Realizing that only a little time remains on a test makes me very tense and anxious. R I O F A

24. In taking a test I know I can control my feelings of tension and stress. R I O F A

25. I breathe faster just before starting a test. R I O F A

26. I feel comfortable and relaxed in the hour or so just before taking a test. R I O F A

27. I do poorer on exams because I am anxious. R I O F A

28. I feel anxious when the teacher announces the date of an exam. R I O F A

29. When I have trouble answering a question on a test, I find it hard to concentrate on the questions that follow. R I O F A

30. During an important examination I experience a feeling of helplessness building up inside me. R I O F A

31. I have trouble falling asleep the night before an important examination. R I O F A

32. My heart beats very fast during an important test. R I O F A

33. I feel anxious while the test is being handed out. R I O F A

34. During a test I get so nervous I forget facts I really know. R I O F A

Name _____ Date and Time _____

Course Title and Number _____ Instructor _____

PLEASE COMPLETE THIS IMMEDIATELY AFTER FINISHING THE EXAM

Each of the words on the next sheet describes feelings or mood. Please use the list to describe your feelings at this moment.

If the word definitely describes how you feel at the moment you read it, circle the double check (vv) to the right of the word. For example, if the word is, relaxed, and you are definitely feeling relaxed at the moment, circle the double vv as follows: relaxed vv v ? no.
This means you definitely feel relaxed at the moment.

If the word only slightly applies to your feelings at the moment, circle the single check as follows: relaxed vv v ? no.
This means you feel slightly relaxed at the moment.

If the word is not clear to you you cannot decide whether or not it applies to your feelings at the moment, circle the question mark as follows: relaxed vv v ? no.
This means you cannot decide whether you are relaxed or not.

If you clearly decide the word does not apply to your feelings at the moment, circle the no as follows: relaxed vv v ? no.
This means you are definitely not relaxed at the moment.

Work rapidly. Your first reaction is best. Work down the first column, then go on to the next. Please mark all words. This should take only a few minutes.

-Now please turn the page and begin working-

(vv) v ? no : definitely feel
vv (v) ? no : feel slightly
vv v (?) no : cannot decide
vv v ? (no) : definitely do not feel

---

carefree vv v ? no

serious vv v ? no

peppy vv v ? no

pleased vv v ? no

placid vv v ? no

leisurely vv v ? no

sleepy vv v ? no

jittery vv v ? no

intense vv v ? no

grouchy vv v ? no

energetic vv v ? no

egotistic vv v ?? no

calm vv v ? no

suspicious vv v ? no

tired vv v ? no

regretful vv v ? no

stirred-up vv v ? no

warm-hearted vv v ? no

vigorous vv v ? no

engaged-in-thought vv v ? no

at rest vv v ? no

elated vv v ? no

drowsy vv v ? no

witty vv v ? no

aroused vv v ? no

fearful vv V ? no

lively vv v ? no

still vv v ? no

self-centered vv v ? no

wide-awake vv v ? no

skeptical vv v ? no

activated vv v ? no

sad vv v ? no

full-of-pep vv v ? no

affectionate vv v ? no

quiet vv v ? no

concentrating vv v ? no

sluggish vv v ? no

overjoyed vv v ? no

quick vv v ? no

nonchalant vv v ? no

quiescent vv v ? no

clutched-up vv v ? no

wakeful vv v ? no

rebellious vv v ? no

active vv v ? no

blue vv v ? no

defiant vv v ? no

Course Title and No._____ Name_____

Date of Exam_____ Phone No._____

RATING SHEET

Please complete this immediately after taking the exam before you leave the exam room.

Type of Exam: Multiple Choice _____
Essay _____
Multiple Choice and Essay _____

Please indicate how you were feeling <u>just before</u> (within 10 minutes) the exam. (Circle one number).

1	2	3	4	5
Completely Relaxed	Calm and Comfortable	Mild Tension- <u>Not</u> Bothersome	Mild Anxiety - a Little Bothersome	Anxiety - Somewhat Disturbing

6	7	8
Anxiety-Moderately Disturbing	Intense Anxiety Very Disturbing	Very Intense Anxiety- Extremely Disturbing

Please indicate how you were feeling at the beginning (first 10 minutes) of the exam.

1	2	3	4	5
Completely Relaxed	Calm and Comfortable	Mild Tension- <u>Not</u> Bothersome	Mild Anxiety -a Little Bothersome	Anxiety - Somewhat Disturbing

6	7	8
Anxiety-Moderately Disturbing	Intense Anxiety Very Disturbing	Very Intense Anxiety Extremely Disturbing

Please indicate how you were feeling <u>in the middle</u> of the exam.

1	2	3	4	5
Completely Relaxed	Calm and Comfortable	Mild Tension - <u>Not</u> Bothersome	Mild Anxiety -a Little Bothersome	Anxiety - Somewhat Disturbing

6	7	8
Anxiety-Moderately Disturbing	Intense Anxiety - Very Disturbing	Very Intense Anxiety- Extremely Disturbing

Please indicate how you were feeling <u>near the end</u> (last 10 Minutes) of the exam.

1	2	3	4	5
Completely Relaxed	Calm and Comfortable	Mild Tension- <u>Not</u> Bothersome	Mild Anxiety - a Little Bothersome	Anxiety - Somewhat Disturbing

6	7	8
Anxiety-Moderately Disturbing	Intense Anxiety - Very Disturbing	Very Intense Anxiety - Extremely Disturbing

Now please indicate how you were feeling <u>after</u> you have completed the exam.

1	2	3	4	5
Completely Relaxed	Calm and Comfortable	Mild Tension- <u>Not</u> Bothersome	Mild Anxiety -a Little Bothersome	Anxiety -Somewhat Disturbing

6	7	8
Anxiety-Moderately Disturbing	Intense Anxiety - Very Disturbing	Very Intense Anxiety- Extremely Disturbing

Therapist Ratings of Client's Anxiety

Please rate Ss on degree of behavioral and intra-psychic anxiety (fidgeting, tenseness, stammering, shaking, etc.).

Therapist_____ Group S.D. 1 S.D. 2 S.G.I. 1 S.G.I. 2

Date_____ (1)_____ (2)_____ (3)_____ (4)_____ (5)_____

Subjects:	Anxiety-level	Anxiety-level	Anxiety-level	Anxiety-level	Anxiety-level
1._____	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2._____	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3._____	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4._____	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

APPENDIX B

SYSTEMATIC DESENSITIZATION:
STANDARD HIERARCHY
MODIFIED GROUP HIERARCHIES

_____ The teacher announces and discusses a course examination (to be held in three weeks) with the class.

_____ Studying for an important examination that is the next day.

_____ Leaving your room at your living quarters to go to an important exam.

_____ Taking an exam and working on a question to which you do not know the answer.

_____ Discussing an important exam with friends, the night before the exam is given.

_____ Studying for an important examination that is two weeks away.

_____ Taking a final exam and working on a question to which you know the answer.

_____ Going to sleep, the night before an important exam.

_____ Studying for an important examination that is two weeks away.

_____ Having thirty minutes left to complete an exam and an hour's worth of work to do.

_____ Entering the room where the exam is being given and sitting down.

_____ Studying for an important examination that is one week away.

_____ While trying to think of an answer to an exam question you notice everyone around you writing very rapidly.

_____ Reading over the instructions to a final exam and surveying the test.

_____ It is the day of the exam--one hour left until exam time.

_____ The exam is being handed out--you receive a copy.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Modified Group Hierarchy

1. Beginning of term, instructor hands out course outline. On glancing over outline you see the words "mid-term" and "final" and how much each is weighted in grading.

2. The teacher announces and discusses a course examination (to be held in three weeks) with the class.

3. Studying for an important examination that is two weeks away.

4. Studying for an important examination that is one week away.

5. You have finished going through your text book notes for the first time. The test is 2 days from now. You realize that the material is very difficult and hard to understand and start thinking about the test coming up.

6. Studying for an important examination that is the next day.

7. Discussing an important exam with friends, the night before the exam is given. Someone asks you a question and you do not know the answer.

8. Going to sleep, the night before an important exam.

9. Day of exam; you get up, wash, get dressed and eat. Leaving your room at your living quarters to go to an important exam, walking across campus.

10. Entering the room where the exam is being given and sitting down.

11. The exam is being handed out--you receive a copy. You read instructions at top; glance at first question.

12. Reading over the instructions to an exam and surveying the test.

13. Taking an exam and working on a question to which you do not know the answer. You begin reading, rereading but still do not understand it.

14. You've completed 1/2 of the first page. you get to a multiple choice item; can't decide between 2 alternates.

15. While turning to the second page of exam, you happen to glance at clock and realize there is only a little time left, not enough for you to finish.

16. As you try to answer more and more of the questions, you're becoming increasingly aware of the fact that you are not adequately prepared for many of these questions.

17. You suddenly realize that this exam will make the difference between a C and a D in the course.

Modified Group Hierarchy

1. The teacher announces and discusses a course examination (to be held in three weeks) with the class.
2. Studying for an important examination that is two weeks away.
3. Studying for an important examination that is one week away.
4. Studying for an important examination that is two days away.
5. Discussing an important exam with friends, the night before the exam is given.
6. Going to sleep, the night before an important exam.
7. It is the day of the exam--one hour left until exam time.
8. Entering the room where the exam is being given and sitting down.
9. The exam is being handed out--you receive a copy.
10. You're reading over the exam before starting and realize some of the things you haven't studied are on it.
11. Taking a final exam and working on a question to which you know the answer but can't remember it.
12. You're working on an extra-long question and don't have time to do it.
13. While trying to think of an answer to an exam question you notice everyone around you writing very rapidly.
14. Everyone is leaving and you're only 1/2 through the exam.

Modified Group Hierarchy

1. Syllabus is passed out at beginning of course.
2. The teacher announces and discusses a course examination (to be held in three weeks) with the class.
3. Studying for an important examination that is two weeks away.
4. Studying for an important examination that is two days away.
5. Studying for an important examination that is the next day.
6. Discussing an important exam with friends, the night before the exam is given.
7. Going to sleep, the night before an important exam.
8. It is the day of the exam--one hour left until exam time.
9. Leaving your room at your living quarters to go to an important exam.
10. Entering the room where the exam is being given and sitting down.
11. The exam is being handed out--you receive a copy.
12. Reading over the instructions to a final exam and surveying the test.
13. Taking an exam and working on a question to which you do not know the answer.
14. While trying to think of an answer to an exam question you notice everyone around you writing very rapidly.
15. Everyone is leaving and you're only 1/2 through the exam.
16. You're taking a final and see that most of the material is unfamiliar.

APPENDIX C

STRUCTURED GROUP INTERACTION: SESSION OUTLINES

PROCEDURES FOR FIRST STRUCTURED GROUP INTERACTION SESSION

1. Introduction of self.

2. Explanation of rationale and course of treatment--10 minutes approximately.

3. Introduction of group members and exploration of history and current status of the problem--20 minutes approximately.

4. Have Ss help pull together and summarize extent of problem that group is to work with. Approximately 15 minutes.
   A. determine with group what previous attempts at self-help or professional help have been and their effectiveness.
   B. enlist possible "active" suggestions for working with this group.

5. Discuss the nature of anxiety hierarchy and pass out hierarch sheet (ditto), get S reaction to list, modifications, suggestions, etc. Approximately 15 minutes.

6. Remind group of time of next session and necessity of coming without fail. Stress!

Session 1

RATIONALE AND COURSE OF TREATMENT--STRUCTURED GROUP INTERACTION

The emotional reactions which you experience as a result of your previous experience with test situations often leads to feelings of anxiety or tenseness that are really inappropriate. As long as you can recall how you've felt in these situations, it is possible to work with your reactions right here in this room by having you imagine yourself in these situations as vividly as possible.

You might say we are going to re-live the tense, nervous feelings in the things we do in here so that when we actually do face examinations, the stress won't seem as great as it previously did.

We are going to continue to meet in a small group because we have something to offer each other. We all know what that tense, anxious feeling is like. So we're going to share the feeling and benefit from the others' experience with it.

The technique that will be used here is called Structured group Interaction and each word is a clue to how the sessions will proceed.

Our feeling is that the benefit of this program of help will be greatest for those who really become involved, "active," and contribute to, as well as use, the other group members.

We are going to do a number of things the purpose of which is to create a lot of the feelings you have had when taking exams and then to learn to react differently by controlling these feelings so they don't control you. This will mean creating the same situations through practice test-taking, role-playing (explain--e.g., re-enacting the most anxiety producing situation for each group member), focusing on what tenseness feels like to us all.

Are there any questions?

ELABORATE AS YOU SEE FIT

Overview of 2nd session of Structured Group Interaction

To reduce anxiety:

1. Change in test-taking behavior
   a. learning specific, better, more adaptive habits and skills.
   b. Reduce physiological and muscular tensions through practice relaxing posture, breathing exercises, etc.
   c. more positive attitudes--"I won't know it all but much of it and the rest I can guess on." Therefore, not knowing one answer won't cause panic.
2. Provide verbal reinforcement for positive steps toward changing behavior.
3. Encourage use of self-reward and punishment re: satisfactory and unsatisfactory performance on tests.

Session 2

STRUCTURED GROUP INTERACTION

Sometimes it is difficult to focus on what about tests really gets us tense and nervous. This is especially true when we just talk about it from memory, so we are going to create the very same situation and conditions by taking an exam here today.

We must try to make it as close to the real testing situation as possible. O.K. We have a chalk board and I'll write the minutes left on it as the time passes. What other kinds of things would make this situation real for you? (Get suggestions and act upon them if possible, e.g., use writing boards on laps, IBM answer sheets and scoring pencils or blue book for essay questions.)

Now that the setting seems right, the important thing is the way you view the situation. So let's set some guidelines. The test is in a course that is important to you. It's the last exam and therefore your performance will be very crucial to your final grade. You've studied for this test about as much as you usually do. You have the same kinds of feelings about this test as you usually have about others you have taken like it.

Do you see what we're trying to do? The goal is to experience the same kinds of feelings and reactions here where we can later focus on them while they're still vivid and real. The more you can make this situation like an actual test-taking situation the more you will be able to focus on your usual test-taking behavior and the more you can learn how to deal with it or change it.

You will have 20 minutes for the test. (Give out test and answer sheets, pencils.)

Introduction (10 minutes)

Before test begins distribute large, blank index cards and ask Ss to write down anything bothering them or interfering with

taking exam or distracting them (mentally or physically) from test--anything at all, cue words, free associations, etc.

Test (20 minutes)

During test counselor will observe behavior--make notes on characteristic modes for each S (i.e., crossing and uncrossing legs, biting nails, squirming, biting pencil, rigid or awkward posture, perspiring, trembling, pained facial expression, closed eyes or blank stare or other indications of inefficient behavior).

At the end of 20 minutes stop the test. Begin discussion:

(1) What kinds of reactions do you have to test? What did Ss feel? How well aware are they of inefficient behavior?

Point out how one or two responded (behaviorally) to get the ball rolling, e.g., "Dave, how did you feel about the test?" Let him explain. He probably won't be aware of his extraneous but interfering behavior. Tell him how you perceived his test-taking behavior, nervously biting pencil, then staring blankly as if frozen.

(2) Go around pointing out maladaptive behavior and encourage interaction by getting members to offer suggestions for how they would like to behave--e.g., sit relaxed, not tense, breathe normally, get non-test thoughts out of mind.

(3) Focus on index cards. What things, feelings, ideas intruded and interfered. Let's name things--not just let it go as vague, diffuse panic or disinterest! If X, Y, and Z things interfered, let's learn to get rid of them. Be ready to offer concrete, precise suggestions for dealing with them. (Some of these will follow.)

(4) What are the problems encountered?
   a. I look at the first question and can't answer it so I panic.
   b. The test is long and this scares me.
   c. Each question has four or five choices--I can't figure out which one is right.
   d. I watch the time tick away and this immobilizes me.

The above items refer to test situation as the stimulus for anxiety Rs. Assuming the Ss know the materials, the goal which seems to be blocked is demonstrating the knowledge.

Some specific suggestions re above problems to help counteract them.

   a. "Admit to yourself that you will not know all the answers. Instead of saying over and over, I'm afraid I won't know it, say, some of it I won't know and some of it I will." Thus when you read the first question and don't know the answer, you will respond by saying, "That's one I don't know."
   b. Figure out a time schedule. Don't let length scare you. Do something constructive about it. Figure amount of

time per question and stick to it--leave a few minutes at the end to review or complete test.

c. Go through exam and answer all those items which are easiest and which you are sure of. Then tackle less sure ones. For each question look at choices. Cross out those which are obviously wrong. If left with two choices make an educated guess. Translate items into own words and see if that is what it really says--don't read into item. Accept each at face value.

d. Realize that time will go by anyway--use it to your advantage to measure progress--X minutes for each item.

e. Suppose all the choices seem true? Perhaps they all are but pick the one that answers the question.

Factors or problems not related to actual test:

A. Reducing physiological or muscular tension. Get back to behavioral observations. Encourage Ss to tell about where or how they felt tension. May have to get them started by referring to observations made when Ss were taking test.

1. to reduce muscle tension--practice relaxation. Counselor demonstrate--tensing muscles, relaxing; individualize.

2. to regulate breathing; to calm down--practice inhaling deeply and exhaling.

3. for rigid or awkward postures, practice composed, comfortable posture.

INDIVIDUALIZE--allow and encourage each S to practice his own anxiety-combating Rs.

B. Getting rid of extraneous, unwanted or persistent non-test ideas and thoughts.

1. interfering thoughts to serve as cue for action--penalty for thinking these is loss of time and points on test. Count each distracting thought as one minute lost.

2. Decide on punishments for non-test related thoughts, e.g., no date Saturday, deny self new shirt or record. Reward self for calm, non-anxious and clear-headed performance--e.g., take Saturday afternoon off for fun.

HOMEWORK--Practice responding to any tests between 2nd and 3rd session in the above way. Have Ss keep record of this to focus on in the third session.

Session 3

STRUCTURED GROUP INTERACTION

A. Review of Session 2 (see guide for Session 2)--10 minutes

1. Test-taking techniques practiced:
   a. doing easy items first,
   b. focus on test, not clock, etc.

2. Relaxation Rs--usefulness and attempts at self-induced relaxation.

3. Ridding mind of non-test-taking thoughts.

4. Usefulness of index card method for noting "disturbances."

5. Reaction to last week's test and the use to which techniques were put outside during the week (generalization).

6. Effectiveness of index cards used while studying or taking "real" exams.

7. Counselor reinforcement or statements pertaining to attempts by Cl. to work on problem outside.

B. Content of third session

1. Get group to discuss ways in which they either did use, or could use, the three kinds of techniques:
   a. test-taking skills and hints,
   b. relaxation and other physical measures (breathing, assuming and practicing a comfortable posture),
   c. Getting nagging thoughts out of mind (writing down on cards, self-reward and punishment).

2. Discuss content of Ss index cards which were accumulated over week. What specifically prevents John from performing optimally? Focus on each S and try to bring about suggestions from group members to help John change his maladaptive Rs. E.g., What can John do to change? What behaviors that are different from his present ones (heart beating, looking around aimlessly in test room at others, verbalizing fear to peers) could John engage in? (E.g., breathe deeply, either don't talk about fear of test to others or play a confident role, be a model of composure.) Importance of creating a new role or self-image as a test-taker.

3. What kind of a role does John want? Just what does he want to do that is different--what behaviors does he want to change.
   a. discuss in general the characteristics of a less defeating role,
   b. emphasize importance of individuality since role has to fit or at least feel comfortable--so it will be

practiced, which is a crucial element. Point to any common elements which Ss may identify. "Not all of you want to change the same things or behave the same way on tests but there may be some common denominator."

4. Creation of a new role of test-taker. Just what does it mean (based on foregoing idea of maladaptive behavior, need to change, characteristics of more adaptive behavior). Based on theory of personal constructs and fixed role therapy.

5. After Ss understand and have a feel for changing their test-taking role, encourage discussion about construction of a new role (what elements to emphasize, how to write the "part," how the skills learned in last session fit in). Make role very specific and detailed and applicable to all possible test situations (the ideal test-taking self). Keep in mind that drastic changes are often easisier to bring about than slight changes. Also, the S must really be willing to give a role a try in the real world--modifications may be necessary later on.

6. Allow time for construction of new role. Ss will write the new role in counseling room (provide paper). 15 minutes.

7. Reading roles, sharing, reacting to one another's role and discussing ways in which they can be enacted, practiced. Emphasize seriousness of task--try to dispel frivolity re role-playing. Focus on any tests which Ss anticipate in coming week. How will they put new role to work? What to do specifically?--be the new role, study it, memorize it and, like a part in a play, live it! Must live it and experience the feelings and reaction to it in real life.

8. Before ending, ask group to talk about the part which studying and present study methods play in creating test-anxiety (difficulties might pertain to self-distraction, room-mate or physical environment distractors). Establish need for a session devoted to study habits. Have Ss make note throughout the week of such distractors--they might continue to use the index card system of noting distractions. Tell them to bring the cards next week--this should reduce the effect of confounded memory traces.

Session 4

STRUCTURED GROUP INTERACTION

A. Review of Session 3.
Implementation of the role is seen as a key to change in test-taking behavior. Spend the first 15 minutes exploring what Ss did to try it out--in test situations, studying, or as extended to total functioning.

1. Explore usefulness or limitations of test-taking role. This assumes that the Ss have tried the role out and on this basis have comments.

2. Explore with those who had the opportunity to play the role outside but did not, why they didn't.

3. Reinforce positive comments re role playing which was successfully carried out.
   Stress--in order for you to be what you feel is the "ideal test-taker" you must be willing to take a chance, practice and practice still more until this role is as natural as the one of test-anxiousness which you have perfected and are still playing.

B. Emphasis of the 4th Session: Preparing (studying) for Exams

1. Relevant questions to focus on:
   a. Where does "preparing for the exam" fit into test-anxiety (central, peripheral, not a factor at all)? The responses generated by this question will determine the direction of the session. If preparation plays a part in examination-anxiety, continue by exploring subsequent "thought" questions. If group does not see preparation as a factor in their test-taking fears, try to identify, through discussion, the antecedent conditions responsible, e.g., inadequate studying, too little time to prepare, simple avoidance or denial of responsibility.
   b. What does "preparation" mean? Seems to imply more than studying, more inclusive, other non-study types of activity and behavior.
   c. Is there one best way to prepare?
   d. Should one prepare differentially depending on the course?
   e. Does preparation for the exam depend on the type of exam, i.e., essay vs. objective type?

2. A few points to keep in mind:
   a. While all the Ss identify themselves as test anxious, preparation for examinations may be as varied as the number of Ss. There's no one way to prepare nor would this approach fit everyone.
   b. Talking about and ventilating the problem is one thing but putting a new plan into action is another. The

latter needs emphasis because unless the effort is made outside of the session no benefit is likely to result.

3. Let the group members do the work--it will be more meaningful that way. Your role here is to: pull in the members, keep discussion close to the topic of preparation for exams (try not to let it wander to studying in general), offer concrete suggestions when members do not, or seem to be incorrect in their advice.

4. In line with the notion of the importance of activity and involvement, the Ss will be asked to think about, recall and write down a list of factors related to preparation which leads to examination fear and tension. This list should be arranged in a hierarchy of least to most significant problems (noise in room, can't get organized, don't have enough time to review). The goal here is to bring specific problems to light for each individual and identify remedies which can be tried out outside of the session and be adapted or adopted to replace maladaptive methods.

5. After writing these, the individuals will take turns presenting their lists and receiving suggestions for improving the conditions. Group should be made aware that it can really help each member by coming up with suggestions that they may have tried and found useful. The leader is only one person--the group can offer 3 times as much help!

6. Here are some specific problems and possible remedies:
   a. physical distractors (more often excuses!)--remove any articles from desk which cause your mind to wander. Find a time to study when it is most quiet, e.g., when your roommate is asleep or when S is most relaxed and alert, or remove self to a quiet place, e.g., stacks in library or other secluded spot like rear of science library (3rd floor).
   b. the best way to prepare?--this is the most comfortable way. May start with overview of material or review of specifics--whichever serves to get S started.
   c. difficulty in focusing attention or holding attention--review should be active, not passive. Not just reading and re-reading notes but giving out information, as S will have to on the exam, by reciting it to self, answering own questions.
   d. learning which doesn't follow logical rules--"memory crutch" to learn a series of unrelated items: form a word with the first letter of each item. Another similar device is to repeat two ideas until they become associated--then the first will elicit the second.
   e. The most effective method of learning:

SQ4R	1. Survey	4. Recite
	2. Question	5. "Rite"
	3. Read	6. Review

   At this point in the term we are only concerned about the last point. It would be almost effortless if the

five others were carried out already. In any case, the whole process implies preparation which is active. The method can even be useful in this respect a few days before exams. Motto: Don't be a sponge and expect to learn!

7. Suggestions are to be tried out during week. Ss should come to 5th session ready to discuss what happened in carrying these out.

8. Arrange for change in last session time for those groups meeting on Memorial Day.

Session 5

STRUCTURED GROUP INTERACTION

1. Specific test-taking techniques of Session 2 (see handout). Identify any new problems encountered by Ss since second session. Try to bring group up to date with respect to test-taking skills, i.e., get them to bring up and work out any still remaining or recurrent maladaptive, self-defeating, behaviors.

2. Reivew roles of relaxation which can be fostered by: a. muscular relaxation (review exercises as needed by individuals in the groups); b. confidence as a test-taker and concentration on exam--not on non-test factors.

3. Reinforce the benefits which role-playing the "good test taker" will bring. Encourage sharing of experiences in which role was tried out. As was stressed elsewhere before, to the extent that the role was played by someone in the group and its benefit discussed, the others will be encouraged to do the same.

   Help to re-work roles that were found to be ineffective, e.g., those that were unrealistic or impossible for S to play. The goal is to create a more comfortable, confident and less tense test-taker but if the role is too difficult to enact, these goals will not be realized.

4. Review and assessment of studying for exams. While this serves as a review of Session 4, it is intended to focus on the week of studying between Session 4 and this one. It is particularly relevant because of its temporal proximity to finals.

   Did Ss make any observations of their characteristic mode of studying or any new techniques which have implications for test-taking anxiety? What kinds of changes have they made? Have they resisted doing anything other than coming to weekly sessions? Re-emphasize importance of practice--that we can not offer magical solutions nor do the work for them.

   Deal with persistent poor study methods. What can be done between now and the final exam to correct these? Concentrate on doable factors such as simply making up a study schedule and sticking to it, going to sleep early before each exam, or not studying immediately before an exam.

5. What are the present concerns about the approach of examination time? The greater portion of this session should enable Ss to express and deal with current fears and hopes. Being the last week of classes and a week before finals, feelings should probably be running high.

   The goal is not to bring out new, previously unexplored problems but to consolidate the five sessions, encourage Ss to apply what they learned, to help Ss face their finals more confidently and better prepared to deal with them--to think clearly and to respond adaptively.

   The counselors' role here is to help every group member to realize the above goal in his own way. You should have the

feeling that all of the individuals in your groups are "holding together" alright. Work with those who still seem particularly anxious or unsure of taking exams to overcome this in the time that still remains.

6. About five minutes before the end of the hour, formally bring the session to a close and explain that "we are asking you to fill out some forms to help us look at the 'test-taking anxiety' program from beginning to end. Some of these questionnaires you will recognize because you filled them out before the program began. These you will fill out here in a few seconds. The other three forms which are stapled together will be filled out immediately after your final exam in Psychology 151 on Friday, June 9. Complete them <u>immediately after</u> you finish the exam (not before). Then bring the materials to the front of the examination room where there will be a container to put them in. If you have any questions at that time or if you forget the forms I will be there with additional ones."

APPENDIX D

POST-EXPERIMENT LETTER TO NO-CONTACT CONTROL SUBJECTS

May 26, 1967

Dear _____:

Your cooperation is greatly needed by a research group in the College of Education. This research is being supervised by Professor Carl Thoresen. They are concerned about the range of responses which these two inventories will yield. To get an accurate and reliable picture of the way students actually feel about these items some students have been randomly selected from my Psychology 151 course to fill out these inventories.

Your efforts will make an important contribution to a research program which, it is hoped, will have important beneficial effects to students.

Instructions for completing and returning the enclosed forms:

1. The S-R Inventory has 11 pages, each of which describes a different situation. For example, "You are going into an interview for a very important job." Mark all your responses directly on the inventory itself.
2. The Test Anxiety Inventory has 34 items. Please circle the most appropriate response for each item on the inventory itself.
3. Put both inventories, when completed, into the enclosed, addressed envelope and put it in the University Mail immediately. We would like to receive it no later than June 1.

It will take you only a few minutes to fill out the forms but you will be providing us with valuable and needed information. Please accept my thanks in advance.

Yours truly,

Paul Bakan

Dr. Paul Bakan

APPENDIX E

ANALYSIS OF VARIANCE AND MEAN SCORE TABLES:

TABLE 1

2X2X2 ANALYSIS OF VARIANCE
TEST ANXIETY INVENTORY

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	236.53	1	236.53	1.08	
Treatment (SD-SGI)	1,069.53	1	1,069.53	4.88	<.05
Counselor	94.53	1	94.53	.43	
Personality X Treatment	157.53	1	157.53	.72	
Personality X Counselor	371.28	1	371.28	1.70	
Treatment X Counselor	1,069.53	1	1,069.53	4.91	<.05
Total Interaction	47.53	1	47.53	.22	
Between Groups	3,046.47	7	435.21		
Error	4,808.25	22	218.56		
Total	7,854.72	29			

I = Introvert
E = Extravert
SD = Systematic Desensitization
SGI = Structured Group Interaction

TABLE 2

2X2X2 ANALYSIS OF VARIANCE
S-R INVENTORY OF ANXIOUSNESS--FACTOR 1
"INTERPERSONAL"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	6,441.13	1	6,441.13	3.96	
Treatment (SD-SGI)	9,316.13	1	9,316.13	5.73	<.05
Counselor	276.13	1	276.13	.17	
Personality X Treatment	1,058.00	1	1,058.00	.65	
Personality X Counselor	200.00	1	200.00	.12	
Treatment X Counselor	60.50	1	60.50	.04	
Total Interaction	78.13	1	78.13	.05	
Between Groups	17,430.00	7	2,490.00		
Error	35,754.00	22	1,625.18		
Total	53,184.00	29			

TABLE 3

2X2X2 ANALYSIS OF VARIANCE
S-R INVENTORY OF ANXIOUSNESS--FACTOR 2
"INANIMATE PERSONAL DANGER"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	712.53	1	712.53	1.33	
Treatment (SD-SGI)	790.03	1	790.03	1.47	
Counselor	42.78	1	42.78	.08	
Personality X Treatment	1,262.53	1	1,262.53	2.35	
Personality X Counselor	3.78	1	3.78	.00	
Treatment X Counselor	57.78	1	57.78	.11	
Total Interaction	215.28	1	215.28	.40	
Between Groups	3,084.72	7	440.67		
Error	11,784.75	22	535.67		
Total	14,869.47	29			

TABLE 4

2X2X2 ANALYSIS OF VARIANCE
S-R INVENTORY OF ANXIOUSNESS--FACTOR 3
"AMBIGUOUS"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	512.00	1	512.00	4.25	
Treatment (SD-SGI)	946.13	1	946.13	7.85	<.05
Counselor	36.13	1	36.13	.30	
Personality X Treatment	153.13	1	153.13	1.27	
Personality X Counselor	210.13	1	210.13	1.74	
Treatment X Counselor	8.00	1	8.00	.07	
Total Interaction	420.50	1	420.50	3.50	
Between Groups	2,286.00	7	326.57		
Error	2,650.00	22	120.46		
Total	4,936.00	29			

TABLE 5

2X2X2 ANALYSIS OF VARIANCE
S-R INVENTORY OF ANXIOUSNESS--FACTOR 4
"AVOIDANCE"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	2,983.78	1	2,983.78	2.27	
Treatment (SD-SGI)	6,469.53	1	6,469.53	4.91	<.05
Counselor	1,237.53	1	1,237.53	.94	
Personality X Treatment	1,339.03	1	1,339.03	1.02	
Personality X Counselor	427.78	1	427.78	.33	
Treatment X Counselor	5.28	1	5.28	.00	
Total Interaction	30.03	1	30.03	.02	
Between Groups	12,492.97	7	1,784.71		
Error	28.946.25	22	1,315.74		
Total	41,439.22	29			

TABLE 6

2X2X2 ANALYSIS OF VARIANCE
S-R INVENTORY OF ANXIOUSNESS--FACTOR 5
"EXHILARATION"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	45.13	1	45.13	.13	
Treatment (SD-SGI)	3,960.50	1	3,960.50	11.64	<.005
Counselor	18.00	1	18.00	.05	
Personality X Treatment	1,431.13	1	1,431.13	4.20	
Personality X Counselor	.13	1	.13	.00	
Treatment X Counselor	128.00	1	128.00	.38	
Total Interaction	91.13	1	91.13	.27	
Between Groups	5,674.00	7	810.57		
Error	7,485.50	22	340.25		
Total	13,159.50	29			

TABLE 7

2X2X2 ANALYSIS OF VARIANCE
S-R INVENTORY OF ANXIOUSNESS--FACTOR 6
"ANTONOMIC"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	128.00	1	128.00	.45	
Treatment (SD-SGI)	78.13	1	78.13	.28	
Counselor	406.13	1	406.13	1.44	
Personality X Treatment	91.13	1	91.13	.32	
Personality X Counselor	406.13	1	406.13	1.44	
Treatment X Counselor	72.00	1	72.00	.26	
Total Interaction	1,012.50	1	1,012.50	3.59	
Between Groups	2,194.00	7	313.43		
Error	6,219.50	22	282.71		
Total	8,413.50	29			

TABLE 8

2X2X2 ANALYSIS OF VARIANCE
THAYER--"HIGH ACTIVATION"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	50.00	1	50.00	4.07	
Treatment (SD-SGI)	36.13	1	36.13	2.93	
Counselor	4.50	1	4.50	.37	
Personality X Treatment	28.13	1	28.13	2.29	
Personality X Counselor	40.50	1	40.50	3.30	
Treatment X Counselor	15.13	1	15.13	1.23	
Total Interaction	28.13	1	28.13	2.29	
Between Groups	202.50	7	28.93		
Error	271.00	22	12.32		
Total	473.50	29			

TABLE 9

2X2X2 ANALYSIS OF VARIANCE
THAYER--"GENERAL DEACTIVATION"

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	.28	1	.28	.02	
Treatment (SD-SGI)	19.53	1	19.53	1.27	
Counselor	.03	1	.03	.00	
Personality X Treatment	3.78	1	3.78	.25	
Personality X Counselor	57.78	1	57.78	3.78	
Treatment X Counselor	5.28	1	5.28	.35	
Total Interaction	140.28	1	140.28	9.17	<.01
Between Groups	226.97	7	32.42		
Error	336.25	22	15.28		
Total	563.22	29			

TABLE 10

2X2X2 ANALYSIS OF VARIANCE
TEST ANXIETY RATING SHEET

Source of Variance	SS	df	MS	F	P
Personality Type (I-E)	3.78	1	3.78	.28	
Treatment (SD-SGI)	5.28	1	5.28	.39	
Counselor	3.78	1	3.78	.28	
Personality X Treatment	2.53	1	2.53	.19	
Personality X Counselor	16.53	1	16.53	1.20	
Treatment X Counselor	75.03	1	75.03	5.54	<.05
Total Interaction	13.78	1	13.78	1.02	
Between Groups	120.71	7	17.25		
Error	298.25	22	13.56		
Total	418.97	29			

TABLE 11

MEAN SCORES
2X2X2 AOV
TEST ANXIETY INVENTORY

Counselor	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	93.5	101.8	123.5	118.0
C_2	117.8	107.5	119.8	105.0

TABLE 12

MEAN SCORES
2X2X2 AOV
S-R INVENTORY OF ANXIOUSNESS
FACTOR 1

Personality Type	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	185.5	176.8	237.0	199.0
C_2	202.3	177.3	242.0	200.3

TABLE 13

MEAN SCORES
2X2X2 AOV
S-R INVENTORY OF ANXIOUSNESS
FACTOR 2

Counselor	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	81.5	108.0	106.5	97.5
C_2	81.0	98.5	101.0	103.8

TABLE 14

MEAN SCORES
2X2X2 AOV
S-R INVENTORY OF ANXIOUSNESS
FACTOR 3

Personality Type	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	39.8	38.3	63.3	38.5
C_2	45.0	39.3	52.0	52.0

TABLE 15

MEAN SCORES
2X2X2 AOV
S-R INVENTORY OF ANXIOUSNESS
FACTOR 4

Counselor	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	139.5	127.8	182.0	140.5
C_2	145.8	144.8	186.0	163.0

TABLE 16

MEAN SCORES
2X2X2 AOV
S-R INVENTORY OF ANXIOUSNESS
FACTOR 5

Personality Type	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	80.3	94.8	123.3	104.3
C_2	86.3	93.8	114.5	102.0

TABLE 17

MEAN SCORES
2X2X2 AOV
S-R INVENTORY OF ANXIOUSNESS
FACTOR 6

Counselor	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	87.5	105.3	102.3	90.8
C_2	95.8	76.8	94.0	90.8

TABLE 18

MEAN SCORES
2X2X2 AOV
THAYER--FACTOR HA

Personality Type	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	7.3	6.3	14.5	6.0
C_2	9.0	8.8	9.8	9.5

TABLE 19

MEAN SCORES
2X2X2 AOV
THAYER--FACTOR GD

Counselor	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	18.8	17.8	16.0	22.0
C_2	16.5	18.5	27.8	16.0

TABLE 20

MEAN SCORES
2X2X2 AOV
TEST ANXIETY RATING SHEET

Personality Type	Treatment: S.D. I	S.D. E	S.G.I. I	S.G.I. E
C_1	11.5	11.3	17.3	13.3
C_2	13.8	13.8	10.8	12.3

TABLE 21

2X3 AOV BY PLANNED COMPARISON
TEST ANXIETY INVENTORY

Source of Variance	SS	df	MS	F	P
Between Groups	3,754.65	5			
Personality Main Effect	58.14	1	58.14	.28	
Treatments Main Effect	2,676.09	2			
Comparison:					
SD-SGI	1,069.53	1	1,069.53	5.15	<.05
SD&SGI-NTC	1,606.56	1	1,606.56	7.74	<.01
Interaction	1,020.42	2			
Comparison:					
Personality-Treatments	157.53	1	157.53	.76	
Remaining Interaction	862.89	1	862.89	4.17	<.05
Error	6,630.12	32	207.23		
Total	10,384.77	37			

SD = Systematic Desensitization
SGI = Structured Group Interaction
NTC = No-Treatment Control

TABLE 22

2X3 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--SITUATION 1

Source of Variance	SS	df	MS	F	P
Between Groups	1,156.13	5			
Personality Main Effect	.25	1	.25	.01	
Treatments Main Effect	1,005.75	2			
Comparison:					
SD-SGI	325.13	1	325.13	6.54	<.05
SD&SGI-NTC	680.63	1	680.63	14.40	<.005
Interaction	150.13	2			
Comparison:					
Personality-Treatments	6.13	1	6.13	.12	
Remaining Interaction	144.00	1	144.00	2.88	
Error	1,593.25	32	49.68		
Total	2,749.38	37			

TABLE 23

2X3 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 1

Source of Variance	SS	df	MS	F	P
Between Groups	32,072.88	5			
Personality Main Effect	1,764.00	1	1,764.00	1.36	
Treatments Main Effect	24,138.63	2			
Comparison:					
SD-SGI	9,316.13	1	9,316.13	7.20	<.05
SD&SGI-NTC	14,822.50	1	14,822.50	11.46	<.005
Interaction	6,170.25	2			
Comparisons:					
Personality-Treatments	1,058.00	1	1,058.00	.82	
Remaining Interaction	5,112.25	1	5,112.25	3.94	
Error	41,443.50	32	1,295.06		
Total	73,516.38	37			

TABLE 24

2X3 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 2

Source of Variance	SS	df	MS	F	P
Between Groups	3,492.00	5			
Personality Main Effect	953.27	1	953.27	1.96	
Treatments Main Effect	1,228.94	2			
Comparison:					
SD-SGI	790.03	1	790.03	1.63	
SD&SGI-NTC	438.91	1	438.91	.90	
Interaction	1,309.80	2			
Comparison:					
Personality-Treatments	1,262.53	1	1,262.53	2.60	
Remaining Interaction	47.27	1	47.27	.09	
Error	15,554.37	32	486.06		
Total	19,046.37	37			

TABLE 25

2X3 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 3

Source of Variance	SS	df	MS	F	P
Between Groups	2,249.28	5			
Personality Main Effect	540.56	1	540.56	3.62	
Treatments Main Effect	1,479.03	2			
Comparison:					
SD-SGI	946.13	1	946.13	6.30	<.05
SD&SGI-NTC	532.90	1	532.90	3.55	
Interaction	229.69	2			
Comparison:					
Personality-Treatments	153.13	1	153.13	1.02	
Remaining Interaction	76.56	1	76.56	.51	
Error	4,800.50	32	149.94		
Total	7,049.78	37			

TABLE 26

2X3 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 4

Source of Variance	SS	df	MS	F	P
Between Groups	17,255.48	5			
Personality Main Effect	669.52	1	669.52	.53	
Treatments Main Effect	12,607.54	2			
Comparison:					
SD-SGI	6,469.53	1	6,469.53	5.15	<.05
SD&SGI-NTC	6,138.01	1	6,138.01	4.86	<.05
Interaction	3,978.42	2			
Comparison:					
Personality-Treatments	1,339.03	1	1,339.03	1.06	
Remaining Interaction	2,639.39	1	2,639.39	2.10	
Error	40.307.63	32	1,259.60		
Total	57,563.10	37			

TABLE 27

2X3 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 5

Source of Variance	SS	df	MS	F	P
Between Groups	8,750.15	5			
Personality Main Effect	22.56	1	22.56	.07	
Treatments Main Effect	7,093.40	2			
Comparison:					
SD-SGI	3,960.50	1	3,960.50	12.28	<.005
SD&SGI-NTC	3,132.90	1	3,132.90	9.70	<.005
Interaction	1,634.19	2			
Comparison:					
Personality-Treatments	1,431.13	1	1,431.13	4.45	<.05
Remaining Interaction	203.06	1	203.06	.63	
Error	10,324.25	32	322.63		
Total	19,074.40	37			

TABLE 28

2X3 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 6

Source of Variance	SS	df	MS	F	P
Between Groups	1,242.65	5			
Personality Main Effect	90.25	1	90.25	.27	
Treatments Main Effect	1,019.03	2			
Comparison:					
SD-SGI	78.13	1	78.13	.23	
SD&SGI-NTC	940.90	1	940.90	2.80	
Interaction	133.38	2			
Comparison:					
Personality-Treatments	91.13	1	91.13	.27	
Remaining Interaction	42.25	1	42.25	.13	
Error	10,775.75	32	336.74		
Total	12,018.40	37			

TABLE 29

2X3 AOV BY PLANNED COMPARISON
THAYER ACTIVATION-DEACTIVATION ADJECTIVE CHECK LIST
HIGH ACTIVATION FACTOR

Source of Variation	SS	df	MS	F	P
Between Groups	363.78	5			
Personality Main Effect	5.06	1	5.06	.40	
Treatments Main Effect	180.53	2			
Comparison:					
SD-SGI	36.13	1	36.13	2.83	
SD&SGI-NTC	144.40	1	144.40	11.32	<.005
Interaction	178.19	2			
Comparison:					
Personality-Treatments	28.13	1	28.13	2.20	
Remaining Interaction	150.06	1	150.06	11.78	<.005
Error	408.00	32	12.75		
Total	771.78	37			

TABLE 30

2X3 AOV BY PLANNED COMPARISON
THAYER ACTIVATION-DEACTIVATION ADJECTIVE CHECK LIST
GENERAL DEACTIVATION FACTOR

Source of Variance	SS	df	MS	F	P
Between Groups	144.65	5			
Personality Main Effect	62.02	1	62.02	3.16	
Treatments Main Effect	28.09	2			
Comparison:					
SD-SGI	19.53	1	19.53	1.00	
SD&SGI-NTC	8.56	1	8.56	.44	
Interaction	54.55	2			
Comparison:					
Personality-Treatments	3.78	1	3.78	.19	
Remaining Interaction	50.77	1	50.77	2.59	
Error	627.13	32	19.60		
Total	771.78	37			

TABLE 31

2X3 AOV BY PLANNED COMPARISON
TEST ANXIETY RATING SHEET

Source of Variance	SS	df	MS	F	P
Between Groups	568.90	5			
Personality Main Effect	50.77	1	50.77	2.55	
Treatments Main Effect	418.09	2			
Comparisons:					
SD-SGI	5.28	1	5.28	.27	
SD&SGI-NTC	412.81	1	412.81	20.74	<.005
Interaction	100.05	2			
Comparison:					
Personality-Treatments	2.53	1	2.53	.13	
Remaining Interaction	248.06	1	248.06	8.97	<.01
Error	636.88	32	19.90		
Total	1,205.78	37			

TABLE 32

2X4 AOV BY PLANNED COMPARISON
TEST ANXIETY INVENTORY

Source of Variance	SS	df	MS	F	P
Between Groups	3,895.21	7			
Personality Main Effect	5.79	1	5.79	.03	
Treatments Main Effect	2,815.09	3			
Comparison:					
NTC-NCC	450.19	1	450.19	2.27	
SD&SGI-NCC	472.59	1	472.59	2.38	
SD&SGI-NTC&NCC	1,620.00	1	1,620.00	8.15	<.01
Interaction	1,074.34	3			
Error	8,934.50	45	198.54		
Total	12,829.71	52			

SD = Systematic Desensitization
SGI = Structured Group Interaction
NTC = No-Treatment Control
NCC = No-Contact Control

TABLE 33

2X4 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--SITUATION 1

Source of Variance	SS	df	MS	F	P
Between Groups	1,305.88	7			
Personality Main Effect	64.29	1	64.29	1.54	
Treatments Main Effect	1,060.44	3			
Comparison:					
NTC-NCC	196.02	1	196.02	4.64	<.05
SD&SGI-NCC	192.67	1	192.67	4.59	<.05
SD&SGI&NTC&NCC	678.61	1	678.61	16.20	<.005
Interaction	181.15	3	60.38	1.44	
Error	1,886.13	45	41.91		
Total	3,192.00	52			

TABLE 34

2X4 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 1

Source of Variance	SS	df	MS	F	P
Between Groups	46,010.55	7			
Personality Main Effect	6,975.45	1	6,975.45	4.91	<.05
Treatments Main Effect	34,770.05	3			
Comparison:					
NTC-NCC	341.33	1	341.33	.24	
SD&SGI-NCC	17,173.50	1	17,173.50	12.06	<.005
SD&SGI-NTC&NCC	24,921.80	1	24,921.80	17.51	<.005
Interaction	4,265.05	3	1,421.69	1.00	
Error	64,049.00	45	1,423.30		
Total	110,059.55	52			

TABLE 35

2X4 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 2

Source of Variance	SS	df	MS	F	P
Between Groups	3,968.68	7			
Personality Main Effect	757.79	1	757.79	1.49	
Treatments Main Effect	1,702.55	3			
Comparison:					
NTC-NCC	.19	1	.19	.00	
SD&SGI-NCC	698.76	1	698.76	1.37	
SD&SGI-NTC&NCC	858.05	1	858.05	1.69	
Interaction	1,508.34	3	502.78	1.00	
Error	22,904.75	45	508.99		
Total	26,873.43	52			

TABLE 36

2X4 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 3

Source of Variance	SS	df	MS	F	P
Between Groups	3,320.34	7			
Personality Main Effect	1,037.16	1	1,037.16	7.36	$<.05$
Treatments Main Effect	2,109.09	3			
Comparison:					
NTC-NCC	.08	1	.08	.00	
SD&SGI-NCC	912.67	1	912.67	6.48	$<.05$
SD&SGI-NTC&NCC	1,080.45	1	1,080.45	7.65	$<.05$
Interaction	174.09	3	58.03	.41	
Error	6,338.50	45	140.86		
Total	9,658.84	52			

TABLE 37

2X4 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 4

Source of Variance	SS	df	MS	F	P
Between Groups	22,087.55	7			
Personality Main Effect	1,921.14	1	1,921.14	1.46	
Treatments Main Effect	17,133.37	3			
Comparison:					
NTC-NCC	126.75	1	126.75	1.00	
SD&SGI-NCC	7,262.76	1	7,262.76	5.54	<.05
SD&SGI-NTC&NCC	10,419.61	1	10,419.61	7.92	<.05
Interaction	3,033.05	3	1,011.02	.77	
Error	59,072.38	45	1,312.68		
Total	81,157.93	52			

TABLE 38

2X4 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 5

Source of Variance	SS	df	MS	F	P
Between Groups	11,449.43	7			
Personality Main Effect	175.02	1	175.02	.57	
Treatments Main Effect	9,180.12	3			
Comparison:					
NTC-NCC	93.52	1	93.52	.31	
SD&SGI-NCC	3,432.04	1	3,432.04	11.25	<.005
SD&SGI-NTC&NCC	5,136.01	1	5,136.01	16.83	<.005
Interaction	2,094.30	3	698.10	2.28	
Error	13,742.13	45	305.38		
Total	25,191.55	52			

TABLE 39

2X4 AOV BY PLANNED COMPARISON
S-R INVENTORY OF ANXIOUSNESS--FACTOR 6

Source of Variance	SS	df	MS	F	P
Between Groups	3,668.71	7			
Personality Main Effect	707.16	1	707.16	2.61	
Treatments Main Effect	2,405.03	3			
Comparison:					
NTC-NCC	9.19	1	9.19	.03	
SD&SGI-NCC	1,926.04	1	1,926.04	7.11	<.05
SD&SGI-NTC&NCC	2,091.01	1	2,091.01	7.70	<.05
Interaction	556.53	3	185.51	.68	
Error	12,217.13	45	271.49		
Total	15,885.84	52			

TABLE 40

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
TEST ANXIETY INVENTORY

Source of Variance	SS	df	MS	F	P
Between Groups	1,523.88	5			
Personality Main Effect	588.06	1	588.06	2.81	
Treatments Main Effect	830.63	2			
Comparison:					
SD-SGI	528.13	1	528.13	2.52	
SD&SGI-NTC	302.50	1	302.50	1.45	
Interaction	105.19	2			
Comparison:					
Personality-Treatments	.13	1	.13	.00	
Remaining Interaction	105.06	1	105.06	.50	
Error	7,117.50	34	209.34		
Total	8,641.37	39			

TABLE 41

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
S-R INVENTORY OF ANXIOUSNESS--SITUATION 1

Source of Variance	SS	df	MS	F	P
Between Groups	338.00	5			
Personality Main Effect	76.56	1	76.56	1.59	
Treatments Main Effect	205.75	2			
Comparison:					
SD-SGI	190.13	1	190.13	3.95	
SD&SGI-NTC	15.63	1	15.63	.32	
Interaction	55.69	2			
Comparison:					
Personality-Treatments	28.13	1	28.13	.58	
Remaining Interaction	27.56	1	27.56	.57	
Error	1,636.00	34	48.12		
Total	1,974.00	39			

TABLE 42

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
S-R INVENTORY OF ANXIOUSNESS--FACTOR 1

Source of Variance	SS	df	MS	F	P
Between Groups	7,476.97	5			
Personality Main Effect	425.39	1	425.39	.36	
Treatments Main Effect	4,452.04	2			
Comparison:					
SD-SGI	2,945.28	1	2,945.28	2.52	
SD&SGI-NTC	1,506.76	1	1,506.76	1.29	
Interaction	2,599.55	2			
Comparison:					
Personality-Treatments	11.28	1	11.28	.01	
Remaining Interaction	2,588.27	1	2,588.27	2.22	
Error	39,698.12	34	1,167.59		
Total	47,175.10	39			

TABLE 43

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
S-R INVENTORY OF ANXIOUSNESS--FACTOR 2

Source of Variance	SS	df	MS	F	P
Between Groups	2,603.13	5			
Personality Main Effect	1,785.06	1	1,785.06	4.68	<.05
Treatments Main Effect	54.50	2			
Comparison:					
SD-SGI	32.00	1	32.00	.08	
SD&SGI-NTC	22.50	1	22.50	.06	
Interaction	763.56	2			
Comparison:					
Personality-Treatments	760.50	1	760.50	1.99	
Remaining Interaction	3.06	1	3.06	.01	
Error	12,978.25	34	381.71		
Total	15,581.38	39			

TABLE 44

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
S-R INVENTORY OF ANXIOUSNESS--FACTOR 3

Source of Variance	SS	df	MS	F	P
Between Groups	937.25	5			
Personality Main Effect	199.52	1	199.52	1.25	
Treatments Main Effect	647.69	2			
Comparison:					
SD-SGI	621.28	1	621.28	3.90	
SD&SGI-NTC	26.41	1	26.41	.17	
Interaction	90.05	2			
Comparison:					
Personality-Treatments	52.53	1	52.53	.33	
Remaining Interaction	37.52	1	37.52	.24	
Error	5,413.12	34	159.21		
Total	6,350.38	39			

TABLE 45

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
S-R INVENTORY OF ANXIOUSNESS--FACTOR 4

Source of Variance	SS	df	MS	F	P
Between Groups	5,169.90	5			
Personality Main Effect	12.25	1	12.25	.01	
Treatments Main Effect	3,204.90	2			
Comparison:					
SD-SGI	3,200.00	1	3,200.00	2.65	
SD&SGI-NTC	4.90	1	4.90	.00	
Interaction	1,952.75	2			
Comparison:					
Personality-Treatments	60.50	1	60.50	.05	
Remaining Interaction	1,892.25	1	1,892.25	1.57	
Error	41,082.50	34	1,208.31		
Total	46,252.40	39			

TABLE 46

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
S-R INVENTORY OF ANXIOUSNESS--FACTOR 5

Source of Variance	SS	df	MS	F	P
Between Groups	3,414.00	5			
Personality Main Effect	385.14	1	385.14	1.21	
Treatments Main Effect	2,613.44	2			
Comparison:					
SD-SGI	2,032.03	1	2,032.03	6.39	<.05
SD&SGI-NTC	581.41	1	581.41	1.83	
Interaction	415.42	2			
Comparison:					
Personality-Treatments	236.53	1	236.53	.74	
Remaining Interaction	178.89	1	178.89	.56	
Error	10,804.37	34	317.78		
Total	14,218.38	39			

TABLE 47

2X3 AOV BY PLANNED COMPARISON
PRE-TEST SCORES
S-R INVENTORY OF ANXIOUSNESS--FACTOR 6

Source of Variance	SS	df	MS	F	P
Between Groups	984.10	5			
Personality Main Effect	351.56	1	351.56	1.03	
Treatments Main Effect	631.35	2			
Comparison:					
SD-SGI	253.13	1	253.13	.74	
SD&SGI-NTC	378.22	1	378.22	1.11	
Interaction	1.19	2			
Comparison:					
Personality-Treatments	1.13	1	1.13	.00	
Remaining Interaction	.06	1	.06	.00	
Error	11,621.50	34	341.81		
Total	12,605.60	39			