

COGNITIVE COPING STRATEGIES AND MODELING
IN THE TREATMENT OF SNAKE PHOBIA

Peter MacKinnon Williamson

A THESIS

IN

THE DEPARTMENT OF PSYCHOLOGY

PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS AT
SIR GEORGE WILLIAMS UNIVERSITY
MONTREAL, CANADA

December, 1972

© Peter MacKinnon Williamson 1973

ABSTRACT

PETER M. WILLIAMSON

COGNITIVE COPING STRATEGIES AND MODELING IN THE TREATMENT OF SNAKE PHOBIA

Two methods for reducing snake avoidance behavior were compared in a pretreatment-posttreatment test design which included a test of generalization. In the first method, subjects observed models handling a snake. Then they were encouraged to approach gradually, and eventually to touch a snake with the aid of physical prompts from the experimenter. The second method involved several variations of a self-instructed cognitive procedure. The basic approach required that subjects prepare new strategies or plans for guiding their behavior, when presented stimuli which provoked fear and avoidance. Variations upon this treatment included - (a) exposure of subjects to single or multiple practice stressors so that they could rehearse coping self-instructions; (b) inclusion of practice in cognitive strategies for dealing specifically with snakes. Both modeling and training in cognitive coping strategies were superior to a no-treatment control condition in decreasing snake avoidance behavior. No differences in effectiveness were found among the various cognitive groups. Modeling with guided participation proved superior to cognitive training on behavioral and anxiety report measures of snake avoidance. This superiority was maintained in a test of generalization of treatment effects involving a second snake.

ACKNOWLEDGEMENTS

I would like to acknowledge the guidance and continuous reinforcement of my thesis supervisor, Dr. William Brender, and the helpful advice of Dr. Gold and Dr. Andres.

Special acknowledgement must go to Mrs. Ruth Clement, my able cotherapist, who repeatedly braved twenty miles of snowdrifts to conduct treatment sessions, and without whose aid the experiment would not have been completed; and to my wife Maureen, both for her endless typing and her understanding forbearance.

I must also thank Mrs. Nina Pollack and Miss Karen Keer, our astute observers, and Uri, Gus, Alex, Penny and others in the department who kindly donated their time during the course of this study.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	iii
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
CHAPTER	
1. INTRODUCTION.....	1
II. METHOD.....	13
III. RESULTS.....	27
IV. DISCUSSION.....	45
V. SUMMARY.....	50
REFERENCES.....	52
APPENDIX A.....	63
APPENDIX B.....	66
APPENDIX C.....	68
APPENDIX D.....	70
APPENDIX E.....	71
APPENDIX F.....	74
APPENDIX G.....	83
APPENDIX H.....	84
APPENDIX I.....	91

LIST OF TABLES

Table	Page
1. Treatment Features of Experimental Groups.....	25
2. Summary of Correlated t-Values Associated with Changes in Approach Scores from Pretest to Posttest 1 (Boa).....	30
3. Comparisons of Behavior Approach Score Changes from Pretest to Posttest 1 (Boa).....	33
4. Number of Subjects in Each Condition Showing No Change, Improvement, or Terminal Goal Behavior.....	34
5. Summary of Correlated t-Values Associated with Changes in Self-Reported Anxiety from Pretest to Posttest 1 (Boa).....	36
6. Comparisons of Changes in Anxiety Scores from Pretest to Posttest 1 (Boa).....	39
7. Summary of Correlated t-Values Associated with Changes in Approach Scores from Posttest 1 (Boa) to Posttest 11 (Garter).....	41
8. Number of Subjects in Each Experimental Group Achieving Terminal Behavior with Novel Garter Snake.....	42
9. Summary of Correlated t-Values Associated with Changes in Anxiety Scores from Posttest 1(Boa) to Posttest 11(Garter).....	44

LIST OF FIGURES

Figure	Page
1. Diagram of Physical Arrangement: Pre- and Posttreatment Assessment and Observation Rooms ...	17
2. Mean Behavior Approach Scores by Experimental Groups at Pretest (Boa) and Posttest 1 (Boa)	29
3. Mean Change in Approach Scores by Experimental Groups from Pretest (Boa) to Posttest 1 (Boa).....	31
4. Mean Anxiety Scores by Experimental Groups at Pretest (Boa) and Posttest 1 (Boa)	35
5. Mean Changes in Anxiety Scores by Experimental Groups from Pretest (Boa) to Posttest 1 (Boa)	37
6. Mean Behavior Approach Scores by Experimental Groups at Posttest 1 (Boa) and Posttest 11 (Garter)	40
7. Mean Anxiety Scores by Experimental Groups for Posttest 1 (Boa) and Posttest 11 (Garter)	43

CHAPTER 1
INTRODUCTION

In recent years there has been much interest in methods of eliminating unrealistic or "neurotic" fears in humans. Many of these methods differ from older therapeutic techniques as they derive from the experimental literature on learning. Learning-based conceptions of neurotic fears or phobias commonly regard them as maladaptive habits; however, there exist several explanations of the way the fears are established. Correspondingly divergent procedures for eliminating them have been proposed. Although a detailed discussion of how fears develop is beyond the scope of this paper, the rationales underlying several treatment methods will be discussed.

Currently, the most popular method of eliminating phobias is "systematic desensitization" (Wolpe, 1958). Wolpe's treatment method consists of the introduction of very attenuated fear stimuli to a subject's imagination while that subject is actively performing some anxiety-incompatible response (such as relaxation). This incompatible response, according to Wolpe, serves to "reciprocally inhibit" the primarily sympathetic anxiety response at the autonomic level. The basis of the effectiveness of systematic desensitization is currently under active investigation (Wilson and Davison, 1970; Wilkins, 1971; Locke, 1971).

Bandura (1969), in accounting for the efficacy of this treatment, assigns a larger role to central mediating factors. He suggests that the rapid elimination of the fear response may result

from the development of expectancies about the future probability of reinforcement (or relatively non-aversive consequences) rather than from the gradual conditioning of incompatible responses to fear stimuli. In accordance with his social learning theory (Bandura and Walters, 1963), Bandura has gone on to argue that expectations can be altered by having a subject expose himself directly to frightening stimuli (under safe conditions), or by having a subject observe a model whose actions towards a feared stimulus do not result in aversive consequences.

Bandura's theoretical formulations involve a dual process theory of avoidance behavior (Bandura, Blanchard and Ritter, 1969). According to this view, threatening stimuli generate emotional arousal which has both autonomic and central components. These arousal processes, operating primarily at the central level, exert some control over instrumental avoidance responding. Bandura cites several lines of evidence to support the view that emotional behavior is primarily centrally, rather than peripherally regulated (as Wolpe suggests). For example, Wynne and Solomon (1955) have shown that avoidance responses can be acquired and maintained in sympathectomized animals. Also, Black (1967) taught animals whose skeletal activity was blocked by curare to perform a conditional avoidance response. Black (1959) has also shown that avoidance behavior persists after autonomic responses have been extinguished. Given that avoidance behavior is largely centrally regulated, any reduction in the arousal capacity of events perceived as threatening would serve to decrease the probability of such avoidance behavior.

The essence of Bandura's method for eliminating phobias relies on having the fearful subject observe a model engage in close interaction with the feared object or situation. The absence of aversive consequences to the model is presumed to lessen the observer's arousal to the fear stimulus. After repeated opportunities to observe several models dealing comfortably with the feared object or situation, the subject is generally able to confront it himself. Bandura (1969) maintains that graduating the intensity of threat to the model is unnecessary. Nevertheless, because subjects' attention is critical to the method, graduated threat to the model is more likely to maintain the attending responses of observing subjects.

The first rigorous experiment to test the effectiveness of modeling procedures in vicariously extinguishing human avoidance behavior was conducted by Bandura, Grusec, and Menlove (1967). The subjects were forty-eight children who were afraid of dogs. The degree of fear exhibited by each child was determined from parental report and directly by a fourteen step behavioral test of avoidance. Four separate groups of children received the following treatments. One group of dog-phobic children observed a fearless peer exhibit successively closer interactions with a dog for gradually extended periods of time over eight sessions at a party. Another group of fearful children watched eight sessions of similar model-dog interaction, but in a neutral context. The third group was exposed to the dog only, over eight sessions. The last group attended parties but were never exposed to a dog. Posttreatment avoidance assessment indicated lasting extinction of the fear for sixty-seven per cent of

subjects in the first two experimental groups, with little improvement occurring in the last two groups. These results showed that observation of the fearless model, regardless of context, was the critical variable in the reduction of avoidance behavior in the dog-phobic children.

Geer and Turteltaub (1967) conducted a similar experiment with snake avoidant adults as subjects. They had two groups watch either fearless, or obviously distressed models approach the snake, while a third group did not observe any models. The group of subjects who had observed the fearless model a single time, achieved significant reductions in avoidance behavior relative to subjects in the other two groups.

Bandura and Menlove (1968) evaluated the differential effect of observing multiple models and several phobic stimuli versus a single model and one fear stimulus. One group of dog-phobic children watched films of models of both sexes and various ages, interacting with several breeds of dogs of different temperament. A second group watched a film of one model dealing with an individual dog. The results indicated that the multiple models were more effective than the single model in reducing avoidance behavior.

Bandura, Blanchard and Ritter (1968) conducted a complex study to evaluate systematic desensitization in comparison with several variations of the vicarious extinction paradigm. Using snake phobic adults and teenagers, they had one treatment group undergo standard systematic desensitization. Another group had a self-directed modeling treatment in which subjects watched a film showing many

models engaging in progressively closer interactions with a snake. Subjects were instructed to watch each scene until they experienced no anxiety, and then, to proceed to the next one, and so on, until they were able to watch models interact closely with the snake. A third group watched snakes being handled by models who then aided the subjects by means of physical prompts (Ritter, 1968) to gradually approach and actually handle a snake themselves. Postexperiment behavioral tests indicated that subjects in the desensitization and graduated-modeling film groups improved significantly over controls, but were significantly less improved than subjects who had been helped to handle live snakes.

In a follow-up experiment, Blanchard (1969) assessed the relative contributions to treatment success of modeling, information, and direct contact with a snake. Blanchard had one group of subjects observe models, then individually perform guided approach behavior to the snake. Two more groups observed the same models and watched through one-way mirrors as subjects in the first group were guided through snake approach behavior. However, only subjects in the second group were able, as well, to listen to the verbal interaction. The second group thus were receiving information, as well as modeling but no direct supervised experience in approaching the snake. The third group was exposed only to the modeling of approach behavior. In comparison with controls, who received no therapy, all treatment subjects achieved significant reductions in avoidance behavior. However, the first group whose treatment included guided participation, benefitted significantly more than did the other two treatment groups (modeling and information, modeling alone).

Ritter adapted the techniques of modeling with therapist-guided subject participation for use in treating a dissection phobia (1965), snake phobia in groups of children (1968), and acrophobia (fear of heights) in groups of adults (1969a; 1969b).

A study by Meichenbaum (1971b) examined yet another variable involved in changing behavior by modeling. He had snake phobic subjects watch two types of models engage in approach behavior towards a snake. For one group, the model exhibited obvious indications of fear as he approached, gradual mastery of his feelings and finally, close interaction with the snake. Another group of subjects saw a completely fearless model approach and handle the snake. Posttreatment assessment of approach behavior by the subjects revealed a greater reduction in avoidance for those subjects who had seen the initially fearful, but ultimately successful model.

In summary, it has been demonstrated that the technique of modeling with guided participation is effective for reducing several different types of fears. It has been successfully used in laboratory and clinical settings with children, as well as with adults.

Another general approach to reduction of neurotic fears, which has sparked increasing interest recently, places even more emphasis on the importance of central processes in controlling behavior. Various investigators (Cautela, 1967; Homme, 1965; Kanfer and Phillips, 1970) have stressed the potency of mental events, imagery, and the like, to act as stimuli in their own right, with punishing and rewarding properties. Others (Meichenbaum, 1969a; Beck, 1970) have emphasized the crucially important role of subvocal speech,

in directing and motivating behavior. Although methods of fear reduction based on these conceptions are in the early stages of development, they nevertheless, seem quite promising.

Cautela's early case reports (1966) described patients who were treated in the following way. They were, first, taught relaxation; then the verbal expression "I am calm and relaxed" was paired repeatedly with the feelings of relaxation. Patients who underwent this classical conditioning, subsequently reported that when they were faced with anxiety situations, the self-verbalizations themselves had a calming effect. More recently, Cautela (1970) has reported on the use of mental images and words as reinforcing events. For example, in attempting to eliminate an undesired type of approach behavior (e.g. overeating), a thought of delicious food could immediately be followed by the punishing consequence of graphic images of vomit. For purposes of reducing avoidance behavior, thoughts of calm approach to the feared object or situation might be followed by pleasurable imagery. Cautela (1970) reports a case in which this "cognitive operant learning" scheme was successfully used to help a student face sitting for examinations.

Another cognitive approach to control and elimination of avoidance behavior, elaborated by Meichenbaum (1971d) is the use of covert self-instruction. Meichenbaum attributes the maintenance of avoidance behavior in large part to anxiety arousing verbal ruminations regarding feared situations and objects. He contends that when faced with fear stimuli, either live or in imagination, a phobic person dwells sub-vocally on the negative attributes of the feared stimu-

lus or stimulus complex, and thereby heightens his own anxiety. The person tends to label his fear, accentuate his own awareness of it, and in fact, become "afraid of being afraid". Meichenbaum has proposed a treatment which attempts to break the cycle of self-arousal by teaching a patient how to initiate subvocal coping statements which are directive in helping him deal with the fear. The principal steps used in this treatment are the following: the subject undergoes an interview during which the therapist probes the self-verbalizations, thoughts and feelings experienced by the subject when the phobic stimuli come to mind, or are encountered in real life. An explanation is given of the process whereby anxious, ruminative trains of thought further the maladaptive avoidance behavior. The subject is taught a method (such as relaxation) for coping with autonomic arousal. He then prepares strategies which he can verbalize to himself for an array of anxiety-producing situations. Finally, he practises these verbal self-instructions along with relaxation. When proficient, the subject is given a chance to expose himself to non-phobic stressors, such as intermittent shock, and to develop coping self-instructions to deal with them (Meichenbaum, 1971d). A possible advantage of this self-instructional method is that, unlike procedures described earlier, it may provide the subject with a technique to prevent or deal with a wide variety of present or future maladaptive avoidance behaviors.

Meichenbaum's procedures for helping clients develop self-directed coping strategies for phobias, draw upon several sources. For example, Schachter and Singer (1962) demonstrated that cognitive

labeling plays an important role in a person's interpretation of his own emotion. Luria (1961) has described the overriding importance of self-directive speech, both overt and covert, in helping children regulate their own behavior. Meichenbaum (1969a, 1969b) has successfully taught hyperactive children self-directive speech, so that they might carry out tasks more slowly and accurately. Working with adults Ellis (1963) has argued that much maladaptive emotion and behavior is the result of faulty cognitive labeling. Based on this notion, he has elaborated a cognitive therapeutic technique which makes the client aware of his maladaptive self-statements and shows him ways to change them.

Proceeding from these lines of research and clinical description, Meichenbaum and his students have conducted several studies to explore the therapeutic effectiveness of teaching a client how to talk to himself so that he might better control his emotions and behavior. Meichenbaum (1971a) first tested the hypothesis that explicit modeling of appropriate task-relevant self-instructions would enhance the effects of modeling in eliminating phobias. One group of subjects were exposed to models who approached snakes without any accompanying verbalizations. The other group watched three models approach the snake in the same manner, except that these models verbalized coping statements as they advanced. They instructed themselves to remain calm by taking slow, deep breaths, to cope with the fear (e.g. "I have to pick up the snake. Okay, one step at a time. I'll put my hand in the cage and stroke it. You feel a little cold, but not slimy like most people imagine. Lie still so I can get a proper hold on you. First behind the head and now down by the tail.")

Observers who had watched the self-instructing models later showed greater avoidance reduction than observers who had seen silent models.

Meichenbaum, Gilmour, and Fedoravicius (1971) developed a "semantic" insight treatment which they compared with group desensitization for effectiveness in treating speech-anxious subjects. The keystone of this "semantic" treatment was examination of the extent to which subjects' ruminative self-statements hindered their performance in fear situations. The desensitization treatment was more effective for subjects whose speech anxieties were restricted to formal speaking situations, while the alternative treatment produced greater success with subjects whose speech anxieties were more general. The techniques of teaching task-attention and anxiety-incompatible responses were successfully used with test anxious subjects in two later studies (Meichenbaum, 1972; Wine, 1971). Meichenbaum (1972) treated one group by Wolpe's desensitization, using a standard imaginal hierarchy and relaxation. Another group was taught coping task-relevant self-statements and relaxation. Self-report and grade point average indicated superiority of the second method.

Meichenbaum (1971a) has reported an extensive study of snake and rat phobic subjects. In this experiment, training in coping self-instruction was compared with the technique of anxiety relief (Wolpe and Lazarus, 1966) and with systematic desensitization. The coping self-instruction method combined the following elements:

- 1) a Schacterian explanation of emotion (Schacter and Singer, 1962) emphasizing the role of cognition in controlling perceived threat;
- 2) practice in controlling arousal through the use of muscular re-

laxation and deep breathing; 3) training in developing coping self-statements for dealing with anxiety in general and specifically in relation to snakes; 4) the opportunity to practise coping self-statements while actually experiencing stress produced by electric shock. Posttreatment behavioral assessments showed that subjects given the last treatment were superior to the other treatment groups and the controls in reducing snake avoidance and subjective anxiety. Similar results were also obtained with the subjects' rat fears which had not been specifically treated. This was in keeping with Meichenbaum's suggestion that transfer effects could be expected, because subjects were learning a generally applicable method for coping with anxiety, instead of learning how to react without anxiety to a single stimulus object.

On the basis of the previous review, it is clear that both systematic desensitization and modeling with guided participation have been effective with a variety of fears. When these two treatment methods have been compared, modeling has produced superior results. Meichenbaum has proposed an alternative cognitive approach to treating phobias. This approach is of particular interest because of Meichenbaum's claims, supported by some evidence that it teaches nonspecific coping strategies applicable simultaneously to many fears.

Statement of the Problem

The experiment reported in this paper attempted to replicate Meichenbaum's basic findings. In addition, it evaluates the role of

several components of his cognitive treatment procedure. Finally, the relative effectiveness of his approach was compared to modeling with guided participation which according to experimental evidence is currently the most potent method of fear reduction.

CHAPTER 11

METHOD

SUBJECTS

A modification of Geer's (1965) fear survey (Appendix A) was administered to 517 introductory students in English and Psychology at Sir George Williams University in Montreal. Ninety-one students from this group, who indicated a response of "much fear", "very much fear", or "terror" to the snake item on the fear survey, were selected. Of sixty-three students who agreed to a telephone request to take part in the study, twenty-one were rejected because their degree of approach towards a live snake exceeded a maximum criterion described below. The remaining forty-two subjects were non-systematically assigned to treatment conditions and a control group. There were thirty-two females and ten males with an age range of eighteen to fifty-five, and a mean age of twenty-three years.

No compensation was offered subjects other than the possible beneficial effects of treatment. The experimenter also promised to communicate to subjects the results of the study upon its completion.

OVERVIEW OF EXPERIMENTAL DESIGN

After obtaining behavioral measures of avoidance and self-reports of degree of felt anxiety in relation to a live snake, subjects were assigned to a control, or one of five treatment groups. Briefly,

the groups were:

1. Control Group: Test-retest of snake avoidance separated in time without intervening treatment.
2. General and Specific Cognitive Strategies with Stress Exposure: This treatment was designed to test the effectiveness of teaching a subject to replace anxiety-inducing thoughts about feared situations with covert, task-relevant self-statements. Subjects practised relaxation and coping self-statements for fears in general, and specifically for dealing with snakes. He was also provided with the opportunity to practise the technique in the presence of one of three stressors. Meichenbaum (1971c) has described this technique in detail.
3. General Cognitive Strategies with Stress Exposure: Again, subjects were taught to replace anxiety-inducing thoughts about fearful situations with task-relevant self-statements. As in condition 2, they were also given the opportunity to implement this training in the presence of a single stress situation. However, to determine whether the treatment's effectiveness would be altered if no cognitive strategies were rehearsed specifically for coping with snakes, subjects were trained in developing coping strategies for other feared situations omitting reference to snakes.
4. General Cognitive Strategies with Multiple Stress Exposure: The purpose of this condition was to determine whether treatment efficacy would be increased by providing subjects with several different practice stressors. After being trained

in the use of coping self-statements, subjects were given practice in dealing with three dissimilar stressors rather than just one.

5. General Cognitive Strategies without Stress Exposure: The contribution to cognitive training of practice with actual stressors was examined in this condition. Subjects were treated as in group four (relaxation, general cognitive strategies) without the opportunity to practise with any stressor.
6. Modeling with Guided Participation: Subjects were given relaxation training, were exposed to several models handling a snake, and were guided by the experimenter to touch and handle the snake.

The relative efficacy of each treatment procedure was subsequently assessed by administering to all subjects, including the untreated controls, an initial test of snake approach behavior and a second one with another snake to measure treatment generalization. Self-report ratings by subjects, of the degree of concomitant anxiety were collected as well.

APPARATUS, FEAR STIMULI, AND STRESSORS

The pretreatment and posttreatment testing were conducted in a twenty-four foot by fifteen foot rectangular room. An adjacent observation booth was equipped with a one-way mirror and communication facilities (Fig.1). Two additional offices in the same area were used

for interviews and administration of treatments. They were equipped with a desk and comfortable chairs. The layout of these facilities is diagrammed in Figure 1.

The fear stimuli consisted of three live snakes. Two were green and brown boa constrictors of identical color pattern, approximately twenty-six inches in length. These were extremely docile. The third snake was a black and yellow garter snake, thirty inches long. It was more active and quicker in movement than the boas.

Three different types of stressors - ice, electric shock, and unpleasant visual material, were used in various treatment conditions. The ice stressor was a seven inch by ten inch by two inch slab of ice, on which subjects rested one hand. The shock device consisted of a grey metal box, five inches by four inches by three inches, which housed a variable current rheostat to control intensity. Shock was initiated by a button and delivered via two leads with stainless-steel electrodes (Nu-Way Snaps, Allied Radio Co.). A twelve-volt battery served as the power source. Visual stress material included brief segments on videotape from two films. One depicted an aboriginal puberty rite in which adolescent boys had their penes cut with sharp stones ("Subincision", R.C. Lazarus et al., 1962). The second demonstrated the impact of an atomic attack on urban centres ("The War Game", B.B.C., 1965). Slides of cancer growths and genetically malformed children taken from medical texts were used in addition to the films.

Subsequent to treatment, subjects were asked to rate the de-

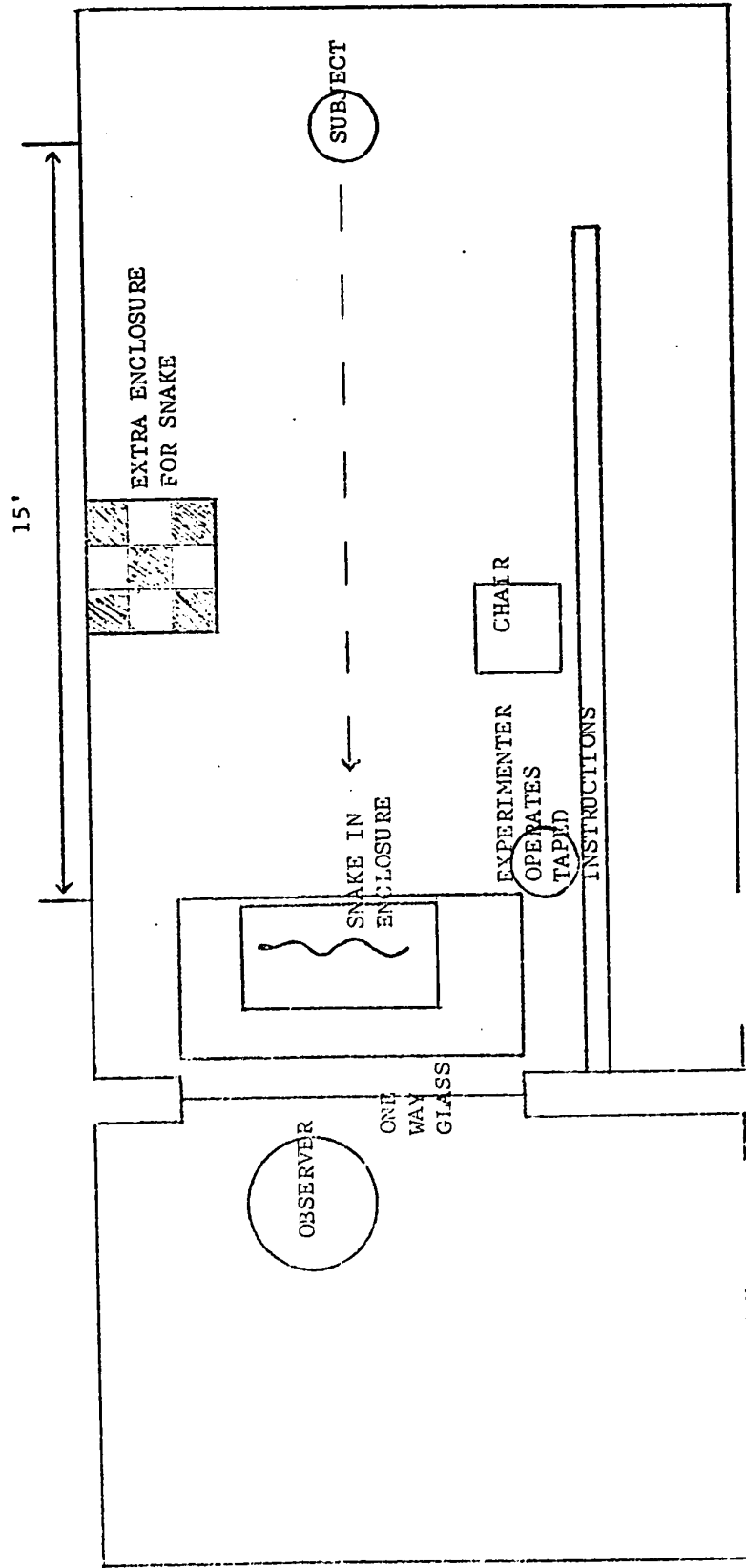


Fig. 1 Diagram of Physical Arrangement: Pre- and Posttreatment Assessment and Observation Rooms

gree of discomfort they experienced during stress exposure on a five-point scale: pleasant, neutral, slightly unpleasant, moderately unpleasant, extremely unpleasant.

PRETREATMENT FEAR ASSESSMENT

Several types of assessment have traditionally been used in phobia reduction experiments: behavior avoidance tests (Lang and Lazovik, 1963; Davison, 1968; Bandura et al., 1966; 1967); self-report of anxiety level during approach (Davison, 1968; Meichenbaum, 1971b); and measures of physiological arousal (Lomont and Edwards, 1967). Lacey's (1950) investigations indicated that individuals display considerable variation in their characteristic modes of physiological reactivity to stress, that different responses are not highly intercorrelated, and no single measures of autonomic reactivity could be considered an adequate measure of physiological arousal. Due to the complexity in carrying out and interpreting multiple physiological measures, the present study used two types of assessment: self-report of anxiety, and behavioral avoidance along a graded scale.

Upon arrival for the initial assessment of snake avoidance, subjects were conducted to a small interviewing room. The general purpose and time requirements of the experiment were explained to them. Subjects were told that the experiment was going to compare a number of different treatments for phobic fears. They were promised information regarding all treatment conditions and results of the study upon its completion. Immediately prior to pretesting, a standardized introduction (Appendix B) explaining the nature of the behav-

for avoidance test and the anxiety self-ratings was read to each subject. He was told that he would be taken into the next room in which there was a harmless caged snake. He would be requested, by means of tape recorded instruction, to perform successively more intimate approach behaviors towards the snake. The subject was urged to follow the approach instructions as far as he could. He was also told that he might discontinue his approach at the point that it became too frightening.

There were twenty approach items in the assessment. The essential steps included the following:

- standing 15' from the snake in the cage
- moving closer to the cage
- resting gloved hand, then bare hands on parts of the cage
- looking at the snake with the cage lid removed
- inserting gloved, then bare hands to various depths in the cage
- gradually touching, then picking up the snake, handling him for various periods of time
- carrying him around the room

The complete series of steps in the assessment, which follows Davison (1968) are listed in Appendix C.

The procedure also required the subject to rate his anxiety on a scale from 1 (Unafraid) to 10 (Extremely Fearful) for each step in the approach sequence. (See Appendix D for Rating Scale.)

The experimenter led the subject into the test room which was used exclusively for pre- and posttesting, and positioned him at the end farthest from the snake. Verbal communication between the experimenter and subject was kept at a minimum while the subject followed the taped instructions. When a subject had completed a step, he was asked for an anxiety rating, which was transmitted to the next room and recorded by an observer. Subjects who, during the pretest, were able to encircle the snake's neck five inches behind his head, with the thumb and index finger of a bare hand, were considered not fearful enough for purposes of the study and were dropped. At the end of the pretest, each subject had two scores: one representing the number of approach steps he had successfully completed towards a boa constrictor and second, a number representing the mean anxiety rating for all steps the subject had completed. The two boas were used interchangeably through testing and treatment. They were indistinguishable both in appearance and temperament, even to experimenters and models, who handled them many times throughout the experiment.

Pretreatment and posttreatment testing were carried out in similar manner. However, in posttesting, following completion of the assessment of approach behavior to a boa, the subject was asked to repeat the procedure again with a garter snake with which he had no previous experience.

EXPERIMENTAL GROUPS

1. TEST-RETEST CONTROLS. These subjects were asked to return for retesting in three to five weeks after initial

assessment of their fear of snakes. The purpose of this condition was to determine the change in avoidance behavior resulting from previous exposure to a snake and passage of time. Upon arrival for retesting, subjects were told that many people found that after being exposed to a snake and waiting a few weeks, they became less fearful of approaching the snake. They were also told that the behavior test was being repeated so that they would have a chance to try to go farther in their approach to the snake. These remarks prior to posttesting represented an attempt to equate controls with experimental subjects on expectations of change.

2. TREATMENT GROUPS. Subjects in all groups were seen individually six times. The training sessions, approximately thirty to forty minutes in duration for all groups, were conducted on the average of once per week. Because scheduling was at the convenience of subjects, the total treatment period varied from three to seven weeks.

A. Cognitive Coping Strategies. The variables common to the four treatment groups based on this approach will be described first. All "cognitive" treatment groups received training in muscle relaxation (Wolpe and Lazarus, 1966) and deep breathing. All were given training in learning to develop cognitive self-instructions as a strategy for coping with fear situations (Meichenbaum, 1971b, 1971c). The strate-

gies imparted to subjects for dealing with fear situations included the following: planning of very concrete, step by step procedures for accomplishing the task; training of attention to self-guiding instructions and to statements of motivation, feedback as to progress, and self-reinforcement for successfully completed steps. (For examples of these types of self-statements, see Appendix E.)

Three out of the four cognitive treatments included for practice, exposure to actual stress. In the two groups using a single stressor, subjects were randomly assigned to one of the three stressors. In the multiple stressor treatment group, subjects were exposed to all three stressors, randomized as to order of presentation.

The differences between the four cognitive strategy treatment groups were as follows:

1. General and Specific Cognitive Strategies with Stress Exposure. In addition to relaxation and general cognitive strategies, this group was trained in strategies for dealing specifically with snakes. Secondly, they were given the opportunity to practise their training in response to one of the three stressors described earlier (ice, shock, or films).

2) General Cognitive Strategies with Stress Exposure. This condition is identical to the one just previously described except that the cognitive training was at no time directed towards snake phobia.

3) General Cognitive Strategies with Multiple Stress Exposure. This condition was similar to 2) above, except that instead of practising coping strategies with a particular stressor over several treatment sessions, the subject practised with three different stressors.

4) General Cognitive Strategies without Stressors. This condition involved the basic procedures of 2) and 3) without exposure of subjects to any actual stressors.

B. Modeling with Guided Participation. Subjects in the modeling group received training in relaxation for the same period of time as had the cognitive strategy groups, but had no specific cognitive coping training. Each subject spent a session watching two models handling a snake and a further session when one experimenter modeled snake handling procedures. During subsequent meetings, subjects were encouraged to approach and handle the snake. If subjects were unable to do so themselves, they were prompted by experimenter contact to touch the snake.

(e.g. subject rests his hand on experimenters hand while he touches snake's back). Gradually the prompts were faded and a subject was to touch and handle the snake himself.

For easy reference, a summary description of all treatments appears in Table 1. Detailed, session by session protocols for each treatment condition appear in Appendix F.

POSTTREATMENT ASSESSMENT

All subjects underwent a posttreatment assessment of snake avoidance immediately after their sixth and final treatment session. After completing the approach test with the boa, each subject was requested to go through the procedure again with a garter snake in order to assess the generality of the treatment effects.

It should be noted that treatment conditions were not matched for degree of exposure to a live snake. Extensive exposure under specified conditions to a live snake was inherent to the modeling treatment. For this condition, the posttest evaluated approach behavior towards a rather familiar reptile. Cognitive training, on the other hand, places emphasis on different variables. As a result, subjects in these conditions were exposed during posttesting to a snake they had seen only once before (in the pretest). The garter snake used in the second part of the posttreatment assessment was equally novel to subjects in all treatment groups.

GENERAL AND SPECIFIC COGNITIVE STRATEGIES WITH SINGLE STRESS EXPOSURE

GENERAL COGNITIVE STRATEGIES WITH SINGLE STRESS EXPOSURE

GENERAL COGNITIVE STRATEGIES WITH MULTIPLE STRESS EXPOSURE

GENERAL COGNITIVE STRATEGIES WITH-OUT STRESS EXPOSURE

MODELING WITH GUIDED PARTICIPATION

RELAXATION

RELAXATION

RELAXATION

RELAXATION

RELAXATION

GENERAL PRACTICE DEVELOPING COPING STRATEGIES

SPECIFIC PRACTICE DEVELOPING COPING STRATEGIES FOR SNAKES

PRACTICE WITH 1 STRESSOR

PRACTICE WITH 1 DEVELOPING COPING STRATEGIES

GENERAL PRACTICE DEVELOPING COPING STRATEGIES

GENERAL PRACTICE DEVELOPING COPING STRATEGIES

MODELS DEMONSTRATE APPROACHING AND HANDLING SNAKE

E USES PHYSICAL CONTACT AND PROMPTS TO AID S IN TOUCHING AND HANDLING SNAKE

PRACTICE WITH 1 STRESSOR

PRACTICE WITH 1 STRESSOR

PRACTICE WITH 3 STRESSORS

Table 1. Treatment Features of Experimental Groups

THERAPIST CHARACTERISTICS

There were two experimenters, each of whom conducted assessments and treatment for an equal number of subjects in each treatment group. One was a twenty-five year old male graduate student in clinical psychology, with a five month full-time internship. The co-therapist was a thirty-one year old female honours psychology undergraduate, with several years experience as a nursing assistant in a hospital. Prior to treatment, a written protocol was prepared for the respective treatment groups and discussed by the therapists. The therapists also observed each other's treatment sessions for the first subjects in each condition to insure uniformity of application.

CHAPTER 111

RESULTS

The data of this experiment consist of changes in two dependent variables, a behavioral measure of approach, and an anxiety self-report (collected while subjects were performing the snake approach test). Measurements were made on three occasions: Pre-treatment (with a boa), Posttreatment I (with a boa), and Post-treatment II (with a novel garter snake). Each dependent variable measure was submitted to separate statistical analysis to evaluate within treatment (pre- to posttreatment) changes and the differences in results between treatments.

Analysis of variance was selected as the method for evaluating between-group differences while t-tests were used to evaluate changes within each treatment condition. Baker, Hardyck and Petrinovitch (1966) reviewed issues and offered new evidence pertaining to the use of t (and hence F) with ordinal data in statistical inference. They calculated t's for computer-generated sample scores based on - 1) unequal interval and 2) equal interval scales. Results indicated that if the tests were two-tailed and the two samples for comparison had equal N's, t's generated from the unequal interval scale samples were not substantially different from those generated from the equal interval scales. Thus, although measurements in the present study were ordinal in nature, it was considered permissible to utilize tests based upon t and F distributions.

Snake Approach Behavior

1. Within Conditions Comparisons (Pre- to Posttreatment 1)

Mean approach scores at pretreatment and posttreatment 1 for subjects in each experimental condition are presented in Figure 2. The pre-experimental differences in approach behavior between conditions were tested by analysis of variance and proved to be nonsignificant ($F = .80$; 5,36 df; $p > .25$). Figure 2 shows that there was an increase in approach behavior at the first post-treatment assessment in all groups except the controls, who exhibited a negligible fluctuation. This change from pretreatment to posttreatment 1 was significant for all treatment groups (General and Specific Cognitive Coping Strategies and 1 Stressor: $p < .05$; General Cognitive Coping Strategies and 1 Stressor: $p < .01$; General Coping Strategies and 3 Stressors: $p < .02$; General Coping Strategies (No Stressors): $p < .05$; Modeling with Guided Participation: $p < .001$). The Control group underwent no significant change. These results are summarized in Table 2.

LEGEND

- Controls
- △ General and Specific Cognitive Coping Strategies + 1 Stressor
- ▲ General Cognitive Coping Strategies + 1 Stressor
- General Cognitive Coping Strategies + 3 Stressors
- General Cognitive Coping Strategies (No Stressors)
- Modeling with Guided Participation

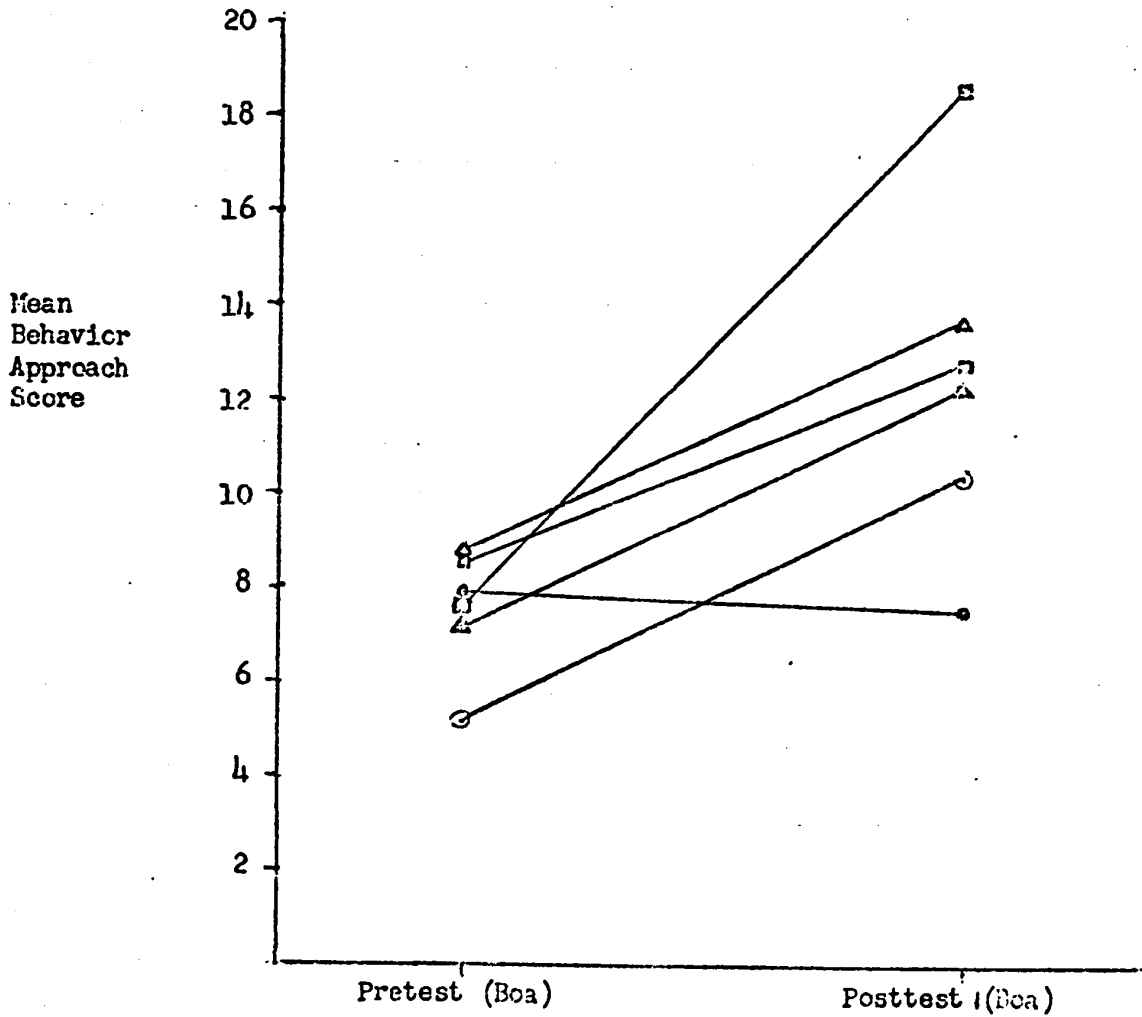


Fig. 2 Mean Behavior Approach Scores by Experimental Groups at Pretest (Boa) and Posttest I (Boa)- Max. Score = 20

Table 2

Summary of Correlated t-Values Associated with Changes
in Approach Scores from Pretest to Posttest 1 (Boa).

<u>Group</u>	<u>t-Value</u>	<u>df</u>	<u>p Value*</u>
1. Control	1.00	6	n.s.
2. General & Specific Cognitive Coping Strategies & 1 Stressor	3.19	6	p < .05
3. General Coping Strategies & 1 Stressor	5.15	6	p < .01
4. General Coping Strategies & 3 Stressors	3.34	6	p < .02
5. General Coping Strategies (No Stressors)	2.65	6	p < .05
6. Modeling with Guided Participation	16.63	6	p < .001

* two tailed-tests

Between Conditions Comparisons

Figure 3 presents the mean changes in approach behavior resulting from each treatment.

In order to compare the changes produced by each experimental condition, an analysis of variance was carried out on behavior approach change scores (posttreatment minus pretreatment scores). The overall F value obtained was significant ($F = 8.25$; $5,36$ df; $p < .01$). Several orthogonal comparisons between conditions were subsequently performed. When the change scores resulting from

LEGEND

- Gp 1 Controls
- Gp 2 General and Specific Cognitive Coping Strategies + 1 Stressor
- Gp 3 General Cognitive Coping Strategies + 1 Stressor
- Gp 4 General Cognitive Coping Strategies + 3 Stressors
- Gp 5 General Cognitive Coping Strategies (No Stressors)
- Gp 6 Modeling with Guided Participation

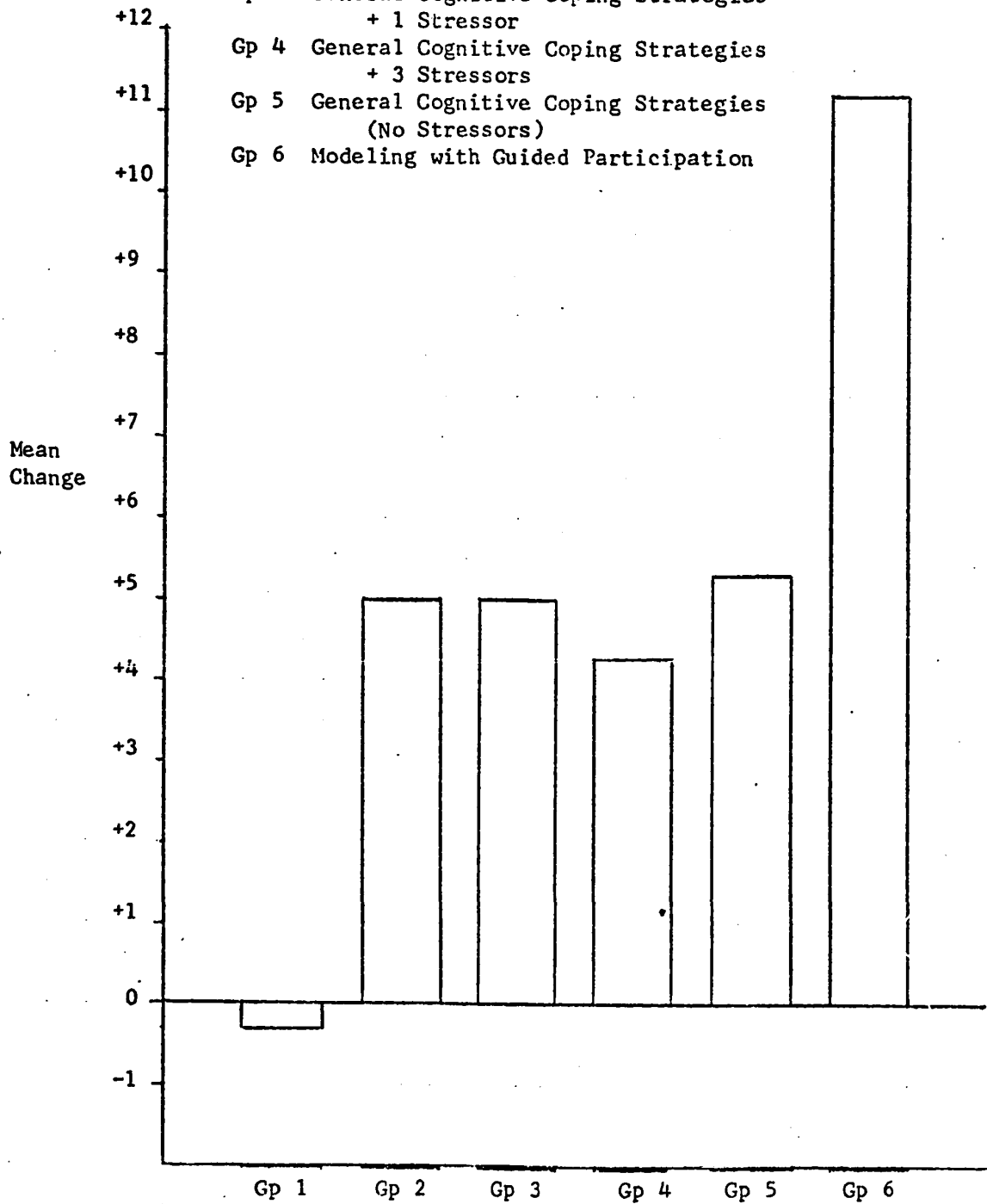


Fig. 3 Mean Change in Approach Scores by Experimental Groups from Pretest (Boa) to Posttest 1 (Boa)

all treatments were pooled and compared with those of controls, the resulting difference was highly significant ($p < .005$). In order to compare the effectiveness of the cognitive treatments as a group relative to modeling with guided participation, a weighted comparison was made. As suggested by Figure 3, modeling with guided participation generated a significantly greater change in snake approach behavior than did the cognitive conditions ($p < .005$).

In a comparison of the results of cognitive treatments incorporating stress with those of the cognitive treatment using no stress, no significant difference between groups was found. It should be noted that for subjects who rated the degree of discomfort they had experienced during stress exposure, "moderately unpleasant", or "extremely unpleasant" ratings occurred in eighty-two per cent of the cases. The cognitive treatment which included a variety of practice stressors produced no significantly greater change than the treatment using a single practice stressor. Likewise, rehearsal of specific cognitive strategies for dealing with snakes produced no greater change than practice with general cognitive strategies. These comparisons and the results are summarized in Table 3.

Table 3

Comparisons of Behavior Approach Changes
from Pretest (Boa) to Posttest 1 (Boa)*

<u>Comparison Made</u>	<u>F</u>	<u>df</u>	<u>Probability</u>
1. Control <u>vs</u> all Treatment Groups	21.42	1,36	p < .005
2. All Cognitive Strategies Groups <u>vs</u> Modeling with Guided Partici- pation	11.73	1,36	p < .005
3. General Cognitive Strategies (No Stressor) <u>vs</u> General Cognitive Strategies (1 Stressor) & General Cognitive Strategies (3 Stressors)	1.93	1,36	n.s.
4. General Cognitive Strategies (1 Stressor) <u>vs</u> General Cognitive Strategies (3 Stressors)	1.79	1,36	n.s.
5. General and Specific Cognitive Strategies (1 Stressor) <u>vs</u> General Cognitive Strategies (1 Stressor)	.00	1,36	n.s.

* Only comparison 5 is non-orthogonal to the other comparisons.

Another way in which the treatments may be compared with respect to the behavior approach measure is to count the number of subjects in each experimental condition who, following treatment, demonstrated either terminal goal behavior or some improvement over pretreatment approach scores. In the Modeling with Guided Participation condition, all seven subjects improved and six out of seven were able to reach terminal performance with the boa. Only one or two subjects from each of the cognitive treatment groups demonstrated terminal behavior, although all but a single subject did show improvement. Among the controls, six of seven subjects showed no im-

provement. These results are presented in Table 4.

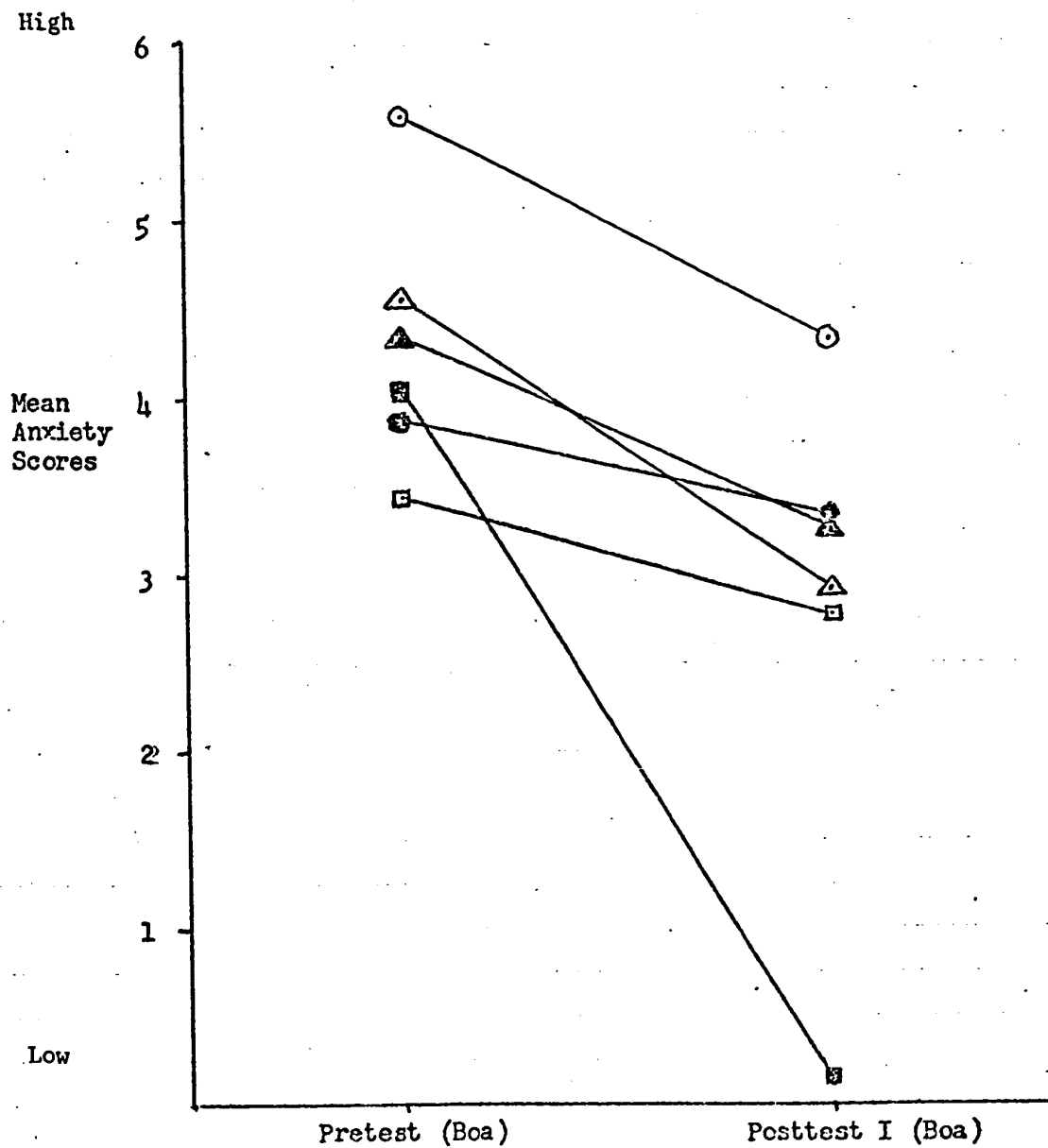
Table 4

Number of Subjects in Each Condition Showing No Change, Improvement, or Terminal Goal Behavior (7 Subjects per Group)

	<u>Terminal Behavior</u>	<u>Some Improvement</u>	<u>No Improvement</u>
1. Controls	0	1	6
2. General & Specific Cognitive Strategies & 1 Stressor	1	7	0
3. General Cognitive Strategies & 1 Stressor	1	7	0
4. General Cognitive Strategies & 3 Stressors	2	7	0
5. General Cognitive Strategies (No Stressors)	2	6	1
6. Modeling with Guided Participation	6	7	0

Self-Reported Anxiety

The second dependent variable was a measure of self-reported anxiety obtained while subjects performed the snake approach behavior sequence. Figure 4 shows the mean anxiety scores for each group before and following treatment. Pretest score differences were tested by analysis of variance. No significant differences between conditions were found.



LEGEND

- Controls
- △ General and Specific Cognitive Coping Strategies + 1 Stressor
- ▲ General Cognitive Coping Strategies + 1 Stressor
- General Cognitive Coping Strategies + 3 Stressors
- General Cognitive Coping Strategies (No Stressors)
- Modeling with Guided Participation

Fig. 4 Mean Anxiety Scores by Experimental Groups at Pretest (Boa) and Posttest I (Boa) - Max. Score = 10

Within Conditions Comparison

In order to evaluate the changes in anxiety scores for each condition from pretreatment to the first posttreatment assessment, correlated t-tests were performed. The only treatment condition which produced a significant change in anxiety report following treatment was Modeling with Guided Participation ($t = 3.50$; 6 df; $p < .05$). A summary of these results appears in Table 5.

Table 5

Summary of Correlated t-Values Associated with Changes in Self-Reported Anxiety from Pretest to Posttest 1 (Boa).

<u>Group</u>	<u>t-Value</u>	<u>df</u>	<u>p-Value*</u>
1. Control	.72	6	n.s.
2. General & Specific Cognitive Coping Strategies & 1 Stressor	2.04	6	n.s.
3. General Coping Strategies & 1 Stressor	2.20	6	n.s.
4. General Coping Strategies & 3 Stressors	1.15	6	n.s.
5. General Coping Strategies (No Stressors)	1.89	6	n.s.
6. Modeling with Guided Participation	3.50	6	$p < .05$

* two-tailed tests

LEGEND

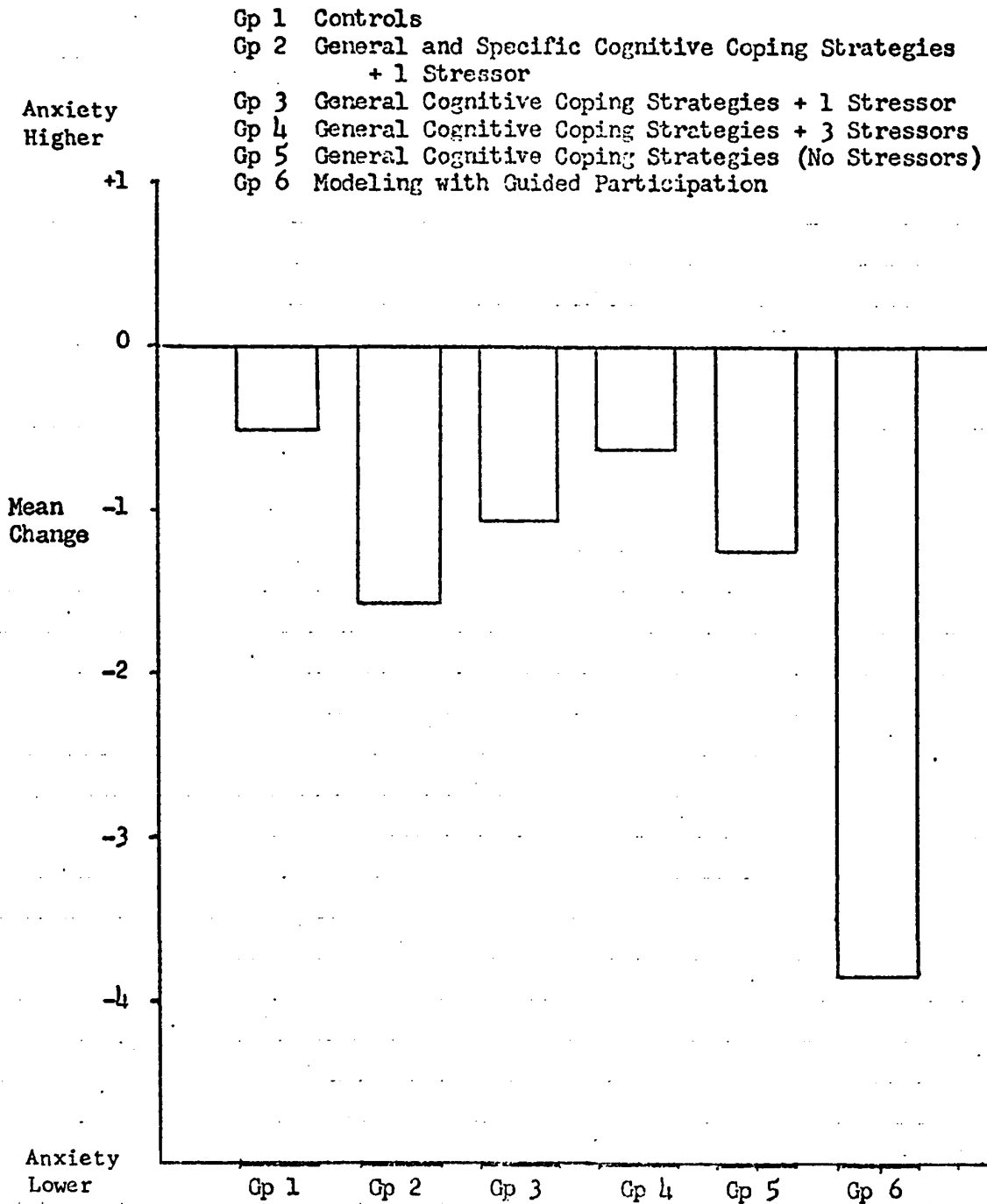


Fig. 5 Mean Changes in Anxiety Scores by Experimental Groups from Pretest (Boa) to Posttest I (Boa)

Between Conditions Comparison

Figure 5 presents mean reductions in anxiety scores for each group from pretreatment assessment to the first posttest (boa). Analysis of variance, performed on the change scores, yielded a significant overall F value of 2.68 (5,36 df; $p < .05$). A number of orthogonal comparisons were subsequently performed. No significant difference was found between pooled treatment group and control anxiety change scores. A comparison between the anxiety change scores of the group of cognitive treatments and Modeling with Guided Participation was significant ($F = 10.08$; 1,36 df; $p < .01$). There was clearly a greater reduction in subjective anxiety following treatment in the modeling group than in the cognitive groups. Other comparisons between anxiety change scores generated by the various cognitive treatments were nonsignificant. These comparisons are summarized in Table 6.

Table 6

Comparisons of Changes in Anxiety Scores from Pretest to Posttest 1 (Boa)*

	<u>F</u>	<u>df</u>	<u>Probability</u>
1. Control <u>vs</u> All Treatment Groups	2.47	1,36	n.s.
2. All Cognitive Strategies Groups <u>vs</u> Modeling with Guided Participation	10.08	1,36	p < .01
3. General Cognitive Strategies (No Stressor) <u>vs</u> General Cognitive Strategies (1 Stressor) & General Cognitive Strategies (3 Stressors)	.16	1,36	n.s.
4. General Cognitive Strategies (1 Stressor) <u>vs</u> General Cognitive Strategies (3 Stressors)	.14	1,36	n.s.
5. General and Specific Cognitive Strategies (1 Stressor) <u>vs</u> General Cognitive Strategies (1 Stressor)	.27	1,36	n.s.

* Only comparison 5 is non-orthogonal to the other comparisons.

Treatment Generalization

Mean approach scores towards the relatively familiar boa (Posttest 1) and towards the novel garter snake (Posttest 11) for each condition, are presented in Figure 6.

LEGEND

- Controls
- △ General and Specific Cognitive Coping Strategies + 1 Stressor
- ▲ General Cognitive Coping Strategies + 1 Stressor
- General Cognitive Coping Strategies + 3 Stressors
- General Cognitive Coping Strategies (No Stressors)
- Modeling with Guided Participation

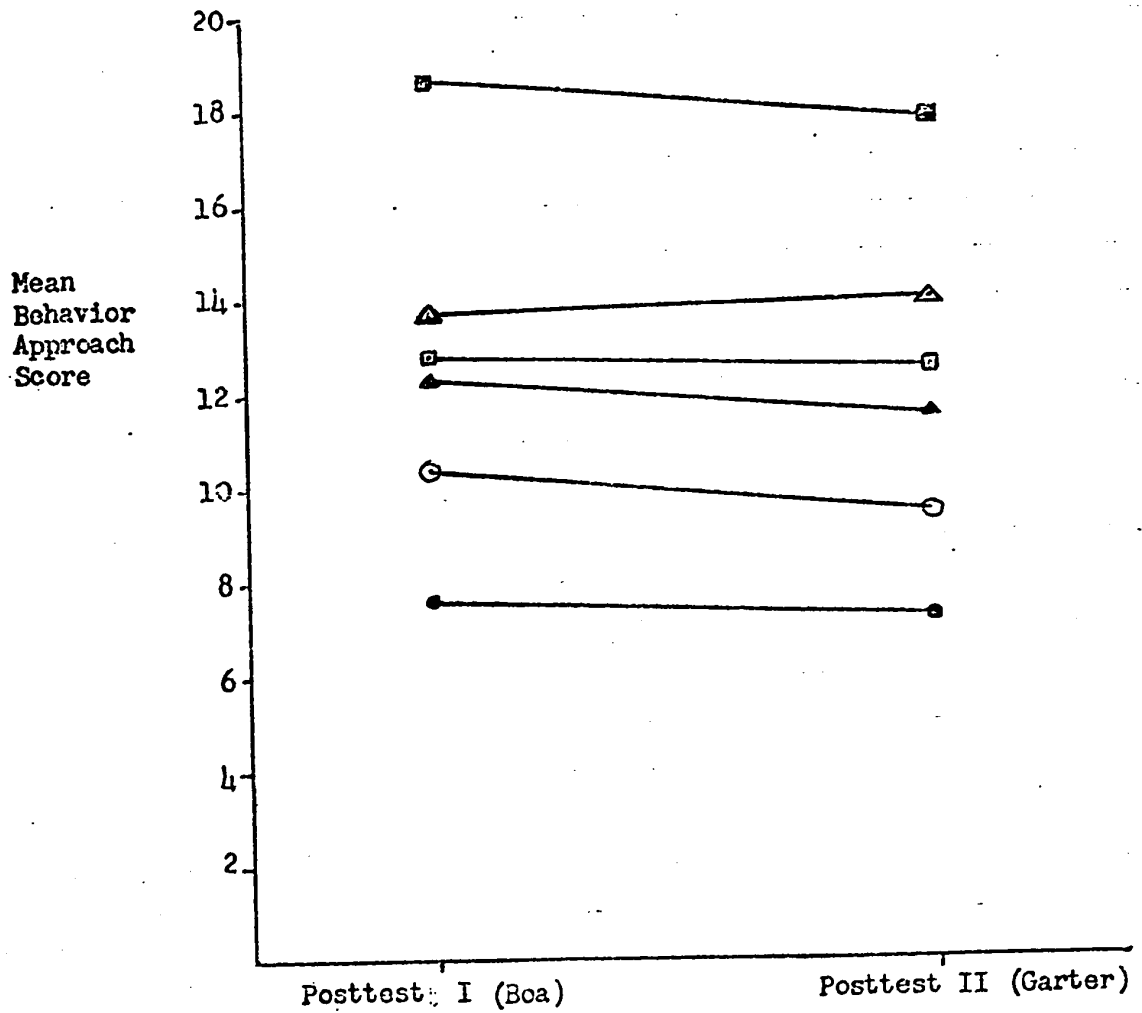


Fig. 6 Mean Behavior Approach Scores by Experimental Groups at Posttest I (Boa) and Posttest II (Garter)

Inspection of this figure shows that all experimental groups except the one employing General and Specific Strategies showed a slight reduction in approach behavior to the novel snake. None of these changes, however, were significant. These results are summarized in Table 7.

Table 7

Summary of Correlated t-Values Associated with Changes in Approach Scores from Posttest 1 (Boa) to Posttest 11 (Garter)

<u>Group</u>	<u>t-Value</u>	<u>df</u>	<u>p-Value*</u>
1. Control	1.43	6	n.s.
2. General & Specific Cognitive Coping Strategies & 1 Stressor	.68	6	n.s.
3. General Coping Strategies & 1 Stressor	1.45	6	n.s.
4. General Coping Strategies & 3 Stressors	1.38	6	n.s.
5. General Coping Strategies (No Stressors)	.51	6	n.s.
6. Modeling with Guided Participation	1.44	6	n.s.

* two-tailed tests

Modeling with Guided Participation retained its superiority when subjects faced the behavioral approach test with a novel snake. Approach scores for the modeling and guided participation treatment group were significantly greater towards the novel snake than those of the cognitive strategies groups ($F = 4.47$; 1,36 df; $p < .05$). Fully five of the seven subjects in the modeling group

were able to achieve terminal behavior with the garter snake.

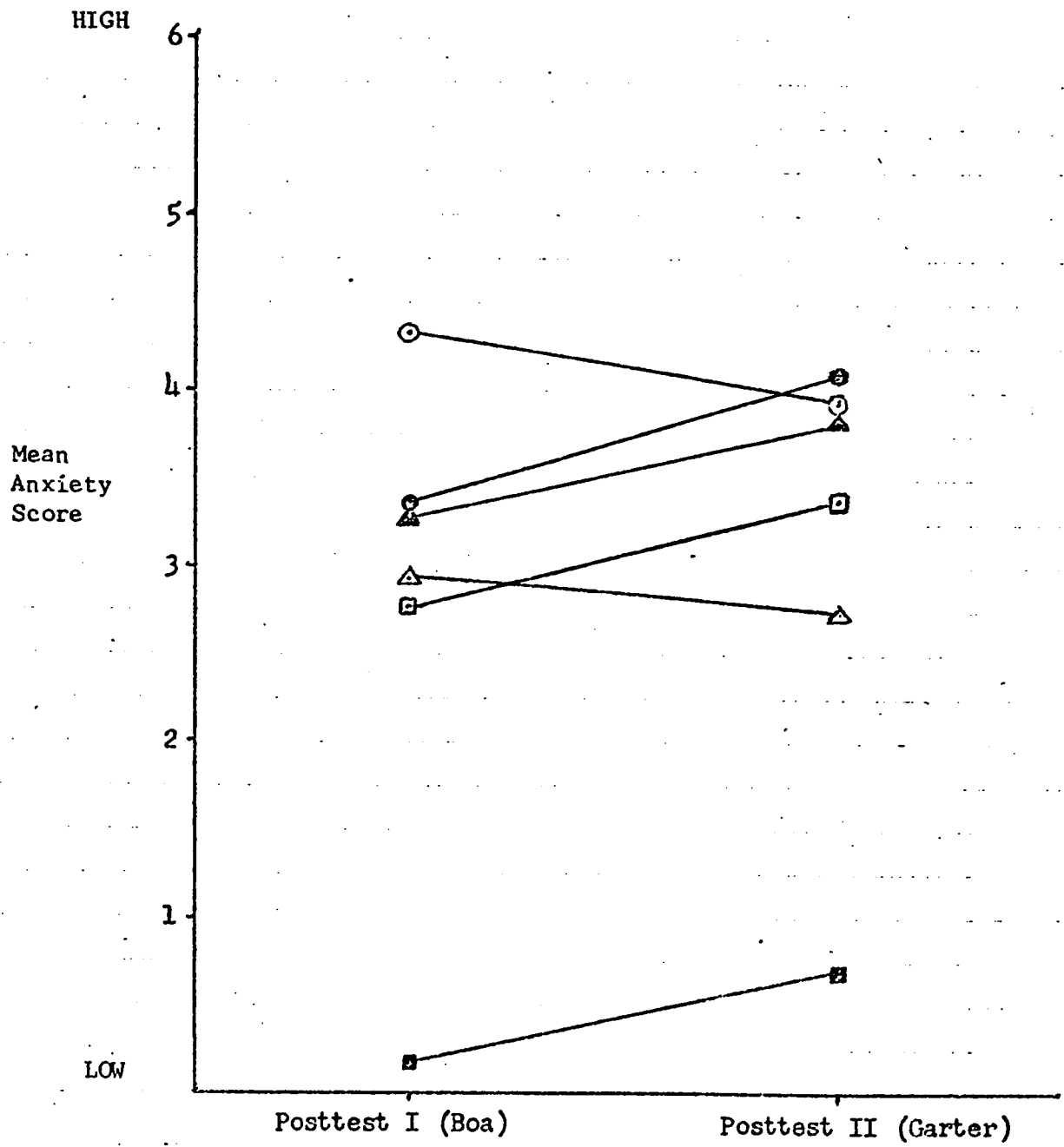
Table 8 shows the number of subjects in each experimental group who were able to demonstrate terminal approach with the garter.

Table 8

Number of Subjects in Each Experimental Group Achieving Terminal Behavior with Novel Garter Snake

<u>Group</u>	<u>No. of Subjects Reaching Terminal Behavior</u>
1. Control	0
2. General and Specific Cognitive Coping Strategies & 1 Stressor	1
3. General Coping Strategies & 1 Stressor	1
4. General Coping Strategies & 3 Stressors	2
5. General Coping Strategies (No Stressors)	2
6. Modeling with Guided Participation	5

Mean anxiety scores at Posttest 1 (Boa) and Posttest 11 (Garter) are presented in Figure 7. In no experimental condition was there a significant change in anxiety report from the first to the second snake. T-values associated with changes in anxiety scores from Posttest 1 to Posttest 11 are reported in Table 9. A comparison of modeling and cognitive strategies treatment groups on anxiety scores in relation to the novel garter snake once again



LEGEND

- Controls
- △ General and Specific Cognitive Coping Strategies + 1 Stressor
- ▲ General Cognitive Coping Strategies + 1 Stressor
- ◻ General Cognitive Coping Strategies + 3 Stressors
- General Cognitive Coping Strategies (No Stressors)
- ◼ Modeling with Guided Participation

Fig. 7 Mean Anxiety Scores by Experimental Groups for Posttest I (Boa) and Posttest II (Garter)

revealed a significant difference in favour of modeling ($F = 9.22$; 1,36 df; $p < .05$).

Table 9

Summary of Correlated t-Values Associated with Changes in Anxiety Scores from Posttest 1 (Boa) to Posttest 11 (Garter)

<u>Group</u>	<u>t-Value</u>	<u>df</u>	<u>p-Value*</u>
1. Control	1.35	6	n.s.
2. General and Specific Cognitive Coping Strategies & 1 Stressor	.004	6	n.s.
3. General Coping Strategies & 1 Stressor	1.12	6	n.s.
4. General Coping Strategies & 3 Stressors	.90	6	n.s.
5. General Coping Strategies (No Stressors)	.48	6	n.s.
6. Modeling with Guided Participation	2.17	6	n.s.

* two-tailed tests

CHAPTER IV

DISCUSSION

The overall findings of this experiment indicate that both modeling and training in cognitive coping strategies effectively reduced avoidance behavior toward snakes. All five treatments produced a significant pre- to postexperimental gain in approach scores. However, modeling with guided participation was the only treatment method to reduce anxiety report scores significantly from pretreatment levels. Modeling subjects thus not only showed pronounced increases in approach behavior but they also reported at the same time, significantly reduced anxiety. Their gains on both measures were significantly different from the performances of subjects trained in cognitive coping strategies, both in relation to the first test snake, as well as to the second generalization snake.

The finding in this experiment that eighty-five per cent of subjects in the modeling group achieved terminal goal behavior is consistent with results obtained by Bandura et al. (1968) and Ritter (1968). Using similar methods, they obtained terminal goal behavior in ninety-two per cent and eighty per cent of phobic subjects respectively.

The pattern of results among the cognitive strategies treatment groups does not lend support to several predictions Meichenbaum (1971a) has made. The hypothesis that the addition of stress exposure to the cognitive treatments would enhance their

effectiveness was not confirmed. Comparisons based on both approach behavior and anxiety report yielded nonsignificant improvements for the group with no stress exposure over those groups whose treatment included practice with stress. Meichenbaum further suggested that training with different types of stress exposure (e.g. films, cold pressor, shock) might be more effective than training with one. This hypothesis was also unsupported in the present experiment.

A comparison of behavior change resulting from the General and Specific Cognitive Strategies treatment with that resulting from the General Cognitive Strategies procedures revealed no difference. According to this finding, training in coping strategies which included specific reference to snakes was no more effective in reducing snake phobia than similar training which omitted any reference to snakes. It was further hypothesized in this experiment that the cognitive treatment groups, because of the broad range of application of their training, might show a smaller decrement in approach behavior in moving from a previously exposed test snake to a second unfamiliar one. No superior generalization effect for cognitive treatments over modeling with guided participation was found.

In considering the marked superiority of modeling with guided participation over the cognitive strategies treatments, it is important to note that the two techniques differ sharply in the degree to which they involve the subject in direct contact with the feared stimulus. Throughout treatment, subjects in the modeling situation practised directly with the snake to which they were later exposed in the posttreatment evaluation. The notion that modeling

with guided participation may tend to have narrow effects derives from this feature of the procedure. In contrast, subjects who received training in cognitive strategies were exposed in certain conditions to practice stresses but not to a snake. For subjects with animal phobias, it would seem that training in the use of coping self-instructions including opportunities to practise this tactic in the presence of stressful stimuli unrelated to the particular animal fear, is inferior to direct training with the animal through modeling with guided participation.

Marks (1969) in a book devoted to the nature, etiology, and treatment of phobias, lists several categories into which neurotic fears might fall: 1. animal phobias; 2. miscellaneous, specific phobias (e.g. electrical storms, heights, driving a car, water); 3. social phobias; 4. agoraphobia - diffuse fear of being outside; 5. obsessive phobias (e.g. dirt, germs). Bandura (1969) has stated that modeling with guided participation as a treatment technique " ... is undoubtedly best suited for behavioral dysfunctions in which the feared consequences are inspectional." According to Bandura, a phobic person will undergo a reduction in fear by observing a model for whom contact with the feared situation yields positive or neutral consequences. This disconfirmation of anticipated aversive consequences is easily arranged when a person fears such things as harmless animals. In addition, with this category of fear, approach behaviors can be demonstrated and gradually shaped. Thus, two major pieces of information are communicated to a fearful observer when a model confronts, for example, a dog: 1. the dog

does not respond to the model with the expected aversive actions (biting, jumping, etc.), and - 2. a behavioral repertoire with which the model deals with the dog (his approach, his voice, his handling) is presented.

According to a survey conducted by Marks (1966), however, only about three per cent of phobias presented for treatment fall into the category of harmless animals. Many classes of fears do not have overt aversive consequences which can be disconfirmed by watching a model. Nor is it easy to demonstrate and shape coping motor behaviors in relation to them. Consider, for example, the fear of crowds, of being outside, or of writing examinations. People suffering from such phobias tend to be more afraid of their own panic in the feared situation than of particular external aversive consequences.

In these circumstances, observation of a model standing safely in a crowd, or writing an examination, would neither contradict the phobic observer's chief fears, nor demonstrate useful motor skills for confronting the feared situations. It is possible that training in self-instructed coping strategies would be more effective for those fears which - 1. lacked obvious external aversive consequences, and - 2. for which the coping method was cognitive and thus not demonstrable through modeled motor behavior. Wine (1970) for example, had considerable success in treating subjects with a fear of examinations using a cognitively based method. The writer has noted several instances during the present experiment when subjects in the cognitive coping strategies group reported having suc-

cessfully used their training to overcome a diversity of fears, including eating in a public restaurant, sitting in crowds at hockey games, and being alone in a dark room.

A profitable direction which future research might take would be to compare the effectiveness of proven fear reduction procedures with different classes of fears. The current development of diverse, effective methods of fear reduction is not only valuable in its own right. It also raises the novel possibility of distinguishing between classes of fears on the basis of the particular treatment to which they respond. This, in turn, may shed more light on the nature of the fears themselves.

CHAPTER V

SUMMARY

Two techniques for eliminating unrealistic fears were compared in this experiment. The contributions of several variables to the effectiveness of one of the methods was also examined. In the first experimental treatment, subjects observed models handling a snake, then they themselves gradually approached and touched the snake with the aid of physical prompts from the experimenter. The second method involved several variations of a cognitive treatment package. The basic treatment entailed the training of subjects to develop new self-instructions for guiding behavior when faced with fear-provoking stimuli. Variations of this basic method included exposure to either one or three stressors in order to give subjects an opportunity to practise coping self-instructions in actual anxiety-provoking situations. Another condition involved training subjects to generate coping self-instructions for dealing specifically with snakes (a fear stimulus not mentioned in other cognitive conditions).

The two dependent measures used to measure the degree of avoidance behavior were - 1. a sequential set of behavioral approach steps towards a snake, and 2. concomittant self-report of anxiety. These measures were taken on forty-two subjects, once prior to treatment, and twice upon its conclusion. The first posttreatment assessment used the same snake as in the pretreatment test. The second assessment, a test for generalization, employed an unfamiliar snake. Results on both behavioral approach and anxiety self-report measures indicated that all treatment groups changed significantly

compared to controls. The modeling treatment produced greater increases in approach behavior and decreases in reported anxiety than the cognitive treatments. Neither addition of one or more stressors, nor practice with strategies to deal specifically with snakes improved the effectiveness of the basic cognitive coping treatment. The changes in approach behavior produced by both modeling and cognitive training generalized when subjects were tested with a novel snake. The modeling technique retained its superiority on both behavioral and subjective measures in this test of treatment generalization.

REFERENCES

- Baker, B.O., Hardyk, C.D., and Petrinovitch, L.F. Weak measurements vs. strong statistics: an empirical critique of S.S. Stevens proscriptions on Statistics. Educational and Psychological Measurement, 1966, V.xxvi; 2, 291-309.
- Bandura, A. Psychotherapy based upon modeling principles. In A.E. Bergin and S.L. Garfield (Eds.), Handbook of Psychotherapy and Behavior Change, Toronto: John Wiley & Sons Ltd., 1971.
- Bandura, A. Principles of Behavior Modification, New York: Holt Rinehart and Winston, 1969.
- Bandura, A. Psychotherapy as a learning process. Psychological Bulletin, 1961, 58, 143-159.
- Bandura, A., Blanchard, E.D., and Ritter, B. Modeling approaches to the modification of phobic disorders. Ciba Foundation Symposium: The Role of Learning in Psychotherapy, London: Churchill, 1968.
- Bandura, A., Blanchard, E.D., and Ritter, B. Relative efficacy of desensitization and modeling approaches for inducing behavioral, affective and attitudinal changes. Journal of Personality and Social Psychology, 1969, 13, 173-199.
- Bandura, A., Grusec, J., Menlove, F. Vicarious extinction of avoidance behavior. Journal of Personality and Social Psychology, 1967, 5, 16-23.

- Bandura, A., and Menlove, F.L. Factors determining vicarious extinction of avoidance behavior through symbolic modeling. Journal of Personality and Social Psychology, 1968, 8, 99-108.
- Bandura, A., and Rosenthal, T.L. Vicarious classical conditioning as a function of arousal level. Journal of Personality and Social Psychology, 1966, 3, 54-62.
- Bandura, A., and Walters, R.H. Social Learning and Personality Development, New York: Holt, Rinehart and Winston Inc., 1963.
- Blanchard, E.B. The relative contributions of modeling, informational influences, and physical contact in the extinction of phobic behavior. Unpublished doctoral dissertation, Stanford University: 1969.
- Beck, A.T. Cognitive therapy: Nature and relation to behavior therapy. Behavior Therapy, 1970, 1, 184-200.
- Bem, S.L. Verbal self-control: The establishment of effective self-instruction. Journal of Experimental Psychology, 1967, 74, 485-491.
- Bergin, A.E. Cognitive and behavior therapy: Foci for a multi-dimensional approach to treatment. Behavior Therapy, 1970, 1, 205-212.
- Bernstein, D., and Paul, G. Some comments on therapy analogue research with small animal "phobias". Journal of Behavior and Experimental Psychiatry, 1971, 2, 225-237.

- Black, A.H. Heart rate changes during avoidance learning in dogs. Canadian Journal of Psychology, 1959, 13, 229-242.
- Black, A.H. Transfer following operant conditioning in the curarized dog. Science, 1967, 155, 201-203.
- Breger, L., and McGaugh, J.L. Critique and reformulation of "learning theory" approaches to psychotherapy and neurosis. Psychological Bulletin, 1965, 63, 338-358.
- Cautela, J.R. A behavior therapy approach to pervasive anxiety. Behavior Research and Therapy, 1966, 4, 99-109.
- Cautela, J.R. Covert reinforcement. Behavior Therapy, 1970, 1, 33-50.
- Cautela, J.R. Covert sensitization. Psychological Reports, 1967, 20, 459-468.
- Crooks, J.L. Observational learning of fear in monkeys. Unpublished manuscript, University of Pennsylvania, 1967.
- Davison, G.C. Anxiety under total curarization: Implications for the role of muscular relaxation in the desensitization of neurotic fears. Journal of Nervous and Mental Diseases, 1966, 143, 5, 443-448.
- Davison, G.C. Systematic desensitization as a counter-conditioning process. Journal of Abnormal Psychology, 1968, 73, 91-99.
- Edwards, A.L. Experimental Design in Psychological Research, 3rd Ed. Montreal: Holt, Rinehart and Winston, 1968.
- Ellis, A. Reason and Emotion in Psychotherapy. New York: Lyle-Stuart, 1963.

- Farber, I.E. The things people say to themselves. American Psychologist, 1963, 18, 185-197.
- Geer, J.H. Development of a scale to measure fear. Behavior Research and Therapy, 1965, 3, 45-53.
- Geer, J., and Turteltaub, A. Fear reduction following observation of a model. Journal of Personality and Social Psychology, 1967, 6, 327-331.
- Hill, J., Liebert, R., and Mott, D. Vicarious extinction of avoidance behavior through films. An initial test. Psychological Reports, 1968, 12, 192.
- Homme, L. Control of coverants; the operants of the mind. Psychological Record, 1965, 15, 501-511.
- Jacobson, E. Progressive Relaxation. Chicago: University of Chicago Press, 1938.
- Jones, Mary C. The elimination of childrens' fears. Journal of Experimental Psychology, 1924, 7, 382-390.
- Lacey, J.I. Individual differences in somatic response patterns. Journal of Comparative and Physiological Psychology, 1950, 43, 338-350.
- Lang, P.J. The mechanics of desensitization and the laboratory study of human fear. In C.M. Franks (Ed.) Behavior Therapy: Appraisal and Status. Toronto: McGraw Hill Book Company, 1969, 160-191.
- Lang, P.J., and Lazovik, A. Experimental desensitization of a phobia. Journal of Abnormal and Social Psychology, 1963, 66, 519-525.

- Lazarus, R.S. Psychological Stress and the Coping Process. New York: McGraw Hill, 1966.
- Lazarus, R.S., Speisman, J.C., Mordkhoff, A.M., and Davison, L.A. A laboratory study of psychological stress produced by a motion picture film. Psychological Monographs, 1962, 76, (Whole Number 553).
- Locke, E.A. Is behavior therapy behavioristic? (An analysis of Wolpe's Psychotherapeutic Methods). Psychological Bulletin, 1971, 6, 318-327.
- Lomont, J.F., and Edwards, J.E. The role of relaxation in systematic desensitization. Behavior Research and Therapy, 1967, 5, 11-26.
- Luria, A.R. The Role of Speech in the Regulation of Normal and Abnormal Behavior. New York: Liveright, 1961.
- Marks, I.M. Different onset ages in varieties of phobias. American Journal of Psychiatry, 1966, 123, 218-221.
- Marks, I.M. Fears and Phobias. New York: Academic Press, 1969.
- Mowrer, A.R. A stimulus-response analysis of anxiety and its role as a reinforcing agent. Psychological Review, 1939, 46, 553-565.
- Mowrer, A. On the dual nature of learning - a reinterpretation of "conditioning" and "problem-solving". Harvard Educational Review, 1947, 17, 102-148.
- Meichenbaum, D.H. Cognitive Factors in Behavior Modification: Modifying what Clients Say to Themselves. Waterloo: University of Waterloo Research Report No.25, 1971. (a)

- Meichenbaum, D.H. Examination of model characteristics in reducing avoidance behavior. Journal of Personality and Social Psychology, 1971, 17, 298-307. (b)
- Meichenbaum, D.H. Personal communication. 1971. (c)
- Meichenbaum, D.H. Reducing fear by modifying what clients say to themselves: a means of developing stress inoculation. Unpublished manuscript. University of Waterloo, 1971. (d)
- Meichenbaum, D.H. Cognitive modification of test-anxious college students. Journal of Consulting and Clinical Psychology, in press, October, 1972.
- Meichenbaum, D., Gilmour, J., and Fedoravicius, A. Group insight in treatment of speech anxiety. Journal of Consulting and Clinical Psychology, 1971, 36, 410-421.
- Meichenbaum, D.H., Goodman, J. The developmental control of operant motor responding by verbal operants. Journal of Experimental Child Psychology, 1969, 7, 553-565. (a)
- Meichenbaum, D.H., and Goodman, J. Reflection - impulsivity and verbal control of motor behavior. Child Development, 1969, 40, 785-797. (b)
- Meichenbaum, D.H., and Goodman, J. Training impulsive children to talk to themselves: a means of developing self-control. Journal of Abnormal Psychology, 1971, 77, 115-126.
- Miller, R.E., Banks, J.H., and Ogawa, N. Role of facial expression in "cooperative avoidance conditioning" in monkeys. Journal of Abnormal and Social Psychology, 1963, 67, 24-30.

- Miller, R.E., Murphy, J.V., and Mirsky, I.A. Nonverbal communication of affect. Journal of Clinical Psychology, 1959, 15, 155-158.
- Nesbitt, R., and Schachter, S. Cognitive manipulation of pain. Journal of Experimental Social Psychology, 1966, 2, 227-236.
- Paul, G.L. Insight versus Desensitization in Psychotherapy: An Experiment in Anxiety Reduction. Stanford: Stanford University Press, 1966.
- Paul, G.L. Behavior modification research: Design and tactics. In C. Franks (Ed.), Behavior Therapy: Appraisal and Status. New York: McGraw Hill, 1969. (a)
- Paul, G.L. Outcome of systematic desensitization. In C.M. Franks (Ed.), Behavior Therapy: Appraisal and Status. Toronto: McGraw Hill Book Company, 1969, 63-159. (b)
- Rimm, D.C., and Mahoney, M.J. The application of reinforcement and participant modeling procedures in the treatment of snake phobic behavior. Behavior Research and Therapy, 1969, 7, 369-376.
- Ritter, B. Treatment of a dissection phobia. Unpublished manuscript, Queens College, 1965.
- Ritter, B. The effect of contact desensitization on avoidance behavior, fear ratings, and self-evaluative statements. APA Proceedings, 1968. (a)

- Ritter, B. The group desensitization of childrens' snake phobias using vicarious and contact desensitization procedures. Behavior Research and Therapy, 1968, 1, 1-6. (b)
- Ritter, B. Eliminating excessive fears of the environment through contact desensitization. In J.D. Knumboltz and C.E. Thoresen (Eds.), Behavioral Counseling: Cases and Techniques. New York: Holt, Rinehart, and Winston, 1969. (a)
- Ritter, B. Treatment of acrophobia with contact desensitization. Behavior Research and Therapy, 1969, 7, 41-45. (b)
- Rosenthal, R. Experimenter Effects in Behavioral Research. New York: Appleton-Century-Crofts, 1966.
- Schacter, S., and Singer, J. Cognitive social and physiological determinants of emotional state. Psychological Review, 1962, 69, #5, 379-399.
- Steffy, R., Meichenbaum, D., and Best, A. Aversive and cognitive factors in the modification of smoking behavior. Behavior Research and Therapy, 1970, 8, 115-125.
- Suinn, R.M., and Richardson, F. Anxiety Management Training: A Nonspecific Behavior Therapy Program for Anxiety Control. Behavior Therapy, 1971, 2, 498-510.
- Valins, S. Cognitive effects of false heart-rate feedback. Journal of Personality and Social Psychology, 1966, 4, 400-408.

- Valins, S., and Ray, A. Effects of cognitive desensitization on avoidance behavior. Journal of Personality and Social Psychology, 1967, 7, 345-350.
- Wilkins, W. Desensitization: Social and cognitive factors underlying the effectiveness of Wolpe's procedure. Psychological Bulletin, 1971, 76, 5, 311-317.
- Wilson, G.T., and Davison, G.C. Processes of fear-reduction in systematic desensitization. Psychological Bulletin, 1971, 76, 1-14.
- Wine, J. Investigations of attentional interpretation of test anxiety. Unpublished doctoral dissertation, Univ. of Waterloo, Waterloo, Ont., 1970.
- Wine, J. Test anxiety and direction of attention. Psychological Bulletin, 1971, 76, 2, 92-104.
- Winer, B.J. Statistical Principles in Experimental Design. Toronto: McGraw Hill Book Company, Inc., 1962.
- Wolpe, J. Psychotherapy by Reciprocal Inhibition. Stanford: Stanford University Press, 1958.
- Wolpe, J. The systematic desensitization treatment of neuroses. Journal of Nervous and Mental Disease, 1961, 132, 189-203.
- Wolpe, J., and Lazarus, A.A. Behavior Therapy Techniques: A Guide to the Treatment of Neuroses. New York: Pergamon Press, 1966.

Wynne, L.C., and Solomon, R.L. Traumatic avoidance learning:
Acquisition and extinction in dogs deprived of normal
peripheral autonomic function. Genetic Psychology
Monographs, 1955, 52, 241-284.

APPENDICES

APPENDIX A

FEAR SURVEY

NAME: _____

PHONE: _____

PLEASE CIRCLE FOR EACH ITEM THE WORD THAT MOST NEARLY DESCRIBES THE AMOUNT OF FEAR YOU FEEL TOWARD THE OBJECT OR SITUATION STATED

- | | | | | | | | |
|--|-------------|--------------------|-----------------|-------------|-------------|------------------|---------------|
| 1. SHARP OBJECTS | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 2. BEING A PASSENGER IN A CAR | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 3. DEAD BODIES | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 4. SUFFOCATING | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 5. LIZARDS | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 6. FAILING A TEST | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 7. LOOKING FOOLISH | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 8. WORMS | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 9. BEING A PASSENGER IN A PLANE | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 10. ARGUING WITH PARENTS | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 11. RATS | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 12. HYPODERMIC NEEDLES | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 13. MICE | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 14. BEING CRITICIZED | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 15. MEETING SOMEONE FOR THE FIRST TIME | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 16. ROLLER CAOSTERS | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 17. BEING ALONE | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 18. MAKING MISTAKES | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 19. DEATH | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |
| 20. BEING IN A FIGHT | <u>NONE</u> | <u>VERY LITTLE</u> | <u>A LITTLE</u> | <u>SOME</u> | <u>MUCH</u> | <u>VERY MUCH</u> | <u>TERROR</u> |

21. CROWDED PLACES	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
22. BLOOD	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
23. HEIGHTS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
24. BEING A LEADER	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
25. BATS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
26. ILLNESS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
27. BEING WITH DRUNKS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
28. INJURY TO LOVED ONES	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
29. DRIVING A CAR	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
30. MENTAL ILLNESS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
31. CLOSED PLACES	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
32. BOATING	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
33. SPIDERS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
34. THUNDERSTORMS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
35. NOT BEING A SUCCESS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
36. CROSSING CITY STREETS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
37. SNAKES	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
38. CEMETERIES	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
39. SPEAKING IN PUBLIC	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
40. SEEING A FIGHT	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
41. DARK PLACES	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
42. DOGS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
43. DEEP WATER	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
44. BEES	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
45. CRAWFISH (LIKE A SMALL LOBSTER)	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>

46. LOSING A JOB	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
47. CATS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
48. SEEING CAR ACCIDENTS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>
49. BIRDS	<u>NONE</u>	<u>VERY LITTLE</u>	<u>A LITTLE</u>	<u>SOME</u>	<u>MUCH</u>	<u>VERY MUCH</u>	<u>TERROR</u>

APPENDIX B

EXPLANATION OF PRETEST PROCEDURE- TO BE READ TO SUBJECTS

"The purpose of this part of the session is to determine how fearful you are of a live snake. There will be a harmless snake in an enclosed cage at the far end of the room next door. We will ask you to approach the cage and do various things with the snake. We want you to understand that at no time will we force you to perform any task which you do not want to do. If you are too fearful to carry out what we ask at any point, then tell us and we will stop there."

In order to determine how you are feeling as you perform each task, we will ask you for an anxiety report while you are performing the task (hand the Anxiety Scale (Appendix D) to subject and allow him to examine it). As you see the scale ranges from "0- Unafraid, not tense or anxious at all" to "10- Extremely afraid, tense & anxious". Please look over the scale and note the different points on it, and what those points indicate in terms of fear and anxiety. (make sure subject understands) During the time when you are performing a task, we will say "Could we have your anxiety rating please" and we would like you to respond with the number that best describes the level of anxiety you are experiencing at that particular time. Do you have any questions regarding the procedure ? (if any,clarify them)

We want to make certain that all persons are tested under the same conditions, including the snake's level of activity. Therefore it may be necessary to ask you to leave the room briefly if the snake becomes too active momentarily. When his activity level has gone down, usually in a few seconds, we will call you back and we will continue. Do you

have any questions before we begin?

Again let me say that if at any point you are completely unable to perform a task, then tell us and we will stop there." (the first item in the behavior approach sequence - stand 15' from the snake - was read to the subject before he entered the pretest room).

APPENDIX C

BEHAVIOR APPROACH TEST SCORE SHEET

SNAKE

S NAME _____

S NO. _____

ITEM	ITEM COMPL	S ANX RAT	ANIM ACTIV
1. STAND 15' FROM SNAKE			
2. " 10' " "			
3. " 5' " "			
4. " 1' " " , LOOK DOWN THRU COVER			
5. PLACE PALM OF HAND AGAINST GLASS OF CONT NEAR SNAKE & SAME TIME LOOK AT SNAKE			
6. PUT ON GLOVE REST 1 GLOVED HAND ON TOP CONT & SAME TIME LOOK AT SNAKE			
7. MOVE COVER OFF CONTAINER LOOK DOWN AT SNAKE THRU OPEN TOP			
8. PLACE A GLOVED HAND IN CONT UNTIL WRIST LEVEL WITH TOP EDGE			
9. REMOVE GLOVE PUT BARE HAND IN CONT UNTIL WRIST LEVEL WITH TOP EDGE			
10. TOUCH SNAKE'S MIDDLE WITH GLOVED HAND			
11. REMOVE GLOVE TOUCH SNAKE'S MIDDLE			
12. WITH THUMB & INDEX FINGER OF BARE HAND ENCIRCLE SNAKE'S MIDDLE 5 SEC			
13. WITH BARE HAND ENCIRCLE SNAKE'S TAIL LIFT 1-2" FROM FLOOR 5 SEC			
14. WITH THUMB & INDEX FINGER OF BARE HAND ENCIRCLE SNAKE'S NECK 5" BEHIND HEAD			

ITEM	ITEM COMPL	S ANX RAT	ANIM ACTIV
15.GLOVES ON HOLD SNAKE UNDER UNDER MIDDLE LIFT SNAKE OFF FLOOR OF CONT HOLD 5 SEC			
16.BARE HANDS LIFT MIDDLE OF SNAKE OFF FLOOR OF CONT 5 SEC			
17.BARE HANDS LIFT SNAKE TO UPPER EDGE OF CONT & HOLD THERE 15 SEC			
18.LIFT SNAKE OUT OF CONT PLACE IN CHECKERBOARD ENCLOSURE AFTER FEW SEC RETRIEVE & PLACE BACK IN CONT			
19.LIFT SNAKE FROM CONT HOLD HEAD OF SNAKE 12" FROM FACE FOR 10 SEC			
20.SIT IN CHAIR WITH ARMS AT SIDES ALLOW SNAKE TO BE PLACED IN LAP FOR 15 SEC			

APPENDIX D
ANXIETY SCALE

ANXIETY SCALE

- 10- Extremely afraid, tense & anxious
- 9-
- 8-
- 7- Moderately afraid, tense & anxious
- 6-
- 5-
- 4- Mildly afraid, tense & anxious
- 3-
- 2-
- 1-
- 0- Not afraid, tense or anxious at all

APPENDIX E

EXAMPLES OF COPING SELF-STATEMENTS

Based on Meichenbaum (1971a; 1971b; 1971c)

Background to explanation of coping self-statements

Nature of self-statements

- questions and analysis of demands of the situation
 - What do I have to do in this situation? What is my overall objective?
 - Exactly what things should I do to accomplish this?
 - Can the things I have to do be broken down into steps; what are they?
- answers to these questions in terms of planning in order to overcome any performance deficiencies
 - this is what my objective is
 - to accomplish this these are the steps I must take, in the following order (for activity e.g. approach behavior) or (for passive situations e.g. fear of being injected)
- self-instructions in form of self-guidance while performing task or waiting (in case of passive situations)
 - active - I'm walking forward towards the point at which I'll be half way to the ... I'll take it one step at a time, not too fast, now I can try the next step. Well, maybe I took that one too quickly, I'll make the next step a little smaller. I can take slow deep breaths to control myself physically.

- passive - Well I'll have to just wait quietly, this will be over in a while. The best thing to do is to try to relax. Just breathe slowly and deeply, and try to spot places on my body that are tense. There's a spot at the base of my neck, so I'll tense it for a few seconds so it will have to relax afterwards.
- Self-instructions in form of self-motivation while performing or waiting
 - I'm determined to get this done. I've spent all this time and I'm not going to give up now. It sure would be nice if I could handle this. If I can, I'll be able to handle other things.
- Take into account physical reactions
 - I'm feeling a little shaky and my hands are clammy, but all that means is that the capillaries on my hands are constricting and my muscles are tight. This is normal reaction to stress and I won't let it stop me from doing what I want to. I can help counteract the reactions by breathing properly and trying to feel muscle tension and eliminating it.
- Self-reinforcement
 - Well I was able to complete that step; I'm doing very well. Okay, onto the next. Just set my next step a little farther. Good. I'm doing things I didn't think I could do.

1

- make self-reinforcing deals with the environment - If I can do this next step, I'll buy myself a milkshake after. I'll try to go a little further, and if I can handle that I'll let myself rest a second before I try the next thing. (If approaching animal) I'll try not to move quickly and scare him, if he doesn't move suddenly and scare me.

- Note aspects of stimulus situation

- This animal seems a lot gentler than I thought it would be, but he sure is active. Well he's not hurting me.

APPENDIX F

PROCEDURAL PROTOCOLS FOR EACH TREATMENT CONDITION

General and Specific Cognitive Strategies with Stress Exposure

Session 1. 30-40 minutes.

During this session, for the most part an interview, subjects were asked to name some of their strongest fears or phobias. Specifically, three were chosen (besides the fear of snakes) for each subject, and these fears were probed for frequency of occurrence, conditions under which they occurred, physiological reactions, subjects thoughts to himself while he was afraid, consequences of expression of the fear, and possible origins. Particular efforts were made to find out how each S talked subvocally to himself in a fear situation, for later use in treatment. A copy of the interview format appears in Appendix G.

At the conclusion of the interview, subjects listened to a taped cognitive explanation of emotion and fear, based on the work of Schacter (Schacter and Singer, 1962). The explanation emphasized that subjects would be taught a method of relaxation to combat physical manifestations of fear, and would learn to speak to themselves in such a way as to limit the cognitive components of fear. A transcript of the taped explanation follows:

"I am going to give you an explanation of why we will ask you to follow the procedures we suggest. The basis of the procedures lies on an explanation of what fears are: an emotional state such as fear, is first a state of physical arousal, or a heightened level of physical and mental awareness. For example, you know when you are fearful that certain physical things happen to you - your heart beats faster, your muscles become tense, you perspire more, and your hands

and feet, although perspiring, may feel cold and clammy; you may feel butterflies or a constriction in your stomach. These physical processes give you feedback and help to let you know that you are indeed afraid. However, there is another important factor which tells you whether you are afraid or not, when you experience those physical processes. This factor is your interpretation of the situation in which you find yourself when you experience the physical symptoms. That is, depending on the way you perceive surrounding circumstances, you may interpret the same physical symptoms as manifestations of different emotions. For example, given that you were in a situation that involved someone just hitting you, you would probably label your ensuing physical symptoms (increased heart rate, etc.) as anger. However, if you experienced the same physical symptoms after having narrowly avoided a head-on collision in a car, you would, because of your perception of the circumstances of the situation, probably interpret your symptoms as an expression of fear of relief. The labelling you do, regarding your own emotions, depends not only on the physical reactions you experience, but on your mind's interpretation of the situation you are in. Much of this interpretation comes about through covert speech. That is, you interpret to yourself the situational factors by means of words, either out loud, under your breath, or you speak to yourself in thought only. For instance, you may think to yourself after someone has hit you, "He had no right to do that; I'm going to hit him back". The point of this is that what you say to yourself out loud, or in your mind, lets you interpret your own emotions and also guides your course of action. With regard to your fear, traditionally called an emotion, we are going to analyse how you speak to yourself when you are afraid, and teach you how to change what you say to yourself so that you will experience less of this emotion, fear. We will also teach you how to help control the physical symptoms of fear by means of relaxation and deep breathing."

Session 2. 30-40 minutes.

Training in relaxation and deep breathing was administered to subjects by means of a 23 minute tape, adapted from Wolpe (1966), (Appendix H). E's modeled relaxation and how to follow taped instructions. S's were requested to practise the relaxation procedure twice daily, spaced at least three hours apart.

Subjects were given explanations of the nature of coping self-statements. These statements were contrasted with ruminative, fretful self-statements which subjects had mentioned during the

interview as being a common response to a fear situation. Types of coping self-statements and examples of each were given, (Appendix E) and in preparation for the next session, each subject was requested to try to develop coping self-statements relevant to one of his personal fears mentioned in the initial interview.

Session 3. 30-40 minutes.

Subjects reviewed the treatment rationale with E, then discussed the coping self-statements they had developed at home. E elaborated upon these, discussed difficulties S was having in his approach to developing coping self-statements, and modeled aloud for S either self-statements which were extensions of S's own ideas, or alternatives to them. The subject was then to practise self-instructing aloud regarding the feared situation. He was asked to practise relaxation and concurrently to incorporate self-instructions to relax into his coping statements. When he had practised this for several minutes, S was requested to prepare coping self-statements on two more fears, one based on another fear obtained from the history, the other based on fear of snakes.

Session 4. 30-40 minutes.

After the treatment rationale had been reiterated, subjects went through procedures similar to those they had followed during session three. That is, they self-instructed regarding the fear topics they had been assigned, discussed it with E, heard elaborations from E on their own coping self-statements, practised them again and attempted to relax at the same time. As he became more

proficient in developing strategies for coping self-statements, S was encouraged to relax and practise the self-statements covertly. Subjects practised developing directive self-statements specifically with regard to snakes, and one other fear. Towards the end of this session, subjects were informed of the stressor to be used in the next session. Stressors were presented to the subjects with the rationale that they would allow the S an opportunity to actively use the coping procedures.

Session 5. 30-40 minutes.

Subjects reviewed the treatment rationale. E modeled some coping self-statements which might be used with the stressor. Subjects were then exposed to one stressor and developed strategies for coping with the stressor. The manner in which S's were induced to experience stressors appears below.

1. Shock Stressor - To prepare the subject so that he would accept administration of the shock, E first attached the electrodes to himself and had the S raise the level of shock intensity, as well as press the button to shock E. After this demonstration that the shock was not dangerous, subjects easily permitted E to attach the electrodes to their fingers. A subject was instructed to raise the shock level gradually from zero to a point slightly beyond a level which was uncomfortable. The subject was requested to turn his chair away from the experimenter so that E could deliver unsignaled shock at random intervals. S was to use the procedures he had learned in coping with the unexpected shock.

2. Videotapes and Slides Stressor- It was explained to subjects that they were to see films which might cause them some anxiety. They were to attempt to develop coping self-instructions to alleviate such stress as they experienced.
3. Ice Stressor - The procedure used to administer the ice stressor involved having the subject place the palm of his hand on the ice surface and indicate to E when he found it so painful that he could hold his hand on the ice no longer. The subject was to remove his hand from the ice, wait several minutes, then place his hand back on the ice, and using the methods he had learned to deal with stress, attempt to keep his hand there for a longer period of time than he had at first.

General Cognitive Strategies with Stress Exposure

Subjects in this treatment group underwent procedures which were identical with those used for the treatment group just described, except that no reference was made to dealing with snakes during treatment sessions. While in the first cognitive strategy group, emphasis was placed upon developing coping self-statements for snakes during sessions 3 and 4, this treatment group spent the same time developing coping strategies for other fears they had mentioned in the initial interview.

General Cognitive Strategies with Multiple Stress Exposure

Sessions 1-5.

Treatment proceeded exactly as it had for the General Cognitive Strategies with Stress Exposure group, except that at the end of session 5, subjects were told that they would be able to prac-

tise developing strategies for two additional stressors.

Session 6. 30-40 minutes.

Subjects reviewed treatment rationale and practised developing coping self-statements for the two stressors they had not yet experienced. If there was time, they also went over the coping strategies they had learned earlier during treatment.

General Cognitive Strategies without Stressors

Sessions 1-4.

These sessions proceeded as they had in the General Cognitive Strategies and Stress Exposure group, except that no mention was made of practising development of coping self-statements with stressors.

Session 5. 30-40 minutes.

Subjects were given several hypothetical fear situations, and were requested to demonstrate how they might model for another person the development of self-directive coping statements for those subjects. They then reviewed the strategies which they had developed on fears of their own, and again practised relaxing.

Session 6. 20-30 minutes.

Subjects reviewed coping self-statements they had learned at earlier stages during treatment.

Modeling with Guided Participation

Session 1. 30-40 minutes.

Subjects underwent the same interview as other treatment groups. Several fears were probed for frequency of occurrence, conditions under which they were experienced, physiological reactions, their thoughts when afraid, etc. (Appendix G). At the conclusion of the interview, a modeling interpretation of fear and how it might be treated (Bandura, 1969) was presented. The treatment rationale explained that a fear of snakes could be vicariously reduced through observation of another person handling a snake. It appears below:

"Many people have developed persisting irrational fears, for the most part through the operation of two processes. First, experience of trauma concerning the feared object at one time or another; second, through the influence of modeling of fears by members of a person's family or immediate circle of friends. Emotional reactions including certain physiological symptoms such as perspiring, a speedup in heart rate or a constriction in the stomach, to name a few, usually occur when a person is confronted with an object or situation which he fears. Generally a person's first response to this feeling of fear is to somehow escape the confrontation. He frequently does escape such a situation and makes active efforts to avoid it most of the time. One method of overcoming a fear is to have other people demonstrate increasingly closer interactions with the feared object, or experience, in the particular situation. Just as fears can be vicariously learned, they can, to an extent, be vicariously lessened in intensity. When the intensity of a person's fear is vicariously lowered in this way, he is usually able to begin to approach the feared object or situation a little at a time, until he is less and less uncomfortable with it. So we are going to have you watch several people handling snakes and then we will try to help you approach snakes at your own speed and become less afraid of them."

Session 2. 30-40 minutes.

Subjects were given relaxation training by means of the same tape that other treatment groups received (Appendix H), and were requested to practise the relaxation twice daily. They were also given an outline of the procedures they would follow in subsequent sessions. It was repeated that they would observe models handling snakes and would have the opportunity of doing so themselves if they wished.

Session 3. 30-40 minutes.

Subjects reviewed their treatment rationale and were escorted into a room where two undergraduate volunteers, a male and a female, sat on either side of a container in which was a boa constrictor. The demeanor of these models was very relaxed and they exhibited no anxiety about the snake. Each in turn, got up from a chair, went to the container, and carried out the following sequence of behaviors: they touched the snake midway between head and tail while it was in the container; then just behind the head; they lifted the tail off the container floor; then lifted the whole snake in the container; then removed the snake from the container and handled it. While each of the models progressed through the sequence, the subject was encouraged to relax and was requested to move the chair on which he was sitting, as close to the snake as he felt comfortable. When models had finished their sequence, they sat on either side of a table and allowed the snake to roam on the tabletop. They frequently touched, lifted it, and allowed it to slide over their arms and

hands. During this entire session, the models were relaxed in handling the snake. The models were silent and discussion was limited to requests by E for the subject to approach the snake when he felt ready.

Session 4. 30-40 minutes.

Subjects observed E handling the snake in a very relaxed manner. They were requested to move as close to the snake as they were able, and when they felt confident, to attempt to touch and pat the snake. Subjects who could move near to the snake, but seemed unable to touch it, were requested to place his or her hand on top of E's while E stroked the snake's back. When S had become accustomed to this, E gradually withdrew his hand and allowed S's hand to remain on the snake.

Session 5. 30-40 minutes.

Subjects in the modeling group continued procedures similar to those in session 4.

Session 6. 30 minutes.

Subjects continued with procedures similar to those in session 5. If they had been able to handle the snake during an earlier session, they were requested to continue doing so during this one.

APPENDIX G
INTERVIEW FORMAT- SESSION I

- 1.Explanation of difference between fear & phobia
- 2.What are S's specific strong fears (take 3 main ones if poss)?
- 3.When do they manifest themselves?
 Snake Specific occasions

 Frequency
 Others Specific occasions

 Frequency
- 4.What consequences (social and otherwise) usually follow expression of these fears ?
- 5.When S is fearful in response to some phobic stimulus, how does S know he is afraid Physiological reactions ? Thoughts to self ?
- 6.What does S see as society's value judgements regarding his fears
- 7.Possible origins Trauma? Modeling (parents, friends, etc.)?
 Informational influences- movies books etc? Other?
- 8.Any attempts to eliminate or deal with fears? Parents or friends?
 Professional help? Self-control?

APPENDIX H

RELAXATION PROCEDURE

"I am going to teach you a method for inducing deep muscle relaxation. You will be learning how to relax tension in the various groups of muscles in your body. At first you will concentrate on relaxing a fixed number of particular muscles, but with practice, you will be able to recognize in which areas of your body, muscles are most tense and then work on those. The eventual aim of this exercise is to allow you to gain an awareness of where localizations of tensions are, and how to relax them.

Settle back as comfortably as you can. Let yourself relax to the best of your ability. Take slow deep breaths. Breathe very deeply. Now, as relax like that, clench your right fist, just clench your fist tighter and tighter, and study the tension as you do so. Keep it clenched and feel the tension in your right fist, hand, forearm ... and now relax. Let the fingers of your right hand become loose, and observe the contrast in your feelings ... Now, let yourself go and try to become more relaxed all over. Try to continue taking long, deep, slow breaths as we proceed. Once more, clench your right fist really tight ... hold it, and notice the tension again ... Now let go, relax; your fingers straighten out, and you notice the difference once more ... Now repeat that with your left fist. Clench your left fist while the rest of your body relaxes; clench that fist tighter and feel the tension ... and now relax. Breathe deeply and slowly. Again enjoy the contrast ... Repeat that once

more, clench the left fist, tight and tense ... Now do the opposite of tension - relax and feel the difference. Continue relaxing like that for a while ... Clench both fists tighter and tighter, both fists tense, forearms tense, study the sensations ... and relax; straighten out your fingers and feel that relaxation. Continue relaxing your hands and forearms more and more ... Now bend your elbows and tense your biceps, tense them harder and study the tension feelings ... all right, straighten out your arms, let them relax and feel that difference again. Let the relaxation develop ... Once more, tense your biceps; hold the tension and observe it carefully ... Straighten the arms and relax; relax to the best of your ability ... Each time, pay close attention to your feelings when you tense up and when you relax. Now straighten your arms, straighten them so that you feel most tension in the triceps muscles along the back of your arms; stretch your arms and feel that tension. And now relax. Take some more breaths very slowly and deeply. Get your arms back into a comfortable position. Let the relaxation proceed on its own. The arms should feel comfortably heavy as you allow them to relax. Straighten the arms once more so that you feel the tension in the triceps muscles; straighten them. Feel that tension ... and relax. Now let's concentrate on more relaxation in the arms without any tension. Get your arms comfortable and let them relax further and further. Continue relaxing your arms even further. Continue breathing with long, slow breaths. Even when your arms seem fully relaxed, try to go that extra bit further; try to achieve deeper and deeper levels of relaxation.

Just settle back quietly and comfortably. Wrinkle up your forehead now; wrinkle it tighter ... And now stop wrinkling your forehead, relax and smoothe it out ... Picture the entire forehead and scalp becoming smoother as the relaxation increases ... Now frown and crease your brows and study the tension ... Let go of the tension again. Smooth out the forehead once more ... Now close your eyes tighter and tighter ... feel the tension ... and relax your eyes. Keep your eyes closed, gently, comfortably, and notice the relaxation ... Now clench your jaws, bite your teeth together; study the tension throughout the jaws ... Relax your jaws now. Let your lips part slightly ... Appreciate the relaxation ... Now press your tongue hard against the roof of your mouth. Look for the tension ... All right, let your tongue return to a comfortable and relaxed position ... Now purse your lips, press your lips together tighter and tighter ... Relax the lips. Note the contrast between tension and relaxation. Feel the relaxation all over your face, all over your forehead and scalp, eyes, jaws, lips, tongue and throat. The relaxation progresses further and further ... Breathe slowly and deeply. Now attend to your neck muscles. Press your head back as far as it can go and feel the tension in the neck; roll it to the right and feel the tension shift; now roll it to the left. Straighten your head and bring it forward, press your chin against your chest. Let your head return to a comfortable position, and study the relaxation. Let the relaxation develop... Shrug your shoulders and feel the relaxation. Neck and shoulders relaxed ... Shrug your shoulders again and move

them around. Bring your shoulders up and forward and back. Feel the tension in your shoulders and in your upper back ... Drop your shoulders once more and relax. Let the relaxation spread deep into the shoulders, right into your back muscles; relax your neck and throat, and your jaws and other facial areas as the pure relaxation takes over and grows deeper ...

Feel that comfortable heaviness that accompanies relaxation. Breathe in and out slowly and deeply. Notice how the relaxation increases as you exhale ... as you breathe out just feel that relaxation ... Now breathe right in and fill your lungs; inhale deeply and hold your breath. Study the tension ... Now exhale, let the walls of your chest grow loose and push the air out automatically. Continue relaxing and breathe freely and gently. Feel the relaxation and enjoy it ... With the rest of your body as relaxed as possible, fill your lungs again. Breathe in deeply and hold it again ... That's fine, breathe out and appreciate the relief. Just breathe normally. Continue relaxing your chest and let the relaxation spread to your back, shoulders, neck and arms. Merely let go ... and enjoy the relaxation. Now let's pay attention to your abdominal muscles, your stomach area. Tighten your stomach muscles, make your abdomen hard. Notice the tension ... And relax. Let the muscles loosen and notice the contrast ... Once more, press and tighten your stomach muscles. Hold the tension and study it ... And relax. Notice the general well-being that comes with relaxing your stomach ... Now draw your stomach in, pull the muscles right in and feel the tension this way ... Now relax again. Let your stomach out. Continue breathing normally and easily and feel the

gently massaging action all over your chest and stomach ... Now pull your stomach in again and hold the tension ... Now push out and tense like that; hold the tension ... once more pull in and feel the tension ... now relax your stomach fully. Let the tension dissolve as the relaxation grows deeper. Each time you breathe out, notice the rhythmic relaxation both in your lungs and in your stomach. Notice thereby how your chest and your stomach relax more and more ... Try and let go of all contractions anywhere in your body ... Now direct your attention to your lower back. Arch your back, make your lower back quite hollow, and feel the tension along your spine ... and settle down comfortably again relaxing the lower back ... Just arch your back and feel the tensions as you do so. Try to keep the rest of your body as relaxed as possible. Try to localize the tension throughout your lower back area ... Relax once more, relaxing further and further. Take long, deep breaths, very slowly. Relax your chest, shoulders, arms and facial areas. These parts relaxing further and further and further and ever deeper.

Let go of all tensions and relax ... Now flex your buttocks and thighs. Flex your upper leg muscles by pressing down your heels as hard as you can ... Relax and note the difference ... This time, straighten your knees and flex your leg muscles again. Hold the tension... Relax your hips and upper legs. Allow the relaxation to proceed on its own. Press your feet and toes downwards, away from your face, so that your calf muscles become tense. Study that tension ... Relax your feet and calves ... This time bend your feet towards your face so that you feel tension along your shins. Bring

your toes right up ... Relax again. Keep relaxing for a while ... Now let yourself relax further all over. Relax your feet, ankles, calves and shins, knees, thighs and hips. Feel the heaviness of your lower body as you relax still further. Continue taking slow, deep breaths. Now spread the relaxation to your stomach, waist, lower back. Let go more and more. Feel that relaxation all over. Let it proceed to your upper back, chest, shoulders and arms and right to the tips of your fingers. Keep relaxing more and more deeply. Make sure that no tension has crept into your throat; relax your neck and your jaws and all your facial muscles. Keep relaxing your whole body like that for a while. Let yourself relax.

Now you can become twice as relaxed as you are merely by taking in a really deep breath and slowly breathing and exhaling. With your eyes closed so that you become less aware of objects and movements around you and thus prevent any surface tensions from developing, breathe in deeply and feel yourself becoming heavier. Take in a long, deep breath and let it out very slowly ... Feel how heavy and relaxed you have become.

In a state of perfect relaxation you should feel unwilling to move a single muscle in your body. Think about the effort that would be required to raise your right arm. As you think about raising your right arm, see if you can notice any tensions that crept into your shoulder and your arm... Now you decide not to lift the arm but to continue relaxing. Observe the relief and the disappearance of the tension ...

Just carry on relaxing like that. When you wish to get up, count backwards from four to one. You should then feel fine and refreshed, wide awake and calm.

APPENDIX I

MEANS AND STANDARD DEVIATIONS OF BEHAVIOR APPROACH SCORES AND ANXIETY SCORES AT PRETEST (BOA) POSTTEST I (BOA) AND POSTTEST II (GARTER)

A. BEHAVIOR APPROACH SCORES

	PRETEST		POSTTEST I		POSTTEST II	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
1.Controls	7.86	4.33	7.57	3.99	7.14	3.71
2.General & Specific Cognitive Coping Strategies & 1 Stressor	8.71	2.69	13.71	4.46	14.00	4.16
3.General Coping Strategies & 1 Stressor	7.29	4.23	12.29	4.53	11.57	5.25
4.General Coping Strategies & 3 Stressors	8.57	3.99	12.86	6.31	12.57	7.32
5.General Coping Strategies (No Stressors)	5.14	2.67	10.43	6.99	9.43	7.55
6.Modeling with Guided Participation	7.57	3.36	18.71	3.40	17.86	4.18

B. ANXIETY SCORES

1.Controls	3.82	2.70	3.31	1.69	4.12	2.11
2.General and Specific Cognitive Coping Strategies & 1 Stressor	4.56	2.98	2.92	1.66	2.74	2.44
3.General Coping Strategies & 1 Stressor	4.34	2.27	3.26	1.89	3.91	2.80
4.General Coping Strategies & 3 Stressors	3.43	1.89	2.76	1.80	3.38	2.48
5.General Coping Strategies (No Stressors)	5.61	1.70	4.36	1.92	3.98	1.81
6.Modeling with Guided Participation	4.03	3.02	.19	.23	.71	.76