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EFFECT OF EXPECTANCY MANIPULATION ON THE
ELIMINATION OF FEAR

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THESIS

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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY
SUPERVISION BY THOMAS DONALD BORKOVEC
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INTRODUCTION

Current research in psychotherapy is on the threshold of controlled evaluations of techniques and the theoretical models upon which they are based. The tight designs available in clinical analogue studies and the inclusion of various control groups have provided the means of answering what Paul (1969a) has called the ultimate question: "What treatment, by whom, is most effective for this individual with that specific problem, under which set of circumstances, and how does it come about?" Most experimental studies in behavior modification to date have focused mainly on three aspects of this question: 1) evaluation of the effectiveness of techniques, 2) evaluation of the components of a technique, and 3) testing of the theoretical rationale underlying aspects of a technique. The present paper reports research which is concerned both with the comparative effectiveness of two learning-theory based strategies for the treatment of fear or "anxiety" as well as with evaluation of the models which presumably explain their efficacy.

Two Learning Theory Techniques for Eliminating Fear

Systematic Desensitization: The model of conditioned fear and of the technique. In Psychotherapy by Reciprocal Inhibition, Wolpe (1958) defined anxiety as the autonomic response pattern characteristically part of an organism's response to noxious

stimulation. "Anxiety" and "fear" were essentially synonymous, and, regardless of the label, the phenomenon was given central status within his theory of neurotic behavior. The development and maintenance of many such behaviors presumably involved the classical conditioning of anxiety to specific stimuli followed by avoidance behaviors in response to those stimuli. The latter behaviors, which frequently characterized the neurotic's overt "symptoms," were reinforced by the consequent reduction in anxiety. Such theorizing, of course, finds its origins in Pavlov's early work as well as that of Mowrer (1939).

In his search for procedures to eliminate conditioned anxiety, Wolpe disregarded simple extinction of fear for two reasons: First, autonomic responses seemed to be resistant to fatigue-associated reactive inhibition (the assumed basis of extinction, Hull, 1943). Secondly, the avoidance behaviors usually precluded sufficient exposure to the conditioned stimuli to allow for extinction. It seemed, then, that Wolpe could take one of three directions: 1) He could deal with the autonomic-respondent component in some way other than extinction. 2) He could eliminate the operant avoidance behaviors. Or 3) he could do both. Taking his cue from a clinical case by Jones (1924), Wolpe chose the first alternative. Since two incompatible responses could not be conditioned to the same stimulus, then evocation of one in the presence of the stimulus would suppress or "reciprocally inhibit" the occurrence of the other, if the former were stronger than the latter. If the anxiety were thus suppressed, the avoidant behaviors maintained by

anxiety reduction would, of course, extinguish. His research with such "counterconditioning" led eventually to a treatment package known as systematic desensitization. A frequently used response incompatible with fear was muscular relaxation as abbreviated from Jacobson's (1934) procedures. Assurance that relaxation was stronger than fear responses was achieved by using Jones' (1924) graded stimuli approach, and imaginal presentation of the stimuli afforded greater flexibility and practicality.

The important assumptions of this conditioning-desensitization model for fear and its elimination are a) the assertion that anxiety is an autonomic response to noxious stimuli (primary or classically conditioned), b) the assertion that anxiety is resistant to extinction, due to slow build-up of reactive inhibition and to avoidant behaviors that reduce exposure to the feared stimulus, and c) the assertion that the pairing of imagined, graded, phobic stimuli with relaxation results in suppression of anxiety responses to those stimuli through reciprocal inhibition.

Research evaluation of the technique. Paul (1969a and 1969b) has extensively reviewed research evaluating systematic desensitization up to 1966. Seventy-five papers appeared during that time. Correlational evidence for the effectiveness of systematic desensitization was found in 46 of 55 uncontrolled case and group studies. Only three reports involved negative findings. Ten controlled studies, involving such within-class confounding as therapist characteristics and nonspecific

treatment effects, all produced positive evidence for the effectiveness of the technique. Finally, of ten studies that controlled for such confounding and hence allowed evaluation of specific cause and effect relationships between technique and outcome, eight provided solid effectiveness evidence. The remaining two studies were less interpretable due to methodological problems. Paul's (1969b) concluding remarks indicated that systematic desensitization is the first therapeutic technique to withstand rigorous testing. The evidence overwhelmingly indicates that the procedure itself is effective in modifying "fear" behavior, beyond non-specific treatment effects. And in the only well controlled comparison with a traditional technique (Paul, 1966), desensitization was found to be more effective than an "insight" therapy in the elimination of speech anxiety.

Since Paul's (1969a and 1969b) review, 77 studies involving systematic desensitization have been carried out. Table 1 presents a summary classification of these studies. The change in emphasis of the research is obvious. There were only 21 studies (case, controlled group, and uncontrolled group) that were mainly interested in establishing evidence of effectiveness of desensitization. Almost half of the research has involved evaluation of procedural variations (17 studies) and of technique components (19 studies). Twenty investigations involved comparison of systematic desensitization with other techniques including positive operant reinforcement, modeling, bibliotherapy, role playing behavior rehearsal, rational

Table 1

Catagorization of Recent Studies in Desensitization

Evaluation of Treatment Components	Procedural Variations	Studies of Effectiveness-Case and Group	Desensitization versus other Therapies
Folkins, Lawson, and Lazarus, 1968	Barlow, Leitenberg, Agras, & Wincze, 1969	Agras, 1967	Bandura, Blanchard and Ritter, in preparation
Cooke, 1968	Cohen, 1969	Cotler and Garlington, 1969	Barlow, Agras, Leitenberg, and Wincze, 1970
Leitenberg, Agras, Barlow, and Oliveau, 1969	Donner and Guernsey, 1969	Davison, 1968	Barrett, 1969
Rachman, 1968	Ihli and Garlington, 1969	Doctor, Aponte, Burry, and Welch, 1970	Brock, 1967
Howlett, 1968	Kahan and Baker, 1968	Evans and Bond, 1969	Crichton and Jehu, 1969
Oliveau, Agras, Leitenberg, Moore, and Wright, 1969	Kondas, 1967	Furst and Cooper, 1970a and 1970b	Crowder and Thornton, 1970
Johnson and Sechrest, 1968	Krapfl and Nawas, 1969	Garlington and Cotler, 1968	DeMoor, 1970
Zeisset, 1968	Lanyon, Manosevitz, and Imber, 1968	Huff, 1970	Dolgan, 1967
Kinder, 1967	Leon, 1967	Ince, 1968	Horowitz, 1970
McGlynn and Mapp, 1970	Miller and Nawas, 1970	Kraft, 1970	Kirts, 1968
Morris, 1967	Nawas, Fishman, and Pucel, 1970	Kraft and Alissa, 1967	Larsen, 1965
Myerhoff, 1968	O'Neil and Howell, 1969	Leventhal, 1967	Mann and Rosenthal, 1969
Jaffe, 1968	Proctor, 1968	Morganstern and Ratliff, 1969	McGlynn, 1967
Schubot, 1966	Quinlan, 1968	Rachman and Hodgson, 1967	Mealiea, 1967
Marcia, Rubin, and Efran, 1969	Robinson and Suinn, 1969	Rifkin, 1968	Rachman, 1966
Davis, McLemore, and London, 1970		Rosenthal, 1968	Sanders, 1967
			Stern, 1968

Table 1 - continued

Categorization of Recent Studies in Desensitization

Evaluation of Treatment Components	Procedural Variations	Studies of Effectiveness- Case and Group	Desensitization versus other Therapies
Sushinsky and Bootzin, 1970	Suinn, 1968	Shrauger and Katkin, 1970	Strahley, 1965
Nawas, Welsch, and Fishman, 1970	Suinn and Hall, 1970	Silverman and Geer, 1968	Wagner and Cauthen, 1968
Mitchell and Ingham, 1970		Tasto, 1969	Willis and Edwards, 1969
		Wilson and Smith, 1968	

emotive therapy, and implosive therapy. Seemingly, with the effectiveness of the technique established, researchers are concentrating on taking desensitization apart to evaluate just what specifically is "active" in producing change and on comparing it to alternative treatment strategies.

Implosive Therapy: The model of conditioned fear and of the technique. Stampfl and Levis (1969) have discussed anxiety or fear as an emotional state elicited by preceding aversion stimuli. As such, the response enters in a central role in his theory of neurosis. Aversive conditioning experiences are assumed to be at the basis of human psychopathology. Classical conditioning of previously "neutral" stimuli present during a primary aversive event results in elicitation of anxiety in the presence of those conditioned stimuli. Such a conditioned state serves as a motivator of behavior and any response that reduces the state reinforces that response. These avoidance behaviors become the "defense mechanisms" and "symptomatology" of the neurotic patient. Anxiety is maintained by the fact that exposure to the conditioned stimuli rarely occurs. Emphasis is placed on the sequential as well as the "gestalt"-like qualities of the conditioned aversive cues. Following Hull (1943) and Mowrer (1960), Stampfl assumes that a strong UCS tends to condition a very large portion of the total stimulus pattern present at the time of conditioning. This pattern is 1) sequential in terms of temporal ordering, 2) complex in terms of the proprioceptive, visual, tactual, auditory aspects of the associated stimulation, and 3) "gestalt"-like

in terms of the assumption that any single stimulus element may have no anxiety-evoking potential by itself but serves to add to the entire anxiety elicitation of the total pattern when it is combined with the remaining elements. Furthermore, not only external stimuli but also internal ones (thoughts, images, desires) can become part of an aversive stimulus pattern.

In his search for procedures to eliminate conditioned anxiety, Stampfl chose simple extinction. By preventing the subject from making avoidance responses to the feared stimuli and by forcing him to experience the conditioned cues in the absence of primary reinforcement, extinction of the fear and consequent elimination of the avoidance behaviors motivated by the fear should occur. This procedure, found in Pavlov's early work, has been suggested by other learning theorists (eg., Malleon, 1959; Holland and Skinner, 1961; Kimble, 1961) as a possible psychotherapeutic technique. Solomon, Kamin, and Wynne (1953) suggested earlier that "the best way to produce extinction of the emotional response would be to arrange the situation in such a way that an extremely intense emotional reaction takes place in the presence of the CS (p. 299)."

The basics of Stampfl's (Stampfl and Levis, 1967) resulting procedures are as follows. The therapist attempts during initial assessment interviews to determine what crucial stimuli are associated with the patient's anxiety. This is done by determining what exteroceptive and interoceptive conditioned stimuli the patient is avoiding. From analysis of the patient's present behavior and of dynamic areas relevant to the problem

behavior, the therapist constructs an Avoidance Serial Cue Hierarchy (ASCH): conditioned stimuli ordered according to the extent to which they are avoided and hence associated with the original primary reinforcement. Symptom-contingent cues involve situational and environmental stimuli that are highly correlated with the occurrence of the avoidance behavior. These stimuli are low on the ASCH and are the ones presented and extinguished first. Hypothesized sequential cues presumably make up the remainder of the stimulus pattern. They are higher on the ASCH (and therefore more highly avoided), are incorporations from dynamic areas (eg., sex, aggression, rejection, etc.,) related to the problem behavior, and are presented for extinction last. The patient is instructed to imaginably play-act the scenes corresponding to the ASCH as presented verbally by the therapist. Every attempt is made to describe each scene in vivid detail and in every sense modality. The patient is encouraged to "live" the scenes and experience fully the feelings and emotions elicited. The goal is to reinstate the conditioned stimuli, to evoke maximal anxiety from the patient, and to maintain such anxiety evocation until the patient begins to show signs of anxiety reduction through extinction. At that point the process is repeated with variations, and movement up the ASCH continues until all cues have been presented and the overt signs of anxiety have been eliminated.

The important assumptions of this conditioning-extinction model for fear and its elimination are a) the assertion that

anxiety is an emotional response to noxious stimuli, b) the assertion that anxiety is resistant to extinction due to avoidance behaviors to cues low in the ASCH, resulting in reduced exposure to the aversive stimulus pattern, and c) the assertion that reinstatement of the aversive stimulus pattern in visualized scenes and the consequent anxiety elicitation in the absence of primary reinforcement results in extinction of anxiety responses to the stimulus pattern.

Research evaluation of the technique. From the current literature it is safe to say that the effectiveness of implosive therapy is yet to be experimentally established. There have been nine papers outlining the theory and procedures of the technique (Hogan, 1963; Stampfl, 1967; Stampfl and Levis, 1967a; Stampfl and Levis, 1967b; Levis, 1967; Hogan, 1968; Stampfl and Levis, 1968; Stampfl and Levis, 1969; and Stampfl and Levis, in press). Four case studies (involving "cures" of depression, hysterical blindness, radio compulsion, and hand-washing compulsion) are presented in two of these papers (Hogan, 1963; Stampfl and Levis, in press). Nineteen research reports are available. Six of these are found in the Dissertation Abstracts and each involves a comparison of implosion to systematic desensitization. These six (Larsen, 1965; Strahley, 1965; Brock, 1967; Mealiea, 1967; Kirts, 1968; and McGlynn, 1968) studies and published papers by Rachman (1966), Wolpin and Raines (1966), Willis and Edwards (1969), Barrett (1969), Horowitz (1970), and DeMoor (1970) will be discussed later. The remaining seven studies attempted to evaluate implosive

procedures in controlled, group research. In most of the studies the confoundings are sufficient to preclude conclusions about technique effectiveness. These studies and their major research flaws are briefly discussed below.

Hogan (1966) assigned 50 psychotic patients to either an implosive therapist or a "non-implosive" therapist and found significant MMPI pretest changes for the implosive group. The two groups were not equated for therapy time, therapist effects, and MMPI pretest scores. Also, use of the MMPI as a dependent variable is highly questionable.

Kirchner and Hogan (1966) compared a group implosion procedure (taped implosive recordings in a language lab) with a group control procedure (taped pleasant scenes accompanied by music). The results indicated that more imploded Ss (16 out of 20) handled the phobic object than did control Ss (5 out of 20) on post-test. Without pretest matching there is no assurance of technique effects. Implosive and control groups were run two weeks apart. The tape recording was longer for the implosive group than for the control. The relevance of the control condition is questionable.

Hogan and Kirchner (1967) found that 14 out of 21 rat "phobics" were able to pass the post-test after one implosive session as compared to two out of 22 Ss in a neutral imagery control group. Again, non-matching on pretest may confound the results. The imploded Ss had an average of 25% more therapist time. Finally, the post-tester knew to which treatment group each S belonged.

Levis and Carrera (1967) compared the effectiveness of four treatment conditions: 10 hours of implosive therapy, 10 hours of insight plus support therapy, 37 hours of insight plus support, and a wait control group. Implosive therapy showed the greatest pre-post MMPI changes away from "psychopathology." Outpatient Ss were heterogeneous in terms of "pathology" and were neither matched nor randomly assigned to treatment conditions. A variety of different therapists treated different groups. Some Ss paid for therapy, others did not.

Hogan and Kirchner (1968) randomly assigned snake-phobic co-eds to implosion, eclectic verbal therapy (talking about snakes), and bibliotherapy (reading about snakes). Implosion produced significantly greater post-test approach than did bibliotherapy, while implosion and eclectic verbal Ss did not differ. Different therapists were used, and one therapist was present at the post-test.

Hodgson and Rachman (1970) recently attempted to test the hypothesis that implosive effects stem from a "behavioral contrast". Fifty female snake "phobics" were pretested on an approach test and assigned to one of five treatment conditions: 1) 40 minutes of implosion, 2) 30 minutes of horror images unrelated to snakes followed by 10 minutes of implosion, 3) 30 minutes of horror images followed 24 hours later by 10 minutes of implosion, 4) 40 minutes of horror images, and 5) 40 minutes of visualizing a neutral object. All treatment was done by tape recordings. Behaviorally only two groups showed slight and non-significant improvement (implosion-only and

horror only). On a subjective report measure, the implosion-only group showed greater fear than the control (neutral object) group. The horror-snake group evidenced significantly lower subjective fear than the group imploded 24 hours later.

Finally, Fazio (in press) attempted in two studies to evaluate the contribution of reality-testing and support to implosive therapy effects. In the first study, 18 college females who refused to touch an insect on a pre-test were randomly assigned to three treatment conditions: 1) implosive scenes involving insects, 2) scenes involving irrelevant objects followed by a rational discussion of fears of insects, and 3) a combination of the two treatments. In a second study, 29 Ss similarly selected were assigned to three treatment groups. The first three sessions involved the same conditions as the first study. After a posttest, however, imploded Ss received two sessions of "rational discussion" while discussion Ss had two sessions of implosion. A second posttest was then administered. All treatment sessions were conducted by means of tape recordings. The results indicated that the implosive group improved the least in both studies, while the significant improvement of the discussion group was associated with the discussion rather than the preceding irrelevant visualizations. Unfortunately, the investigator did not have a no-treatment condition.

Most of the above studies fail in one way or another to present solid evidence for cause and effect relationships between implosive therapy and behavioral change. Few of the

designs provide adequate controls, and even if they had, most of them suffer from other methodological problems sufficient to make any conclusion weak, at best.

Comparison and Testing of the Models and the Techniques

The models underlying systematic desensitization and implosive therapy as well as their procedures have some similarity. At the theory level, both involve a learning paradigm to explain the development and maintenance of neurotic behavior. In each case, the learning model entails two central aspects: 1) the conditioning of respondents (anxiety or fear) to previously neutral stimuli and 2) the consequent occurrence of avoidance behaviors which reduced the probability of exposure to the aversive stimuli and which are negatively reinforced by anxiety reduction. At the technique level, both make use of visualizations of hierarchical, conditioned, aversive stimuli.

Despite their similarity, there are many more differences. The two techniques seemingly involve different and, at times, diametrically opposed procedures that are based on quite different or opposed models. Yet proponents of both claim success in eliminating anxiety responses to certain stimuli.

Wolpe chose to concentrate treatment procedures on the anxiety and its learned connection with the conditioned stimuli. Avoidance behaviors presumably would drop out once the motivating force of anxiety was eliminated. Stampfl focused on the avoidance behaviors by preventing their occurrence

while the subject was in the presence of the conditioned aversive stimuli which were not followed by primary aversive stimulation.

Reciprocal inhibition is the assumed mechanism for anxiety reduction in the Wolpean model. Relaxation presumably inhibits the anxiety. Such an incompatible response is necessitated by the inefficiency of simple extinction. The implosive group stresses extinction. The two objections to extinction are handled by a) dealing with the avoidance responses (in terms of response prevention) and b) emphasizing the importance of the total conditioned stimulus pattern. Stampfl would no doubt propose that the apparent resistance of conditioned autonomic responses to extinction would be due to a failure to immerse the patient into all of the cues associated with his fear (see Levis, 1967).

Procedurally, the differences boil down to degree of stimulus-specific anxiety elicited in the therapy hour. In systematic desensitization, there is ideally no experienced anxiety. Implosive therapy, on the other hand, involves the evocation and subsequent experiencing of as much anxiety specific to the feared object as possible. In order for this technique to eliminate fear, anxiety elicitation must continue until the organism is no longer giving evidence of the occurrence of anxiety.

The models of the two techniques may be combined and conceptualized by a single model represented by an inverted-U function. As length of presentation time and degree of stimulus

noxiousness increases, amount of anxiety increases until extinction begins to occur. Systematic desensitization involves short presentation time, low stimulus noxiousness, and therefore, low anxiety. Long item presentation, highly noxious stimulation, and therefore high anxiety with subsequent extinction are presumably characteristic of implosive therapy.

It may be noticed that covert sensitization (eg., Cautela, 1967) would fall somewhere in between desensitization and implosion. With this latter technique, the purpose is to establish a conditioned emotional response to a previously neutral stimulus through its pairing with visualized aversive stimulation. Logically, the amount of anxiety elicited must be great enough to achieve conditioning of the neutral stimulus but not great enough to result in extinction of the anxiety response to the aversive stimulus used as the reinforcer.

This conceptualization is a reasonable way to rationalize the similarities, differences, and claims of effectiveness of the two techniques. Theoretically, both techniques should work if their underlying models are correct and if the techniques are carried out in the way the models dictate. The questions of interest that arise then would involve a) the comparative effectiveness and efficiency of the two techniques properly applied, b) the effectiveness of each technique as compared to a model-relevant control condition, and c) the physiological events in an organism undergoing technique conditions as compared to what events are predicated to occur according to the model.

Systematic Desensitization vs. Implosive Therapy. There have been twelve studies which have, in one way or another, attempted to compare systematic desensitization with implosive therapy. Six of these are found in the Dissertation Abstracts.

Strahley (1966) compared a direct confrontation group (in vivo stimulus presentation of a live snake without graded approach) to a systematic desensitization group. Subjects (32 females) selected on the basis of subjective report and failure to touch on a pretest were apparently assigned randomly to the two groups after failing an avoidance pretest. The confrontation group evidenced significantly more fear reduction on the FSS and on the avoidance post-test. There were no differences on fear thermometer and palmar perspiration tests. Besides the dubious validity of the treatment conditions, the absence of control conditions render the study next to worthless.

Kirts (1969) randomly assigned 48 college students to four treatment conditions involving either relaxation conditioned to the word, "now", or exercise training. A conditioned GSR was then established in all Ss, using both low shock associated with one visual CS and high shock associated with another. Extinction followed, with half of the Ss presented low shock CS plus a superimposed "now" and half presented high shock CS plus a superimposed "now". Relaxation preconditioned to the word, "now", was found to be effective in reducing GSR's to the aversively conditioned CS. The "Wolpe group" which received relaxation training and low shock CS was no different than the "Stampfl group" which was given exercise training

and extinction to the high shock CS. The discrepancy between these treatment groups and what is actually done in desensitization and implosion makes it difficult to generalize the implications of these results to the comparative effectiveness of the techniques.

After administering an avoidance test, L arsen (1966) assigned 36 adult snake-phobics to one of four conditions. Relaxation Ss were hypnotized, instructed to recall past experiences with snakes, and told to relax during recall. Arousal Ss were given similar instructions, but were instructed to fully re-experience their early fear rather than to relax. Post-hypnotic suggestion Ss simply had 15 minutes of hypnotic tasks followed by direct suggestion of symptom removal. All Ss had nine sessions. Control Ss received only pretest, post-test, and two-week follow-up test. All three treatment groups evidenced greater approach behavior on the post-test than did the controls, and they did not differ among themselves. At follow-up, the arousal group was no longer different from the unchanged control group. While this analogue might be seen as presenting evidence on comparative effectiveness of desensitization-like and implosive-like treatment procedures, such generalization is extremely risky. The procedures are highly dissimilar to the actual therapy techniques. The fact that at both posttest and follow-up the hypnotic group showed as much improvement as the relaxation and arousal groups indicates that the other two "treatment" procedures did not differ from an attention-placebo group that

involved only suggestion and therapist contact.

Rachman (1966) "flooded" three female spider-phobics, matched on avoidance test scores to Ss used earlier in either a systematic desensitization group or a no treatment group. These three Ss were given ten sessions of ten stimulus presentations per session. Each presentation involved two minutes of visualizing terrible, real and imagined, scenes of spiders. The "flooded" Ss showed no improvement over no treatment Ss on post-test and three month follow-up test, while desensitized Ss were significantly more improved. No placebo condition was included. The "flooding" procedure involved only two-minute item presentations (unlike implosion's longer presentations). The N was quite small and the practice of comparing data taken at one point in time with that from earlier studies allows for too many uncontrolled variables to be operating.

Wolpin and Raines (1966) assigned six snake-phobics to one of three treatments: 1) hierarchy presentation without relaxation, 2) hierarchy with muscle tension, and 3) neither relaxation nor tension and working only at the top of the hierarchy. All 6 Ss handled the phobic object after four sessions. Again, small N and lack of control groups preclude solid evidence. Also, the treatment conditions are not comparable to systematic desensitization or implosion, although some authors have attempted to draw such parallels from these results.

In a unique comparative study, McGlynn (1968) randomly assigned 54 females after a snake avoidance pretest to six

conditions: systematic desensitization, implosion, and four groups which received various combinations of desensitization and implosion. No significant differences were found anywhere in the data.

Barrett (1969) randomly assigned 36 snake-phobics to desensitization, implosion, or no treatment groups after an avoidance test. Desensitization Ss received fifteen 50-minute sessions, while implosive Ss were seen for two 50-minute training sessions and two implosion sessions of unspecified duration. Ss in both groups were terminated whenever the most frightening scene was experienced without discomfort. The results indicated success on post-test for one control, 11 desensitization, and ten implosive Ss. While less therapy time was required for the implosion group, Ss in this group showed some fear increase at a six month follow-up. The lack of a placebo group reduces the strength of this study, while random assignment from the pretest did not insure comparable groups or meaningful pre-post change scores.

Another analogue study (Brock, 1967) involved the establishment of an escape-avoidance response in 51 male Ss who were subsequently divided into two groups: relaxation training or discussion of, but no training in, relaxation. Ss were then extinguished in one of four ways: 1) simple extinction to the CS without relaxation (implosion), 2) extinction under relaxed conditions, 3) extinction of non-relaxed Ss to a stimulus gradient approaching the CS, and 4) graded extinction of relaxed Ss (desensitization). The study reports only that the

desensitization group did not show the most rapid extinction. Departure from usual treatment procedures, non-reported results, and absence of control conditions make this study difficult to interpret.

Willis and Edwards (1969) have reported results on 50 female mouse-phobics exposed to systematic desensitization, implosion, or an attention-placebo group which was seen for an equal amount of therapy time but engaged in discussions of topics irrelevant to the study. Post-tests indicated significantly greater fear reduction for the desensitization Ss over the imploded and control Ss who did not differ. Although the absence of no treatment condition weakens the study, the design and treatment procedures appear sound enough to conclude that some evidence exists favoring desensitization over implosion.

Mealiea (1967) has done the only study to date that approaches control requirements. Fifty female snake-phobics were matched on an avoidance pre-test and assigned to one of five conditions: 1) systematic desensitization, 2) implosion, 3) modified desensitization (relaxation paired with graded stimuli adapted from scenes presented from the implosive group, 4) pseudotherapy (relaxation paired with pleasant images), and 5) a no treatment group. Systematic desensitization produced significantly greater fear reduction over all other groups. Implosion did not differ from control conditions. The major problem with this study was the use of tape recordings for all instructions and therapy procedures. Unless feedback from the subject's behavior controls the continuation or cessation

of an imploded scene, it is very possible that imploded Ss will be sensitized to the stimuli rather than extinguished. While feedback is important in desensitization also, the possible damaging effects in the absence of feedback are probably greater in the implosive group.

Horowitz (1970) assigned 36 female snake "phobics" to one of four treatment conditions: a control group and three therapy groups involving hypnosis. The latter three groups included 1) recall of events with snakes with suggestions of relaxation, 2) recall with suggestions of fully experiencing the associated anxiety, and 3) hypnotic tasks followed by a post-hypnotic suggestion of elimination of fear of snakes. After nine treatment sessions, this investigator found the three therapy groups equally improved over the control group at the approach post-test, while the arousal group (recall plus experiencing anxiety) showed non-significant improvement over controls by the follow-up test. The other two therapy groups maintained their superiority at follow-up. While Horowitz draws an analogy between her groups and desensitization and implosion, such was not the case. Relaxation involved only suggestion, visualization was not controlled, and scenes were not presented in a hierarchical order. Similarly, her arousal subjects were not "imploded" but were apparently left on their own to visualize and experience whatever they wished.

Finally, DeMoor (1970) divided 27 males, who failed to pick up a snake on a pretest, into three matched treatment groups: 1) desensitization, 2) implosion, and 3) no-therapy.

After five treatment sessions for the first two groups, subjects were given the approach posttest. A follow-up test was administered six months later. Approach score results indicated that the two therapy groups showed more change than the no-therapy group from pre-to-posttest. By follow-up, however, the implosive group returned to its pretest level.

From the above studies evaluating comparative effectiveness of systematic desensitization and implosive therapy, it is reasonable to state the few studies have been sufficiently controlled to allow for solid evidence in favor of either technique. The closest approximations have been the work of Willis and Edwards (1969) and Mealia (1967), both of which indicated greater fear elimination through systematic desensitization, and the study by DeMoor (1970) which found desensitization to be superior to implosion only after a six month follow-up test.

As mentioned earlier, if the models are correct and if the techniques are applied as the models dictate, both systematic desensitization and implosive therapy should not differ in effectiveness. Significant evidence in regard to this hypothesis has yet to be found, and it is first hypothesis of the present, proposed study.

A Model-Relevant Control Group. The use of control groups in therapeutic outcome studies has increased rapidly in the past few years. The realization that changes occurring in therapy may be due to a variety of factors has resulted in the inclusion of treatment conditions designed to parcel out these factors and to evaluate their contribution to outcome. Such

treatments have included a) no treatment conditions, as detailed by Campbell and Stanley (1963), to control for passage of time, repeated testing, and extra-therapy experiences, b) attention-placebo conditions to control for non-specific therapy effects such as suggestion and therapist relationship, and c) therapy-component conditions which further break down a particular technique into its components in order to specify its "active" procedures. Proper use of such groups can lead to evidence of specific cause-effect relationships (see Paul, 1969b).

While such groups are sometimes used, proper use is not always present. Frequently control groups with no relevance whatsoever to the specific conclusions of the study are employed (eg., Hogan and Krichner's (1967) use of a neutral imagery condition). One of the most frequent criticisms of implosive research is not only improper use of control groups, but failure to use control groups at all.

It seems reasonable that, in a study investigating the effects of a treatment condition, a control group which is most relevant to that condition and its model would be most desirable. Furthermore, in a study that compares the effectiveness of two techniques, it would be desirable to include a control condition which contains elements common to both techniques and is relevant to both models.

As discussed earlier, desensitization and implosion may be conceptualized within a single model, due to their common theoretical explanations of the origin and maintenance of neurotic behavior. Particularly relevant is the common assertion that

avoidance behaviors reinforced by anxiety reduction are responsible for the maintenance of conditioned anxiety. This suggests a highly relevant control procedure. If a subject is instructed to visualize a stimulus item (as both techniques do) and if that subject is instructed to visualize himself making an avoidance response soon after noticing the first occurrence of anxiety (as both models assume to happen to the phobic individual), such a condition would a) control for non-specific effects of therapy and b) provide a highly relevant control condition for both systematic desensitization and implosive therapy. Both models must necessarily predict that such a group would show little or no improvement. If improvement does occur that is equal to one or the other or both therapy groups, then there is something definitely wrong with the model underlying one or the other or both techniques.

While this Avoidance Response Placebo group is quite logically derived from the learning theory models, it has never been deliberately used in the research of either desensitization or implosion. The nearest approximation was actually an "implosion" group typically used by Hogan and Kirchner (1967), who told their implosion Ss that they could call off the treatment and take the post-test whenever they felt they could pick up the phobic object. Considering implosion itself as an aversive stimulus, these Ss had the option of making an avoidance response (picking up phobic object) to the therapy session. This may have produced snake-phobia "cures" (by negative reinforcement and not by extinction), but it also could have main-

tained their fear of Hogan and Kirchner.

The second hypothesis of the present paper is that, if the two models are correct and the techniques are carried out properly as the models dictate, systematic desensitization and implosion should show improvement greater than that shown by the Avoidance Response Placebo group or a no treatment group.

The Effects of Expectancy on Therapy Outcome

The second major variable of interest in the present study is expectancy. Concern for this factor, common to all therapies, has led to the practice of including attention-placebo groups in group designs. Frequently such groups show improvement significantly beyond no treatment groups. This fact reflects the power that expectancy setting can have on the elimination of "pathological" behavior.

Goldstein (1960) demonstrated that there was a positive correlation between degree of patient's expectation of improvement and the degree of non-specific therapy remission. He warned that designs comparing therapy to no-therapy conditions do not involve an evaluation of improvement in the presence and absence of psychotherapy. Later, Goldstein and Shipman (1961) found patient's expectation of symptom reduction due to psychotherapy to be related positively and curvilinearly to perceived symptom reduction. Friedman (1963) similarly showed that patients reporting improvement after therapy tended to have high levels of expectancy of improvement.

Expectation effects have been found to influence the

intensity of conditioned autonomic responses. Streiner and Dean (1968) aversively conditioned GSR on a 50% random reinforcement schedule and had the Ss guess prior to each trial whether they thought the shock would occur. A significant correlation was found between expectancy and CR amplitude.

Valins (1966) has employed false physiological feedback as a method of manipulating cognitions. Presenting slides of semi-nude females to two groups of Ss, he increased "heart beat" to half of the slides in one group and decreased "heart beat" to half of the slides in the other group. The results indicated that the slides to which a change occurred (increase or decrease) were rated significantly more attractive. In an attempt to demonstrate a "cognitive labeling" process in systematic desensitization, Valins and Ray (1967) ran two experiments in which false physiological feedback "in response to slides of snakes and the word, 'shock'," was manipulated. Ss heard marked changes in their heart beats to "shock" and no change to snake stimuli. On an avoidance post-test, these experimental Ss exhibited greater approach behavior toward a live snake than did control Ss who were exposed to the same procedures except that no information about their internal reactions was given. The authors concluded that, regardless of actual internal state, internal cognitions such as, "That stimulus has (or has not) affected me internally," can have strong effects of emotional states and behavior. While this study is of importance to desensitization research, the absence of an avoidance pretest minimizes the strength of the

conclusions.

Perkins (1966) assigned 56 Ss to one of four conditions: relaxation with suggestion of anxiety reduction, relaxation with suggestion of no reduction, control task with reduction suggestion, and control task with suggestion of no effect. Although positive suggestion was more effective than negative suggestion in reducing anxiety (in terms of finger movement), the result was not replicated two weeks later. Ss who received relaxation or positive suggestion did report anxiety reduction more often than Ss in other conditions.

Marcia, Rubin, and Efran (1969) used 44 snake and spider phobics in a study designed to evaluate the effect of expectancy on fear elimination. Treatment procedures involved: a) desensitization, b) a control task labeled as a therapy procedure, c) the same control task labeled as an incomplete and probably ineffective therapy procedure, and d) no treatment. These investigators found no differences between the first two "therapy" groups, while they evidenced greater fear reduction than the last two groups.

Howlett (1968) assigned 72 snake-phobic Ss to a relaxation control group, a hierarchy-alone group, and a systematic desensitization group. Ss in the last two groups were then assigned to one of four suggestion conditions just prior to avoidance post-test: suggestion that treatment had reduced snake fear, suggestion of no reduction, exposure to suggestion information without specifying the suggestion, and no exposure or suggestion. The above expectancies were manipulated by means of a display of

bogus physiological measures. While the efficacy of systematic desensitization was demonstrated, slight evidence existed that negative expectancy (treatment had failed) resulted in greater behavioral fear reduction. Positive suggestion did reduce subjective fear. It appears that telling an S that treatment was unsuccessful might set up a challenge to that S, resulting in improved performance.

Indirect evidence for this possibility is supplied by Jaffe (1968). His study involved a pseudotherapy group (expectancy of symptom removal plus irrelevant task), a no treatment group, and two systematic desensitization groups. One of the latter groups was told that they would receive a real treatment for fear reduction, while the other was told that they would be in a control condition. The positive expectancy desensitization group showed the greatest fear reduction over both controls and no-expectancy desensitization Ss. There seems to be a difference in S's behavior depending on whether a negative expectancy or no expectancy is established.

Quinlan (1968) has reported results indicating no expectancy effects on desensitization. The 2 x 2 design involved desensitization with or without a therapist and with high or neutral expectancy of success. While desensitization produced significant reduction in test anxiety (self report), no other results were significant.

Leitenberg, Agras, Barlow, and Oliveau (1969) ran an experiment involving systematic desensitization with or without therapeutic instructions and praise, and a no treatment condition.

They found that instructions plus praise in desensitization produced greater reduction of fear behavior on an avoidance post-test as compared to the other two groups. Desensitization alone did result in significant pre-post changes, while no treatment did not.

Oliveau, Agras, Leitenberg, Moore, and Wright (1969) ran a similar study using four systematic desensitization groups: with therapy oriented instructions ("This is therapy") and positive reinforcement for progress, with instructions but without praise, with praise but without instructions, and neither praise nor instructions. The expectation of improvement established by the therapeutic instructions was the only significant effect; there were no reinforcement or interaction effects.

Finally, McGlynn and Mapp (1970) gave eight desensitization sessions to three groups of college females who had failed to touch a snake on a pretest. The three groups differed in terms of the expectancy-setting rationale given for the treatment procedures. Eight subjects were told that the therapy should eliminate their fear of snakes, eight subjects were told the therapy probably would not be successful in eliminating their fear, and the remaining eight subjects were given no information about the anticipated results of the treatment. All three of these groups showed significantly greater behavioral improvement than seven control subjects who received only the pretest and post-test. There were no differences among the desensitization groups. It is difficult to evaluate the expectancy

results, since little information was given regarding the exact rationale presented to the neutral expectancy group.

The above studies indicate somewhat contradictory findings. Three out of five studies combining desensitization with either positive or neutral expectancies demonstrated an expectancy effect, while the other two found no differences.

This study proposes to cross expectancy manipulation (positive vs. neutral) with its treatment conditions. The purpose is to a) clarify the expectancy effects found in previous studies and b) make use of a crossed expectancy condition to evaluate interactions of therapy techniques and expectancy effects. When one compares treatment techniques, there is the important question of the comparative sensitivity of the techniques to expectancy manipulation. This supplies an independent estimate of the "active" ingredients of a therapy technique, beyond that resulting from the use of an attention-placebo group.

Specifically, the third and fourth hypotheses of this study are:

3) Positive expectancy should result in greater fear reduction than neutral expectancy.

4) If expectancy is effective and if the two models of systematic desensitization and implosion are correct and properly employed, then:

a) the avoidance response placebo-neutral expectancy group should be equal to neutral no-therapy group;

b) the avoidance response placebo-positive expectancy group should be greater in fear reduction than the positive

no-therapy group; and

c) the difference between the expectancy conditions of the avoidance response placebo group should be greater than that between expectancy conditions of either desensitization or implosion.

The last hypothesis indicates that the two therapy conditions, if they are truly "active" beyond mere expectancy manipulation, should be less sensitive to such a manipulation than a placebo group which presumably reflects only expectancy effects.

Physiological Events During Therapy

Physiological measurements on pre- and post-tests are a frequently used dependent measure, along with behavioral avoidance tests and self-reports. But for two techniques which claim to be based on learning theory models and which claim to eliminate emotional and autonomic responses, surprisingly little physiological data has been collected during treatment.

From the desensitization model, one would predict little autonomic arousal to each hierarchy item with a subsequent, quick return to pre-item baseline. From the implosive model, one would expect a high degree of physiological arousal to each item presentation. Such arousal would continue for some time, and the return to baseline would occur prior to termination of the verbally presented material.

Wilson (1967) has shown that the galvanic skin response (GSR) can be used to discriminate responses to feared stimuli from those to neutral stimuli. Ten Ss reporting intense fear

of spiders were given tachistoscopic presentations of the feared stimulus and of neutral (landscape) stimuli. A control group of ten Ss reporting no fears received the same treatment. The ratio of GSRs to spider slides over GSRs to neutral slides resulted in perfect discrimination between the two groups.

Grossberg and Wilson (1968) have demonstrated that the imagining of fearful scenes does produce physiological arousal. Subjects were read, and then told to imagine, a fearful scene and a neutral scene, each counterbalanced and presented four times. The results indicated that there were no significant differences in heart rate or skin conductance between fearful and neutral scenes during the reading of the scenes. Imagination of those scenes did produce significantly greater arousal in response to fearful scenes. Both heart rate and skin conductance decreased over trials, demonstrating a habituation effect.

Craig (1968) exposed each of 72 subjects to three counterbalanced conditions: direct, imagined, and vicarious aversive stimulation (hand in cold water) while he monitored skin conductance, heart rate, and respiration rate. Direct experience was most arousing; imagined and vicarious did not quantitatively differ. However, a qualitative difference also occurred with direct and imagined exposure resulting in heart rate acceleration and vicarious exposure leading to deceleration.

In a study which monitored physiological responses during actual therapy conditions (desensitization plus anxiety relief), Solyom and Miller (1967) used GSR and plethysmographic recordings

with three patients. The varied purposes of such recordings included evaluation of progress in fear elimination, assurance that selected hierarchy stimuli were arousing, and construction of anxiety hierarchies.

Agras (1965) has shown that GSRs to hierarchy items during desensitization treatment show an extinction curve, typically found in learning studies, as well as spontaneous recovery. In a later study, Agras (1967) recorded GSR to hierarchy items during the desensitization of five agoraphobics. These items were presented several times in random order prior to the beginning of every other treatment session. The purpose was to estimate the degree of transfer between items desensitized and the same items presented in an extra-therapy context. Further, estimates of generalization could be made between responses to imagined stimuli and those to the real stimuli. The results indicated close correlation between progress on the hierarchy and extinction of extra-therapy item GSRs in three subjects, while such GSR changes covaried little with behavioral improvement. Agras concluded that there may be two phases to systematic desensitization: one phase which has low transfer from therapy to real life, followed by a phase where the majority of transfer occurs as a function of the therapist reinforcing S by selective attention to progress reports.

Hogan and Kirchner (1968) used pulse rate recording as a means of discovering anxiety-eliciting material during implosive therapy with ten snake-phobics. No data, however, are reported. Earlier, the same investigators (Hogan and Kirchner, 1967)

monitored during-treatment pulse rates of 43 Ss, half of whom were receiving implosive therapy for fear of rats, while other half visualized neutral scenes. Both investigators independently sorted the coded pulse records into experimental and control groups. They correctly identified 71 of the total 86 sortings.

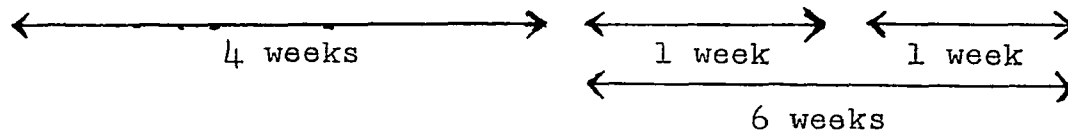
Folkins, Lawson, Opton, and Lasarus (1969) have reported the only study to date that employed during-treatment physiological recording in an adequately controlled group design. One hundred and nine Ss were randomly assigned to four conditions: desensitization, relaxation, cognitive rehearsal, or no-training control. After three sessions of appropriate training, all Ss viewed the target stimulus, an anxiety eliciting movie. Skin conductance and heart rate were monitored during the entire third training session and during the movie. Arousal increases in all four groups occurred predictably at the more stressful moments of the treatment and film. The cognitive rehearsal group actually showed the lowest amount of skin conductance increase, although the results are confounded by baseline differences. No heart rate differences were found among the four groups.

Unfortunately, the above study employed some rather unusual desensitization procedures, presented scenes that are more typical of implosive therapy than of desensitization, and analysed data from only a few selected points. Consequently, although the study has some design strengths, its relevance to systematic desensitization is questionable.

So while physiological arousal has been shown to occur in response to feared stimuli, presented pictorially and imagin- ally, physiology during desensitization and implosion has yet to be adequately investigated. The fifth hypothesis of this study is that if the models are correct and if the techniques are properly employed, then the following is to be expected: a) systematic desensitization groups should, during therapy, show a decrease in general arousal over hierarchy items, a minimal response to item visualizations, a decrease in response from first to last presentation of the same item, and a minimal amount of arousal after termination of item visualization; b) implosion groups should, during therapy, show an increase fol- lowed by a decrease in general arousal over items, an increase and decrease in response to visualizations over hierarchy items but little change from first to last visualization of the same item, and maximal arousal after termination of item visualiza- tion; and c) the avoidance response groups should show no change or even an increase in general arousal over items, no change or an increase in response to visualizations, and median arousal after termination of item visualization.

Table 2

Overall Design					
Group	N	Pretest	Four Therapy Sessions	Posttest	Follow-up
E+SD	6	FSS	Desensitization with positive expectancy	AS	AS
EoSD	6	AS	Desensitization with neutral expectancy	FT	FT
E+IT	6	FT	Implosion with positive expectancy	FSP	FSP
EoIT	6	FSP	Implosion with neutral expectancy	PR	PR
E+ARP	6	PR	Avoidance Response Placebo with positive expectancy		
EoARP	6		Avoidance Response Placebo with neutral expectancy		
E+NT	7				
EoNT	7				



be free to participate. They were phoned during the last week in January and scheduled for the following week. Follow-up phone calls on the day before their scheduled times were made to remind them. This procedure was repeated for Ss in the spring semester introductory psychology class during the first week of February. These Ss were pretested during the second week of February.

Appendix A presents the pretest instructions. Upon arrival at the laboratory, each S was told by a tape-recorded message that E was interested in the relationship between actual and self-reported fear. She was told that in the next room there was a tame and completely harmless snake in a cage and she was requested to approach as close as she could to the snake, pick it up and handle it. S was then escorted to the test room and the door was closed. No one else was in the room. She was observed by "blind" raters through a one-way mirror. These observers scored the closeness of S's approach on a 17-point scale. After S either remained in the room for 90 seconds without touching the snake or left the room earlier without touching the snake, E entered the room and had S sit down. E then took S's pulse rate, a finger sweat print test (McNair et al., 1967), a subjective report measure of her degree of fear (the fear thermometer, after Walk, 1956). Any subject capable of touching the snake in any way was thanked and released from the experiment with no mention of her failure to exhibit enough fear to remain in the study. Any subject who was unable to approach the snake beyond placing her hand in the

cage was removed from the room after the two physiological measurements and self-reported fear estimate were taken and was asked if she would like to volunteer for further paid studies concerning fear. Subjects responding affirmatively were told that the series of studies would require their presence for less than an hour per week for five consecutive weeks and that they would be paid \$1.50 per hour for consistent attendance. The importance of attending all sessions was stressed. If the subject agreed to take part, she was asked to fill out another availability time sheet and was told that she would be contacted within two weeks for further instructions.

One-hundred and thirty-five Ss were pretested during the first two weeks of February. Fifty-one Ss were unable to touch the snake, and 50 of these agreed to be in the remainder of the study.

The 50 Ss were then rank-ordered on the basis of their approach test behavioral task score and were assigned randomly (on the basis of a table of random numbers) within blocks of eight to the eight treatment conditions to be employed (4 therapy conditions X 2 expectancy conditions). Within treatment cells, Ss were then randomly assigned to one of the two therapists. This resulted in three Ss per cell with the exception that therapist 1's no-therapy group had four per cell. The Ss were then contacted by phone and asked to appear at the lab at a scheduled time during the third week of February.

Amount of time spent in each session was equated for all treatment conditions in order to remove any possible confoundings due to differences in therapist-contact time.

Therapy Conditions. The therapy conditions of this study involved two therapy techniques, systematic desensitization and implosion, as well as an avoidance response placebo group and a no-therapy control group. All therapy sessions were held in the same consulting room in the University's Psychological Clinic. The room contained a desk, a chair for the therapist, a desk lamp, and a reclining chair for S. An adjacent observation room contained a tape-recorder and a Beckman dynograph for monitoring physiological responding. Fifteen minute time segments from the second and fourth therapy sessions for each S were tape recorded.

Systematic Desensitization (SD). The 12 Ss in the SD condition all received therapy procedures modeled after Paul (1966). Appendix B contains the manual used by the therapists in carrying out the desensitization.

Session 1. Each S was brought to the lab on a scheduled time during the third week of February. In the E+ condition, she was introduced to her Th and made comfortable in a reclining chair. Th then spent 25 minutes explaining the rationale for the therapy procedures that she would be receiving (a modification of Paul's (1966) rationale), i.e., that visualizations of the feared stimulus would be paired with, and counterconditioned by relaxation. Next, S was given imagery practice involving visualizations of a standard set of images.

Subsequently, Th trained S in relaxation for the next 35 minutes (after Bernstein and Borkovec, in press). She was given instructions to practice relaxation twice a day for 15 minutes each. A self-checklist was given to her with written reminders describing how to practice and spaces to mark daily in order to keep track of when and how much she actually did practice. Finally, in the last five minutes, the standard hierarchy of 18 approach task situations was presented to her and she was asked to make any corrections in their ordering. The time and date of her next session was then set and she was dismissed with instructions to not discuss any aspect of the study with anyone until completion of it in five weeks.

Session 2. At this session, electrodes for physiological recording were attached by E and she was told that the experimenters were interested in seeing how her body reacts to the various procedures and that she would be able to see for herself at the end of each session. Her relaxation homework checklist was then reviewed by Th, who encouraged her to continue or (or improve) the practice. Subsequently, further training in relaxation was given, and finally desensitization proper began. After 50 minutes, therapy ceased and a new homework self-checklist was given. At this time, E entered the room and explained "how she physiologically responded to the visualizations," using the false records to illustrate his explanation. (See Appendix E for verbatim feedback.)

Sessions 3 and 4. Sessions 3 and 4 were similar to session 2, i.e., therapy continued until the hierarchy was completed.

After session 4, S was reminded to return the following week for the second snake exposure and for payment for participation.

Implosive Therapy (IT). A total of 12 Ss received implosive therapy. Appendix C contains the manual used by the therapists in carrying out the implosion procedures.

Session 1. Session 1 for the IT group was identical to Session 1 for the SD group with the following exceptions: 1) the rationale given for IT was different from that for SD. For E+ Ss, the rationale was essentially the same one used by Stampfl (1967) and his researchers, i.e., that scenes involving the feared stimulus would be presented to allow the fear response to extinguish. 2) Relaxation training was not given. 3) The amount of time taken for relaxation in the SD group was devoted to gathering case history and background assessment material. 4) After hierarchy arrangement, a "daily emotional checklist" was assigned as homework.

Session 2. At the beginning of Session 2, S had the same electrode attachment, explanation, and rationale review. Then implosion began. After 50 minutes of therapy, E brought in, and explained, the false physiological records. (See Appendix E for verbatim feedback.)

Sessions 3 and 4. IT continued for the last two sessions following the same procedures as in Session 2. As with the SD group, the last session ended with a reminder about the session during the following week for the second snake exposure condition.

Avoidance Response Placebo (ARP). Appendix D contains the manual used by the therapists in carrying out the ARP procedures.

Expectancy Conditions. Half of the Ss received positive expectancies for change concerning the "therapy" they were to have, while the other half were given no expectancy for change. (See Appendix B, C, and D for exact expectancy setting for the three therapy conditions.)

Positive Expectancy Condition (E+). Ss assigned to the E+ condition were told at the beginning of the first session by their Th that the procedures they were to experience were relatively new "therapy" techniques designed to eliminate anxiety over specific objects, like snakes. Depending on which of the three therapy groups they were assigned to, the rationale for use of that therapy was worded to indicate why it was expected that their anxiety of snakes would be reduced by those procedures. Furthermore, after each therapy session (sessions 2, 3, and 4), S was shown a dummy physiological record by E indicating that indeed the therapy procedures were reducing her anxieties to the snake imagery taking place during therapy.

The seven E+ NT Ss were told during their phone contact that in the past it has been found that college females, after having experienced the approach test once before, demonstrated greatly reduced fear responses four weeks later.

No-Expectancy Condition (Eo). Ss assigned to the Eo condition were told at the beginning of the first session by their Th that the procedures occurring during the four sessions were designed to aid the "experimenters" in studying subjective feelings of fear under various conditions. Since they had reported a fear of snakes and had demonstrated that fear in the approach

test, they had met the criteria for taking part in the rest of the study. The stimulus of snake would be used, since it reliably elicited physiological and self-report responses of fear. No mention of the words "therapist", "therapy", "treatment", or "change in fear" were made. Furthermore, after each session, Eo Ss were shown by E the same dummy physiological records seen by their E+ therapy counterparts, but no mention was made of any changes in response other than simple physiological adaption.

The seven Eo NT Ss were asked during their phone contact only to return for a second testing.

Physiological Measurement During Therapy

As outlined above, physiological recordings were taken continuously during Sessions 2 through 4. A Beckman/Offner Type RS portable dynograph was used to record S's basal skin conductance (BSC). Two electrode attachments, using Grass silver-silver-chloride electrodes half-filled with Beckman electrode paste, were made to the first and third finger tip of the left hand for BSC measurements. A single, grounded electrode was fastened to S's right ear lobe. The above measurement procedures were carried out on all three therapy groups (SD, IT, and ARP) in both expectancy conditions (E+ and Eo) on the second, third, and fourth therapy sessions. Attachment of electrodes and monitoring of the recordings was done by E.

Post-test

After the last week of therapy, each S returned for a repetition of the approach test. Post-testing for each S took place

exactly seven days after her last therapy session. After arriving at the lab, she was again told by a tape-recorded message that the snake used in the earlier test was in the next room and that she was to again attempt to approach, touch, and handle it. She was then escorted to the test room. After the 90 second criterion time, E entered the room, and repeated the pulse rate, finger sweat print, and fear thermometer measurements made at the pretest. S's closest approach to the snake and the length of time before touching the snake were scored by "blind" observers from behind the one-way mirror. Appendix A gives the verbatim instructions used in the tape recorded message.

The post-test procedure was identical for all Ss. After completion of the approach test, S was asked to fill out a questionnaire in another room. This questionnaire involved questions relating to her experience and evaluation of the procedures and her therapist. (See Appendix F for exact questionnaire.)

After completion of the questionnaire, she was paid and was dismissed with a request not to discuss any aspect of the experiment until the following week, at which time all post-testing would be completed.

The two Ths involved in the study also filled out a rating scale questionnaire on each S as soon as that S completed her last session. They had also filled out a general questionnaire after the week of the second therapy session. This questionnaire asked for their prediction of the outcome of the study. (See Appendix F for exact questionnaires.)

Follow-Up

Four weeks after the post-test week, each S was contacted by phone, told that E had some results from the study which he wanted to present and asked to come to the lab during the following week, for \$1.50, to discuss the results and to answer some further questions critical to their final analysis.

The follow-up testing was identical in procedure to the post-test. After the follow-up testing, the entire nature of the experiment was disclosed to S and results were presented to her. (See Appendix A for verbatim the tape recorded message.)

RESULTS

The basic dependent measures were the Ss' scores on the pre-, post-, and follow-up snake exposure tests. These measures included the approach distance score (AS), latency to touching the snake, pulse rate (PR), fear thermometer self rating (FT), and the finger sweat print (FSP).

A second set of analyses dealt with the physiological responses of the Ss during therapy and their relationship to the outcome measures.

The third area of analysis involved the questionnaire information. Both therapists and Ss answered questionnaires relevant to their roles in the experiment.

Reliability

Whenever possible, two observers rated S's approach distance and recorded the length of time before S touched the snake or left the room. The inter-observer correlations on pre-, post-, and follow-up tests for AS were .992 (N=23), .989 (N=35), and .991 (N=17), respectively. Inter-observer correlations for latency of touching the snake on post- and follow-up tests were .966 (N=19) and .999 (N=6), respectively. Inter-observer correlations on latency of leaving the test room on post-test and follow-up were .995 (N=5) and .950 (N=6), respectively. There were, of course, no latency scores on the pretest, since failure

to touch was a criterion for admission into the experiment, and the N for latency scores was reduced since scores of 90 seconds (i.e., failed to touch the snake and stayed in the room for the entire time) were not included in the reliability analysis.

FSPs were categorized on the basis of a standard set of 15 prints provided by Droppleman.* Prints were rated blindly by E and also by a "blind" rater. The inter-observer correlations of these ratings on pre-, post-, and follow-up prints were .983, .975, and .987, respectively. Each correlation was based on the entire sample (N=50).

On any measure having a reliability score, the mean of the two observers was taken and used as the S's score.

Pretest Analysis for the Effectiveness of Random Assignment

Ss had been grouped on the basis of their pretest AS and randomly assigned in blocks of eight to the eight treatment conditions. Four-way analyses of variance (therapy X expectancy X therapist X Ss) were applied to the pretest AS, FT, FSP, and PR scores to insure that none of the groups differed initially on these variables. Table 3 presents the means of the measures. Table 4 presents a summary of the results of the analyses of variance.

There were no significant differences among any of the groups on any measure. The only trends involved a therapy X therapists interaction on FSP ($p < .118$) and on PR ($p < .152$). Thus it appeared that the random assignment of Ss was successful in

*Information concerning this procedure and the standard scoring prints may be obtained from Dr. Leo Droppleman, Boston University Medical Center, Boston, Massachusetts.

Table 3

Means of AS, FT, FSP, and PR Scores on the Pretest*

Expectancy :	E+	EO	E+	EO	E+	EO	E+	EO	
Dependent measure :	<u>AS</u>	<u>AS</u>	<u>FT</u>	<u>FT</u>	<u>FSP</u>	<u>FSP</u>	<u>PR</u>	<u>PR</u>	
<u>Therapy</u>									
SD	Th 1	2.67	3.00	7.67	7.33	4.00	6.67	19.33	20.33
	Th 2	3.17	3.33	6.67	8.67	6.50	7.67	22.67	20.67
IT	Th 1	3.33	4.83	7.00	5.33	8.17	5.50	20.00	22.33
	Th 2	3.00	2.33	6.67	7.00	5.83	5.50	24.67	21.67
ARP	Th 1	3.33	4.67	7.67	6.33	4.33	8.67	21.00	23.00
	Th 2	3.33	1.67	8.67	8.67	10.00	9.67	19.33	21.67
NT	Th 1	3.25	3.00	7.25	5.50	9.25	6.50	25.50	22.25
	Th 2	4.00	4.00	6.00	6.00	3.50	6.67	18.33	21.33

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

Table 4

Analysis of Variance Summaries of AS, FT, FSP, and PR Pretest Scores
(Therapy (TR) X Expectancy (E) X Therapist (Th) X Ss (S))

<u>Source</u>	<u>df</u>	Dependent Measure							
		AS		FT		FSP		PR	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
TR	3	.59	.14	8.02	1.21	10.82	.96	4.93	.36
E	1	.11	.03	1.46	.22	5.33	.47	1.13	.08
Th	1	2.04	.49	3.50	.53	.98	.09	2.26	.16
TR X E	3	.25	.06	1.94	.29	8.51	.75	4.86	.35
TR X Th	3	4.68	1.13	2.33	.35	23.75	2.10*	26.03	1.88*
E X Th	1	5.00	1.20	10.65	1.61	.84	.07	.59	.04
TR X E X Th	3	1.89	.45	.14	.02	16.36	1.45	19.57	1.41
Error (S)	34	4.16		6.60		11.31		13.85	

* $p < .20$

distributing the variance of the measures evenly across treatment conditions.

Analysis of Treatment Effects

All Ss assigned to the experiment completed every aspect of the research and there was no mortality. Thus, treatment analyses included the entire sample of 50 Ss.

The basic dependent measures (AS, FT, FSP, and PR) were subjected to two main analyses. The first was a five-way repeated measures analysis of variance (therapy X expectancy X therapist X time X Ss) on the residual change scores calculated from the raw scores. The purpose of this analysis was to provide a base-free measure of change (Tucker, Kamarin, and Messick, 1966). If perfect matching of Ss on pretest dependent measures is not possible, simple pre-post and pre-follow-up difference scores as well as analyses utilizing pre-post-follow-up as a factor suffer from the possible influence of base or pretest score differences. This problem can be overcome by deriving a residual change score. Such a score is the difference between the observed post-test (or follow-up) score and the product of the pretest score and the regression coefficient of the post-test (or follow-up) scores on the pretest scores (eg., $X_2 - X_1 r_{x_1 x_2} \frac{s_2}{s_1}$). This formula differs somewhat from that used by Tucker, Damarin, and Messick (1966). In their formula, they suggest dividing the correlation coefficient by the test-retest reliability of the measurement device. It is difficult to obtain such a statistic for the approach test since repeated exposures to the test is in

itself a treatment condition and the test-retest reliability coefficient would reflect more than simply the reliability of the measurement. The present formula assumes, then, that the reliability is perfect and depends on inter-observer reliability for this assumption.

The second main analysis was a five-way repeated measures analysis of variance (therapy X expectancy X therapist X time X Ss) on the raw scores. This analysis is presented in Appendix G.

In all of the following over-all analyses, there are four levels of the therapy factor (SD, IT, ARP, and NT), two levels of the expectancy factor (E₀ and E₊), and two levels of the therapist factor (Th 1 and Th 2). The time factor involved two levels (pre-to-post change score and pre-to-follow-up change score). The NT Ss were randomly assigned to therapists to balance the design, even though no therapist contact occurred for these Ss.

Table 5 reports the summary results of the repeated measures analysis of variance of the four residual change score measures (AS, FT, FSP, and PR).

Approach Score (AS) Analysis. Table 6 presents the residual change score AS means for time 1 (pretest to post-test) and time 2 (pretest to follow-up). Larger scores indicate greater approach.

As shown in Table 5, a significant main effect of time was found, indicating that pretest-to-post-test increases in approach behavior (Mean=4.01) were greater than pretest-to-follow-up increases (Mean=3.29).

A significant main effect of expectancy was found, indicating a greater increase in approach behavior for Ss in the E₊ condition

Table 5

Repeated Measures Analysis of Variance Summaries of AS, FT, FSP, and PR Residual Change Scores (Therapy (TR) X Expectancy (E) X Therapist (Th) X Time (T) X Ss (S))

Dependent Measure									
<u>Source</u>	<u>df</u>	<u>AS</u>		<u>FT</u>		<u>FSP</u>		<u>PR</u>	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
TR	3	2.92	.13	4.57	.79	593.29	.91	47.72	4.05**
E	1	397.24	17.30*	21.81	3.76	1014.88	1.55	.40	.03
Th	1	.42	.02	.52	.09	232.09	.35	7.49	.64
TR X E	3	39.27	1.71	9.13	1.57	1882.34	2.88***	16.05	1.36
TR X Th	3	34.67	1.51	6.73	1.16	438.12	.67	14.54	1.23
E X Th	1	4.70	.20	6.71	1.15	31.33	.05	38.82	3.29
TR X E X Th	3	19.61	.85	2.76	.48	426.56	.65	6.09	.52
Error (S)	34	22.96		5.81		653.12		11.78	
T	1	12.88	5.09***	3.05	1.65	2513.42	6.51**	155.70	46.14*
TR X T	3	4.16	1.64	4.88	2.64	537.64	1.39	5.15	1.52
E X T	1	3.89	1.54	.23	.13	165.09	.43	.08	.02
T X Th	1	1.20	.47	2.47	1.33	393.23	1.02	.08	.02
TR X E X T	3	2.96	1.67	.12	.06	75.77	.20	4.17	1.23
TR X T X Th	3	1.99	.79	4.90	2.65	221.26	.57	1.70	.50
E X T X Th	1	.24	.10	.15	.08	79.99	.21	.33	.10
TR X E X T X Th	3	1.10	.43	.52	.28	700.45	1.81	3.11	.92
Error (T X S)	34	2.53		1.85		385.93		3.37	

* $p < .001$

** $p < .01$

*** $p < .05$

Table 6

AS Residual Change Score Means for Treatment Conditions and Test Times *

		Treatment Condition															
		E+SD		EoSD		E+IT		EoIT		E+ARP		EoARP		E+NT		EoNT	
Therapist :		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
<u>Time</u>																	
Pre-Post :		2.89	8.71	2.21	2.87	9.53	6.55	1.14	1.57	7.20	4.20	2.48	1.93	3.62	3.84	1.63	3.84
Pre-Follow-																	
up :		2.12	5.46	1.35	1.57	9.57	5.01	- .59	- .10	8.23	4.90	1.47	- .22	3.30	5.35	1.26	4.02

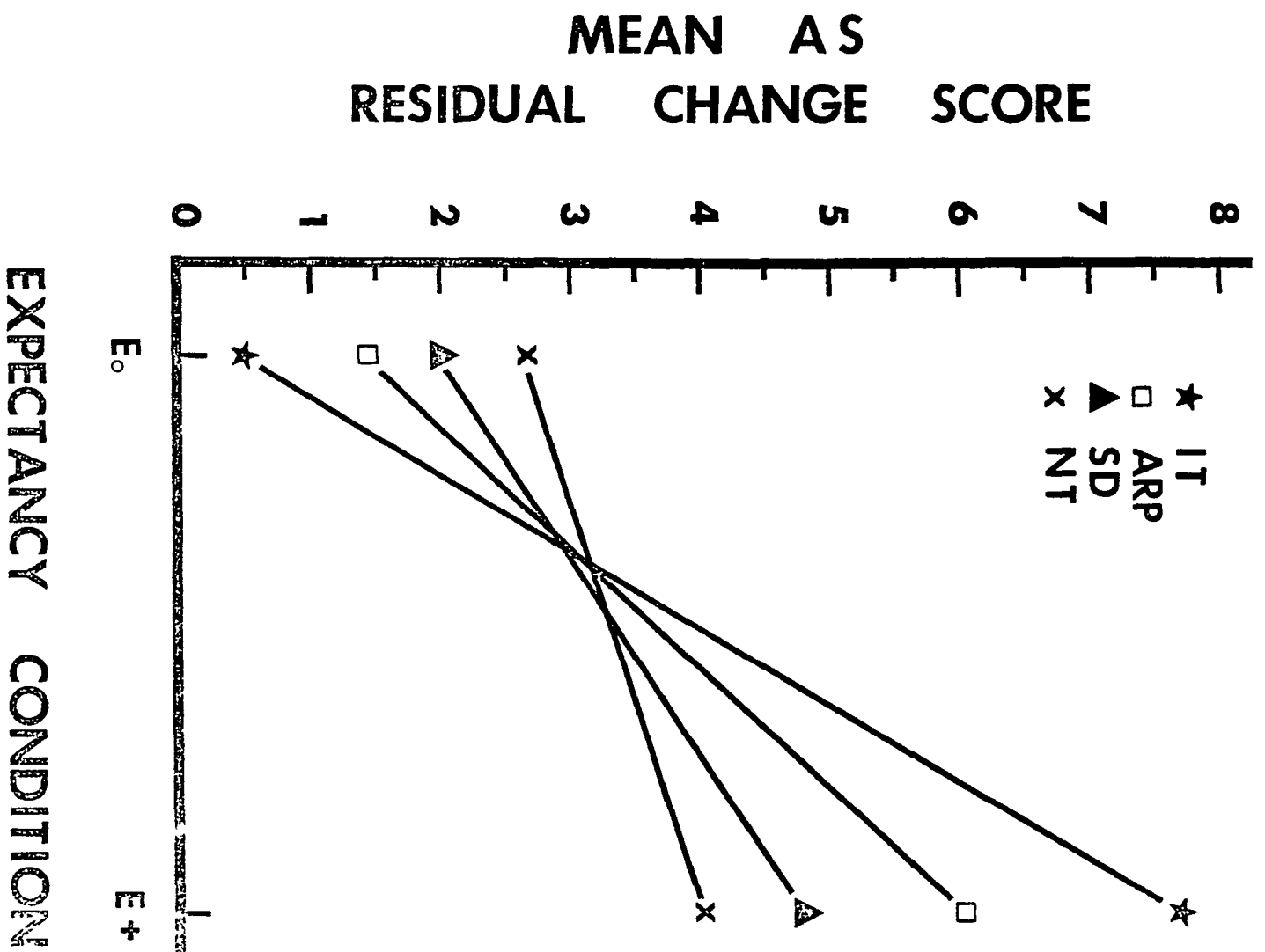
* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

(Mean=5.66) as compared to the Eo condition (Mean=1.65).

Two other trends resulted from this analysis. The first was a therapy X expectancy interaction trend ($p < .183$). Means for these factors were calculated from the Table 6 means. Inspection of these means revealed a reversal of rank ordered therapy means from Eo to E+ conditions (NT=4.03, ARP=6.13, and IT=7.67 in the E+ condition, and IT=.51, ARP=1.42, SD=2.00, and NT= 2.69 in the Eo condition). Figure 1 presents this interaction.

Given that the interaction effect was not significant, it was decided to test the differences between each E+ therapy condition and the Eo NT group by means of t -tests. The Eo NT condition is the traditional NT group commonly used in therapy outcome studies, since it represents only the effects of pre-testing and post-testing. It was found that the E+ IT group differed significantly from the Eo NT group on pre-post change scores ($t=2.01$, $df=11$, $p < .05$, one-tailed) and on pre-follow-up change scores ($t=1.82$, $df=11$, $p < .05$, one-tailed). The E+ ARP and SD groups tended to show greater changes from pre- to post-test, as compared to Eo NT ($t=1.62$, $df=17$, $p < .10$, one-tailed). E+ ARP showed significantly greater changes than Eo NT from pretest to follow-up ($t=2.20$, $df=11$, $p < .025$, one-tailed).

The second trend involved a therapy X time interaction ($p < .198$). Means calculated from Table 6 indicated that IT \bar{S} s tended to show the greatest pre- to post-test change (4.70), followed by SD (4.17), ARP (3.95), and NT (3.23). Pre- to follow-up changes tended to be greater for ARP (3.60), NT (3.48), and IT (3.47), while the SD group (2.62) showed



comparatively less change.

T-tests for correlated means were carried out on the pre-to-post and post-to-follow-up raw score AS means within each therapy group. All four therapy groups evidenced statistically significant increases in approach behavior on the post-test (for SD, $t=3.23$, $df=11$, $p<.01$; for IT, $t=2.93$, $df=11$, $p<.02$; for ARP, $t=4.92$, $df = 11$, $p<.002$; and for NT, $t=4.81$, $df=13$, $p<.002$). None of the groups showed significant changes from post-test to follow-up.

The raw score analysis of the AS presented in Appendix G paralleled these residual change score results. Expectancy and time factors were statistically significant, and there was a therapy X expectancy X time interaction trend revealing the same inverse therapy order from E₀ to E₊. Additionally, there was a therapy X therapist interaction trend and a significant expectancy X time effect.

Fear Thermometer (FT) Analysis. Table 7 presents the residual change score FT means for time 1 (pretest to post-test) and time 2 (pretest to follow-up). Smaller scores indicate greater decreased reported fear.

Although the results of the analysis of the residual change score FT summarized in Table 5 produced no statistically significant results, there were three strong trends.

A main effect of expectancy approached significance ($p<.062$). Means calculated from Table 7 indicated that the E₊ groups (Means=2.08) tended to report greater fear decreases than the E₀ groups (Mean=3.02). While the treatment X expectancy interaction

Table 7

FT Residual Change Score Means for Treatment Conditions and Test Times *

		Treatment Condition															
		E+SD		EoSD		E+IT		EoIT		E+ARP		EoARP		E+NT		EoNT	
Therapist:		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
<u>Time</u>																	
Pre-Post :		1.42	1.59	.25	2.90	2.09	.59	3.28	2.76	2.08	1.24	4.76	2.57	4.05	2.60	2.94	2.93
Pre-Follow-																	
up:		3.02	2.70	2.13	4.01	2.92	1.03	4.49	2.58	.02	1.34	2.48	4.01	3.74	2.93	2.35	3.93

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

was not significant ($p < .22$), the expectancy trend was due to decreases of the SD, ARP, and IT groups. NT showed slight increases from E0 to E+ conditions on both pre-post and pre-follow-up changes.

A second trend involved a therapy X time interaction ($p < .066$). Pre-post means calculated from Table 7 were 1.54, 2.18, 2.67, and 3.13 for SD, IT, ARP, and NT changes. Pre-follow-up means for the same groups were 2.96, 2.75, 1.96, and 3.24. Inspection of these means indicated that the SD and IT groups showed the greatest pre-post decreases, while ARP produced the greatest pre-follow-up decreases. NT showed the least change from the pretest FT at both pre-post and pre-follow-up measurements.

T-tests for correlated means on the raw score FT revealed that only the SD group reported a significant reduction in fear on the post-test ($t = 4.29$, $df = 11$, $p < .002$). ARP and NT reported significantly reduced fear at the follow-up ($t = 2.45$, $df = 11$, $p < .025$ and $t = 2.19$, $df = 13$, $p < .025$, respectively), while SD and IT showed no change from the post-test.

The third trend emerging from Table 5 was a therapy X time X therapist interaction ($p < .065$). Inspection of Table 7 means revealed the Th 1's SD group showed the greatest pre-post change, followed by IT, ARP, and NT. On pre-follow-up changes, his ARP group showed a largest decrease in reported fear relative to its pre-post change and to the other groups, while IT and SD showed less change compared to their pre-post scores and NT evidenced a slight decrease. Th 2's group showed a different trend. The ranking of his pre-post therapy means revealed the IT group to have the greatest decreased subjective fear, followed by ARP, SD,

and NT. These groups maintained their rank at follow-up and they all showed less change relative to their respective pre-post decreases.

Comparing these results to those of the raw score analysis presented in Appendix G, the therapy X time interaction similarly approached significance. Additionally, there was a main effect of time for the raw scores, while the expectancy and the therapy X time X therapist trends disappeared.

Finger Sweat Print (FSP) Analysis. Table 8 presents the residual change score FSP means for time 1 (pretest to post-test) and time 2 (pretest to follow-up). Smaller scores indicate greater reduced sweat gland activity.

As Table 5 indicates, the five-way analysis of variance on the FSP residual change scores revealed two significant effects.

The first was a significant main effect of time. The pre-to-post-test mean was 9.09, while the pre-to-follow-up mean was -.99. This result indicates that there were greater FSP reductions from pretest to follow-up than from pretest to post-test.

The second significant F involved a therapy X expectancy interaction. Means for these factors, calculated from Table 8, were -3.91, 26.59, .90, and 5.41 for SD, IT, ARP, and NT respectively in the E+ condition, and 1.74, -5.57, 3.50, and 3.72 respectively in the Eo condition. Post-hoc comparisons due to Scheffe (Hays, 1963) revealed only one significant result: the comparison of E+ IT with E+ SD ($30.50 - 30.42 \leq Y \leq 30.50 + 30.42$, $p < .05$).^{*} So this interaction effect was due primarily

^{*}For a post-hoc comparison by the Scheffe method to be significant, such a confidence interval must not cover zero.

Table 8

FSP Residual Change Score Means for Treatment Conditions and Test Times *

	Treatment Condition									
	E+SD		EoSD		E+IT		EoIT		E+ARP	
	1	2	1	2	1	2	1	2	1	2
<u>Time</u>										
Pre-Post:	.21	13.67	20.90	5.95	39.31	23.08	1.95	-6.38	- 3.67	- 1.15
Pre-Fol- low-up:	-9.82	-19.71	- 7.48	-12.43	24.26	19.91	-14.75	-3.08	-15.36	23.79

	EoARP		E+NT		EoNT	
	1	2	1	2	1	2
<u>Time</u>						
Pre-Post:	- .66	14.39	11.31	5.18	7.01	14.24
Pre-Fol- low-up:	7.61	- 7.34	- 4.99	10.16	-15.54	9.19

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

to the small reduction in E+ IT sweat gland activity relative to the reductions occurring in the other seven groups.

T-tests for correlated means on raw scores indicated that only the ARP and NT groups showed significantly reduced FSP at the post-test ($t=4.39$, $df=11$, $p<.002$ and $t=3.32$, $df=13$, $p<.01$, respectively). Only the SD group evidenced post-test-to-follow-up reductions that were statistically significant ($t=3.39$, $df=11$, $p<.01$).

The raw score analysis presented in Appendix G again paralleled the residual change score analysis in some ways and not in others. The main effect of time was statistically significant, while the therapy X expectancy effect only tended toward significance. Additionally, the raw score analysis resulted in trends for a therapy X therapist interaction and a therapy X expectancy X therapist interaction.

Pulse Rate (PR) Analysis. Table 9 presents the residual change score PR means for time 1 (pretest to post-test) and time 2 (pretest to follow-up). Smaller scores indicate greater reductions in pulse rate.

As Table 5 reports, there were two significant main effects and an interaction trend emerging from the repeated measures analysis of variance of the PR residual change scores.

The first was a main effect of time. Means calculated from Table 9 were 8.46 for the pretest-to-post-test change and 10.99 for the pretest-to-follow-up change. These means indicate that the pre- to post-test decrease in PR was significantly greater than the pre-test-to-follow-up reduction.

Table 9

PR Residual Change Score Means for Treatment Conditions and Test Times *

		Treatment Condition									
		E+SD		EoSD		E+IT		EoIT		E+ARP	
Therapist:		1	2	1	2	1	2	1	2	1	2
<u>Time</u>											
Pre-Post:		8.85	6.92	7.60	7.41	10.46	5.10	8.45	8.16	8.88	9.18
Pre-Fol- low-up:		13.53	8.39	8.09	9.28	10.90	7.52	9.88	10.17	11.46	11.86

		EoARP		E+NT		EoNT	
Therapist:		1	2	1	2	1	2
<u>Time</u>							
Pre-Post:		6.73	8.16	9.29	9.75	9.41	11.02
Pre-Fol- low-up:		9.25	10.83	12.07	12.30	14.99	14.98

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

The second main effect was that of therapy. The means for this factor were 8.76 for the SD groups, 8.83 for the IT groups, 9.54 for the ARP groups, and 11.73 for NT. Post-hoc comparisons showed that SD and IT combined produced significantly greater PR reduction than NT ($2.93 - 2.69 \leq Y \leq 2.93 + 2.69$, $p < .025$). No other comparison was significant.

T-tests for correlated means on the raw score PR showed that the only significant reduction in pulse rate occurred in the IT group from post-test to follow-up ($t=3.45$, $df=11$, $p < .01$).

Finally, there was a trend for an expectancy X therapist interaction ($p < .08$). Means for these factors were 10.68 for Th 1 and 8.88 for Th 2 in the E+ condition, and 9.30 for Th 1 and 10.00 for Th 2 in the Eo condition. Eo Ss in Th 1's groups tended to show greater PR reduction, while E+ Ss in Th 2's groups produced the larger PR decrease.

The raw score analysis presented in Appendix G indicated similar significant effects of time and of the therapy X time interaction. The expectancy X therapist interaction trend did not appear, while there was a trend for a therapy X therapist X time interaction.

Analysis of Latency Scores. Amount of time between entering the room and touching the snake was subjected to a five-way repeated measures analysis of variance (therapy X expectancy X therapist X time X Ss). Ss who did not touch the snake were given a score of 90 seconds (the criterion time). The time factor had two levels (post-test and follow-up). Table 10 presents the means for the conditions. Table 11 summarizes the

Table 10

Latency Means for Treatment Conditions and Test Times *

		Treatment Condition															
		E+SD		EoSD		E+IT		EoIT		E+ARP		EoARP		E+NT		EoNT	
Therapist:		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
<u>Time</u>																	
Post-test:		75.5	40.5	64.0	77.3	38.1	46.3	65.7	90.0	18.3	42.5	49.4	73.3	55.9	45.9	64.2	43.5
Follow-up:		67.1	36.5	74.7	65.3	28.7	44.7	65.3	90.0	12.7	39.8	68.4	90.0	51.5	40.7	51.2	17.7

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

Table 11

Repeated Measures Analysis of Variance Summary for Latency
Data (Therapy (TR) X Expectancy (E) X Therapist (Th) X Time
(T) X Ss (S))

<u>Source</u>	<u>df</u>	<u>MS</u>	<u>F</u>
TR	3	1468.63	.67
E	1	12974.11	5.91*
Th	1	114.63	.05
TR X E	3	2861.42	1.30
TR X Th	3	3063.38	1.39
E X Th	1	283.41	.13
TR X E X Th	3	764.63	.35
Error (S)	34	2195.32	
T	1	197.42	.64
TR X T	3	363.06	1.18
E X T	1	121.50	.39
Th X T	1	55.28	.18
TR X E X T	3	356.85	.16
TR X Th X T	3	60.17	.19
E X Th X T	1	250.72	.81
TR X E X Th X T	3	37.65	.12
Error (SXT)	34	308.72	

* $p < .05$

results of the analysis.

Only the expectancy effect was significant. The E+ Ss touched the snake earlier (Mean=42.7 seconds) than did the Eo Ss (Mean=65.6 seconds). There were no strong trends indicated by the results.

Relationships Between Behavioral, Subjective Report, and Physiological Variables

Correlations between AS, FT, FSP, and PR at pretest, post-test, and follow-up and their respective residual change scores were computed. The matrix of the 210 intercorrelations is presented in Table 12. Note that in the following results the correlations within measurement domains were generally significant, while correlations between domains were generally non-significant.

Raw Score Pretest, Post-test, and Follow-up Correlations.

All twelve of the correlations between testing times within the same measurement method (AS, FT, FSP, or PR) were statistically significant for raw scores. These correlations ranged from .36 to .88 (Mean=.60). These results indicate Ss tended, to a significant degree, to maintain their rank order from pretest to post-test to follow-up on all measures.

Between different measurement methods across testing times, there were only two significant correlations. FSS score prior to the experiment was related negatively to AS on the pretest. Secondly, on follow-up testing, AS and FT were negatively related.

Residual Change Score Pre-Post and Pre-Follow-Up Correlations.

All four correlations between testing times within the same measurement method for the residual change scores were significant

Table 12

Correlations between AS, FT, FSP, PR, and Their Respective Change
Scores at Pretest, Post-test and Follow-up

	<u>Pre</u>					<u>Post</u>				<u>F-U</u>	
	<u>FSS</u>	<u>AS</u>	<u>FT</u>	<u>FSP</u>	<u>PR</u>	<u>AS</u>	<u>FT</u>	<u>FSP</u>	<u>PR</u>	<u>AS</u>	<u>FT</u>
<u>Pre</u>											
AS	-.30**	---									
FT	-.15	-.06	---								
FSP	-.04	-.11	.17	---							
PR	.23	-.08	.24	.25	---						
<u>Post</u>											
AS	-.20	.44*	.18	-.13	-.12	---					
FT	-.02	.10	.54*	.11	.17	-.01	---				
FSP	.06	.09	.11	.74*	.27	.14	-.04	---			
PR	.10	-.13	-.04	.10	.60*	-.25	.08	.19	---		
<u>F-U</u>											
AS	-.25	.52*	.09	-.12	-.21	.88*	-.02	.13	-.14	---	
FT	.13	-.08	.36**	.04	.11	-.18	.60*	-.08	.05	-.30**	---
FSP	-.01	.10	.03	.67*	.22	.02	-.16	.64*	.14	.08	-.16
PR	.19	-.06	-.01	.07	.46*	-.26	.21	.01	.72*	-.10	.16
<u>Pre-Post</u>											
AS	-.07	.00	.23	-.09	-.10	.90*	-.06	.11	-.22	.72*	-.15
FT	.07	.16	.00	.02	.05	-.13	.84*	-.12	.13	-.09	.47*
FSP	.14	.26	-.02	.00	.13	.35**	-.17	.68*	.18	.33**	-.17
PR	-.04	-.10	-.23	-.06	.00	-.23	-.02	.04	.80*	-.02	-.02
<u>Pre-F-U</u>											
AS	-.11	.00	.14	-.08	-.19	.76*	-.09	.10	-.08	.85*	-.31**
FT	.20	-.07	.00	-.02	.03	-.26	.43*	-.13	.07	-.36**	.93*
FSP	.03	.23	-.11	.00	.07	.14	-.32**	.20	.10	.22	-.26
PR	.10	-.03	-.13	-.04	.00	-.23	.14	-.12	.50*	.00	.12

Table 12 continued

Correlations between AS, FT, FSP, PR, and Their Respective Change
Scores at Pretest, Post-test, and Follow-up

	<u>F-U</u>			<u>Pre-Post</u>			<u>Pre-F-U</u>		
	<u>FSP</u>	<u>PR</u>	<u>AS</u>	<u>FT</u>	<u>FSP</u>	<u>PR</u>	<u>AS</u>	<u>FT</u>	<u>FSP</u>
<u>F-U</u> <u>PR</u>	.01	---							
<u>Pre-Post</u> <u>AS</u>	-.03	-.26	---						
<u>FT</u>	-.21	.25	-.23	---					
<u>FSP</u>	.22	-.06	.26	-.20	---				
<u>PR</u>	.01	.56*	-.20	.12	.12	---			
<u>Pre-F-U</u> <u>AS</u>	.04	-.07	.85*	-.20	.23	.04	---		
<u>FT</u>	-.19	.17	-.26	.51*	-.17	.07	-.38**	---	
<u>FSP</u>	.74*	-.05	.05	-.31**	.30**	.07	.12	-.23	---
<u>PR</u>	-.10	.89*	-.24	-.14	-.14	.63*	.02	.18	-.09

* $p < .002$

** $p < .05$

and positive. These correlations ranged from .30 to .85 (Mean = .57), indicating that the amount S improved from pre- to post-testing was positively related to the amount she improved from pre- to follow-up testing.

Between different measurement methods across testing times, only two significant change score correlations appeared. First, the amount of improvement from pre- to post-test on the FT was negatively related to the amount of improvement from pre- to follow-up testing on the FSP. The more S reported a decrease in fear at post-test, the less decrease in sweat gland activity occurred. Secondly, AS change from pre- to follow-up was negatively related to FT change from pre-to-follow-up. The greater the amount of increased approach behavior at follow-up, the greater the decrease in subjective fear.

Raw Score and Residual Change Score Correlations. The four correlations between post-test and pre-post changes as well as the four correlations between follow-up and pre-follow-up change scores were all significant. Of course, these correlations are artifactual, since the change scores already involved the correlation of the two test times.

Post-test scores in three out of four of the measures (AS, FT, and PR) were correlated significantly and positively with their respectively pre-follow-up change scores. The more S showed decreased fear on these measures at post-test, the more pre-follow-up decrease she was likely to show. These same measures also showed significant and positive correlations between follow-up scores and pre-post change scores. Again, the more

pre-post change evidenced, the greater the improvement at follow-up.

Between different measurement methods, there were five significant correlations.

Post-test AS and follow-up AS were both related positively to pre-post FSP change scores. Greater approach was related to less decrease in sweat gland activity.

Post-test FT was negatively related to pre-follow-up FSP. The more fear reported by S on the post-test, the greater the decrease in sweat gland activity at follow-up.

Follow-up FT and pre-follow-up AS change were negatively correlated. The more fear reported by S at the follow-up, the less increased approach behavior. In the same vein, follow-up AS was negatively related to pre-follow-up FT change. The greater the approach at follow-up, the greater the decreased subjective fear.

Excluding the eight artifactual correlations, there were 11 correlations significant at the .05 alpha level, and 20 exceeded the .002 level, yielding 31 significant correlations.

During-Therapy Physiological Recording Analysis

Basal Skin Conductance (BSC) was recorded from each S during the three item-presentation therapy sessions. Portions of those recordings were selected for analysis. For any hierarchy item presentation, four sampling points were used: 1) BSC one second before presentation of the item, 2) maximal BSC reached during visualization of the item, 3) maximal BSC reached within 30

seconds after termination of the visualization of the item, and 4) maximal BSC reached between termination of item visualization and initiation of the next item. (Initial analysis revealed that the latter measure added no new information to the results of the 30 seconds after-item analysis. Consequently, analysis of this measure is not reported below). This sampling was carried out for the first and last presentation of each of the 18 hierarchy items, resulting in 108 values for each S (2 presentation X 18 items X 3 sampled points).

Three six-way analyses of variance (therapy X expectancy X therapist X item number X presentation order X Ss) were performed. The first was carried out on the pre-item raw score values. The remaining two analyses were performed on a derived score of the during-item and the 30 seconds after-item measures. As a control for differences in pre-item level, these derived scores involved subtraction of pre-item values from the during-item and after-item values. In all of the following analyses, there are three levels of therapy (SD, IT, and ARP), two levels of expectancy (E+ and Eo), two levels of therapist (Th 1 and Th 2), 18 levels of item, two levels of order (first and last), and 36 Ss.

Table 13 reports a summary of the analyses of variance on the pre-item raw score BSC, the during-item change score BSC, and the after-item change score BSC.

Pre-Item Analysis. Four significant results emerged from the analysis of the pre-item raw score BSC presented in Table 13. The first was a significant main effect of item number, indicating that general BSC decreased as therapy progressed.

The second was a therapy X item interaction. This interaction is presented in Figure 2. One-way analyses of variance were performed on each therapy group to test for the significance of the item number effect. All three therapy groups showed significant decreases in pre-item BSC from first to eighteenth item (for SD, $F=1.65$, $df=17, 187$, $p<.05$; for IT, $F=4.74$, $df=17, 187$, $p<.001$; and for ARP, $F=5.11$, $df=17, 187$, $p<.001$).

Inspection of Figure 2 indicated that among the three groups, SD showed lowest BSC early prior to and in therapy and the highest BSC later in therapy. The ARP group had the highest early BSC but the lowest BSC during the last items. IT fell between these two groups and showed a tendency toward a tri-model distribution of arousal values over items.

Thirdly, there was a significant therapist X item interaction. Figure 3 indicates that Th 2's groups had the higher BSC during the first five item presentations and the lower BSC thereafter.

The fourth significant effect was an expectancy X therapist interaction. Means indicated that among his groups Th 1's E+ Ss (Mean=10.04) had lower overall BSC, while his Eo Ss (Mean=14.50) had higher BSC, as contrasted to Th 2's Ss (Mean=17.37 for E+ and Mean=9.52 for Eo).

There were also two trends. The first was a therapy X order interaction ($p<.09$). Means for these factors revealed that, from first presentation to last presentation of the same hierarchy item, pre-item BSC for ARP group showed a decrease (13.90 to 13.80), BSC for the IT group showed an increase (12.34 to

Figure 2
Mean Micromho BSC Raw Scores for Pre-item Arousal for
SD, IT, and ARP Groups over Items

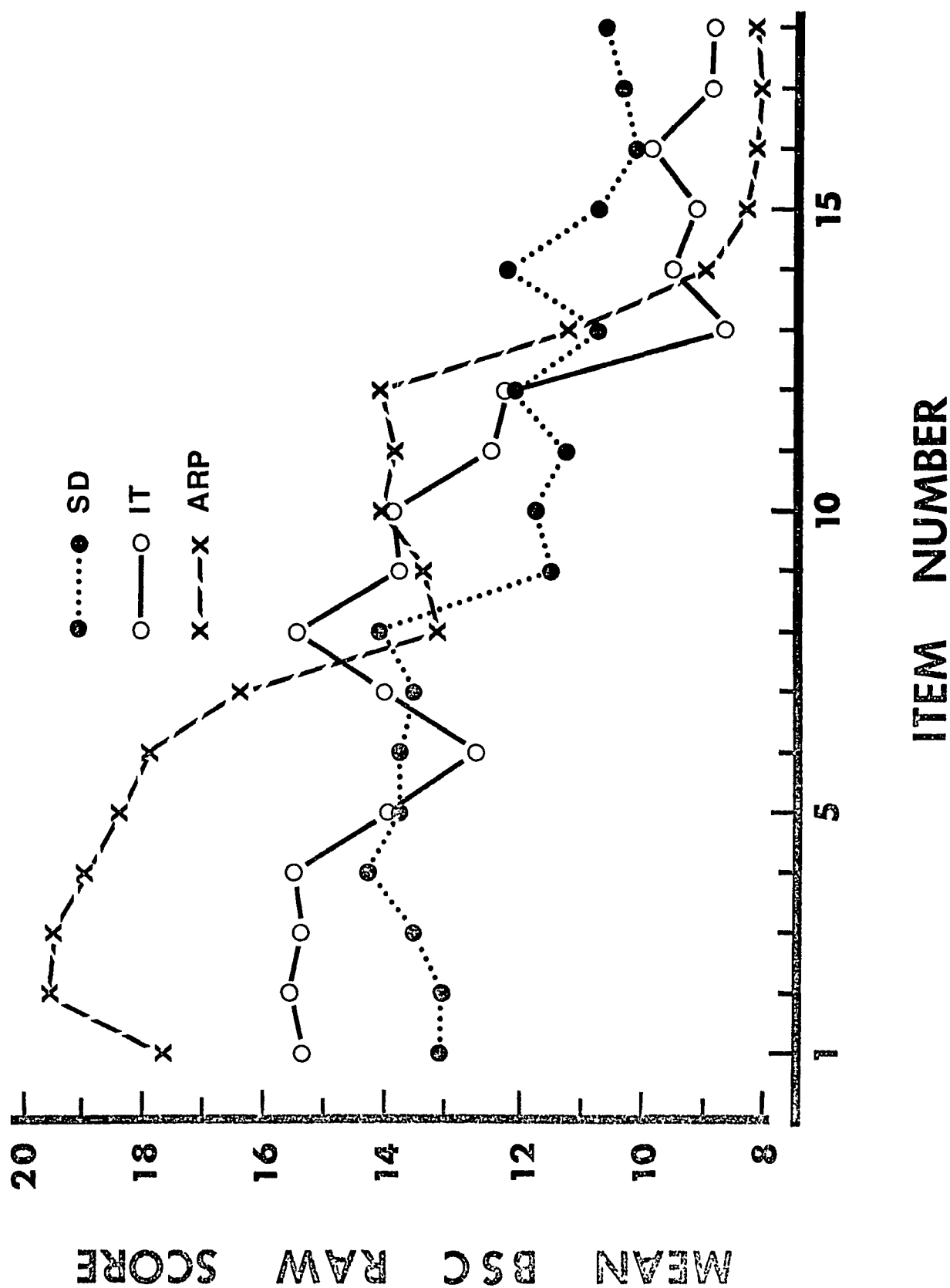
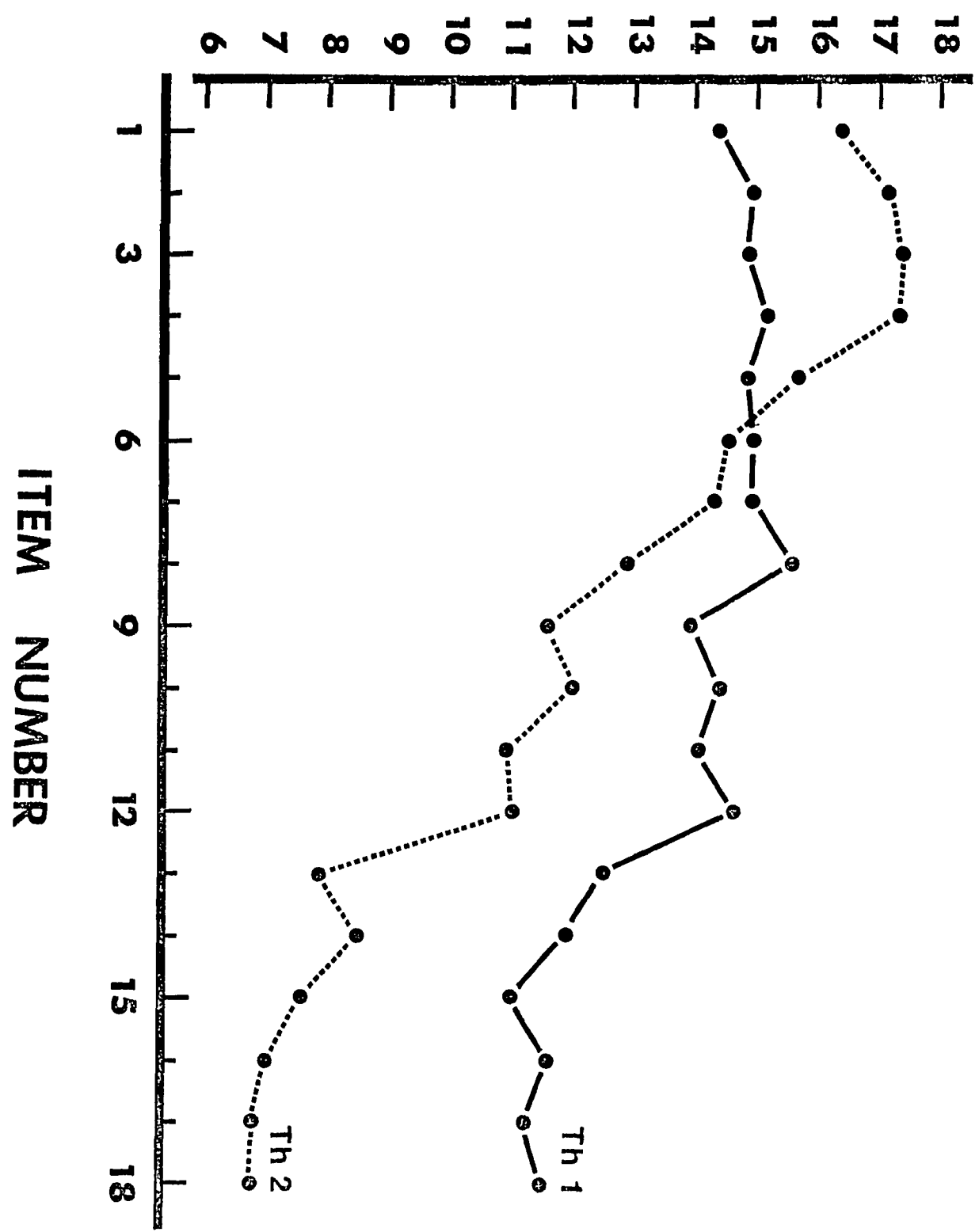


Figure 3
Mean Micromho BSC Raw Scores for Pre-item Arousal for the Two
Therapists over Items

MEAN PRE-ITEM BSC RAW SCORE



12.64), and BSC for the SD group remained essentially the same (12.21 to 12.27).

The second trend involved a therapy X therapist interaction ($p < .08$). Among Th 1's groups, IT had the greatest amount of overall BSC (Mean=16.05) followed by SD (Mean=13.34) and then ARP (Mean=11.73). Among Th 2's groups, ARP was highest (Mean=15.98), IT was lowest (Mean=8.93), and SD fell in the middle (Mean=11.13).

During-Item Analysis. Four significant effects resulted from the analysis of the during-item change score BSC presented in Table 13.

There was a significant main effect of therapist. Th 1's groups (Mean=.883) had larger BSC changes in response to the item visualization than Th 2's groups (Mean=.428).

Secondly, there was a significant order effect. On first presentation of items, BSC increases were greater (Mean=.852), as compared to BSC increases on last presentation (Mean=.454).

The third effect involved an expectancy X order interaction. In the E+ condition, BSC arousal was essentially the same on both item orders (Mean=.500 on first and .443 on last presentation), while Eo Ss showed a large decrease on the last presentation of items (Mean=1.204 on first and .475 on last presentation).

Fourthly, there was a significant three-way interaction among expectancy, therapist, and order. Means indicated that Th 1's E+ groups showed a slight increase in BSC change from first to last presentation (.47 to .51), while his Eo groups evidenced a large decrease from an initially high level of BSC change on the first presentation (1.92 to .64). On the other

hand, both of Th 2's expectancy groups showed lower initial BSC changes, followed by further decreases on last presentation (.53 to .38 for E+ and .49 to .31 for Eo).

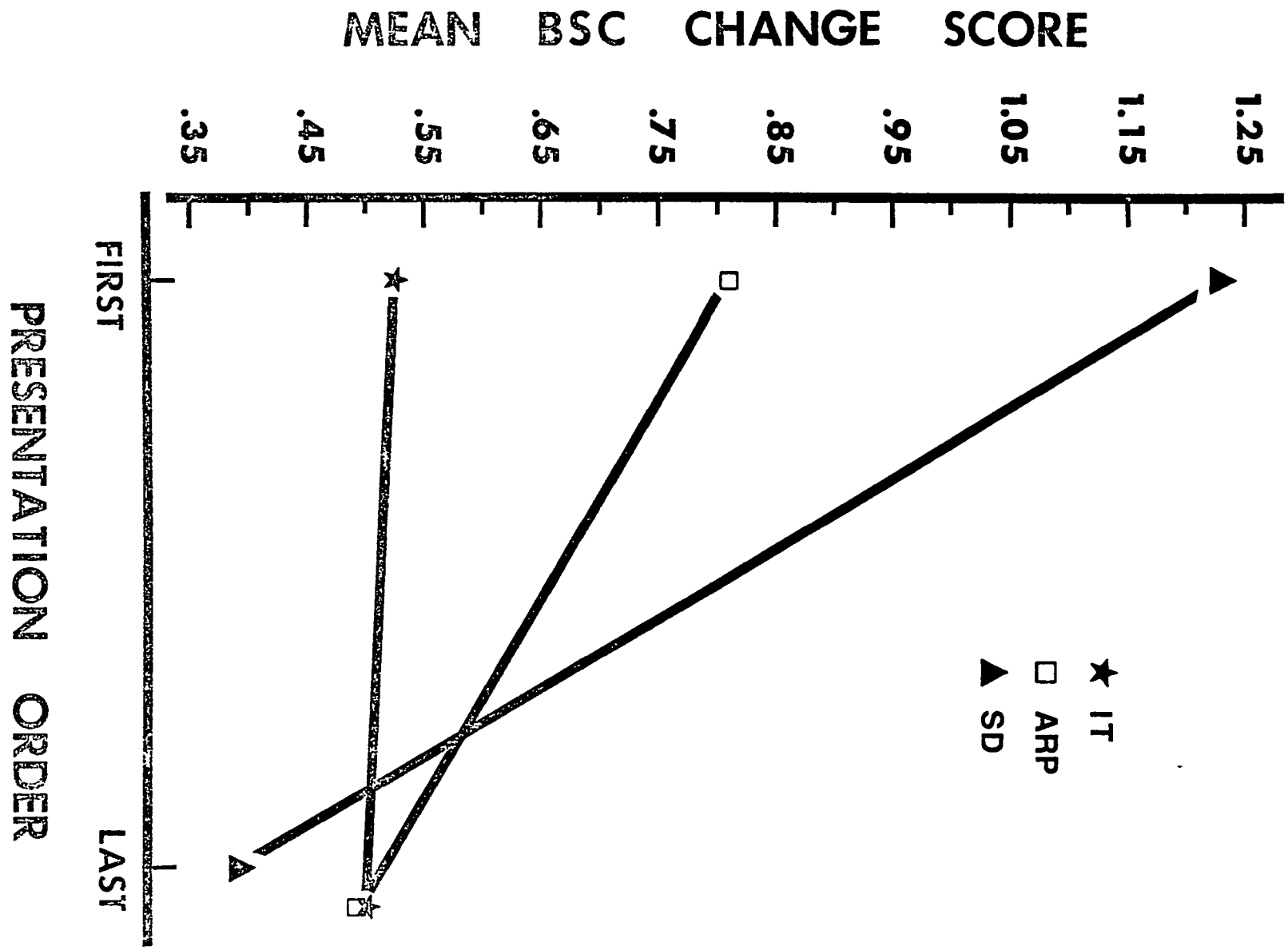
Six trends also emerged. There was a trend ($p < .06$) for a therapy X order interaction. Figure 4 presents this interaction. While all three therapy groups showed the same, lowered BSC change on second presentation, the SD groups had the greatest decrease from first to second presentation and IT had the least decrease.

Second, there was a therapy X item X order interaction trend ($p < .07$). Means for these factors indicated that, in general, BSC changes in response to item visualizations showed slight decreases over items. Second presentation BSCs were lower than first presentations, except in the case of IT groups where second presentations began to produce greater response later in the item hierarchy. IT's responses to first presentations increased and then decreased over items. The SD groups evidenced the greatest difference between first and second presentations over items, and responses to last item presentations showed a decrease over items. SD also showed the greatest first presentation responses of any group during the middle of the hierarchy, but the least response on last presentations throughout the hierarchy. The avoidance response groups showed decreases over items on both first and last presentations.

Third, a main effect for expectancy tended toward significance ($p < .11$). Eo S (Mean=.840) evidenced greater arousal in response to item visualizations than E+ Ss (Mean=.472).

The remaining three trends involved the therapist factor

Figure 4
Mean Micromho BSC Change Scores for During-item Arousal on
First and Last Presentation of Same Item for the SD, IT,
and ARP Groups



in interaction with order ($p < .11$), with expectancy ($p < .07$), and with item number ($p < .06$). Both therapists' groups showed decreases in BSC change from first to second presentations (1.19 to .57 for Th 1 and .51 to .34 for Th 2), but the decrease for Th 1's group was greater. Th 1's Eo groups evidenced the greatest arousal (Mean=1.28) while his E+ groups (Mean=.49) were essentially the same as Th 2's groups (Mean=.40 for Eo and Mean=.45 for E+). And, finally, arousal was greater for Th 2's groups earlier in the hierarchy, but evidenced progressive decrease over items. Th 1's groups were initially lower in arousal but increased over items and surpassed Th 2's groups by the fifth item.

After-Item Analysis. Only one significant effect emerged from analysis of the after-item data: a main effect of order. Máximal BSC arousal during the 30 seconds after termination of visualization was greater during first presentations (Mean=1.62) than during second presentations (Mean=.82).

Five trends also resulted. Two of these involved interactions of order with expectancy ($p < .07$) and with therapy ($p < .08$). In both, there were decreases in arousal from first to second presentation for all groups. Eo group means however showed the sharpest decrease among the expectancy conditions (2.16 to .88 versus 1.07 to .77). And among therapy conditions, SD group means, which along with ARP means showed relatively high arousal on first presentation, evidenced the greatest decrease, down to a level equal to the relatively low arousal of the IT groups (2.07 to .43 for SD, 1.96 to 1.54 for ARP, and .82 to .51 for

IT).

The third trend involved a therapy main effect ($p < .09$). ARP had the greatest arousal (Mean=1.75), SD had lower arousal (Mean=1.25), and IT produced the least amount of general BSC (Mean=.66). The purpose of the 30 second scoring criterion, of course, was to equate the groups on the time during the procedures during which physiological recordings were sampled. Looking at maximal BSC reached any time after termination of visualization revealed that IT had the greatest arousal (Mean=2.05) followed by ARP (Mean=1.88) and SD (Mean=1.34). This difference was not, however, statistically significant ($F = .796$, $df = 2, 24$, $p < .46$).

The last two trends involved the therapist factor. There was an interaction between therapist and expectancy ($p < .07$). Th 1's E+ groups produced the least arousal values (Mean=.60) and his Eo groups gave the highest values (Mean=1.95), while Th 2's Eo and E+ groups fell between (Mean=1.09 and Mean=1.23, respectively). A therapist X item interaction also approached significance ($p < .06$). Th 1's groups showed relatively low arousal early in the hierarchy and decreased only slightly over items. Th 2's groups had large, initial arousal values but evidenced a sharp and consistent decrease to a final level well below that of the Th 1 groups.

Questionnaire Analysis

Three types of questionnaire information were obtained from the participants in the study. The first was a questionnaire

given to the two therapists, asking them to predict the outcome of the study. Secondly, each therapist completed a short checklist on each S after the last session for that S. And, finally, each S completed a questionnaire concerning her experience with and evaluation of her therapist and the therapeutic procedures. Appendix F contains copies of these three questionnaire.

Therapist General Questionnaire. After the half-way point of the therapy sessions, the therapists were asked to plot the amount of improvement which they predicted for the four therapy and the two expectancy conditions. Th 1 predicted that only the SD group among the Eo conditions would show any improvement on subjective report, physiological, and behavioral approach measures. For the E+ condition, he predicted that the therapy groups would rank order themselves, in terms of decreasing improvement, in the following way: SD, IT, ARP, and NT. The same rank occurred on all three measures. Th 2 predicted that all Eo groups would show equally small improvement, with the exception that SD would show large behavioral approach improvement. For E+ groups, he predicted that SD would show the greatest improvement on all three measures, followed by ARP, IT, and NT on the subjective report and physiological measures and by IT, ARP, and NT on the approach measure:

Taken together, the two therapists expected little improvement and little difference among therapy groups in the Eo condition, large improvements for E+ SD, and no change for NT Ss. E+ IT and ARP fell in the middle:

So, half-way through therapy, the therapists had a definite

bias in favor of E+ conditions generally, and SD therapy specifically. This bias was not confounding for the E+ manipulation since it can be viewed as part of that manipulation. The SD bias does confound the therapy factor, and results in a conservative test of IT.

Therapist Evaluation Postquestionnaire. The postquestionnaire was completed by the therapist for each S immediately upon completion of the last therapy session with that S.

The four questions involved asked for a rating on either a five-point or seven-point scale. These ratings were subjected to a therapy X expectancy X therapist analysis of variance.

The first question dealt with how "likeable" the S was. There was a trend ($F=3.44$, $df=1,24$, $p<.08$) for E+ S (Mean=3.94) to be rated as more likeable than Eo Ss (Mean=3.17).

The therapists' mean rating (Mean=4.00) of how well S followed directions was in the positive direction with no significant differences.

On the question dealing with prediction of increased behavioral approach, there was a significant expectancy effect ($F=12.50$, $df=1,24$, $p<.002$) with E+ Ss (Mean=5.33) predicted to show greater approach than Eo Ss (Mean=4.22).

The last question asked for a prediction of subjectively reported fear decreases. There was a significant expectancy effect ($F=16.69$, $df=1,24$, $p<.0005$) with E+ groups (Mean=5.39) predicted to show greater decrease than Eo groups (Mean=4.17). There was also a trend ($F=2.72$, $df=2,24$, $p<.09$) for treatment effect, with SD predicted to show the greatest decrease (5.25),

followed by ARP (4.67) and IT (4.42). Finally there was a trend for a therapy X expectancy X therapist interaction ($F=3.14$, $df=2,24$, $p<.07$). Means for these factors indicate that Th 1 predicted little change for Eo groups, greatest change for the E+ SD and E+ ARP groups, and a decrease in improvement for the E+ IT group. For his Eo groups, Th 2 predicted SD to show the greatest fear reduction, followed by ARP and IT. For E+ groups, he predicted IT to improve to a level equal to that of SD, with ARP showing no greater improvement across expectancy conditions.

Subject Evaluation Questionnaire. Each S completed a post-questionnaire rating sheet immediately after the post-test. There were 29 questions involved: five ratings dealing with her experience with the general procedures, eight seven-point semantic differential ratings of the procedures, and 12 seven-point differential ratings of her therapist.

General Procedures. In terms of clarity of visualization during therapy, there were no significant differences. The group mean was 1.75, indicating that the S felt their visualizations were clear to very clear.

There were also no significant differences on the item asking for an estimations of the percentage of the time that S was able to actually experience the emotions suggested by the therapist. The group mean (4.83) indicated that the Ss identified the emotions nearly 80 percent of the time. There was a trend for a therapist effect ($F=2.70$, $df=1,24$, $p<.12$) with Th 1's estimating a higher percentage (Mean=5.11) than Th 2's Ss (Mean=4.55). A related question asked for an estimation of the

percentage of time S felt that she avoided any emotions suggested by the therapist. There was a significant therapy X therapist interaction ($F=4.15$, $df=2,24$, $p<.03$). Th 1's SD and IT Ss and Th 2's ARP and IT Ss estimated their avoidant thinking to be between 10 to 18 percent. Th 1's ARP and Th 2's SD Ss estimated somewhat higher avoidance (Mean=40% and Mean=24%).

When asked to rate whether their fear of snakes had decreased as a result of the procedures, E+ Ss indicated a significantly greater report of decrease (Mean=3.38) than Eo Ss (Mean=2.50) ($F=8.53$, $df=1,24$, $p<.01$).

The last question dealt with whether S thought the false physiological feedback accurately corresponded to how they felt during the sessions. There was a significant main effect of therapy ($F=3.79$, $df=2,24$, $p<.04$). ARP Ss felt the recordings accurately reflected their feelings (Mean=4.67) to a greater extent than SD Ss (Mean=4.42) or IT (Mean=3.50). IT's group mean indicated uncertainty as to the recordings' accurateness.

Semantic Differential Rating of the Procedures. Ss rated the procedures lively, useful, friendly, and helpful without significant differences among the groups.

There was a significant therapy effect for the "enjoyableness" of the procedures ($F=14.32$, $df=2,24$, $p<.001$). They were moderately enjoyable for ARP Ss (Mean=1.75), slightly enjoyable for SD Ss (Mean=2.64) and slightly unenjoyable for IT Ss (Mean=4.33). There was a trend for a therapy X therapist interaction ($F=3.09$, $df=2,24$, $p<.07$). Only Th 1's IT group rated the procedures as unenjoyable (Mean=5.33).

SD and ARP groups evaluated the sessions to be very quiet (Mean=1.25 and Mean=1.42, respectively), while the IT group considered them to be only slightly quiet (Mean=2.92). This therapy effect was statistically significant ($F=5.97$, $df=2,24$, $p<.01$).

There was an expectancy trend ($F=2.44$, $df=1,24$, $p<.14$) on friendliness, indicating that Eo Ss (Mean=6.94) tended to rate the procedures as very friendly, while E+ Ss (Mean=6.39) rated them as moderately friendly.

Although the Ss in all three therapy groups felt that the sessions had been very interesting (IT=1.58, SD=1.50, and ARP=1.08), there was a significant therapy effect ($F=3.87$, $df=2,24$, $p<.04$) indicating that the ARP group evaluated their experience as most interesting.

Finally, there was a significant main effect of therapist on the item involving the anxiousness of the procedures ($F=7.06$, $df=1,24$, $p<.02$). Ss in Th 1's groups rated the sessions as more anxious (Mean=3.00) than Ss in Th 2's groups (Mean=4.44).

Semantic Differential Rating of the Therapists. Ss evaluated their therapist to be competent, sensitive, directive, interesting, friendly, accepting, skilled, and honest without significant differences among groups.

There were trends for an expectancy effect on the distant-close item and the helpful-unhelpful item ($F=2.77$, $df=1,24$, $p<.11$ and $F=3.27$, $df=1,24$, $p<.09$, respectively). Eo Ss tended to evaluate their therapist as closer (Mean=5.88) and more helpful (Mean=1.33) than E+ Ss (Mean=5.22 and Mean=1.72).

Finally, there was a strong trend ($F=3.26$, $df=2,24$, $p<.06$)

for a therapy X therapist interaction on the anxious-nonanxious item. No group mean fell in the anxious range. However, Th 1's IT and ARP Ss rated him as more nonanxious than his SD Ss, while Th 2's SD group rated him as more nonanxious than did his ARP and IT groups.

Therapist Differences

The therapist factor was present in several significant and trend effects in the above analyses. Given the complexity of the outcome and physiological results, it would be wise to summarize and look at the variance accounted for by therapists in hope of understanding what was going on in therapy.

Among the outcome results, there was one trend involving the therapist factor: therapist 1's neutral expectancy group showed the greater pulse rate decreases of his two groups, while therapist 2's positive expectancy group evidenced more improvement than his neutral expectancy group.

To further pursue to question of therapist differences on outcome measures, therapy X therapist interactions on AS, FT, FSP, and PR data presented in Table 5 were inspected. Two of these measures revealed weak trends (for AS, $F=1.51$, $df=3,34$, $p<.23$; and for PR, $F=1.23$, $df=3,34$, $p<.31$).

Inspection of AS means for these factors indicated that therapist 1's implosion (Mean=4.91) and avoidance (Mean=4.84) groups showed greater improvement than his desensitization group (Mean=2.14), while therapist 2's desensitization group (Mean=4.65) displayed greater behavioral improvement than his implosion (Mean=3.26) and avoidance (Mean=2.71) groups.

Inspection of PR means revealed that therapist 1's therapy groups showed similar PR decreases (avoidance response=9.08, desensitization=9.51, and implosion=9.92). Therapist 2's implosion (7.74) and desensitization (8.00) groups tended to show greater PR reductions than his avoidance group (10.00).

One-tailed t -tests for correlated means were performed on the AS and PR data for the pretest-to-post-test scores and the post-test-to-follow-up scores within each therapy group for each therapist. In all reported results there were five degrees of freedom.

On the AS measure, significant pre-to-post improvement occurred for therapist 1's desensitization group ($t=2.61$, $p<.025$) and his avoidance group ($t=3.87$, $p<.01$). His implosion group approached statistically significant improvement ($t=1.92$, $p<.06$). Significant pre-to-post behavioral improvement occurred for all three of therapist 2's groups (for desensitization, $t=2.49$, $p<.05$; for implosion, $t=2.19$, $p<.05$; and for avoidance response, $t=3.12$, $p<.025$). There were no significant post-to-follow-up improvement for any therapy group of either therapist.

On the PR measure, the only therapy condition among therapist 1's groups to evidence significant reduction was the implosion group from post-test to follow-up ($t=3.16$, $p<.025$). Among therapist 2's groups, both desensitization and implosion resulted in significant reductions from pretest to post-test ($t=2.34$, $p<.05$, and $t=2.22$, $p<.05$, respectively). His implosive group also tended to show further PR decreases from post-test to follow-up ($t=1.73$, $p<.10$). The avoidance group displayed no

significant PR reductions.

Among the significant therapist effects found in the physiological data, the following was characteristic of therapist 1. His neutral expectancy Ss evidenced greater pre-item arousal than his positive expectancy Ss. His groups as a whole showed little pre-item arousal change over hierarchy items, they had the greatest arousal responses to item visualizations, and his neutral expectancy group gave the largest responses on first presentations.

Contrasted with this was therapists 2's groups. His positive expectancy Ss had the greater pre-item arousal levels, while over items his groups as a whole decreased in arousal, and both of his expectancy groups had low responses to first and second item presentations.

Among the therapist trends, the following characteristics emerged. Therapist 1's implosion group showed the greatest pre-item arousal followed by desensitization and avoidance response groups. For therapist 2, his avoidance response group had the greatest general pre-item arousal, desensitization had the second most arousal, followed closely by implosion. Therapist 2's groups as a whole produced the largest response to first visualization, and his neutral expectancy group gave the largest overall responses. Responses to visualizations and maximal arousal after visualization increased or remained the same over items for therapist 1's groups while therapist 2's progressively decreased on both measures. Finally, therapist 1's neutral expectancy Ss showed the greatest arousal after visualization, whereas therapist 2's expectancy groups were equal at a lower level of arousal.

The most obvious characteristic of therapist 1, then, was the greater pre-item, during-item, and after-item arousal generated in his sessions. Conversely, therapist 2's sessions were characterized by lower arousal and/or rapid decreases in arousal over items. Note also that therapist 1's implosion group evidenced the greatest general arousal while therapist 2's implosion group had the least general arousal among their respective groups.

On the subjects' postquestionnaire, two significant differences and three trends were found between therapists. Therapist 1's avoidance response Ss indicated the most avoidant thinking during the procedures compared to his other two groups. For therapist 2, it was the desensitization group reporting the most avoidance. Significantly, therapist 1's Ss rated the procedures as more anxious.

Among the three trends, therapist 1's Ss reported experiencing the suggested emotions a greater percentage of the time. Also his implosion group rated the procedures as more unenjoyable. And finally, his implosion and avoidance response Ss rated the therapist as more nonanxious than did his desensitization group, while therapist 2's desensitization group rated him as being more nonanxious than did his other two groups.

Later on in the discussion, the above therapist differences will become relevant to the explanation of the results.

DISCUSSION

Table 14 summarized the hypotheses, predictions, and outcome of the present study.

The first hypothesis stated that desensitization and implosion should not differ in effectiveness. This hypothesis was supported by the FT, FSP, and PR data. Further support came from the AS pre-post results.

In terms of within-group changes over time, desensitization and implosion were both effective in producing increased approach behavior at the post-test. Neither resulted in significant changes from post-test to follow-up. However, the data also suggest that desensitization was effective in producing decreases in subjective fear and sweat gland activity, while implosion was effective in reducing pulse rate.

It may be concluded, therefore, that, when expectancy conditions are not considered, desensitization and implosion do not differ substantially in their effectiveness in eliminating fear and avoidance of snakes.

The second hypothesis stated that desensitization and implosion should show significantly greater anxiety reduction than avoidance response or no-therapy groups. The findings relevant to this hypothesis were somewhat equivocal. In terms of the overall residual change score results, desensitization and

Table 14

Summary of Hypotheses, Predictions, and Outcome

<u>Hypothesis</u>	<u>Prediction</u>	<u>Outcome</u>
1	SD and IT will show equal outcome improvement.	Partially supported by all measures.
2	SD and IT will show greater outcome improvement than ARP and NT.	Not supported. ARP was equally effective. Some evidence that the three therapies were more effective than NT.
3	Positive expectancy will show greater outcome improvement than neutral expectancy.	Supported by AS and Latency results, partially supported by FT results.
4(a)	Eo ARP and NT will show equal outcome improvement.	Supported by all measures.
(b)	E+ ARP will show greater outcome improvement than NT.	Partially supported by AS and FSP results.
(c)	ARP will be most sensitive to expectancy effects.	Not supported. IT tended to be most sensitive on AS and FSP measures.
5	SD, IT, and ARP will show during-therapy physiology which fits their respective theoretical models.	Partially supported for SD and IT. Not supported for ARP.

implosion tended to be more effective than the other two conditions in producing increases in approach and decreases in reported fear at the post-test and were more effective in reducing pulse rate than no-therapy. Contrary to the hypothesis, there was no evidence of differential effectiveness in reducing sweat gland activity, the avoidance response condition was not significantly less effective than desensitization and implosion in reducing pulse rate and the avoidance and no-therapy conditions tended to produce the greater pre-to-follow-up increases in approach behavior.

Within-group analyses provided meager support for the second hypothesis. All therapy conditions effectively increased approach behavior at the post-test, while none resulted in further improvement on the follow-up. The avoidance and no-therapy conditions were effective in reducing sweat gland activity by the time of the post-test and reported fear by the follow-up. Support for the hypothesis from these analyses came from desensitization's effectiveness in reducing sweat gland activity at the follow-up, its effectiveness in decreasing post-test reported fear, and implosion's effectiveness in producing pulse rate decreases.

It can be concluded, then, that desensitization and implosion differ little in effectiveness from a "placebo" condition which was based on a model representing what both theories predict the phobic does in the real world, i.e., avoids the stimulus object. Further, with some exceptions (eg., FSP and the pre-to-follow-up AS results), all three therapy conditions are

more effective in producing fear elimination than no-therapy.

Hypothesis three stated that positive expectancy conditions should result in greater anxiety reduction than neutral expectancy. This hypothesis was strongly supported by the AS and Latency analysis and supported by a trend in the FT analysis. The positive expectancy condition was more effective than neutral expectancy in producing greater approach behavior on the post-test and the follow-up and in reducing the amount of time before the subjects touched the snake. It also tended to decrease the amount of subjectively reported fear over both testings. Only the two physiological measures failed to reflect a main effect of expectancy.

It is concluded, then, that expectancy manipulation can powerfully influence overt behavioral approach and, to a lesser extent, reports of fear. Regardless of what kind of "therapy" a person receives, what he thinks the effects of the treatment condition should be does play an important role in changing his behavior.

This conclusion is in agreement with the findings of Jaffe (1968), Leitenberg, Agras, Barlow, and Oliveau (1969), and Oliveau, Agras, Leitenberg, Moore, and Wright (1969). The results of the present study disagree with the two studies indicating an absence of expectancy effects, i.e., Quinlan (1968) and McGlynn and Mapp (1970). It may be that expectancy can influence behavior only when that the setting is well detailed to the subjects and when that setting is continually reinforced (eg., through the use of physiological feedback) throughout therapy.

The fourth hypothesis dealt with interactions between therapy and expectancy conditions. Specifically, it was predicted that the neutral expectancy avoidance response group should show improvement equal to the neutral no-therapy group, the positive expectancy avoidance group should show greater improvement than positive no-therapy, and the effect of expectancy should be greater on the avoidance response groups than on desensitization or implosion.

The neutral avoidance group did not show significantly greater anxiety reduction than neutral no-therapy on any measure. Nor did it evidence any trends in that direction. Indeed, in those measures where trends existed (AS and FSP), the neutral avoidance condition was less effective in producing change than no-therapy.

The positive avoidance condition consistently evidenced greater effectiveness than positive no-therapy on all measures. While none of these differences were statistically significant, AS and FSP trends supported this hypothesis.

While avoidance response procedure did result in some effects characteristic of a "non-active" placebo condition, as indicated by the above support for the hypothesis, it is the author's contention that this condition was truly "active" in a specific sense. This will be discussed later.

As for the sensitivity of the therapy groups to expectancy manipulation, the hypothesis that the avoidance response group should be more sensitive than the other therapy groups was not supported. As noted in the results section (see Figure 1), the

therapy X expectancy interaction trend in the AS analysis revealed that in the positive expectancy condition, implosion was the most effective in producing change, followed by avoidance response, desensitization, and no-therapy. In the neutral expectancy condition, this rank-order in terms of effectiveness was exactly the opposite: no-therapy followed by desensitization, avoidance response, and implosion. Similarly, the significant therapy X expectancy interaction in the FSP analysis indicated that implosion was the most effective therapy strategy in the neutral expectancy condition but the least effective in the positive expectancy condition. It appeared, then, that the effects of implosion on approach behavior and sweat gland activity were more susceptible to expectancy manipulations than were the effects of the other therapy conditions. No differential susceptibility was apparent on the FT, PR, and Latency analyses.

Another result related to both the first and the fourth hypotheses stemmed from the comparisons of the positive therapy conditions with the neutral no-therapy condition on the AS. Implosion under positive expectancy conditions was more effective in producing behavioral change than was no-therapy under neutral expectancy conditions. There was evidence for this effect at both post-test and follow-up. The positive avoidance condition resulted in more improvement than neutral no-therapy on the follow-up test. Desensitization, however, showed little evidence of greater effectiveness than no-therapy at either testing.

Based on the above, it is concluded that the effects of

desensitization implosion, and the avoidance response procedures may be differentially influenced by expectancy manipulations and that implosion is most affected by such manipulations. Of greatest interest was the rank-ordered effectiveness of the therapy conditions on the approach test, as a function of expectancy condition. The technique which was most effective when subjects knew it was therapy (implosion) was least effective in producing behavioral change when subjects did not know it was a bona fide therapy technique. And, finally, it is concluded that only implosion embedded in a therapeutic context was more effective in producing behavioral and pulse rate improvements than a traditional (neutral expectancy) no-therapy condition.

Hypothesis five predicted that Ss in each of the three therapy groups should show physiological patterns during therapy that fit the models on which those therapies were based. Specifically, the desensitization groups should show a decrease in general arousal over hierarchy items, minimal response to item visualizations, a decrease in response from first to last presentation of the same item, and minimal arousal after termination of item visualization. Implosion groups should show an increase followed by a decrease in general arousal over items, an increase and decrease in response to visualizations over hierarchy items but little change from first to last visualization of the same item, and maximal arousal after termination of item visualization. And the avoidance response groups should show no change or even an increase in general arousal over items, no change or an increase in response to visualizations, and median arousal after termination

of item visualization.

The only significant results relevant to this hypothesis were the therapy X item interaction on the pre-item arousal values (see Figure 2) and the one-way analyses of variance within each therapy condition. As predicted, desensitization was effective in producing significant decreases in general arousal over hierarchy items. Inspection of Figure 2 also suggested the predicted rises and falls in arousal for the implosion condition. Contrary to the hypothesis, the avoidance response procedure produced significant decreases in arousal over therapy.

Without a no-therapy group, it is difficult to say whether the decreases evidenced by the therapy groups were produced by the "active ingredients" of the procedures or by adaption of the subjects to the general experimental situation. Between the therapy groups, however, there were differences.

Comparisons among the three groups were made by inspection of Figure 2. Among the three groups, the desensitization group had the lowest pre-item arousal just prior to initiation of therapy and during the first five items, and it showed the least amount of decrease over items. The initial lower arousal was probably a function of the relaxation training which immediately preceded item presentation for this group. The avoidance response condition produced the highest arousal prior to and during the initial item presentations and the greatest amount of decrease over items. Apparently, anticipation of avoiding a feared stimulus was more arousing initially than even the horrific images involved in implosion, even though the avoidance procedure

itself appeared to be very effective in ultimately reducing general arousal during therapy. Finally, the implosion procedure produced arousal prior to and early in therapy that was between the other two groups, while it decreased arousal to a level below desensitization but above the avoidance response.

The remaining evidence for the fifth hypothesis came from trends in the results.

As predicted, desensitization produced decreases in response to item visualization from first to last presentation of the same item (see Figure 4). The same result appeared in the after-item analysis. Apparently, the relaxation paired with visualization was successful in producing a decrement in response to the visualization. Also as predicted, implosion produced little change in arousal from first to last presentation of the same item. This was true for both during-item and after-item arousal. Contrary to the hypothesis, the avoidance procedure resulted in decreases in arousal from first to last presentation of the same item in both the during-item and after-item measures.

Desensitization was predicted to show minimal response to item visualizations. As seen in Figure 4, it resulted in the greatest response to the first presentation of items. Failure to support this prediction may have stemmed from the fact that desensitization subjects were lower in arousal than the other two groups of subjects during much of the therapy (see Figure 2). As such, an orienting response to a new stimulus (i.e., a new hierarchy item) may have been greater for this group because of the contrast in cognitions between item visualization and relaxation.

Implosion did show an increase followed by a decrease in response to first item visualizations over hierarchy items, as indicated by the therapy X item X order interaction trend on the during-item arousal measure. The same interaction revealed the predicted decrease in response to last item presentations for the desensitization group. Contrary to the prediction, the avoidance response group was effective in reducing responses to visualizations over items on both first and last presentations.

As for maximal arousal after termination of item visualization, implosion was discrepant with the prediction by producing the least arousal among the three groups. The avoidance response group fell predictably higher than desensitization. Implosion did achieve maximal arousal among the three groups if the 30-second criterion was not employed, while avoidance response and desensitization remained essentially the same. This difference was not significant, however.

In summary, then, desensitization evidenced a significant decrease in general arousal over hierarchy items but this decrease was less than that occurring in the other two therapy groups. It showed a decrease in response from first to last item presentation and this decrease was greater than that displayed by the other groups. And it produced less after-visualization arousal than the avoidance response group. It did not evidence a minimal response to visualizations as compared to the implosion and avoidance response procedures, possibly because of lower general arousal.

Implosion showed some evidence (by graph inspection) for

the predicted increases and decreases in general arousal over items. It produced an increase and a decrease in response to first presentations over items. And the implosive procedure showed little change from first to last presentations of the same item. It did not show maximal arousal after visualization, except when the 30-second criterion was ignored and even then it was not a statistically significant result.

The avoidance response group was discrepant from its model on all of the results. It evidenced the lowest, general arousal among the three groups toward the end of the hierarchy as well as the greatest decrease in general arousal over items. It produced a decrease in response to visualizations from first to last presentation, although this decrease was not as great as that occurring under desensitization. And this procedure resulted in a decrease in response to visualizations over hierarchy items. Finally, it tended to have the largest arousal level of the three groups during the 30-second interval after item visualization.

It is concluded, then, that the three therapy procedures produced different during-therapy physiology and that desensitization and implosion resulted in physiological arousal which in some respects was predictable from their respective models and in other respects was contrary to the predictions. Furthermore, the avoidance response procedure produced during-therapy physiology which, for the most part, was discrepant from the model which asserted the "non-activeness" of the procedure. Indeed, in terms of decreased arousal over items and decreased response to visualizations, over items and from first to last presentation of the

same item, the avoidance response group evidenced arousal similar to that predicted to occur from the desensitization model.

Several of the above conclusions bring into serious question the adequacy of the theoretical basis of both desensitization and implosion, or the adequacy of the placebo condition as truly "nonactive", or both. It may be true that gradual presentation of the phobic stimuli followed by non-anxiety-provoking material leads to no greater anxiety elimination than does presentation of the stimuli followed by highly anxiety-provoking material. But it was also the case that presentation of stimuli followed by avoidance of those stimuli resulted in essentially equal effectiveness, even though the models would not predict this to occur. It is felt by this author that both the theoretical bases are inaccurate and the placebo condition was actually "active". Given the conclusions and the evidence supplied by the therapist differences on outcome measures, during-therapy physiology, and questionnaire measures, an alternative explanation of the effects of the three therapy procedures can be formulated.

Desensitization and implosion showed during-therapy physiology which does not completely disagree with their respective models. And, indeed, these two treatments resulted in increased approach behavior, decreased reported fear, and lowered pulse rate. Regardless of the theoretical interpretation of the mechanisms involved, these therapies did produce an operationally defined elimination of "fear". One major problem for these theories was the fact that expectancy had a powerful influence on overt behavior and subjective report, and this influence

tended to vary according to the therapy conditions. A second problem was that a "placebo" condition, predicted by the theories to show no change, actually resulted in nearly as much elimination of fear as the other two therapies.

As for the first problem, one would expect little influence of expectancy on the physiological outcome of learning-based therapy techniques, if those techniques involved the mechanisms suggested by their respective theories. This was the case for one physiological outcome measure. Both desensitization and implosion resulted in significantly greater reduced pulse rate than no-therapy. One discrepancy was the relatively high sweat gland activity for the positive expectancy implosion group.

Overt behavioral and subjective report indices of fear, however, were much more strongly influenced by whether or not the subject was told that the procedures involved "therapy". These response systems, predictably most susceptible to the effects of suggestion, were most influenced by the expectancy manipulation. If the sole mechanism for the elimination of fear was "counter-conditioning" or "extinction", differences between expectancy conditions within each therapy condition should not have resulted.

The subject's interpretation was influenced not only by the expectancy manipulation but also by the actual therapy procedures. Given the interaction trend between expectancy and therapy on the approach scores, and given the dimension of "anxiety-provoking" experience along which the three therapies varied, it is quite possible that the greater the "emotionality" of the procedures, in terms of content of the procedures, the more strongly the

subject's interpretation of the effects of the procedures is influenced. Having been subjected to the unenjoyable experience of implosion, subjects in the positive expectancy group may have more strongly attempted to verify to themselves and the experimenters that the experience was successful. Given the same procedures but no pragmatic rationale, subjects in the neutral expectancy group may have interpreted the effects of the procedures as increasing their fear of snakes. This would be a more logical conclusion for them to make than to conclude that visualizing horrible scenes about snakes would make them less fearful of snakes.

It is concluded, therefore, that a) desensitization and implosion both resulted in greater elimination of physiological "fear" than no-therapy via some learning mechanism, while b) the modified approach behavior and subjective report resulted from a manipulation of the subject's interpretation of the effects of the procedural events, regardless of the "active" learning mechanism involved in the therapy techniques. Neither "counter-conditioning" nor "extinction" can account for the expectancy effects on overt responses, while they can account for the physiological changes during therapy and after therapy.

One body of empirical research relevant to the overt behavior changes as a function of expectancy and its interaction with therapy stems from current research on "demand characteristics" and their influence on avoidance behavior. Bernstein (1970), for example, manipulated the situational context in which subjects underwent a rat approach test ("experiment" vs "fear assessment"). He found 20% of the "fear" subjects refused to touch the animal,

while only 3% of the "experiment" subjects refused. He concluded that informing subjects of the purpose of their experience with the test object can affect the amount of "phobic" behavior displayed. Similarly, the work of Schachter (eg., Schachter and Singer, 1962) and of Valins (eg., Valins and Ray, 1967) has pointed to the importance of cognitive labeling processes in determination of emotional behavior. The latter authors have applied this conceptualization to the explanation of desensitization effects. Valins and Ray (1967) demonstrated that greater approach behavior to a live snake could be achieved simply by altering the subject's evaluation of his internal reactions to the feared stimulus. When false physiological feedback indicated that he was not aroused by the stimulus, the subject later displayed less avoidance of that stimulus. These authors concluded that somatic relaxation per se in desensitization may be less relevant than whether or not the subject thinks he is relaxed. Such theorizing has resulted in a lively exchange between Wolpe and Valins (eg., Davison and Valins, 1968; Wolpe, 1969; Wolpe, 1970; Davison and Valins, 1970).

There is at present no adequate theory from which to deduce the processes involved in the effects of demand characteristics. The clinical "theory" of Ellis (1958) comes close to discussing analogous cognitive behavior in clients. He maintained that much of the neurotic's problem stems from the emotional and behavioral effects of the kinds of irrational statements he makes to himself. More broadly, whatever a person "tells himself", whether a result of environmental events, physiological events, or his own internal

logic is likely to affect how he feels and behaves.

Another allied area of investigation is Dulany's (1968) theory of propositional control and its accompanying empirical support. This investigator has attempted to make a case for the causal effect of private experiential processes on response selection. His theory relates response selection to "instructions, reinforcement parameters, habit, and a number of states of awareness and their reports." Through the positing of such internal constructs as "behavioral hypothesis", "behavioral intention", "reinforcement distribution", "reinforcement significance", and "motivation to comply", he assumes that behavior is very much an effect of internalized propositions about the environment. Such propositions originate from instructions or from deductive and inductive inference. His data indicates, he feels, that such private events account for more variance than do objectively defined environmental events.

While Schachter has been criticized methodologically (eg., Plutchik and Ax, 1967), while Ellis lacks a body of empirical support, and while Dulany has been criticized for emphasis on "response-response" laws, the effects of environmental demand on subjective interpretation and consequently on later physiological and behavioral performance remains an important area of research relevant to the explanation of the effects of expectancy found in the present study. It does not seem heuristic, however, to attempt to extend the concepts of counterconditioning or extinction to account for such effects.

Given that simple learning mechanisms such as counterconditioning and extinction are to some extent irrelevant to the

explanation of the expectancy effects on behavioral and subjective report performance but still apparently relevant to the physiological effects, the second problem remains, i.e., the effectiveness of the avoidance response procedure. Operationally, the avoidance response group received procedures predicted by both Wölpe's and Stampfl's theories to show no change, or at least less change than their respective therapy techniques. In fact, this group showed nearly equal improvement on all measures, including the physiological. Physiologically this group should have shown little change in during-therapy responses. In fact, it evidenced physiological patterns which were similar to those predicted to occur under desensitization procedures and which more closely approximated that model than the actual desensitization group. Because of the outcome results for the avoidance response group, the theoretical models are weakened on the operational level. Because of the outcome results and the during-therapy physiological responses, the avoidance response procedure cannot be evaluated as a completely non-active, placebo condition. And because of the physiological results, the theoretical models are weakened on the physiological level. The concepts of counter-conditioning and extinction cannot account for either the outcome or the physiological results of the avoidance response group, unless their proponents each assume that this group actually underwent a desensitization or an implosive procedure. Based on the during-therapy physiology, desensitization can make the best case for this. Operationally, such an extension of either concept would be quite absurd, since the operations were in a

theoretical sense opposed to those involved in desensitization and implosion.

What is required is a theory that will account for the significant reduction of physiological responses by all three therapy procedures. Lader and Mathews (1968) have contended that "extinction" of a physiological response will occur when two conditions are present: 1) a repetitious conditioned stimulus and 2) a critically low level of general arousal. Thus, they viewed extinction as simple habituation of a conditioned response, similar to the way that any response is reduced and eliminated after repetitious presentations of its learned or unlearned stimulus. If, on the other hand, general arousal of the organism is above some critical level, habituation would not occur and arousal would increase with each stimulus presentation, resulting in a "positive feedback" mechanism. These authors have proposed this concept as an alternative model of the desensitization mechanism. Specifically, they have suggested that the technique involves habituation occurring when the rate of habituation is maximal, i.e., when the organism has a very low level of arousal.

This alternative model can be extended to both the implosive (as Rachman, 1969, has done) and the avoidance response procedures. Hypothetically, the subject undergoing implosive therapy is physiologically aroused for an initial period, after which fatigue sets in (i.e., arousal decreases) below some critical level. The conditioned aversive stimuli continue to be presented, however, and the conditions necessary for habituation are thus fulfilled. This conceptualization differs from Stampfl's theory and is

similar to Lader and Matthew's interpretation of the desensitization mechanism in that low arousal is held as a necessary pre-condition for extinction rather than as a necessary post-condition.

In the avoidance response procedure, the subject, in effect, learns to short-circuit the anxiety elicited by visualization of the conditioned stimuli. With only minimal exposure to these stimuli and with the majority of the time spend visualizing the relatively quiet and pleasant situation involved in the avoidance response, arousal is maintained at a relatively low level while item presentation continues. Such "short-circuiting" of physiological arousal as a function of practice has been indicated by the research of Epstein and Fenz (1965 and 1967) on experienced and inexperienced paratroopers.

The Lader and Mathews (1968) theory accounts for the reduced physiological outcome measures found in all three therapy procedures. Perhaps some cogent support for this explanation comes from the therapist effects present in this study.

Compared to therapist 2, therapist 1's groups as a whole had the greater during-item arousal with significantly less reduction of pre-item arousal and trends toward less reduction of during-item and after-item arousal over hierarchy items. His implosive group tended to have the greatest pre-item arousal among all groups. His sessions, therefore, more closely met the conditions necessary for habituation under the implosive-fatigue model. And his implosion group may have met these conditions most closely, evidencing as they did the greatest general arousal. Arousal for his desensitization group was perhaps too high to

allow for a desensitization-low arousal-habituation and too low for an implosion-fatigue-habituation. His desensitization group showed the least evidence for behavioral and pulse rate improvement, while his implosion displayed the most behavioral improvement and was the only group of therapist 1's conditions to show significant pulse rate decreases.

Therapist 2's groups, on the other hand, had significantly lower during-item arousal with significantly greater reduction in pre-item arousal and trends toward greater reduction in during-item and after-item arousal over hierarchy items. His sessions more closely met the conditions for habituation under the desensitization-low arousal model. His desensitization and implosion groups met these conditions most closely, evidencing less general arousal than the avoidance response group. And, in fact, among therapist 2's groups, desensitization tended to show the greatest behavioral approach improvement, while desensitization and implosion had the most pulse rate improvement.

It is speculated, then, that elimination of the physiological component of fear was a function of either an implosion-fatigue process or a desensitization-low arousal process either of which could have met the conditions for habituation of the response depending on the quantitative type of arousal generated during stimulus presentation. Regardless of what the operations of the therapy techniques were, the during-therapy physiological data suggested that therapist 1's implosion procedure met the fatigue conditions, while therapist 2's desensitization and implosion procedure met the low arousal conditions.

In summary, it is concluded that the subjects' interpretation of the effects of the therapy procedures influenced their approach and subjective report behavior. This interpretation was influenced by a) the expectancy established by the "therapy" vs "not-therapy" instructions, b) the expectancy established by the type of therapy experienced, in terms of "emotionality" of its content, and c) the actual physiological changes that occurred during therapy and after therapy. It appeared that some simple learning mechanism could have resulted in the pulse rate outcome measures, but that a concept of habituation under various arousal conditions may more parsimoniously accounts for these results.

Quite obviously, the above explanation of the results must be regarded as highly speculative. Some of the conclusions were based on a pattern of trends as well as the significant results. Many of these were based on a small number of subjects. The Lader and Mathews (1968) theory is quite recent and as yet lacks a body of empirical support. Most importantly, the above argument assumed that arousal was a pre-conditioned rather than the traditionally held post-condition. It was assumed that regardless of the "cause" of certain arousal levels (therapy operations, subject or therapist characteristics, etc.) the empirically found levels played the important role in the physiological outcome results. This identifies arousal as a cause rather than an effect. Such an assumption may not be justified, since the during-therapy physiology may simply have been an effect of the therapy sessions and/or expectancy manipulations without mediating any further

behavior. Koenig and Del Castillo (1969), for example, showed that subjects knowledgeable of the onset of non-shocked trials evidenced more rapid extinction of conditioned responses than non-knowledgeable subjects and that false feedback about their reactivity during extinction can retard actual extinction.

The conclusions drawn in this section must further be qualified by the fact that the treatment effects were not very strong. There are a number of possible explanations for this. The number of subjects per cell was small, while therapy was carried out in only three sessions.

On the positive side, it is felt that the present study was better controlled than many of its predecessors and thus may justify a more conservative opinion of the effects of learning-based treatment techniques. The inclusion of a highly relevant "placebo" condition led to some important theoretical conclusions. For the first time, to the author's knowledge, an expectancy factor was factorially combined with a therapy factor and resulted in a control within each therapy condition for the effects of subject expectation for change. No other person was present in the testing room during the snake exposure conditions so that the possible effect of modeling and social pressure present in many other similar studies was eliminated. The therapy procedures were very precisely defined for the therapists in the form of detailed and lengthy manuals. And, finally, great care was taken that the therapy technique be applied as their theoretical models dictated. For instance, subjects in the desensitization groups were not told to use the relaxation they had

learned during the post-test. This study was aimed primarily at testing certain theoretical assumptions and only secondarily at the question of comparative effectiveness.

A related issue is that of generalizability of the findings. First, within even normal populations, the subjects in this study not only were college females (a highly select group in themselves) but also were paid volunteers. About one third of the students asked to participate in the pretest came in. Of those who did come in and met the criterion for admission to the remainder of the experiment, 50 out of 51 volunteered to come in for five more sessions. So the results are limited to paid, volunteer college females.

There is also the issue of generalization to clinical populations. The purpose of the study was, from the start, theoretical: a test of learning assumptions. As such, the issue of analogue versus clinical research is somewhat less relevant. But certainly the results of this study can be generalized only to "normal" subjects who showed an avoidance of, rather than a "phobia" for, snakes. Only two subjects out of 135 pretested subjects would have been labeled clinically "phobic" by the author. This agrees with the observations of Bernstein (1970) and Lang (1968). And certainly the no-therapy groups showed a good deal of improvement on most measures. The strongest and most recurring effect in the analysis of all the outcome measures was that of time. It is difficult to assess therapy effects when comparison is made with a no-therapy group which evidenced as much improvement as it did in the present study.

It is hoped that a design similar to this study will be replicated with clinical groups. This author agrees with Bernstein (1970) who asserts that demand characteristics would have a more powerful influence on "normal" fear. The present author contends that "normal" subject's interpretation of the situation is based more strongly on environmental cues than is the case with "phobic" fear where interpretation may be more strongly based on physiological cues. Another difference would involve the avoidance response results. For a clinical population, this procedure could theoretically result in the "positive feed-back" mechanism suggested by Lader and Mathews (1968). Since this group would more likely have a higher level of arousal, that level would more likely be above the "critical" level. A repetitive stimulus would not result in habituation but rather in heightened arousal.

The most general area of future research suggested by this study, then, involves the interaction of expectancy, therapy, and arousal in various normal and clinical populations. If learning-based treatments do result in reduced physiological responses, then such responses could be an important component in the subject's interpretation of the effects of treatment. On the other hand, it may be that the expectations established by expectancy instructions and by the therapy procedures themselves resulted directly in reduced physiology. If such is the case, the Lader and Mathews (1968) theory as well as the search for simple learning mechanisms actively operating in the therapy procedures become irrelevant to the explanation of effectiveness. At any rate, it is felt that demand characteristics and subjective interpretation

based on cues of environmental demand and physiological feedback remain as important areas of investigation toward an understanding of both "normal" and clinical fear of specific stimuli.

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APPENDIX A. INSTRUCTIONS FOR PRETEST SEQUENCE, AND PRETEST,
POST-TEST, AND FOLLOW-UP TAPED INSTRUCTIONS

APPENDIX A

INSTRUCTIONS FOR PRETEST SEQUENCE, AND PRETEST, POST-TEST, AND FOLLOW-UP
TAPED INSTRUCTIONS

Pretest Sequence

1. Ss arrive.
Send one to the center lounge.
Bring the other to the instruction room.
Ask for her name and enter it on the data sheet.
2. Turn on the taped instructions.
3. Notify observers.
4. Escort S to test room.
5. Observe whether S touches the snake or not.
6. Touch-Ss:
 - a. "Thank you for coming in. You're now eligible for one of the two \$25 prizes."
 - b. Escort S to the student lounge.
7. No-Touch Ss:
 - a. At the end of the criterion time or when S begins to leave the room, enter the room and say, "Would you stay there a minute?"
 - b. Take PR, then PSI, and then FT, saying, "If you were to rate how fearful you were when you were closest to the snake, on a 10 point scale, 1 being "not at all fearful" and 10 being extremely fearful," what number would you assign to your fear?"
8. Escort No-Touch S to the instruction room and ask if she would like to take part in further studies:

"Thank you for participating in the study. You're now eligible for one of the two \$25 prizes. We'd like to offer you an opportunity to earn some more money as well as help us with our research. There are going to be further studies this semester dealing with emotion. This research will last about five weeks and we need students who can spend one hour per week for five weeks as subjects in this research. We are willing to pay \$1.50 per hour to students who take part. You can participate on a schedule convenient to you, and we can assure you that there is no pain involved. Would you be interested in helping us out and earning this money?"

If S agrees, have her indicate on her availability time sheet hours that would be convenient (number them from 1 to 10 in order of decreasing convenience) and ask whether any evening hours would be possible. Tell her it is necessary to attend each session. Money will be payed at the end of the research and only to students who were able to make all of their appointments. Tell her we'll call her in a week or so to let her know when she is scheduled. Make sure that the phone number and address on her availability time sheet are correct.

Thank you for coming in today. I am Tom Borkovec. I'm on the staff of the Department of Psychology and I am currently engaged in research aimed at assessment and evaluation of fear.

As part of my research, students in Psychology 100 were asked to fill out a questionnaire designed to determine the kinds of stimuli and situations which make college students fearful. You may remember having taken this questionnaire in your quiz section. As a continuation of this research, we have asked you to come in today so that we may obtain some additional information about you and your fears.

You may be wondering why you are receiving this information by tape recording. The main reason is that we want to be absolutely sure that each of our subjects receives exactly the same instructions in exactly the same way. The tape recording allows us to avoid the random variation in subject contact procedures which would be inevitable without it.

We have carefully analysed the data from the fear questionnaire and, as a result of our analysis, we have decided to focus upon the fear of snakes as the target for our evaluations, since it is a very common fear.

There are many ways to evaluate fears. We can ask people to tell us how afraid they are of some stimulus. We can record bodily processes such as heart rate and blood pressure while they are in the presence of the stimulus. And we can observe people while in the presence of the stimulus. We will be using all three types of evaluation techniques.

In order to obtain an extremely objective assessment of your fear of snakes, we are going to give you the opportunity to attempt to approach, touch, and handle a live snake.

When this tape recording is over, you will be escorted to a test room where you will find a cage containing a tame and completely harmless snake. Once in the room, please attempt to approach as close as you can to the snake

and, if you can, take it out of the cage with both hands and handle it until the experimenter instructs you to stop.

Remember, we want to evaluate the degree of your fear of snakes and we will be observing your behavior throughout the test by means of one-way glass. If at any point in the test, you wish to go no further, leave the room and tell the experimenter.

Please do not speak to the experimenter until the experiment is over.

You may now consider the tape to be over.

Thank you.

Post Test Taped Instructions

This snake exposure condition is exactly the same as the last one you were in a month ago. When this tape recording is over, you will be escorted to the test room where you will again find a cage containing the same tame and completely harmless snake. Once in the room, please attempt to approach as close as you can to the snake and, if you can, take it out of the cage with both hands and handle it until the experimenter instructs you to stop.

If at any point in the test you wish to go no further, leave the room and tell the experimenter. Please do not speak to the experimenter until the experiment is over.

Thank you.

Follow-Up Test Taped Instructions

We would like to make one final and equally important assessment of your fear of snakes. When this tape recording is over, you will again be escorted to the test room where you will find the same tame and completely harmless snake. Once in the room, approach as close as you can to the snake, take it out of the cage, and handle it until the experimenter instructs you to stop.

If at any point in the test you wish to go no further, leave the room and tell the experimenter.

Thank you.

APPENDIX B. SYSTEMATIC DESENSITIZATION THERAPISTS MANUAL

APPENDIX B

SYSTEMATIC DESENSITIZATION THERAPIST MANUAL

- (5') A. Introduction
- (20') B. Expectancy Setting and Rationale
- (10') C. Visualization Practice
- (35') D. Relaxation Training
- (5') E. Hierarchy Ordering

- (5') A. Introduction

When S arrives, introduce yourself to her and give her some background information about yourself. Mention that you are in clinical psychology and some of the clinical experiences you have had. Encourage her to give information about herself. It is very important to model warmth and friendliness, so allow this time for establishing a friendly relationship.

- (20') B. Expectancy Setting and Rationale

The main points to be covered involve:

- 1) this is a therapy study for elimination of fear
- 2) that the therapy involves 3 skills: relaxation, visualization, and hierarchy construction, and
- 3) that these skills will be systematically combined to countercondition and hence eliminate her fear and avoidance of snakes.

Begin by mentioning that the experiment will have 5 phases. 4 sessions of treatment aimed at anxiety reduction and one quick session repeating the snake exposure condition to assess the amount of anxiety reductions. Mention that "we are studying the effectiveness of a relatively new therapy technique, called systematic desensitization, for the elimination of fear or anxiety. Hopefully, the results of our study will help in the treatment of people who have problems with being anxious. By studying how to eliminate common fears that most everyone has, like fear of snakes, we may be able to better understand and treat neurotic fears. So far in our work, we have been very much encouraged by the possible benefits of this treatment technique."

Mention that over these four sessions, S will be "desensitized" to snakes, i.e., her fear and avoidance of snakes will be markedly reduced or eliminated altogether.

Proceed with the description of what desensitization is and the rationale behind it. Cover the following points (after Paul, 1966) and elaborate where necessary:

- 1) Anxiety ordinarily involves some kind of conditioning process (classical or vicarious) whereby certain stimuli become associated with certain responses. Give Pavlov's bell-food-salivation as an example and apply the analog to snake stimuli. Include both classical and vicarious examples of learning fear reactions and consequent avoidance behaviors to snakes.

- 2) Desensitization produces anxiety reduction by counterconditioning. That is, a new response that is opposite to anxiety is learned to the anxiety-provoking stimuli. So, where snake stimuli once led to fear responses because of past learning or association, the person learns instead to give a different response to snake stimuli because of relearning or the building up of new associations.
- 3) Anxiety almost always involves tension and the resulting sweat gland activity, increased heart rate, "butterflies" in the stomach, and feelings of being anxious. Therefore, one response that is opposite to anxiety would be relaxation. Muscles can't be tensed and relaxed at the same time. So we will be teaching S the skill of relaxing herself very deeply. Once she knows how to relax herself, she can use this response to eliminate tension and anxiety.
- 4) Using our particular method of relaxation is often inconvenient to use in actual anxious situations and wouldn't overcome anxiety permanently unless that relearning-by-association occurs.
- 5) Therefore, we will be systematically exposing S to a new learning situation right here in the office. This will be done by first teaching her to deeply relax herself. Second, we will ask her to make a hierarchy, a list of situations, describing scenes involving snakes, going from scenes that produce very little anxiety to scenes that produce a great deal of anxiety. Finally, each scene will be presented to her imaginably while she is completely relaxed, starting with scenes low on the hierarchy. Thus, instead of the scene producing anxiety, it will be paired and associated with relaxation, a response opposite to anxiety. As soon as a scene produces no anxiety, we move up to the next more anxious scene, pair it with relaxation, and so on until none of the scenes produce any anxiety. The anxiety of each scene has then been counterconditioned by relaxation through this relearning experience.
- 6) Past research has indicated that the relaxation response does transfer to the real-life stimuli, so that once desensitization to imagined scenes has been completed, people are usually much less anxious, and often not anxious at all, to real-life situations similar to the scenes.

Spend the remaining time summarizing the above rationale, asking S to reiterate the rationale and making sure she understands the following concepts: desensitization as a counterconditioning process, relaxation as the response incompatible with anxiety, the hierarchy, the result of pairing relaxation with the hierarchy scenes.

Tell S that in the next 3 sessions we will be monitoring her psychological responses and she will be able to see what they look like.

Mention that for desensitization to be successful, 2 skills need to be learned: visualization and relaxation. Mention that the remaining time will be spent in training S in those skills.

C. Visualization Training.

Tell S that the next 10 minutes will involve practice in imagining scenes. Ask S to picture herself in each scene as if she were really there (not a mirror image of herself), to picture objects in the scene clearly and in color, and to begin the scene when T finished saying, "Visualize yourself ---," as well as to stop the scene when T says, "Stop visualizing that." Then read the following items to her and have her agree with herself as to what she will visualize:

1. Visualize yourself sitting in a chair reading a novel.
2. Visualize yourself walking down a supermarket aisle, turning around at the end of the aisle, and running back down the aisle.
3. Visualize yourself sitting in a chair and a friend of yours walks toward you, stops, and says "hello."

Once she has discussed each scene and described what she will visualize, ask her to get comfortable and close her eyes, and proceed to present each scene. Give a 15 second presentation each time, end it with "stop visualizing that," and allow 10 seconds of silence to elapse. Then ask S to describe what she saw, ask her whether she was able to start the scene immediately and end it immediately, whether she pictured the scene as if she were really there, and whether the scene was clear. Give suggestions as to how to improve the scene and/or 2 further presentations of the scene anytime the questioning indicates problems. Follow the same procedure with each of the three items. When completed, ask S to open her eyes and praise her effort.

D. Relaxation Training.

Tell S that the next 35 minutes will be spent in training her in the skill of deep relaxation. Tell her that the technique involves the systematic tensing and releasing of various muscle groups, describe the normal-tense-released tonus explanation, and mention that such deep muscular relaxation is the response opposite to tension and anxiety and the one that will be used for counterconditioning.

Then proceed to demonstrate each of the 16 muscle groups (after Paul, 1966) and how to tense them, and be sure she can model each group and notice the tension. Mention that 1 of the 3 items will be represented once she is relaxed. Ask her, then, to remove any impediments (glasses, contact lenses, watches, rings, shoes, full bladder) so that nothing will interfere with her comfort and relaxation. Suggest that in future sessions she may wish to wear comfortable, unrestrictive clothing. Answer any questions at this point.

Ask S to recline in the chair and get comfortable, such that she needs to use no muscles to support any part of herself. Tell her that you will dim the lights to cut down on distractive stimuli and ask her to keep her eyes closed, then refrain from talking unless in answer to questions, and to not move any muscle groups unnecessarily once they have been relaxed. Tell her that her most important job for the next half hour is to focus her attention only on the sensations of tension during tensing and relaxation during releasing, to notice the difference in those sensations, and to simply enjoy the pleasant experience of deep relaxation.

Dim the lights and proceed with training. Remember to instruct breathing exercises and make indirect suggestions about breathing from the chest and back to the feet. Use 5-7 seconds tensing, 20 to 30 seconds releasing; give at least 2 cycles and no more than 4 cycles on each muscle group. After completing the left foot, have her focus on her breathing for a minute while giving indirect suggestions of continued relaxation in the muscles of the hands, forearms biceps, face and neck, muscles of the back, chest, shoulders, and the abdomen, and the upper legs, calves, and feet. Ask if she notices any tension anywhere in her muscles, and if so, give no more than 2 t-r cycles. Then present practice item #1 and record lag time. Repeat once or twice if there is a large lag time.

Arouse S by the counting method (4, 3, 2, 1). Briefly discuss the experience, assess any problems, and ask her to practice relaxation twice a day, no more than 15 minutes per practice, three hours apart, and hand her an instruction-self-checklist, stressing the importance of practicing.

E. Hierarchy Ordering.

Present S with a copy of the common hierarchy and ask her to make any rank ordering changes. Tell her that the items should proceed from the least to the most anxiety-provoking situations. Mention that the rank ordering on the copy is typical among college females, but that not all agree, so that she may wish to make corrections in their ordering. When she has finished explain that these are the situations that will be desensitized, i.e., these anxiety provoking stimuli will be presented to her imaginally while she is in a state of deep relaxation, and that this relearning experience should greatly reduce her fear and avoidance of snakes. The purpose of using a graded hierarchy and starting with low scenes, of course, is to insure that strength of relaxation is greater than strength of anxiety, so that only relaxation is paired with the scenes. Mention also to S the generalization of counterconditioning.

Praise S for her time and very fine effort, tell her you are looking forward to seeing her next week, and terminate after reminding her of the time and place of the next meeting.

Session 2 - E+SD

- (15') A. Review
- (15') B. Relaxation Training
- (25') C. Desensitization
- (5') D. Feedback

(15') A. Review.

Immediately have S sit down and mention that your project coordinator will attach tiny electrodes to her fingers, arms, and ear lobe. "Their purpose is to allow us to look at your physiological responses during the procedures." Mention that "there will be no pain or discomfort whatsoever, and at the end of the hour you'll be able to see what the responses look like."

Briefly review the rationale (that we are going to counter-condition her anxiety response to snakes by pairing snake-related stimuli with deep relaxation, a response opposite to anxiety; the result of this new learning experience is the elimination of anxiety to and avoidance of snake stimuli). Then say: "and, as you know, we will be using stimuli like 'lifting a snake out of its cage with both hands'."

Answer any further questions S might have.

Ask S for her relaxation homework checklist. If she doesn't have it, have her report verbally on the frequency of practice, record that frequency, and ask her to be sure to bring the checklist next time. Praise her for any good performance and encourage improved practice. Stress the importance of the skill for this study as well as the benefit to her in the future. Give her a Session 2 checklist (4 muscle groups).

(15') B. Relaxation Training (Be sure to have S's hierarchy).

Mention that you are going to shorten the procedure to 4 muscle groups instead of 16. Run through the groups (1. hands, forearms, biceps; 2. face and neck; 3. back, shoulders, chest, and abdomen; and 4. upper legs, calves, and feet). Demonstrate each group, have S model the tension, and be sure she is achieving sufficient tension. Mention that again her only job is to focus on the sensations of tension and relaxation and their contrast.

Tell S that once she is completely relaxed, you will begin desensitization. Demonstrate the procedure, using neutral item #1 as follows: "For instance, I might say: 'Visualize yourself sitting in a chair, reading a novel.' As soon as I finish saying the item, get a clear image of that scene in mind. And keep that scene in mind until I say, 'Stop visualizing that and go on relaxing.' When I say that, simply drop the scene and shift your attention to the pleasant relaxation sensations for about a minute, until I present another item."

"After each scene, I'll say, 'Signal if that last image was clear.' You can signal by simply raising your right index finger. This way, we'll be able to make sure of whether you're visualizing good, clear images."

"There is one other signal that is very important. Raise your right thumb anytime you notice any anxiety or tension. If anxiety occurs during a scene, I'll ask you to 'stop visualizing that scene and go on relaxing.' The important thing is that the

scenes are paired only with relaxation and not with anxiety. Signalling with your thumb whenever anxiety occurs makes sure of this."

Ask S if she has any questions about the desensitization procedure, clarity signals with right index finger, and anxiety signals with the right thumb.

Have S get comfortable after removing impediments. Remind her to not move muscles unnecessarily after being relaxed, to keep her eyes closed, focusing only on the sensations of tension and relaxation, and to not talk except in response to direct questions.

Proceed with relaxation training by 4 muscle groups. Again use 5-7 seconds of tensing and 30 seconds of release; give 2 cycles on each group and not more than 3. After completing the 4 groups, ask Ss if she notices any tension anywhere in her muscles. If so, give no more than 2 t-r cycles. Then have S focus on her breathing for a minute, while you give indirect suggestions of deep, smooth breathing and continued muscle relaxation.

(25')C. Desensitization.

Once S is completely relaxed, begin desensitization (after Paul):

- a) Present each item twice with 10 seconds of visualization on each presentation. If no anxiety is signalled, go to the next item.
- b) Allow 30 to 40 seconds between items.
- c) If anxiety is signalled, terminate item immediately, give one minute of indirect relaxation suggestions, and ask if S feels "completely relaxed now." Then inform S that you'll shorten the presentation so that the anxiety won't occur, and give the following presentations before proceeding to the next item: 3-5 seconds, 5 seconds, 10 seconds, and 20 seconds. If this is not successful, drop back to a 10 second presentation of the previous item, then try the 3-5, 5- 10, 20 sequence again.
- d) Repeat any item that wasn't signalled as clear.
- e) Use a notational system on S's hierarchy to indicate the progress: A=anxiety, NC=not clear; eg. 10-10=2 ten second presentations; no anxiety; clear images; eg. 7A-3NC-3-5-10NC-10-20: anxiety was signalled after 7 seconds on the first presentation; the 3-second presentation was not clear, so it was repeated; same for the 10 second presentation.
- f) Use the following pattern, or minor variation thereof, for each item: "Visualize yourself - - -. (10 seconds). Stop visualizing that and go on relaxing, focusing only on the very pleasant sensations of relaxation and your smooth and regular breathing Signal if that last image was clear Just go on relaxing muscles continuing to loosen up (unwind, smooth out, become more and more deeply relaxed). (Just attend to how it feels to be so completely relaxed) Breathing continuing to become more and more slow and deep and regular. 30 - 40 seconds.
- g) Arouse S 5 minutes before the end of the session. Be sure to end on a successful item.
- h) Briefly, ask S the following:
Were the images clear? Did they fill the entire 10 seconds? Was there any time when S didn't signal anxiety when she thought there may have been some? Does she have any further questions about the procedure?

i)-Praise her fine effort and progress, and remind her to again practice relaxation twice a day, using 4 muscle groups and the homework checklist.

*

(5') D. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 3 - E+SD

- (5') A. Review
- (5' and 45') B. Relaxation and Desensitization
- (5') C. Feedback

(5') A. Review.

Have E attach electrodes while you engage S in casual conversation. When E leaves, ask for S's homework checklist, praise, and encourage her. Give her a new checklist (same as last week's: 4 muscle groups by t-r).

(5' and 45') B. Relaxation and Desensitization (Be sure to have S's hierarchy).

Tell S that the relaxation procedure will be the same as last week, 4 major muscle groups by t-r. Mention that once she is relaxed, you will proceed with desensitization, starting with the last item used. Remind her to signal in answer to your questions with her right index finger and to signal anxiety whenever it occurs by raising her right thumb.

Proceed with relaxation and desensitization exactly as instructed for Session 2 (between asterisks).

C. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 4 - E+SD

- (5') A. Review
- (5' and 45') B. Relaxation and Desensitization
- (5') C. Feedback

Session 4 is exactly the same as Session 3 with the following 2 exceptions:

- 1) no relaxation homework nor checklist is given.
- 2) after arousing S and while casually talking about the desensitization session, ask S what she thought of the procedure in general. After her first sentence, say: "What did you think of using visualized items like: 'lifting a snake from its cage with both hands'?" Electrodes may be removed 60 seconds after this statement.

Whenever an S finished the hierarchy early, go ahead and terminate the session. In such cases, record how much time of the 4th session elapsed.

Thank S for her cooperation and effort, and remind her of the second snake exposure condition, at which time she will be paid.

Fill out the S Evaluation Form at first opportunity

Therapist Manual for Eo Desensitization - Session 1

- (5') A. Introduction
- (20') B. Expectancy Setting and Rationale
- (10') C. Visualization Practice
- (35') D. Relaxation Training
- (5') E. Hierarchy Ordering

(5') A. Introduction

When S arrives, introduce yourself to her and give her some background information about yourself. Mention that you are a research psychologist. Encourage her to give information about herself. It is very important to model warmth and friendliness, so allow this time for establishing a friendly relationship.

(20') B. Expectancy Setting and Rationale

The main points to be covered involve:

- 1) This is an experimental study investigating subjective reports and physiological responses of fear.
- 2) Past research in this area has so far been unfruitful.
- 3) This research is aimed at studying such response measurements and their relationship in a variety of conditions, eg. imagined vs. real, relaxed vs. non-relaxed state, various degrees of fear-provoking stimuli.

Begin by mentioning that the experiment will have 5 phases. 4 sessions here in the office and one quick session repeating the snake exposure condition.

Explain to S that "we are interested in studying the relationship between subjective reports of feelings of fear and physiological responses to feared stimuli."

"A good deal of research has been done in the past on various self-report measures of fear to specific stimuli. Similarly a variety of studies have monitored physiological responses to equally specific stimuli. These past research studies have come to a variety of conclusions about fear and human responses to feared stimuli. Recent research, however, has attempted to obtain measurements of both the self-report kind and the physiological kind. These later studies indicated 2 things. First, the earlier studies, which collected information by one or the other kind of measurement device, may have come to faulty conclusions. Apparently, one needs to gather both sets of information (self-report and physiological) simultaneously in order to come to valid conclusions about human fear reactions. For example, for any individual person, self-report may sometimes give an accurate account of his reaction to a stimulus; and sometimes not. At other times, physiological measurements may give more accurate information about that individual's reaction. And at even other times, it is necessary to have a combination of self-report and physiological information before accurate assessment of the person's fear reaction can be made."

"The second point indicated by these research studies is that the combination of self-report information and the physiological information is probably quite complex. For example, one cannot simply add the 2 measurements together and come up with an accurate estimate of the person's reaction."

"So, researchers of human fear reactions cannot depend only on self-report; not can they trust only physiological measurement; nor can they simply add the two together. But if we are to adequately understand human fear, we need some way of accurately measuring it. So we are faced with a difficult, but important, problem."

"Very recent speculation has offered a possible clue. Perhaps it is impossible to discover what the exact combination of the 2 measures needs to be, if we are dealing with the feared stimulus in only one condition. However, if the conditions in which that feared stimulus appears are varied systematically, we may be able to detect systematic variation in the relationship between the 2 measures and to thus obtain clues to the possible complex function that relates these 2 measures."

"That is the purpose of this study. We'd like your help in obtaining answers to this problem. You have already indicated that the stimulus, snake, is a feared one for you. Since this stimulus seems to reliably elicit fear reactions from you, this is the stimulus we will use."

"The important thing is that we are going to place that stimulus in a variety of conditions while measuring your self-reported fear and your physiology. The major conditions involve the following things: imagined scenes involving snakes, real scenes involving snakes, and the state of your physiological activation."

"The remainder of today's session will involve giving you some practice in the conditions, before we actually begin the procedures next week. First, we'll practice visualizing scenes. Then I will instruct you in a method of deep muscle relaxation. This condition is crucial since it is the different degrees of muscle relaxation that may provide the conditions necessary for us to discover the relationship between self-report and physiology. Then I will ask you to rank order a set of scenes involving snakes, ordering them from the least to the most fear provoking scene. This condition is a similarly crucial systematic variation. What we will be doing in the next 3 sessions is to imaginably present to you these scenes, from lowest to highest, while you are in various stages of relaxation. By measuring you physiology as well as your self-report during this time, we hope to discover the complex function relating the 2 measures."

Summarize the above rationale, answer any questions S has, and in the remaining time, ask her questions to assess how well she understands the rationale and what is going on.

Tell S that in the next 3 sessions we will be monitoring her physiological responses and she will be able to see what they look like.

(10') C. Visualization Training.

Tell S that the next 10 minutes will involve practice in imagining scenes. Ask S to picture herself in each scene as if she were really there (not a mirror image of herself), to picture objects in the scene clearly and in color, and to begin the scene when T finishes saying, "Visualize yourself - - ." as well as to stop the scene when T says, "Stop visualizing that." Then read the following items to her and have her agree with herself as to what she will visualize:

1. Visualize yourself sitting in a chair reading a novel.
2. Visualize yourself walking down a supermarket aisle, turning around at the end of the aisle, and running back down the aisle.
3. Visualize yourself sitting in a chair and a friend of yours walks toward you, stops, and says "hello."

Once she has discussed each scene and described what she will visualize, ask her to get comfortable and close her eyes, and proceed to present each scene. Give a 15 second presentation each time, end it with "Stop visualizing that," and allow 10 seconds of silence to elapse. Then ask S to describe what she saw, ask her whether she was able to start the scene immediately and end it immediately, whether she pictured the scene as if she were really there, and whether the scene was clear. Give suggestions as to how to improve the scene and 1 or 2 further presentations of the scene anytime the questioning indicates problems. Follow the same procedure with each of the three items. When completed, ask S to open her eyes and praise her effort.

(35') D. Relaxation Training.

Start off by mentioning that for us to be successful in our attempt, it is necessary to have S very deeply relaxed, physiologically. Therefore, the next 35 minutes will be spent in training her in deep muscular relaxation. Tell her that the technique involves the systematic tensing and releasing of various muscle groups and describe the normal-tense-released tonus explanation.

Then proceed to demonstrate each of the 16 muscle groups (after Paul, 1966) and how to tense them, and be sure she can model each group and notice the tension. Mention that 1 of the 3 items will be presented once she is relaxed. Ask her, then, to remove any impediments (glasses, contact lenses, watches, rings, shoes, full bladder) so that nothing will interfere with her comfort and relaxation. Suggest that in future sessions she may wish to wear comfortable, unrestrictive clothing. Answer any questions at this point.

Ask S to recline in the chair and get comfortable, such that she needs to use no muscles to support any part of herself. Tell her that you will dim the lights to cut down on distractive stimuli and ask her to keep her eyes closed, to refrain from talking unless in answer to questions, and not to move any muscle groups unnecessarily once they have been relaxed. Tell her that her most important job for the next half hour is to focus her attention only on the sensations of tension during tensing and relaxation during releasing, to notice the difference in those sensations, and to simply enjoy the pleasant experience of deep relaxation.

Dim the lights and proceed with training. Remember to instruct breathing exercises and make indirect suggestions about breathing from the chest and back to the feet. Use 5-7 seconds tensing, 20-30 seconds releasing; give at least 2 cycles and no more than 3 cycles on each muscle group. After completing the left foot, have her focus on her breathing for a minute while giving indirect suggestions of continued relaxation in the muscles of the hands, forearms and biceps, face and neck, muscles of the back, chest, shoulders, and abdomen, and the upper legs, calves, and feet. Ask if she notices any tension anywhere in her muscles, and if so, give no more than 2 t-r cycles. Then repeat the minute of breathing focus.

Finally, tell her to signal by raising her index finger when the following image is clear. Then present practice item #1 and record lag time. Repeat once or twice if there is a large lag time.

Arouse S by the counting method (4, 3, 2, 1). Briefly discuss the experience, assess any problems, and ask her to practice relaxation twice a day, no more than 15 minutes per practice three hours apart, and hand her an instruction-self-checklist, stressing the importance of practicing.

(5') E. Hierarchy Ordering.

Present S with a copy of the common hierarchy and ask her to make any rank ordering changes. Tell her that the items should proceed from the least to the most feared situations. Mention that the rank ordering on the copy is typical among college females, but that not all agree, so she may wish to make corrections in their ordering. When she has finished, explain that this, of course, is the second systematically varied condition; using it, we hope to increase our chances of discovering systematic relations between self-report and physiology.

Praise S for her time and very fine effort, tell her you are looking forward to seeing her next week, and terminate after reminding her of the time and place of the next meeting.

Session 2-EoSD

- (15') A. Review
- (15') B. Relaxation Training
- (25') C. Item Presentation
- (5') D. Feedback

(15') A. Review.

Immediately have S sit down and mention that your assistant will attach 5 tiny electrodes to her fingers, arms, and ear lobe. "their purpose is to allow us to look at your physiological responses during the procedures." Mention that "there will be no pain or discomfort whatsoever, and at the end of the hour you'll be able to see what the responses look like."

Briefly review the rationale (that we are going to expose her to a hierarchy of items under low physiological activation while monitoring physiological and self-report responses in an attempt to discover clues to the complex function relating the two measures.)

Then say: "and, as you know, we will be using stimuli like 'lifting a snake out of its cage with both hands'."

Answer any further questions S might have.

Ask S for her relaxation homework checklist. If she doesn't have it, have her report verbally on the frequency of practice, record that frequency, and ask her to be sure to bring the checklist next time. Praise her for any good performance and encourage improved practice. Stress the importance of the skill for this study as well as the benefit to her in the future. Give her a Session 2 checklist (4 muscle groups).

(15') B. Relaxation training (Be sure to have S's hierarchy).

Mention that you are going to shorten the procedure to 4 muscle groups instead of 16. Run through the groups (1. hands, forearms, biceps; 2. face and neck; 3. back, shoulders, chest, and abdomen; and 4. upper legs, calves, and feet). Demonstrate each group, have S model the tensing, and be sure she is achieving sufficient tension. Mention that again her only job is to focus on the sensations of tension and relaxation and their contrast.

Tell S that once she is completely relaxed, you will begin item presentation. Demonstrate the procedure, using neutral item #1 as follows: "For instance, I might say: 'Visualize yourself sitting in a chair, reading a novel.' As soon as I finish saying the item, get a clear image of that scene and shift your attention to the pleasant relaxation sensations for about a minute, until I present another item."

"After each scene, I'll say, 'Signal if that last image was clear.' You can signal by simply raising your right index finger. This way, we'll be able to make sure of whether you're visualizing good, clear images."

"There is one other signal that is very important. Raise your right thumb anytime you notice any tension. If tension occurs during a scene, I'll ask you to 'stop visualizing that scene and go on relaxing.' The important thing is that we know when tension occurs, by your self-report, and signalling with your right thumb makes sure of this."

Ask S if she has any questions about the item presentation procedure, clarity signals with right index finger, and tension signals with the right thumb.

Have S get comfortable after removing impediments. Remind her to not move muscles unnecessarily after being relaxed, to keep her eyes closed, focusing only on the sensations of tension and relaxation, and to not talk except in response to direct questions.

Proceed with relaxation training by 4 muscle groups. Again use 5-7 seconds of tensing and 30 seconds of release; give 2 cycles on each group and not more than 3. After completing the 4 groups, ask S if she notices any tension anywhere in her muscles. If so, give no more than 2 t-r cycles. Then have S focus on her breathing for a minute, while you give indirect suggestions of deep, smooth breathing and continued muscle relaxation.

(25') C. Item Presentation

Once S is completely relaxed, begin item presentation (after Paul):

- a) Present each item twice with 10 seconds of visualization on each presentation. If no tension is signalled, go to the next item.
- b) Allow 30 to 40 seconds between items.
- c) If tension is signalled, terminate item immediately, give one minute of indirect relaxation suggestions, and ask if S feels "completely relaxed now." Give the following presentations before proceeding to the next item: 3-5 seconds, 5 seconds, 10 seconds, and 20 seconds. If this is not successful, drop back to a 10 second presentation of the previous item, then try the 3-5, 5, 10, 20 second sequence again.
- d) Repeat any item that wasn't signalled as clear.
- e) Use a notational system on S's hierarchy to indicate the progress:
A=anxiety, NC=not clear; e.g. 10-10=2 tenseconds presentations; no anxiety; clear images; eg. 7A-3NC-3-5-10NC-10-20: anxiety was signalled after 7 seconds on the first presentation; the 3 second presentation was not clear, so it was repeated; same for the 10 second presentation.
- f) Use the following pattern, or minor variations thereof, for each item:
"Visualize yourself - - -. (10 seconds) Stop visualizing that and go on relaxing, focusing only on the very pleasant sensations of relaxation and your smooth and regular breathing Signal if that last image was clear Just go on relaxing muscles continuing to loosen up (unwind, smooth out, become more and more deeply relaxed). (Just attend to how it feels to be so completely relaxed.) (Breathing continuing to become more and more slow and deep and regular.) 30-40 seconds.
- g) Arouse S 5 minutes before the end of the session. Be sure to end on a successful item.
- h) Briefly, ask S the following:
Were the images clear? Did they fill the entire 10 seconds? Was there any time when S didn't signal tension when she thought there may have been some? Does she have any further questions about the procedure?
- i) Praise her fine effort and progress, and remind her to again practice relaxation twice a day, using 4 muscle groups and the homework checklist.

(5') D. Feedback

Escort S to the recording room where she may be left with E for physiological feedback.

Session 3-EoSD

- (5') A. Review
- (5' & 45') B. Relaxation and Item Presentation
- (5') C. Feedback

(5') A. Review

Have E attach electrodes while you engage S in casual conversation.

When E leaves, ask for S's homework checklist, praise, and encourage her. Give her a new checklist (same as last weeks: 4 muscle groups by t-r).

(5' & 45') B. Relaxation and Item Presentation (Be sure to have S's hierarchy).

Tell S that the relaxation procedure will be the same as last week, 4 major muscle groups by t-r. Mention that once she is relaxed, you will proceed with item presentation, starting with the last item used. Remind her to signal in answer to your questions with her right index finger and to signal tension whenever it occurs by raising her right thumb.

Proceed with relaxation and item presentation exactly as instructed for Session 2 (between asterisks).

(5') C. Feedback

Escort S to the recording room where she may be left with E for physiological feedback.

Session 4-EoSD

- (5') A. Review
- (5' & 45') B. Relaxation and Item Presentation
- (5') C. Feedback

Session 4 is exactly the same as Session 3 with the following 2 exceptions:

- 1) no relaxation homework nor checklist is given.
- 2) after arousing S and while casually talking about the item presentation session, ask S what she thought of the procedure in general. After her first sentence, say: "what did you think of using visualized items like: lifting a snake from its cage with both hands?" Electrodes may be removed 60 seconds after this statement.

Whenever an S finishes the hierarchy early, go ahead and terminate the session. In such cases, record how much time of the 4th session elapsed.

Thank S for her cooperation and effort, and remind her of the second snake exposure condition, at which time she will be paid.

Fill out the S Evaluation Form at first opportunity.

NAME: _____

Relaxation Practice Instructions - Session 1

This week you have been shown how to develop the skill of relaxation. Such a skill, if practiced, results in your ability to deeply relax yourself. We would like you to practice relaxation daily between our sessions. You should use the same procedure that you were taught this week. Practice twice a day for no more than 15 minutes per practice. Separate your two practice sessions by at least three hours. A good time to do your second practice would be just before you go to sleep at night.

Tense each of the following muscle groups for about six seconds, release them, and concentrate only on the pleasant sensations of relaxation for about 25 seconds. Repeat this once more, and then go on to the next muscle group.

Muscle groups:

- 1)-right hand and forearm
- 2)-right biceps
- 3)-left hand and forearm
- 4)-left biceps
- 5)-forehead
- 6)-eyes and nose
- 7)-mouth, jaw, and cheeks
- 8)-neck
- 9)-chest, back, and shoulders
- 10)-abdomen
- 11)-right upper leg
- 12)-right calf
- 13)-right foot
- 14)-left upper leg
- 15)-left calf
- 16)-left foot

Please write in the number of times you practiced relaxation each day. Return this sheet next week.

Mon.____ Tues.____ Wed.____ Thurs.____ Fri.____ Sat.____ Sun.____

Name _____

Relaxation Practice Instructions - Sessions 2 and 3

This week you have been relaxing at home by using four major muscle groups instead of 16. Please continue practicing twice a day. Each practice should only take about five minutes. Again, separate the practice sessions by at least three hours.

Tense each of the following muscle groups for about six seconds, release them, and concentrate only on the pleasant sensations of relaxation for about 25 seconds. Repeat this once more, and then go to the next major muscle group.

Muscle groups:

- 1)-both hands, forearms, and biceps
- 2)-forehead, eyes, nose, mouth, jaw, cheeks, and neck
- 3)-chest, back, shoulders, and abdomen
- 4)-both upper legs, calves, and feet.

Please write in the number of times you practiced relaxation each day. Return this sheet next week.

Mon.____Tues.____Wed.____Thurs.____Fri.____Sat.____Sun.____

ITEM HIERARCHY

1. Entering the laboratory door and seeing the cage.
2. Walking half way toward the cage and seeing part of the snake.
3. Standing right in front of the cage and seeing the whole snake.
4. Touching the cage with one hand while looking at the snake.
5. Touching the cage with both hands while looking at the snake.
6. Putting one hand into the cage while looking at the snake.
7. Putting both hands into the cage while looking at the snake.
8. Touching the snake with one hand.
9. Touching the snake with both hands.
10. Grasping the snake with one hand.
11. Grasping the snake with both hands.
12. Lifting the snake up a few inches with one hand.
13. Lifting the snake up a few inches with both hands.
14. Removing the snake from the cage with one hand.
15. Removing the snake from the cage with both hands.
16. Holding the snake with one hand and it's coiling around your hand.
17. Holding the snake with both hands and it's coiling around your arms.
18. Holding the snake up near your face.

APPENDIX C. IMPLOSIVE THERAPY THERAPISTS MANUAL

APPENDIX C

IMPLOSIVE THERAPY THERAPISTS MANUAL

- (5') A. Introduction
- (20') B. Expectancy Setting and Rationale
- (10') C. Visualization Practice
- (35') D. Background Assessment
- (5') E. Hierarchy Ordering

(5') A. Introduction

When S arrives, introduce yourself to her and give her some background information about yourself. Mention that you are in clinical psychology and some of the clinical experience you have had. Encourage her to give information about herself. It is very important to model warmth and friendliness, so allow this time for establishing a friendly relationship.

(20') B. Expectancy Setting and Rationale.

The main points to be covered involve:

- 1) This is a therapy study for elimination of fear.
- 2) That the therapy involves 2 skills: Visualization and hierarchy construction.
- 3) That these skills will be systematically combined to extinguish and hence eliminate her fear and avoidance of snakes.

Tell S that "this program has 2 phases: 1) 4 sessions of treatment aimed at anxiety reduction and 2) a second exposure to the snake situation to assess the amount of anxiety reduction." Mention that "we are studying the effectiveness of a relatively new therapy technique, called Implosive Therapy, for the elimination of fear or anxiety. Hopefully, the results of our study will help in the treatment of people who have problems with being anxious. By studying how to eliminate common fears that most everyone has, like fear of snakes, we may be able to better understand and treat neurotic fears. So far in our work, we have been very much encouraged by the possible benefits of this treatment technique."

Mention that: "Over the next 4 sessions, your anxiety responses to snake stimuli will be extinguished, i.e., your fear and avoidance of snakes will be markedly reduced or eliminated altogether."

Proceed with the description of what the Implosive Therapy technique is and the rationale behind it. Cover the following points (after Stampfl and Levis, 1967) and elaborate where necessary:

- 1) Anxiety ordinarily involves some kind of conditioning process (classical or vicarious) whereby certain stimuli become associated with certain responses. Give Pavlov's bell-food-salivation as an example and apply the analog to snake stimuli. Include both classical and vicarious examples of learning fear reactions and consequent avoidance behaviors to snakes.

- 2) Since anxiety follows the laws of conditioning, there should be efficient ways of extinguishing it. Extinction involves presenting the conditioned stimulus repeatedly (thus evoking the conditioned response repeatedly) without the occurrence of the unconditioned or primary stimulus. For example, when Pavlov presented the bell (the CS) repeatedly without food (the UCS), salivation occurred for a while, but soon ceased to occur after several repetitions.

3) Anxiety should similarly extinguish if the conditioned stimuli (like a snake) are repeatedly presented without the unconditioned stimulus (like a snake bite). Most people remain anxious about snakes because, first, such repeated presentations rarely occur. Second, people usually make quick avoidance responses to snake or snake-related stimuli, so that the conditioned response of anxiety hardly occurs. And without its occurrence, extinction cannot take place. So while avoidance responses do result in short term anxiety reduction, permanent elimination of anxiety never occurs, due to the too early occurrence of avoidance responses.

4) The logical treatment procedure would therefore involve the following: The stimuli to which the anxiety response has been conditioned should be repeatedly presented in the absence of primary reinforcement. That is, the feared stimuli should be presented in the absence of primary reinforcement. That is, the feared stimuli should be presented and the person should experience the anxiety repeatedly without making avoidance responses until that anxiety response extinguishes (stops occurring). This extinction will occur if the person tries to experience the anxiety and if no primary reinforcement (eg., a snake bite) occurs.

5) This technique would be most efficient if it was applied to a hierarchy of visualized anxiety stimuli. A hierarchy is a list of various anxiety-provoking stimuli, ordered from least to most anxious stimuli. We start with the least anxious scene since it is easily extinguished. We then apply the technique to each scene in order, extinguishing anxiety to each.

6) Using visualized scenes allows us to treat anxiety right here in the office. Past research has indicated that use of visualization in such techniques does result in a transfer of the extinction to real life. Thus, successful extinction to visualized scenes does lead to marked reduction and often complete elimination of anxiety to real life situations related to the imagined feared stimuli.

Spend the remaining time summarizing the above rationale, answering S's questions, and asking her questions to insure that she understands: 1) conditioning; 2) extinction and why it doesn't occur in the case of anxiety; 3) Implosive Therapy and how it results in elicitation and consequent long-term extinction of anxiety responses; and 4) the use of visualized, hierarchical scenes. Then mention that the remainder of this session will involve practice in visualization, some background information collecting, and arranging the hierarchy; the actual implosive therapy will begin next week. Mention also the future physiological measurement and feedback.

(10') C. Visualization Practice.

Tell S that the next 10 minutes will involve practice in imagining scenes. Ask S to picture herself in each scene as if she were really there (not a mirror image of herself), to picture objects in the scene clearly and in color, and to begin the scene when T finishes saying, "Visualize yourself," as well as to stop the scene when T says, "Stop visualizing that." Then read the following items to her and have her agree with herself as to what she will visualize:

- 1) Visualize yourself sitting in a chair reading a novel.
- 2) Visualize yourself walking down a supermarket aisle, turning around at the end of the aisle, and running back down the aisle.
- 3) Visualize yourself sitting in a chair and a friend of yours walks toward you, stops, and says "hello."

Once she has discussed each scene and described what she will visualize,

ask her to get comfortable and close her eyes, and proceed to present each scene. Give a 15 second presentation each time, end it with "Stop visualizing that," and allow 10 seconds of silence to elapse. Then ask S to describe what she saw, ask her whether she was able to start the scene immediately and end it immediately, whether she pictured the scene as if she were really there, and whether the scene was clear. Give suggestions as to how to improve the scene and 1 or 2 further presentations of the scene anytime the questioning indicates problems. Follow the same procedure with each of the three items. When completed, ask S to open her eyes, and praise her effort.

(35') D. Background Assessment.

Tell S that the next 35 minutes will be spent simply collecting background information about S. Tell her that such information will help us to better evaluate with whom our technique is most successful.

Proceed with background assessment, following the Background History and Demographic Questionnaire. The questions are representative of the types of information to be sought. Use any additional questions you wish and you need not ask all the questions listed. Keep the questioning informal and casual, write down short answers to the questions asked, as if the information were important, and allow S to elaborate as much as she wishes. The important thing is to a) fill up the 35 minutes in casual question-and-answer and b) make it appear to be an important part of the program.

Finally, hand S a "Daily Emotion Checklist" and tell her: "I'd like you to fill out this checklist each day between our sessions. At the end of the day, spend about 30 minutes writing down various events of the day that involved 'happiness,' 'security,' 'anger,' etc. and describing how specifically you felt at those times. This will be very important for us in analysing the results and for you in becoming skilled, through practice, in looking carefully at your emotions."

(5') E. Hierarchy Ordering.

Present S with a copy of the common hierarchy and ask her to make any rank ordering changes. Tell her that the items should proceed from the least to the most anxiety-provoking situations. Mention that the rank ordering on the copy is typical among college females but that not all agree, so that she may wish to make corrections in their ordering. When she has finished, explain that these are the basic situations that will be used for initiating extinction by the Implosive Therapy technique, i.e., these anxiety-provoking stimuli will be presented to her imaginally and her job will be to experience the anxiety so that it will be extinguished. This relearning experience should greatly reduce her fear and avoidance of snakes. Mention again the purpose of the graded hierarchy and efficient.

Praise S for her time and very fine effort, tell her you are looking forward to seeing her next week, and terminate after reminding her of the time and place of the next meeting.

Session 2 - E+IT

- (15') A. Review
- (15') B. Homework Review and Procedural Explanation
- (25') C. Implosion
- (5') D. Feedback

(15') A. Review

Immediately have S sit down and mention that your assistant will attach 5 tiny electrodes to her fingers, arms and ear lobe. "Their purpose is to allow us to look at your physiological responses during the procedures. Mention that "there will be no pain or discomfort whatsoever, and at the end of the hour you'll be able to see what they look like."

Briefly review the rationale (that we are going to extinguish her anxiety response to snakes by presenting snake-related images and by allowing anxiety to occur and hence extinguish; the result of this new learning experience is the elimination of anxiety to snake stimuli.)

Then say: "And, as you know, we will be using stimuli like 'lifting a snake from its cage with both hands.'"

Answer any further questions S might have.

(15') B. Homework Review and Procedural Explanation.

(5') Spend no more than 5 minutes reviewing S's homework. Simply ask S to talk about some of her written responses. Praise and encourage her and give her another homework sheet.

(10') Spend about 10 minutes describing the Implosive procedure to S. Demonstrate the procedure, using neutral item #1 as follows:

"I'll start with first item on the hierarchy, Just as an example, I might say, 'Visualize yourself sitting in a chair, reading a novel.' As soon as I finish saying the item, get a clear image of that scene in mind. Then I'll continue to describe what's happening in the scene and your job is to simply visualize whatever I'm describing, as if you were really there. For example, I might say, 'Now a friend walks in and hands you a book.' Of course the scenes we'll be using have to do with snakes, but the idea is the same. Continue to get clear images of whatever I'm describing.

As I am describing a scene to you, as soon as you notice any muscle tension, "butterflies" in your stomach, or any other feelings of anxiety, signal me by immediately raising your right thumb. Keep that thumb raised as long as you notice any anxiety. Lower it whenever you no longer notice any anxiety. After stating the hierarchy item to you and you get a clear image of it, I'll start describing further scenes involving snakes in order to elicit anxiety. Remember, anxiety must be elicited so that it will extinguish. The scenes I'll be describing are quite anxiety-provoking. Don't try to avoid the anxiety. Experience it as intensely as possible."

"Each hierarchy item and its anxiety-provoking scenes will be presented twice. This will allow the anxiety to extinguish. We'll start with low ranked items and move up through the whole hierarchy."

Ask S if she has any questions about what will happen and what she is supposed to do.

(25') C. Implosion.

Have S set comfortable in her chair. Dim the lights, telling her that this is to help her to concentrate. Ask her to talk during the procedure except in response to direct questions and tell her to keep her eyes closed until the end of the procedures.

Begin item presentation, using the IT instruction sheets. The implosive material are presented on separate sheets.

Follow the same procedure with each item: Read through the material the first time using a normal tone of voice and normal speed. After completing the material, repeat the item and its anxiety scenes. On this second reading, slow down the pace of presentation and use a much more emotional tone in its presentation. You are free to throw in your own variations in words during this second presentation, but stick fairly close to the content given. Particularly emphasize any material that seemed especially noxious to S during the first presentation.

First presentation will take about 2 to 2 1/4 minutes. Second presentation should take 2 3/4 to 3 1/2 minutes. During this first session, you should be able to complete the first 6 items of the hierarchy.

Stop 5 minutes before the end of the session, question whether she had any problems with the procedure, and praise her fine effort and progress. It is important to show clearly discriminated behavior between pre-post-implosion behavior and implosion behavior, ie., be gentle, friendly, and empathetic both before and after imploding, in marked contrast to the apparent "sadistic" imploding behavior.

Remind S of her homework assignment and terminate the session.

(5') D. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 3 - E+IT

(10') A. Review

(45') B. Implosion

(5') C. Feedback

(10') A. Review.

Have E attach electrodes while you engage S in casual conversation.

When E leaves, ask S for her homework checklist, praise, and encourage her. Give her a new checklist.

Spend the remaining time reviewing what happens in Implosion and what S is supposed to do.

(45') B. Implosion.

Have S get comfortable, dim the lights, and begin the IT procedure.

Start with the next item on the hierarchy after reminding her to signal with her thumb whenever she notices any anxiety or tension.

Proceed with IT as in Session 2, section C. You should complete items 7-12 during this session.

(5') C. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 4 - E+IT

- (10') A. Review
- (45') B. Implosion
- (5') C. Feedback

Session 4 is exactly the same as Session 3 with the following 2 exceptions:

- 1) no homework assignment nor checklist is given,
- 2) after finishing the ARP procedure and while casually talking about the ARP session, ask S what she thought of the procedure in general. After her first sentence, say:

"What did you think of using visualized items like: 'lifting the snake from its cage with both hands'?" Electrodes may be removed 60 seconds after this statement.

Whenever an S finishes the hierarchy early, go ahead and terminate the session. In such cases, record how much time of the 4th session elapsed.

Thank S for her cooperation and effort, and remind her of the second snake exposure condition, at which time she will be paid.

Fill out the S Evaluation Form at first opportunity.

APPENDIX C

Therapist Manual for Eo Implosion Condition - Session 1

- (5') A. Introduction
- (20') B. Expectancy Setting and Rationale
- (10') C. Visualization Practice
- (35') D. Background Assessment
- (5') E. Hierarchy Ordering

(5') A. Introduction.

When S arrives, introduce yourself to her and give her some background information about yourself. Mention that you are a research psychologist. Encourage her to give information about herself. It is very important to model warmth and friendliness, so allow this time for establishing a friendly relationship.

(20") B. Expectancy Setting and Rationale.

The main points to be covered involve:

1) This is an experimental study investigating subjective reports and physiological responses of fear.

2) Past research in this area has so far been unfruitful.

3) This research is aimed at studying such response measurements and their relationship in a variety of conditions, eg., imagined vs. real, various degrees of arousal, various degrees of fear-provoking stimuli.

Begin by mentioning that the experiment will have 5 phases: 4 sessions here in the office and one quick session repeating the snake exposure condition.

Explain to S that "we are interested in studying the relationship between subjective reports of feelings of fear and physiological responses to feared stimuli."

"A good deal of research has been done in the past on various self-report measures of fear to specific stimuli. Similarly, a variety of studies have monitored physiological responses to equally specific stimuli. These past research studies have come to a variety of conclusions about fear and human responses to feared stimuli. Recent research, however, has attempted to obtain measurements of both the self-report kind and the physiological kind. These later studies indicated 2 things. First, the earlier studies, which collected information by one or the other kind of measurement device, may have come to faulty conclusions. Apparently, one needs to gather both sets of information (self-report and physiological) simultaneously in order to come to valid conclusions about human fear reaction. For example, for any individual person, self-report may sometimes give an accurate account of his reaction to a stimulus; and sometimes not. At other times, physiological measurements may give more accurate information about that individual's reaction. And at even other times, it is necessary to have a combination of self-report and physiological information before accurate assessment of the person's fear reaction can be made."

"The second point indicated by these research studies is that the combination of self-report information and the physiological information is probably quite complex. For example, one cannot simply add the 2 measurements together and come up with an accurate estimate of the person's reaction."

"So, researchers of human fear reactions cannot depend only on self report; nor can they trust only physiological measurement; nor can they simply add the 2 together. But if we are to adequately understand human fear, we need some way of accurately measuring it. So we are faced with a difficult, but important, problem."

"Very recent speculation has offered a possible clue. Perhaps it is impossible to discover what the exact combination of the 2 measures needs to be, if we are dealing with the feared stimulus in only one condition. However, if the conditions in which that feared stimulus appears are varied systematically, we may be able to detect systematic variation in the relationship between the 2 measures and to thus obtain clues to the possible complex function that relates these 2 measures."

"That is the purpose of this study. We'd like your help in obtaining answers to this problem. You have already indicated that the stimulus, snake, is a feared on for you. Since this stimulus seems to reliably elicit fear reactions from you, this is the stimulus we will use."

"The important thing is that we are going to place that stimulus in a variety of conditions while measuring your self-reported fear and your physiology. The major conditions involve the following things: imagined scenes involving snakes, real scenes involving snakes, and the state of your physiological activation."

"The remainder of today's session will involve giving you some practice in the conditions, before we actually begin the procedures next week, and getting some general information about you. First, we'll practice visualizing scenes. This is done since we'll want you to be skilled in getting good clear images in mind. Then I'll ask you to rank order a set of scenes involving snakes, ordering them from the least to the most fear-provoking scene. This, of course, will be one of our systematically varied conditions. What we'll be doing in the next 3 sessions is to imaginably present to you these rank-ordered scenes. We'll ask you to visualize each scene and to experience as much fear as you can. By measuring your physiology as well as your self-report during this time and during the snake exposure condition, we hope to discover the complex function relating the 2 measures."

Summarize the above rationale, answer any questions S has, and in the remaining time, ask her questions to assess how well she understands the rationale and what is going on.

(10') C. Visualization Training.

Tell S that the next 10 minutes will involve practice in imagining scenes. Ask S to picture herself in each scene as if she were really there (not a mirror image of herself), to picture objects in the scene clearly and in color, and to begin the scene when T finishes saying, "Visualize yourself. . .," as well as to stop the scene when T says, "Stop visualizing that." Then read the following items to her and have her agree with herself as to what she will visualize:

1. Visualize yourself sitting in a chair reading a novel.
2. Visualize yourself walking down a supermarket aisle, turning around at the end of the aisle, and running back down the aisle.
3. Visualize yourself sitting in a chair and a friend of yours walks toward you, stops, and says, "hello."

Once she has discussed each scene and described what she will visualize, ask her to get comfortable and close her eyes, and proceed to present each

scene. Give a 15 second presentation each time, end it with "Stop visualizing that," and allow 10 seconds of silence to elapse. Then ask S to describe what she saw, ask her whether she was able to start the scene immediately and end it immediately, whether she pictured the scene as if she were really there, and whether the scene was clear. Give suggestions as to how to improve the scene and 1 or 2 further presentations of the scene anytime the questioning indicates problems. Follow the same procedure with each of the three items. When completed, ask S to open her eyes, and praise her effort.

(35') D. Background Assessment.

Tell S that the next 35 minutes will be spent simply collecting background information about S. Tell her that such information will help us to better evaluate the relationships discovered between her physiological responses and self-reports.

Proceed with background assessment, following the Background History and Demographic Questionnaire. The questions are representative of the types of information to be sought. Use any additional questions you wish and you need not ask all the questions listed. Keep the questioning informal and casual, write down short answers to the questions asked, as if the information were important, and allow S to elaborate as much as she wishes. The important thing is to a) fill up the 35 minutes in causal question-and answer and b) make it appear to be an important part of the program.

Finally, hand S a "Daily Emotion Checklist" and tell her: "I'd like you to fill out this checklist each day between our sessions. At the end of the day, spend about 30 minutes writing down various events of the day that involved 'happiness,' 'security,' 'anger,' etc. and describing how specifically you felt at those times. This will be very important for us in analyzing the results.

(5') E. Hierarchy Ordering.

Present S with a copy of the common hierarchy and ask her to make any rank ordering changes. Tell her that the items should proceed from the least to the most feared situations. Mention that the rank ordering on the copy is typical among college females, but that not all agree, so she may wish to make corrections in their ordering. When she has finished, explain that this, of course, is the second systematically varied condition; using it, we hope to increase our chances of discovering systematic relations between self-report and physiology.

Praise S for her time and very fine effort, tell her you are looking forward to seeing her next week, and terminate after reminding her of the time and place of the next meeting.

Session 2-EOIT

- (15') A. Review
- (15') B. Homework Review and Procedural Explanation
- (25') C. Implosion
- (5') D. Feedback

(15') A. Review.

Immediately have S sit down and mention that your assistant will attach 5 tiny electrodes to her fingers, arms, and ear lobe. "Their purpose is to allow us to look at your physiological responses during the procedures." Mention that "there will be no pain or discomfort whatsoever, and at the end of the hour you'll be able to see what they look like."

Briefly review the rationale (that we are going to expose her to a hierarchy of items while monitoring physiological and self-report responses in an attempt to discover clues to the complex function relating the two measures.

Then say: "And, as you know, we will be using stimuli like 'lifting a snake from its cage with both hands.'"

Answer any further questions S might have.

(15') B. Homework Review and Procedural Explanation.

(5') Spend no more than 5 minutes reviewing S's homework. Simply ask S to talk about some of her written responses. Praise and encourage her and give her another homework sheet.

(10') Spend about 10 minutes describing the Implosive procedure to S. Demonstrate the procedure, using neutral item #1 as follows:

"I'll start with the first item on the hierarchy. Just as an example, I might say, 'Visualize yourself sitting in a chair, reading a novel.' As soon as I finish saying the item, get a clear image of that scene in mind. Then I'll continue to describe what's happening in the scene and your job is to simply visualize whatever I'm describing, as if you were really there. For example, I might say, 'Now a friend walks in and hands you another book.' You would visualize one of your friends walking in and handing you a book. Of course, the scenes we'll be using have to do with snakes, but the idea is the same: Continue to get clear images of whatever I'm describing."

As I am describing a scene to you, as soon as you notice any muscle tension, "butterflies" in your stomach, or any other feelings of fear, signal me by immediately raising your right thumb. Keep that thumb raised as long as you notice any fear. Lower it whenever you no longer notice any fear. After stating the hierarchy item to you and you get a clear image of it, I'll start describing further scenes involving snakes in order to elicit fear. Remember, fear must be elicited so that we'll be able to relate it to physiological and self-report responses. The scenes I'll be describing are quite fear provoking. Don't try to avoid the fear. Experience it as intensely as possible.

"Each hierarchy item and its fear provoking scenes will be presented twice. This will allow two sample measurements on each item.

We'll start with low ranked items and move up through the whole hierarchy,

Ask S if she has any questions about what will happen and what she is supposed to do.

(25') C. Implosion.

Have S get comfortable in her chair. Dim the lights, telling her that this is to help her to concentrate. Ask her not to talk during the procedure except in response to direct questions and tell her to keep her eyes closed until the end of the procedures.

Begin item presentation, using the IT instruction sheets. The implosive material for all 18 items are given verbatim. Each item and fear provoking material are presented on separate sheets.

Follow the same procedure with each item: Read through the material the first time using a normal tone of voice and normal speed. After completing the material, repeat the item and its fear scenes. On this second reading, slow down the pace of presentation and use a much more emotional tone in its presentation. You are free to throw in your own variations in words during this second presentation, but stick fairly close to the content given. Particularly emphasize any material that seemed especially noxious to S during the first presentation.

First presentation will take about 2 to 2 1/4 minutes. Second presentation should take 2 3/4 to 3 1/2 minutes. During this first session, you should be able to complete the first 6 items of the hierarchy.

Stop 5 minutes before the end of the session, question whether she had any problems with the procedure, and praise her fine effort and progress. It is important to show clearly discriminated behavior between pre-post-implosion behavior and implosion behavior, ie., be gentle, friendly, and empathetic both before and after imploding, in marked contrast to the apparent "sadistic" imploding behavior.

Remind S of her homework assignment and terminate the session.

(5') D. Feedback

Escort S to the recording room where she may be left with E for physiological feedback.

Session 3-EoIT

- (10') A. Review
- (45') B. Implosion
- (5') C. Feedback

(10') A. Review.

Have E attach electrodes while you engage S in casual conversation.

When E leaves, ask S for her homework checklist, praise, and encourage her. Give her a new checklist.

Spend the remaining time reviewing what happens in Implosion and what S is supposed to do.

(45') B. Implosion.

Have S get comfortable, dim the lights, and begin the IT procedure. Start with the next item on the hierarchy after reminding her to signal with her thumb whenever she notices any fear or tension.

Proceed with IT as in Session 2, section C. You should complete items 7-12 during this session.

(5') C. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 4-EoIT

- (10') A. Review
- (45') B. Implosion
- (5') C. Feedback

Session 4 is exactly the same as Session 3 with following 2 exceptions:

- 1) no homework assignment nor checklist is given,
- 2) after finishing the IT procedure and while casually talking about the IT session, ask S what she thought of the procedure in general. After her first sentence, say:

"What did you think of using visualized items like: 'lifting a snake from its cage with both hands'?" Electrodes may be removed 60 seconds after this statement.

Whenever an S finishes the hierarchy early, go ahead and terminate the session. In such cases, record how much time of the 4th session elapsed.

Thank S for her cooperation and effort, and remind her of the second snake exposure condition, at which time she will be paid.

Fill out the S Evaluation Form at first opportunity.

Background History and Demographic Questionnaire

Mention that S may feel free to not answer any question she'd prefer not to answer.

1. How old are you?
2. Where were you born?
3. Was your grammar school large, medium, or small in size?
Estimate enrollment.
4. Was your high school large, medium, or small in size?
Estimate enrollment.
5. What year are you in college?
6. Have you attended any other college besides U. of I. ?
Where? When?
7. What is your major area? Minor?
8. What courses did you take during last semester?
9. What courses are you taking this semester? Estimate GPA.
10. Do you plan to do graduate work?
11. What do you plan to do after completing formal education?
12. How many brothers do you have? sisters?
13. What is your rank in the birth order?
14. Have you been employed since age 16? If so, what kind of jobs?
15. What courses at the U. of I. have you enjoyed most? Why?
16. What courses at the U. of I. have you enjoyed least? Why?
17. What kind of activities do you most enjoy in your free time currently? Elaborate.
18. What kind of and how much free-time reading do you do?

Mention that the next few questions will ask about her impression of various emotions.

19. What do you usually do when you get "angry"?

Describe how you feel when angry.

What kinds of things make you angry?

When was the last time you were angry?

20. What do you usually do when you are "depressed"?

Describe how you feel when depressed.

What kinds of things make you depressed?

When was the last time you were depressed?

21. Describe how you feel when "unhappy".

What kinds of things make you unhappy?

When was the last time you were unhappy?

22. Describe how you feel when "disgusted".

What kinds of things make you disgusted?

When was the last time you were disgusted?

23. Describe how you feel when "secure".

What kinds of things make you feel secure?

When was the last time you felt secure?

24. Describe how you feel when you are "lonely".

What kinds of things make you feel lonely?

When was the last time you were lonely?

25. Describe how you feel when "happy".

What kinds of things make you happy?

When was the last time you were happy?

1. Visualize yourself entering the laboratory door and seeing the cage. . .

A snake slithers from the cage toward you.

*It moves near your hand and as it does, it bites your finger. Do you see that? . . .How does it feel? . . .Feel the pain in your finger. Again the snake opens its mouth and lunges toward your hand. You try to move away but you can't. The snake sinks its teeth into your finger. Feel that pain shooting through your finger, spreading into your hand. The snake now has coiled itself around your wrist and it is chewing on your finger. The finger is bleeding. Do you see the blood? . . .Can you feel the pain in that finger? . . .

The snake continues to bite and snap at your finger and now it starts gnawing on the rest of your hand. The blood is really gushing out now and your whole hand is almost numb with pain. You want to pull your hand away, but leave it there. Feel the snake gnawing at your hand. Look at the blood dripping off your finger and your hand. The teeth are stuck right in your hand, right down to the bone. You can hear the bones crunching. Now squeeze the snake with your hand. Make it bite harder. Squeeze it. Let it bite. It's really mad now and its snapping viciously at your hand. Again and again it sinks its teeth deeply into your hand. Feel the pain shooting through your hand. See the blood pouring out. Can you hear the crunching of your bones as the snake gnaws on your hand? . . .Just watch that snake as he rips your hand to shreds. He bites again at your finger and he bites it right off. All that is left is a bloody stump. Can you see that? . . .Get a good, clear, image of that, and concentrate only on the pain and the fear. The snake swallows your finger. He's still coiled around your wrist. He rears back and strikes again at your hand, embedding his fangs into your flesh and bones. Again. And again. Biting, and ripping, and tearing. Can you see that? . . .Just feel the pain. You

want desperately to move, but you can't. There is nothing but a bleeding mass of flesh left. Look at what used to be your hand and the snake crawling around it. . . . *

O.K. Again visualize yourself entering the laboratory door and seeing the cage. . . The snake slithers from the cage toward you.

It moves near your other hand and. . . (Repeat between asterisks more slowly and emotionally)

2) Visualize yourself walking half way toward the cage and seeing part of the snake. . .It starts to move, crawls out of the cage, and heads toward you.

The snake coils up and is staring at you. Its head is swaying from side to side. Do you see it clearly?. . .Its fangs are protruding from its mouth.

It suddenly lunges at you. Immediately it coils its body around your arm. Can you feel it slithering around your arm?. . .Now it is drawing tighter and tighter, constricting around your arm. Can you feel how tightly it is squeezing?. . .It's again staring at you. Now it opens its mouth and dives toward your wrist. It's two fangs sink deeply into your wrist. Can you see it biting into your wrist?. . .You want to shake it loose but you can't move. Feel the pain in your wrist. The blood is spurting up now. The snake bites again. And again. Now each time it sinks its teeth into your wrist, it shakes its head, tearing and ripping your flesh. You can hear the muscles and tendons snapping and tearing as the snake continues to gnaw on your wrist. Slowly it starts to work its way up your arm. Feel the fear as it stares up your arm. Can you see it?. . .Can you feel the sensations of fear?. . . Keep experiencing those feelings. The snake strikes at your elbow. You can hear the sound of teeth scraping against bone. Feel the pain. The blood is pouring down your arm as the slimy, cold snake continues to constrict around your arm and to bite into your flesh. It lunges again and again at your forearm, biting, and ripping and tearing. You shake your arm a couple of times, trying to shake it loose. But all this does is to make the snake more agitated and it tightens its grasp on your arm, attacks your arm even more viciously. It strikes, tears, then backs away for a moment and strikes again. Each time it backs away, you can hear it hissing loudly. And each time it strikes, you can hear the muscle and skin give way to its terrible slashing.

O.K. Visualize yourself walking half way toward the cage and seeing part

of the snake. . .It starts to move, crawls out of the cage, and heads toward you.

Again the snake coils up and stares at you. Do you see it clearly?. . . Its fangs are protuding from its mouth.

It suddenly lunges at you. (Repeat between asterisks more slowly and emotionally).

3) Visualize yourself standing right in front of the cage and seeing the whole snake. . .The snake sees you and slithers out toward you.

It is getting closer. Put your right hand out toward it. Can you see your hand going toward it?. . .The snake moves toward your out-stretched hand and bites on your thumb. It's biting hard into your thumb. Feel the pain shooting through your hand. Can you see the blood starting to pulsate out from your thumb?. . .Now it is just gnawing on your thumb with the side of its mouth. Listen to the sound of its teeth crushing and scraping the bone in your thumb. Now look up toward the ceiling. There's another snake hanging from the ceiling. It's watching the snake chewing on your thumb. Slowly it turns its head and it looks right at you. Can you see that snake staring at you?. . .The other snake continues to chew on your thumb. Now it coils the rest of its long, slimy body around your wrist. It's pulling tighter and tighter. Feel the tension in your wrist as the snake constricts. Now look up at the ceiling again. That other snake is still staring at you. It's starting to move a little now. Suddenly it falls from the ceiling. It falls right on your other arm, your left arm. It's coiling itself around your whole arm. It's pulling tighter and tighter around your arm. Now there are two snakes, two black, cold, slimy snakes, coiled around your arms and they're both squeezing your arms. Can you see both of the snakes?. . .What does it feel like?. . .Just attend to those feelings; concentrate only on those feelings and on how afraid you are.

Both snakes are staring at you now. Look at their small, fiery eyes. Their forked tongues keep lashing in and out of their mouths. Both are hissing. Can you hear them hissing?. . .Can you see them staring at you?. . .Now the snake on your left arm dives with its mouth wide open toward your shoulder. It bites down hard into your shoulder. Feel the pain, the burning pain, that spreads through your shoulder. Again the snake rears back and lunges into that

shoulder. It grasps the flesh tightly between its teeth, and then shakes its head, tearing the skin, ripping and shredding the flesh of your shoulder.

There's blood all over your left side now. The other snake lunges into your right shoulder, biting and tearing. Feel the pain shooting through both of your shoulders as the snakes continue to rip the skin and muscles. Again you can hear that terrible sound of teeth scraping against bone, your shoulder bone. Can you see both snakes wrapped around your arms and chewing on your shoulder?

. . .Just concentrate on the feeling of pain, and fear, and helplessness.

(Repeat all of the above more slowly and emotionally.)

4) Visualize yourself touching the cage with one hand while looking at the snake. . .it turns its head toward you and starts to move toward you.

It slithers out of the cage and drops to the floor right next to your foot. Can you see it there next to your foot?. . .It coils up as if ready to strike. It's head sways back and forth as it stares at you with those hypnotic eyes. It's hissing now; can you hear the hissing?. . .Its mouth is slowly opening, exposing its needle-sharp teeth and its lashing tongue. Now it strikes, right into your foot. The snake is biting deeply into your foot. Feel the pain in your foot, spreading through your leg, a hot, burning pain. The snake releases its grasp, rears back, and strikes again into your foot. Again. And again. It shakes its head wildly and viciously as it tears into the flesh of your foot. You want to move but you can't. The snake is having difficulty penetrating the bone and cartilage of your foot, so it repeatedly strikes again and again in the same spot. Now it is dragging its upper teeth along the top of your foot, shredding the skin. Feel the dull, throbbing pain in your leg, and the sharp, burning pain in your foot. The snake wraps itself around your ankle. You try to shake it loose but it just pulls tighter and tighter. It lunges toward your foot and bites down on your big toe. Again that horrible sound begins as the snake crunches its teeth through the skin and the bone. Can you see the snake wrapped around your ankle and chewing on your toe?. . .There is blood all over your foot. The snake opens its mouth slightly and then clamps down over your foot. The snake opens its mouth slightly and then clamps down once more on your toe. The teeth go all the way through. The snake has bitten off your toe. It chews it for a while, then swallows it. A bloody stump is all that remains.

The snake looks up at you. Its mouth is filled with blood. . .Your blood. Still coiled around your ankle, it lunges at your knee. Can you see it biting your knee?. . .Its teeth sink into the flesh around your knee. The teeth scrap

and tear the skin and bone. The snake rears back and strikes at your thigh. Again and again it bites and rips the flesh of your thigh. The blood is pouring from your leg. Feel the pain in your leg as the snake continues to tear and rip.

(Repeat the above more slowly and emotionally.)

5) Visualize yourself touching the cage with both hands while looking at the snake. . .The snake crawls out of the cage and it moves in your direction. It's wiggling and slithering toward your right foot again. It lunges at you and bites into your ankle. Can you see it grasping on to your ankle with its teeth?. . .It's chewing and gnawing on your ankle now, getting deeper and deeper with each bite. Feel the pain as it spreads through your foot and leg. You shake your leg to knock it loose, but this makes it all the more angry and vicious, and it rips and tears at your ankle and calf, chewing and gnawing through the flesh.

Look behind you now. There's another snake slithering very quickly toward you. You try to run but you can't. That snake is getting closer and closer. He reaches your left foot and starts to climb up your leg, coiling around and climbing right up your leg. There you stand with two slimy, cold, black snakes wrapped around your legs and you can't move. They both start to constrict very hard, tighter and tighter. Blood is still flowing from your right leg where the first snake had been attacking. The second snake looks at your wounds, and at the other snake, and at the blood. It looks up at you and then dives toward your thigh. It bites again and again shaking its head, ripping and tearing. Now it embeds into two fangs deeply into your thigh and pulls down cutting a path of bloody slashes in your leg. Can you see that?. . .What kind of feelings does it give you?. . .O.K., just concentrate on those feelings. Both snakes are now continuing to chew and gnaw at your legs. Every once in a while, one hits a bone and you can hear the scraping of teeth on bone.

Reach down with your hands and grab each snake just below its head. . . Do you have a hold on them?. . .O.K., now squeeze the snakes, very tightly. Both snakes just stare at you. They're still coiled around your bleeding, aching legs. Now they bend their heads toward your hands as you're squeezing

them. The squeezing has made them extremely vicious and they slash into your fingers, biting and snapping. You try to let go of them but it's too late. They have sunk their teeth into your fingers and they're chewing and gnawing them down to the bone. You can hear the bones in your fingers snapping and cracking as the vice-like bite of the snake breaks them.

(Repeat the above more slowly and emotionally.)

6) Visualize yourself putting one hand into the cage while looking at the snake. . .It turns toward you, sees your hand, and starts to slither toward it.

Before you can move away, it strikes at your hand and catches hold of your palm. Can you see that snake with its teeth embedded in your hand?. . .Feel the pain in your hand. You pull your hand back and drag the snake out of the cage. As you do, it coils around your wrist. You shake your hand trying to dislodge the snake, but it continues to tighten its grasp and to tear and rip at your hand. There is a gaping hole in your palm where the snake has been attacking and blood is oozing out from that hole.

Look behind you. There are two larger snakes at the other side of the room: two big, slimy snakes. Do you see them? They're backed up in a corner of the room and you can't get past them. They're getting closer and closer. How does that make you feel; describe your feelings as you view this scene. . . O.K., just experience those feelings as intensely as you can. . .Look back at your hand. The first snake is still wrapped around your wrist and continues to gnaw on your hand. There's a sudden, intense pain in your ankle. The snakes on the floor have reached you and they're attacking your legs. They're coiling around your legs. Feel them pulling tighter and tighter around your legs. They both begin to sink their fangs deeply into your thighs. Now they pull and rip at your flesh. Blood is pouring down your legs and onto the floor. The snakes lash out again and again as they bite and tear and mutilate your legs. Can you see that?. . .Feel the pain and hopelessness.

Look above you. There are several snakes crawling along a ledge on the wall; a mass of cold, clammy, slimy snakes. They're moving over the edge, right above you. Hold your arms out. Can you see your arms extended in front of you?. . .One by one the snakes drop from the ledge and land on your arms. Your arms are covered with a writhing, squirming mass of slimy snakes. They're biting

your hands, your arms, your shoulders, biting and ripping and tearing your flesh. Can you see that? . . . You're too scared to move. And you can't move. There are snakes coiled around your legs, gnawing and scraping your flesh. There are snakes all over your arms, tearing and shredding your skin. Feel the pain and desparateness and fear. There's no one to help and all you can do is watch these animals mutilate your arms and legs.

(Repeat the above more slowly and emotionally.)

7) Visualize yourself putting both hands into the cage while looking at the snake. . .it begins to crawl toward you.

It bites your hand, then starts to crawl up your arm. Can you see it slithering up your arm? . . .It's coiling around your neck now. Around and around it wraps itself. It's head is in front of your face and it's staring at you with those small, fiery eyes. It's tongue moves rapidly in and out of its mouth. The mouth opens wide and the snake is hissing loudly. Slowly it rears back away from your face, and suddenly it strikes. It bites your cheek. Again and again it lashes out at your cheek. Its teeth easily penetrate the soft skin and you can feel and taste the blood as it flows into your mouth. Can you see that snake darting toward you? . . .It's pulling tighter around your neck now and you can hardly breathe. For a moment, the snake stops its attack and once again it stares at you, its head swaying from side to side. Suddenly it lunges at you and bites your nose. Its teeth sink into the skin. The snake strains to pull back and as it does, it rips the skin off your nose. Feel the snake pulling the skin from your nose. The snake now sinks its fangs into your other cheek and it pulls and rips and tears. Again and again it scrapes through your flesh. Feel the pain as the snake attacks your cheek. Again, it pauses and stares at you. It's staring right into your eyes. Now it's staring only at one of your eyes. It's rearing back again. And it strikes. It strikes at your eye. Feel it hitting your eye. The snake is going to bit your eye. It takes hold of your eye between its teeth and its pulling, pulling your eye out of the socket. Can you feel that eye being pulled? . . . The eye pulls loose and it's hanging down on your cheek. The snake starts to gnaw on it; chewing, and biting, and gnawing on your little eye. The snake is eating your eye.

(Repeat the above more slowly and emotionally.)

8) Visualize yourself touching the snake with one hand. . .It shivers and suddenly coils around your hand.

The snake begins to crawl up your arm. Feel the cold, slimy animal moving up your arm. It snaps at your arm as it's going. It's up to your neck now and it's beginning to wind itself around your neck. Can you feel it slithering around your neck?. . .It's pulling tight now, constricting around your neck. Feel the tightness in your neck. You try to pull the snake loose, but as your hands draw near, the snake lashes out, biting and ripping at your fingers. The snake is moving to the top of your head now and it's entangled in your hair. Can you feel the snake writhing and squirming on top of your head?. . .Its head moves out in front of you and it looks at your eye again. It looks like the snake is going to attack your eye. You try to cover your face with your hands, but they don't move. You can't move your hands. The snake lunges forward and bites at your eye. Again and again it bites. It grasps your eye between its teeth and it pulls it out. Look at the snake with your other eye. Can you see it holding your eye in its mouth?. . .It's chewing gnawing on your eye, and finally it swallows your eye. The hissing starts again. The snake is staring at the socket and bites into the muscle and skin. The snake is eating its way through that socket. It breaks through and starts to crawl into your head; very slowly since the hole is small and the snake has to squeeze through it. Can you feel the snake moving into your head through that socket?. . .It's half way in, now, and it begins to rip and tear at the flesh inside your head. It's chewing and gnawing on your brains. It chews a hole in the roof of your mouth and slides down into your mouth. It bites at your tongue. The blood is oozing out from your brain and your tongue and filling your mouth. You can taste the blood and you can taste the cold, slimy snake as it moves about in your mouth. How does this make you feel?. . .O.K., just focus on those feelings and experience

them fully. Part of the snake is still in your brains. Part of it is stuffed in your mouth. And it continues to bite and tear into the flesh within your head.

(Repeat the above more slowly and emotionally.)

9) Visualize yourself touching the snake with both hands. . .Immediately it coils around your wrists.

You try to pull it loose, to shake it loose, but it is coiled around too tightly. It savagely attacks your finger, biting, ripping, and gnawing. You can hear the finger bone cracking as the vise-like bite of the snake severs your fingers.

Look above you. Another snake is slithering across a ledge above you. It lunges into the air and lands on you, right on top of your head. It moves slowly down your face, snapping and biting your face as it goes. The other snake crawls up your arm, headed for your face. Can you feel the slimy snakes on your face and your arm? They both begin to chew and gnaw on your face. One wraps itself around your neck and tightens, choking you so you can hardly breath. It chews on your ear and easily rips it to shreds. The other is gnawing on your nose. You can hear it's teeth scraping the bone of your nose.

They both stop their attack momentarily. Coiled around your head and neck, they move in front of your face and look at you, heads swaying from side to side, tongues whipping in and out. Each snake is staring at your eyes now. One stares at the right eye; the other stares at the left. At the same time they bite, grasp, shake their heads, and rip the skin and muscles surrounding your eyes. Can you feel the pain around your eyes?. . .Finally they are able to bite into the eyeballs. Grasping tightly with their teeth, they pull, trying to dislodge your eyes from their sockets. Can you feel the pain and the tension as the snakes pull your eyes out of your head?. . .Both eyes leave their sockets and the snakes viciously chew and crush your eyes.

(Repeat the above more slowly and emotionally.)

10) Visualize yourself grasping the snake with one hand. . .Its tail and head start to curl around your arm.

Another snake suddenly appears on the floor. It slithers up to you and starts to wind its way up your leg. Can you feel the cold, slimy snakes sliding across the skin of your arm and leg? They're both headed for your face. Their tails wrap around your shoulders as they raise themselves up to your face. Grab hold of the snakes. Now squeeze as hard as you can. Can you feel their slimy skin oozing between your fingers?. . .Squeeze harder. This enrages them. Their hissing becomes very loud and their mouths open wide, displaying their razor-sharp teeth. They bite down on your wrists and you release your grasp. Feel the pain shooting up your arms. Their bite lacerates your arteries and the blood is pulsating out. One of the snakes lunges toward your mouth. It bites and snaps at your mouth and tears the flesh from your lips. Feel the hot, burning pain around your mouth as you helplessly watch the snake attacking your body. The other snake is gnawing on your ear. It slips its head inside your ear and you can feel it pushing itself inside your ear. It bites and tears the skin, trying to make its way into your head. The second snake is entering your mouth. Bite down on it with your teeth. Bite hard. Can you feel and taste the slimy snake?. . .This injured the snake and it is viciously attacking the interior of your mouth, biting and scraping the flesh of your tongue and inner cheeks. The other snake has broken through to your brain. It's easily slashing the soft tissue of your brain with its sharp fangs. Both snakes have crawled entirely into your head now. Can you feel them moving around inside of your head?. . . Both continue to chew their way through the flesh within your head. They are heading for your eye sockets. They start to gnaw on your eyes from within your head. They're chewing and biting their way through. They break through and they slither out through your eye sockets.

(Repeat the above more slowly and emotionally.)

11) Visualize yourself grasping the snake with both hands. . . The snake suddenly twists itself around your hands.

You feel something on your legs. There are two large, black snakes slithering on the floor and climbing up your legs. Feel their cold slimy bodies moving across your skin. There's something in your hair. Look up. There are three snakes on a ledge above you, their ugly heads near your face. They drop from their perch onto your shoulders. Look behind you. The floor is covered with a mass of writhing, slithering, hissing snakes. Can you see them? . . . There's no escape. Just lay down on the floor. The snakes are all moving toward your head. One snake twists itself into your hair. Another lunges at your nose and grasps it between its teeth, biting, ripping, and tearing. You're paralysed with fear. You open your mouth to scream and a third snake rams its head into your mouth. It forces its whole body into your mouth. . . Describe how you feel. . . O.K., just concentrate on those feelings and experience them as intensely as possible. Another snake tears its way through your ear, chewing and eating your brains as it moves itself inside your head. Two more snakes savagely attack your eyes, pulling them entirely out of your head, gnawing on them, swallowing them. Several snakes chew on the skin covering your face, while others enter your head through your ears and mouth. Your head is completely covered with snakes, inside and out. They are biting and tearing every inch of skin. You can feel them from your skull and roof of your mouth. You can hear the sound of teeth cracking bone as the snakes continue to gnaw away on your head. Describe your feelings. . . Alright, just concentrate on those feelings.

(Repeat the above more slowly and emotionally.)

12) Visualize yourself lifting the snake up a few inches with one hand. . . It wraps itself around your arm and starts to move up your arm.

It's crawling slowly up your arm, it's tongue whipping in and out, hissing loudly. Can you feel the slimy, cold body of the animal sliding up your arm? . . . It's on your shoulder now and it's beginning to wrap itself around your neck, Feel the snake pulling tighter and tighter around your neck. Breathing is becoming more and more difficult. The snake bites on to your chin. It's biting and chewing on the flesh of your chin. You can hear the sound of its teeth scraping against the bone as it gnaws on your chin.

Look behind you, over in the corner of the room. There's a huge snake laying in the corner, a huge, black, slimy snake. It's head is tremendous, bigger than a human head. It's body is as thick as a human body. This huge, ugly snake is staring at you. How do you feel looking at this horrible animal? . . . O.K., concentrate on those feelings and experience them as intensely as you can. The snake starts to move toward you. Slowly it moves across the room. It's hissing is loud, almost deafening. Can you see that huge snake moving toward you? It's very close now and it raises its head high in the air. Its head is above yours and it's staring down at you. Its mouth opens and displays a set of large razor-sharp teeth. Slowly the head moves down toward your head. The mouth is covering your head. The snake is going to bite off your head. It's dark now and you can feel the slimy interior of the snake's head. You can feel these huge teeth sinking into your neck. Feel the pain as the snake bites off your head. It severs your head from the neck. Now it's chewing your head. You can't see anything but you can still feel the teeth chewing and crushing your skull. The bones are cracking and splitting as the snake chews and gnaws on your head. Finally, it swallows your head.

(Repeat the above more slowly and emotionally.)

13) Visualize yourself lifting the snake up a few inches with both hands. . . immediately it winds around your arms.

It makes its way up your arms toward your face. Can you feel the slimy, cold snake moving across your arms? . . . It coils itself around your neck. It pulls tighter and tighter around your neck. You can hardly breathe. You open your mouth, gasping for air and the snake sticks its head in your mouth. You can feel its head moving around inside your mouth and you can taste the slimy skin of the snake. It starts to gnaw on your tongue. Feel the teeth sinking into your tongue. The blood is filling your mouth. You swallow the blood. If you didn't swallow, you might choke. As you swallow the blood, the snake follows. The snake is going down your throat. You're swallowing a live snake. As it descends, it releases its grasp on your neck, and it slides all the way in. The snake is sliding down your throat. Can you feel the animal as it moves down your throat? . . . The snake reaches your stomach and it draws its whole body in there. It's moving around your stomach, sliding along the soft tissue. Can you feel the snake moving down there? . . . What does it feel like? . . . The snake starts to snap at the flesh of your stomach. You can feel sharp pains as the animal sinks its teeth into the tissue of your stomach. It starts to tear and rip more savagely now, biting and chewing and ripping. Blood is flowing into your stomach and is filling your stomach. You can hear the splashing of the snake in your blood-filled stomach as it continues to attack the soft flesh. The snake rips a hole in the tissue and starts to push itself through that hole, into the cavities of your abdomen. It's biting and chewing on tissue everywhere it moves. You can feel it scraping its teeth along the flesh as it moves. Scraping, and ripping, and tearing. Now it's chewing its way out. You can see a lump in your stomach where it's trying to get out. It gnaws and scrapes away the skin. A small hole appears and now you can see the mouth

of the snake chewing and eating your flesh as it works its way out. It forces its head through the hole and slithers out of your stomach, covered with blood.

(Repeat the above more slowly and emotionally).

14) Visualize yourself removing the snake from the cage with one hand. . .

It suddenly slithers up your arm.

It begins to wrap itself around your head. Can you feel the body of the snake as it moves around your head?. . .Its head is right in front of your eyes and it's staring at you. You can see the forked tongue whipping in and out and the long, pointed fangs. The snake lunges toward you and sinks its fangs into your nose. As it backs away, the fangs tear through the weak flesh and cartilage of your nose. Again it strikes, tearing and ripping. Blood is coming from your nose and drips down your mouth and throat. There is a gaping hole where your nose used to be, and the snake pushes itself through, wiggling its way into your head. Can you feel the snake as it moves into your head?. . .It continues to slither through your head and down into your throat. It bites the inside of your throat. Feel the sharp pain in your throat. It's like a needle digging into your throat, as the snake sinks its teeth into the flesh within your neck. The snake moves a little further down. Now it starts gnawing and scraping the flesh of your throat again. It tears and eats the soft tissue. It chews its way right through your throat and starts to slide its slimy, bloody body into the chest cavity. Can you feel the animal moving through the interior of your chest?. . .It reaches your lungs and it viciously rips and tears into them. The snake is eating your lungs. You can't feel any pain there, but you know that it's tearing your lungs to shreds. The snake turns toward your heart. Your heart is pounding faster and faster as the snake slithers through your chest toward your heart. It sinks its teeth into the tissue of your heart and shakes its head, trying to tear it loose. It bites and gnaws off pieces of your heart, chews them up and swallows them. The snake bites through the main chambers of your heart and the blood gushes out, spilling into the chest cavity. Describe how you feel viewing this scene. . .Focus all of your concentration on those feelings and experience them as fully as possible.

(Repeat the above more slowly and emotionally).

15) Visualize yourself removing the snake from the cage with both hands. . .
It coils around your arms and heads toward your face.

Look on the floor. Another larger snake is slithering across the floor toward you. The first snake lunges at your face and viciously attacks your eye. It grabs hold with its teeth and pulls your eye right out of your head. It continues to rip and tear through the flesh of the socket. It pushes its way through and slides into your skull, biting and tearing and ripping the brain tissue. The other snake is climbing up your leg. It reaches your stomach coils around your waist, and begins to sink its teeth into your skin. Feel the pain in your head and stomach. Feel the snakes gnawing on your flesh. Describe how you feel. . .O.K., just concentrate on those feelings and experience them fully. The snake around your waist chews through your stomach and litters into the abdominal cavity. The snake in your skull slides down your throat. They're both in your stomach now. Two ugly, slimy snakes are wiggling around in your stomach. How does that make you feel? . . .Just focus on those feelings. Both snakes start mutilating the flesh within your body. One is chewing on the skin between your ribs. Can you feel the head moving along your ribs? . . .You can hear the scraping of teeth against your ribs as the snake gnaws on them. The other snake is chewing on your spinal cord. It gnaws away the skin and bites into the bone. It touches a nerve and a chilling pain shoots through your back. Both snakes now savagely attack your lungs. Biting and ripping and tearing, they shred your lungs. Can you feel the two animals in your chest cavity as they eat your lungs? . . . They twist and turn within your chest and slide down lower toward your stomach. They snap and bite at the soft stomach tissue. You can hear them and feel them writhing and wiggling in a pool of blood in your stomach. The snakes are eating your stomach. Now they begin to chew their way out your side. Feel them gnawing and biting the skin along your side. A hole appears and, one after the other, they slide out, covered with blood.

(Repeat the above more slowly and emotionally).

16) Visualize yourself holding the snake with both hands and it's coiling around your hands...It's slithering up your arms and around your neck.

It starts to bite your ear. Feel the snake as it bites and snaps at your ear. Its fangs pierce the skin within your ear. Squeeze the snake. Grab hold of the snake and squeeze it as hard as you can. This enrages the animal and he viciously rips and tears into your head. It pushes itself through your ear and slides down your throat to your stomach. Can you feel it slithering down your throat?... The snake lays thousands of eggs in your stomach. One by one the eggs turn into small snakes. Thousands of snakes are crawling, wiggling, slithering around inside your stomach. Can you feel all those little animals moving down there? There're spreading throughout your body. Hundreds of small snakes are crawling around your heart and lungs. Hundreds of them are sliding up your throat and around your mouth and brains. Their movement causes a kind of nauseating itching sensation all throughout your body. Can you feel that itchiness as those small animals spread all over within you?... Now the itching stops. They start to feed themselves. Thousands of small snakes are feeding themselves on your flesh and blood. The itching is replaced by sharp pains. It's like a thousand pins were being shoved into your body. From your skull to your stomach, you can feel nothing but pain. Those tiny snakes with their needle-like teeth are scraping and mutilating the flesh within your body. Describe how you feel, experiencing this scene... O.K., just concentrate on those feelings and attend to them as intensely as possible. Within your head, chest, and abdomen, there is nothing but a mass of writhing, squirming snakes, all viciously tearing and ripping at the interior of your body. Just continue to concentrate on those thousands of vicious, flesh eating animals living in your body.

(Repeat the above more slowly and emotionally.)

17) Visualize yourself holding the snake with both hands and it's coiling around your arms... Now it's moving up your arm and around your neck and it's looking right at you.

Open your mouth, real wide. The snake jumps into your mouth and slides down into your stomach. It's wiggling around down there. Feel it slithering around and biting in your stomach. It's laying eggs, and now thousands of little snakes are in your stomach, and they're crawling around, slimy and wiggly. Feel them inside you. They're biting at your heart and lungs. Feel them crawling up into your lungs. They are shredding your lungs. Can you feel them down there... Feel them biting and gnawing at your heart. They're feeding themselves on your flesh and blood, and they're growing. They're growing into big, ugly, slimy snakes. There's no more room for all of them' inside your body, so some of them leave. They're crawling up your throat and they slither out your mouth and nose. Feel them sliding out of your head. Bite down on them as they try to get out. You can taste the snakes and the blood as they leave your mouth. They attack your face and arms and legs. They're still hungry and still growing, and you are their food. Can you see the snakes crawling all over your arms and legs?... They bite and snap at your flesh, chewing and gnawing. There you are, alone and helpless. There are hundreds of snakes inside your body, wiggling around and eating your vital organs. There are hundreds of black, cold, slimy snakes covering your arms and legs and trunk. Describe how you feel... O.K., just focus all your attention on those feelings and experience them as deeply as possible. Snakes all over you and snakes within you. They bite and rip and chew on your flesh and there's nothing you can do but watch and feel the pain and fear. The snakes inside start to chew their way out. Holes and snake heads begin to appear in your stomach, on your neck, along your side. They slither out, covered with blood... your blood. Some are leaving through your nose; others through your ears. Feel the slimy snakes slithering out and sliding across your body.

(Repeat the above more slowly and emotionally.)

18) Visualize yourself holding the snake near your face... Suddenly it lunges toward you.

You jump backwards to avoid it and trip over something. You land on the floor. Look around you. The floor is covered with snakes. Black, ugly, slimy snakes are crawling all over the floor. You try to get up but you can't. Something is holding you down. Look above you. The ledge near the ceiling is filled with squirming, wiggling snakes. They're all staring at you. They stop moving and hissing and just stare at you, laying helplessly on the floor. Look in front of you. There's a huge snake, bigger than a human. It's staring at you and looking at you. It's ugly and black and it has horrible eyes and long fangs and it's coming toward you. It's standing on its tail and it is looking down at you. Describe how you feel, laying there with that huge snake above you... Alright, just concentrate on those feelings. Just experience those feelings and the fear and the hopelessness. Feel it coming slowly toward you, closer and closer. Horrible, evil, ugly, slimy, and it's looking down on you, ready to strike. It is getting closer and closer and it snaps out at you. Feel it biting at your head now. It's biting at your head. The snake opens its mouth and it has your whole head inside of its mouth. And it's biting your head right off. Feel it. Feel it biting, the fangs going right through your neck. Now it's starting to swallow you whole. It's pulling you right inside its body. Feel yourself inside, helpless and lost. The body of the snake starts to digest its food. You are the food and the digestive juices of the snake are eating away and dissolving your skin and bone. Feel the pain as the acid burns away your flesh. Describe your feelings as you experience this scene... O.K., concentrate on those feelings, Think only of those sensations.

(Repeat the above more slowly and emotionally.)

Daily Emotion Questionnaire

As part of our program, we are interested in increasing your skill in observing and describing your own emotional states. Please fill out this sheet at the end of each day. For each emotion listed below, answer the following Questions. Return the sheets at the next session.

1. How often did you feel the emotion today ?
2. Describe one situation that resulted in your feeling that emotion.
3. Describe how you felt in that situation.
4. Did you express that emotion overtly ?

ANGER

DEPRESSION

DISGUST

LONELINESS

SECURITY

HAPPINESS

APPENDIX D. AVOIDANCE RESPONSE PLACEBO THERAPISTS MANUAL

APPENDIX D

AVOIDANCE RESPONSE PLACEBO THERAPISTS MANUAL

- (5') A. Introduction
- (20') B. Expectancy Setting and Rationale
- (10') C. Visualization Practice
- (35') D. Relaxation Training
- (5') E. Hierarchy Ordering

(5') A. Introduction.

When S arrives, introduce yourself to her and give her some background information about yourself. Mention that you are in clinical psychology and some of the clinical experience you have had. Encourage her to give information about herself. It is very important to model warmth and friendliness, so allow this time for establishing a friendly relationship.

(20') B. Expectancy Setting and Rationale.

The main points to be covered involve:

- 1) This is a therapy study for elimination of fear
- 2) The therapy involves 2 skills: visualization and hierarchy construction
- 3) These skills will be systematically combined into an avoidance skill training technique to extinguish and hence eliminate her fear of snakes.

Tell S that "this program has 5 phases:

- 1) 4 sessions of treatment aimed at anxiety reduction and 2) a second exposure to the snake situation to assess the amount of anxiety reduction. "Mention that "we are studying the effectiveness of a relatively new therapy technique, called Avoidance Skill Training, for the elimination of fear or anxiety. Hopefully, the results of our study will help in the treatment of people who have problems with being anxious. By studying how to eliminate common fears that most everyone has, like fear of snakes, we may be able to better understand and treat neurotic fears. So far in our work we have been very much encouraged by the possible benefits of this treatment technique."

Mention that: "over the next 4 sessions, your anxiety responses to snake stimuli will be extinguished, i.e., your fear and avoidance of snakes will be markedly reduced or eliminated altogether."

Proceed with the description of what the Avoidance Skill Training technique is and the rationale behind it. Cover the following points and elaborate where necessary.

- 1) Anxiety ordinarily involves some kind of conditioning process (classical or vicarious) whereby certain stimuli become associated with certain responses. Give Pavlov's bell-food-salivation as an example and apply the analogy to snake stimuli. Include both classical and vicarious examples of learning fear reactions and consequent avoidance behaviors to snakes.

- 2) Since anxiety follows the laws of conditioning, there should be efficient way of extinguishing it. Extinction involves presenting the conditioned stimulus repeatedly (thus evoking the conditioned response repeatedly) without the occurrence of the unconditioned or primary stimulus. For example, when Pavlov presented the bell (the CS) repeatedly without food (the UCS), salivation occurred for a while, but soon ceased to occur after several repetitions.

- 3) Anxiety should similarly extinguish if the conditioned stimuli (like

a snake) are repeatedly presented without the unconditioned stimulus (like a snake bite). Most people remain anxious about snakes because, first, such repeated presentations rarely occur. Second, people usually make quick avoidance responses to snakes or snake-related stimuli, so that the conditioned response of anxiety hardly occurs. And without its occurrence, extinction cannot take place. Thirdly, people use a wide variety of different avoidance responses (eg., close eyes, run away, freeze, think of other distracting things, etc.) Since different avoidance responses occur, none of them are practiced enough to become habitual and effective in eliminating anxiety. Finally, some of those avoidance responses are not even successful in reducing anxiety. So while such avoidance responses do sometimes result in short term anxiety reduction, permanent elimination of anxiety never occurs, due to the too early occurrence of avoidance responses and due to their variety and lack of practice.

4) The logical treatment procedure would therefore involve the following: The anxiety-provoking stimuli should be used repeatedly, in order to build up its skillful use.

5) This technique would be most efficient if it was applied to a hierarchy of visualized anxiety stimuli. A hierarchy is a list of various anxiety-provoking stimuli, ordered from least to most anxious stimuli. We start with the least anxious scene since it involves only a little anxiety and such anxiety is easily extinguished. We then apply the technique to each scene in order, extinguishing anxiety to each scene before moving up to the next.

6) Using visualized scenes allows us to treat the anxiety right here in the office. Past research has indicated that use of visualization in such techniques does result in a transfer of the reconditioning to real life. Thus successful extinction to visualized scenes does lead to marked reduction and often complete elimination of anxiety to real life situations related to the imagined feared stimuli.

Spend the remaining time summarizing the above rationale, answering S's questions, and asking her questions to insure that she understands: 1) conditioning; 2) extinction and why it usually doesn't occur in the case of anxiety; 3) the Avoidance Skill Training and how it results in a) elicitation and consequent long-term extinction of anxiety responses and b) the skill of terminating anxiety in the short run by means of an effective, practiced avoidance response; 4) the use of visualized, hierarchical scenes. Then mention that the remainder of this session will involve practice in visualization, some background information collecting, and arranging the hierarchy; the actual avoidance skill training will begin next week. Mention also the future physiological measurement and that she'll be able to see her responses.

(10') C. Visualization Practice

Tell S that the next 10 minutes will involve practice in imagining scenes. Ask S to picture herself in each scene as if she were really there (not a mirror image of herself), to picture objects in the scene clearly and in color, and to begin the scene when T finishes saying, "Visualize Yourself. . .," as well as to stop the scene when T says, "Stop visualizing that." Then read the following items to her and have her agree with herself

as to what she will visualize:

1. Visualize yourself sitting in a chair reading a novel
2. Visualize yourself walking down a supermarket aisle, turning around at the end of the aisle, and running back down the aisle.
3. Visualize yourself sitting in a chair and a friend of yours walks toward you, stops, and says "hello."

Once she has discussed each scene and described what she will visualize, ask her to get comfortable and close her eyes, and proceed to present each scene. Give a 15 second presentation each time, end it with "Stop visualizing that," and allow 10 seconds of silence to elapse. Then ask S to describe what she saw, ask her whether she was able to start the scene immediately and end it immediately, whether she pictured the scene as if she were really there, and whether the scene was clear. Give suggestions as to how to improve the scene and 1 or 2 further presentations of the scene anytime the question indicates problems. Follow the same procedure with each of the three items. When completed, ask S to open her eyes and praise her effort.

(35') D. Background Assessment.

Tell S that the next 35 minutes will be spent simply collecting background information about S. Tell her that such information will help us to better evaluate with whom our technique is most successful.

Proceed with background assessment, following the Background History and Demographic Questionnaire. The questions are representative of the types of information to be sought. Use any additional questions you wish and you need not ask all the questions listed. Keep the questioning informal and casual, write down short answers to the questions asked as if the information were important, and allow S to elaborate as much as she wishes. The important thing is to a) fill up the 35 minutes in casual question-and-answer and b) make it appear to be an important part of the program.

Finally, hand S a "Daily Emotion Checklist" and tell her: I'd like you to fill out this checklist each day between our sessions. At the end of the day, spend about 30 minutes writing down various events of the day that involved 'happiness,' 'security,' 'anger,' etc. and describing how specifically you felt at those times. This will be very important for us in analysing the results and for you in becoming skilled, through practice, in looking carefully at your emotions."

(5') E. Hierarchy Ordering.

Present S with a copy of the common hierarchy and ask her to make any rank ordering changes. Tell her that the items should proceed from the least to the most anxiety-provoking situations. Mention that the rank ordering on the copy is typical among college females, but that not all agree, so that she may wish to make corrections in their ordering. When she has finished, explain that these are the situations that will be extinguished by the Avoidance Skill Training technique, i.e., these anxiety-provoking stimuli will be presented to her imaginally and she will practice making a visualized, successful avoidance response shortly after noticing mild anxiety. This relearning experience should greatly reduce her fear and avoidance of snakes. Mention again that the purpose of the graded hierarchy and of starting with low scenes is to make the learning process easy and efficient.

Praise S for her time and very fine effort, tell her you are looking forward to seeing her next week, and terminate after reminding her of the time and place of the next meeting.

Session 2 - E+ARP

- (15') A. Review
- (15') B. Homework Review and Procedural Explanation
- (25') C. Avoidance Skill Training
- (5') D. Feedback

(15') A. Review

Immediately have S sit down and mention that your assistant will attach 5 tiny electrodes to her fingers, arms, and ear lobe. "Their purpose is to allow us to look at your physiological responses during the procedures." Mention that "There are no sensations whatsoever and at the end of the hour you'll be able to see what they look like."

Briefly review the rationale (that we are going to extinguish her anxiety response to snakes by presenting snake-related images, by allowing anxiety to occur and hence extinguish, by having her practice an efficient, visualized avoidance response; the result of this new learning experience is the elimination of anxiety to snake stimuli).

Then say: "And, as you know, we will be using stimuli like 'lifting a snake from its cage with both hands.' "

Answer any further questions S might have.

(15') B. Homework Review and Procedural Explanation.

(5') Spend no more than 5 minutes reviewing S's homework. Simply ask S to talk about some of her written responses. Praise and encourage her and give her another homework sheet.

(10') Spend about 10 minutes describing the Avoidance Response Skill Training procedure to S. Demonstrate the procedure, using neutral item # 1 as follows:

I'll start with the first item on the hierarchy. Just as an example, I might say, 'Visualize yourself sitting in a chair, reading a novel.' As soon as I finish saying the item, get a clear image of that scene in mind. Then I'll continue to describe what's happening in the scene and your job is to simply visualize whatever I'm describing, as if you were really there. For example, I might say, 'Now a friend walks in and hands you another book.' You would visualize one of your friends walking in and handing you a book. Of course, the scenes we'll be using have to do with snakes, but the idea is the same: Continue to get clear images of whatever I'm describing.

As I am describing a scene to you, as soon as you notice any muscle tension, "butterflies" in your stomach, or any other feeling of anxiety, signal me by immediately raising your right thumb. Keep that thumb raised as long as you notice any anxiety. Lower it whenever you no longer notice any anxiety. After stating the hierarchy item to you and you get a clear image of it, I'll start describing further scenes involving snakes in order to elicit some anxiety. Remember, some anxiety must be elicited so that it will extinguish. So when you do notice it, signal with your thumb and the experience that anxiety. Don't try to avoid it yet. After about 5 seconds I'll begin describing the avoidance response. This is the time for you to start visualizing your avoidance."

Then state the avoidance response to S and make sure she knows what to visualize:

"The avoidance response you should use each time goes as follows: 'Visualize yourself turning around and running toward the laboratory door, getting away from that snake.' Can you get a clear image of that? O.K., then it goes

on. . . 'Visualize yourself opening the door and running through the door.' O.K.? Then, 'Now your running down the stairs... .You run out of the building and now you are on the sidewalk outside.' Do you have a good image of that? O.K., then I'll continue, 'Your're away from the lab now. . .It's a clear warm day. . .You sit down on a bench and relax. . .Cars are driving by. . .People are walking on the sidewalks, joking and laughing together.' Can you visualize that without any problems? O.K., then I'll say, 'You feel relieved and calm and safe, now that you're away from the lab and the snake.' So now you'll just try to feel as good as you can. Finally, I'll ask you to signal if all of your images were clear by saying, 'Signal by raising your right index finger if your images were clear.'"

"Each hierarchy item will be presented just like this 3 times. This will allow the anxiety to extinguish and will allow several good practices of the avoidance response. We'll start with low ranked items and move up through the whole hierarchy."

Ask S if she has any questions about what will happen and what she is supposed to do.

(25') C. Avoidance Skill Training.

Have S get comfortable in her chair. Dim the lights, telling her that this is to help her to concentrate. Ask her not to talk during the procedure except in response to direct questions and tell her to keep her eyes closed until the end of the procedures.

Begin item presentation, using the three ARP instruction sheets. Sheet 1 gives the hierarchy items and their initiation statements. Allow 5 seconds between item and initiation statement. Each S will have a Sheet 1 with their own hierarchy order. Sheet 2 gives a variety of implosive-like scenes that are to be used just after the initiation statement. Their purpose is to elicit and maintain anxiety for 7 to 10 seconds. As soon as S signals anxiety, continue to implode for 7 to 10 seconds. Then immediately shift to presenting the avoidance response give on sheet 3. Repeat this procedure 3 times on each item before moving to the next. Ask for clarity after each presentation. Repeat item once each time there is poor clarity. Talk more smoothly and calmly during avoidance response statements.

Record only how many presentations were give by writing down the sequence number of that item. The usual entry would be: 1, 2, 3, since 3 presentations are ordinarily given. Circle any presentation that was not clear, eg., 1, 2, 3, 4, would indicate that presentation #2 was not clear and therefore #4 had to be given.

Stop 5 minutes before the end of the session, question whether she had any problems with the procedure, praise her fine effort and progress, and remind her of her homework assignment.

(5') D. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 3 - E+ARP

- (10') A. Review
- (45') B. Avoidance Skill Training
- (5') C. Feedback

(10') A. Review

Have E attach electrodes while you engage S in casual conversation.

When S leaves, ask S for her homework checklist, praise, and encourage her. Give her a new checklist.

Spend the remaining time reviewing what happens in ARP and what S is supposed to do.

(45') B. Avoidance Skill Training.

Have S get comfortable, dim the lights, and begin ARP procedure. Start with 3 presentations of the last item completed in the previous session. Remind her to signal with her thumb whenever she notices any anxiety or tension.

(5') C. Feedback

Escort S to the recording room where she may be left with E for physiological feedback.

Session 4 - E+ARP

- (10') A. Review
- (45') B. Avoidance Skill Training
- (5') C. Feedback

Session 4 is exactly the same as Session 3 with the following 2 exceptions:

- 1) no homework assignment nor checklist is given,
- 2) after finishing the ARP procedure and while casually talking about the ARP session, ask S what she thought of the procedure in general. After her first sentence, say:

"What did you think of using visualized items like: 'lifting a snake from its cage with both hands'?" Electrodes may be removed 60 seconds after this statement.

Whenever an S finishes the hierarchy early, go ahead and terminate the session. In such cases, record how much time of the 4th session elapsed.

Thank S for her cooperation and effort, and remind her of the second snake exposure condition, at which time she will be paid.

Fill out the S Evaluation Form at first opportunity.

APPENDIX D

Therapist Manual for Eo Avoidance Response Group. - Session 1

- (5') A. Introduction
- (20') B. Expectancy Setting and Rationale
- (10') C. Visualization Practice
- (35') D. Background Assessment
- (5') E. Hierarchy Ordering

(5') A. Introduction.

When S arrives, introduce yourself to her and give her some background information about yourself. Mention that you are a research psychologist. Encourage her to give information about herself. It is very important to model warmth and friendliness, so allow this time for establishing a friendly relationship.

(20') B. Expectancy Setting and Rationale.

The main points to be covered involve:

1) This is an experimental study investigating subjective reports and physiological responses of fear.

2) Past research in this area has so far been unfruitful.

3) This research is aimed at studying such response measurements and their relationship in a variety of conditions, eg., during imaginal presentation, during imaginal avoidance responses, during real presentation.

Begin by mentioning that the experiment will have 5 phases: 4 sessions here in the office and one quick session repeating the snake exposure condition.

Explain to S that "we are interested in studying the relationship between subjective reports of feelings of fear and physiological responses to feared stimuli."

"A good deal of research has been done in the past on various self-report measures of fear to specific stimuli. Similarly a variety of studies have monitored physiological responses to equally specific stimuli. These past research studies have come to a variety of conclusions about fear and human responses to feared stimuli. Recent research, however, has attempted to obtain measurements of both the self-report kind and the physiological kind. These later studies indicated 2 things. First, the earlier studies, which collected information by one or the other kind of measurement device, may have come to faulty conclusions. Apparently, one needs to gather both sets of information (self-report and physiological) simultaneously in order to come to valid conclusions about human fear reactions. For example, for any individual person, self-report may sometimes give an accurate account of his reaction to a stimulus; and sometimes not. At other times, physiological measurements may give more accurate information about that individual's reaction. And at even other times, it is necessary to have a combination of self-report and physiological information before accurate assessment of the person's fear reaction can be made."

"The second point indicated by these research studies is that the combination of self-report information and the physiological information is probably quite complex. For example, one cannot simply add the 2 measurement together and come up with an accurate estimate of the person's reaction."

"So, researchers of human fear reactions cannot depend only on self report; nor can they trust only physiological measurement; nor can they simply add the 2 together. But if we are to adequately understand human fear, we need some way of accurately measuring it. So we are faced with a difficult, but important, problem."

"Very recent speculation has offered a possible clue. Perhaps it is impossible to discover what the exact combination of the 2 measures needs to be, if we are dealing with the feared stimulus in only one condition. However, if the condition in which that feared stimulus appears are varied systematically, we may be able to detect systematic variation in the relationship between the 2 measures and to thus obtain clues to the possible complex function that relates these 2 measures."

"That is the purpose of this study. We'd like your help in obtaining answers to this problem. You have already indicated that the stimulus, snake, is a feared one for you. Since this stimulus seems to reliably elicit fear reactions from you, this is the stimulus we will use."

"The important thing is that we are going to place that stimulus in a variety of conditions while measuring your self-reported fear and your physiology. The major conditions will involve the following things: imagined scenes of varying degrees of fear-provoking stimuli involving snakes, real scenes involving snakes, and imagined scenes of making avoidance responses to snakes."

"The remainder of today's session will involve giving you some practice in the conditions, before we actually begin the procedures next week, and getting some general information about you. First we'll practice visualizing scenes. This is done since we'll want you to be skilled in getting good clear images in mind. Then I'll ask a series of questions about your background and interests. Then I will ask you to rank order a set of scenes involving snakes, ordering them from the least to the most fear provoking scene. This, of course, will be one of our systematically varied conditions. The real and imagined scenes and avoidance behaviors are the other. What we'll be doing in the next 3 sessions is to imaginably present to you these rank-ordered scenes. We'll ask you to continue to visualize each scene until you notice any mild fear, and then we'll have you make an imagined avoidance response to the scene. By measuring your physiology as well as your self-report during this time and during the snake exposure condition, we hope to discover the complex function relating the 2 measures."

Summarize the above rationale, answer any questions S has, and in the remaining time, ask her questions to assess how well she understands the rationale and what is going on.

(10') C. Visualization Training.

Tell S that the next 10 minutes will involve practice in imagining scenes. Ask S to picture herself in each scene as if she were really there (not a mirror image of herself), to picture objects in the scene clearly and in color, and to begin the scene when T finishes saying, "Visualize yourself. . .," as well as to stop the scene when T says, "Stop visualizing that." Then read the following items to her and have her agree with herself as to what she will visualize:

- 1) Visualize yourself sitting in a chair reading a novel.
- 2) Visualize yourself walking down a supermarket aisle, turning around at the end of the aisle, and running back down the aisle.
- 3) Visualize yourself sitting in a chair and a friend of yours walks toward you, stops, and says "hello."

Once she has discussed each scene and described what she will visualize, ask her to get comfortable and close her eyes, and proceed to present each scene. Give 15 second presentation each time, end it with "Stop visualizing that," and allow 10 seconds of silence to elapse. Then ask S to describe what she saw, ask her whether she was able to start the scene immediately and end it immediately, whether she pictured the scene as if she were really there, and whether the scene was clear. Give suggestions as to how to improve the scene and 1 or 2 further presentations of the scene anytime the questioning indicates problems. Follow the same procedure with each of the three items. When completed, ask S to open her eyes, and praise her effort.

(35') D. Background assessment.

Tell S that the next 35 minutes will be spent simply collecting background information about S. Tell her that such information will help us to better evaluate the relationships discovered between her physiological responses and self-reports.

Proceed with background assessment, following the Background History and Demographic Questionnaire. The questions are representative of the types of information to be sought. Use any additional questions you wish and you need not ask all the questions listed. Keep the questioning informal and casual, write down short answers to the questions asked, as if the information were important, and allow S to elaborate as much as she wishes. The important thing is to A) fill up the 35 minutes in causal question-and-answer and b) make it appear to be an important part of the program.

Finally, hand S a "Daily Emotion Checklist" and tell her: "I'd like you to fill out this checklist each day between our sessions. At the end of the day try to spend about 30 minutes writing down various events of the day that involved 'happiness', 'security', 'anger', etc. and describing how specifically you felt at those times. This will be very important for us in interpreting the results we get in these sessions."

(5') E. Hierarchy Ordering

Present S with a copy of the common hierarchy and ask her to make any rank ordering changes. Tell her that the items should proceed from the least to the most feared situations. Mention that the rank ordering on the copy is typical among college females, but that not all agree, so she may wish to make corrections in their ordering. When she has finished, explain that this, of course, is the second systematically varied condition; using it, we hope to increase our chances of discovering systematic relations between self-report and physiology.

Praise S for her time and very fine effort, tell her you are looking forward to seeing her next week, and terminate after reminding her of the time and place of the next meeting.

Session 2 - EOARP

- (15') A. Review
- (15') B. Homework Review and Procedural Explanation
- (25') C. Avoidance Response Procedure
- (5') D. Feedback

(15') A. Review.

Immediately have S sit down and mention that your assistant will attach 5 tiny electrodes to her fingers, arms, and ear lobe. "Their purpose is to allow us to look at your physiological responses during the procedures." Mention that "There are no sensations whatsoever, and at the end of the hour you'll be able to see what they look like."

Briefly review the rationale (that we are going to expose her to a hierarchy of items, eliciting some fear, and having her then visualize avoiding the situation while monitoring physiological and self-report responses in an attempt to discover clues to the complex function relating the 2 measures).

Then say: "And, as you know, we will be using stimuli like 'lifting a snake from its cage with both hands.'"

Answer any further questions S might have.

(15') B. Homework Review and Procedural Explanation.

(5') Spend no more than 5 minutes reviewing S's homework. Simply ask S to talk about some of her written responses. Praise and encourage her and give her another homework sheet.

(10') Spend about 10 minutes describing the Avoidance Response Procedure to S. Demonstrate the procedure, using neutral item #1 as follows:

"I'll start with the first item on the hierarchy. Just as an example, I might say, 'Visualize yourself sitting in a chair, reading a novel.' As soon as I finish saying the item, get a clear image of that scene in mind. Then I'll continue to describe what's happening in the scene and your job is to simply visualize whatever I'm describing, as if you were really there. For example, I might say, 'Now a friend walks in and hands you another book.' You would visualize one of your friends walking in and handing you a book. Of course, the scenes we'll be using have to do with snakes, but the idea is the same: Continue to get clear images of whatever I'm describing.

As I am describing a scene to you, as soon as you notice any muscle tension, "butterflies" in your stomach, or any other feelings of tension or fear, signal me by immediately raising your right thumb. Keep that thumb raised as long as you notice any fear. Lower it whenever you no longer notice any fear. After stating the hierarchy item to you and you get a clear image of it, I'll start describing further scenes involving snakes in order to elicit some fear. Remember, some fear must be elicited so that we'll be able to relate your self-report to your physiological responses. So when you do notice it, signal with your thumb and then experience that fear. Don't try to avoid it yet. After about 5 seconds I'll begin describing the avoidance response. This is the time for you to start visualizing your avoidance."

Then state the avoidance response to S and make sure she knows what to visualize:

"The avoidance response you should use each time goes as follows: 'Visualize yourself turning around and running toward the laboratory door, getting away from that snake.' Can you get a clear image of that? O.K., then it goes on. . . 'Visualize yourself opening the door and running through the door.' O.K.? Then, 'Now you're running down the stairs. . . You run out of the building and now you are on the sidewalk outside.' Do you have a good image of that? O.K., then I'll continue, 'You're away from the lab now. . . It's a clear, warm day. . . You sit down on a bench and relax. . . Cars are driving by. . . People are walking on the sidewalks, joking and laughing together?' Can you visualize that without any problems? O.K., then I'll say, 'You feel relieved and calm and safe, now that you're away from the lab and the snake.' So now you'll just try to feel as good as you can. Finally, I'll ask you to signal if all of your images were clear by saying, 'Signal by raising your right index finger if your images were clear.'"

"Each hierarchy item will be presented just like this 3 times. This will allow us to get 3 samples of your report and physiology on each item. We'll start with low ranked items and move up through the whole hierarchy."

Ask S if she has any questions about what will happen and what she is supposed to do.

(25') C. Avoidance Response Procedure.

Have S get comfortable in her chair. Dim the lights, telling her that this is to help her to concentrate. Ask her not to talk during the procedure except in response to direct questions and tell her to keep her eyes closed until the end of the procedures.

Begin item presentation, using the three ARP instruction sheets. Sheet 1 gives the hierarchy items and their initiation statements. Allow 5 seconds between item and initiation statement. Each S will have a Sheet 1 with their own hierarchy order. Sheet 2 gives a variety of implosive-like scenes that are to be used just after the initiation statement. Their purpose is to elicit and maintain fear for 7 to 10 seconds. As soon as S signals fear, continue to implode for 7 to 10 seconds. Then immediately shift to presenting the avoidance response given on sheet 3. Repeat this procedure 3 times on each item before moving to the next. Ask for clarity after each presentation. Repeat item once each time there is poor clarity. Talk more smoothly and calmly during avoidance response statements.

Record only how many presentations were given by writing down the sequence number of that item. The usual entry would be: 1, 2, 3, since 3 presentations are ordinarily given. Circle any presentation that was not clear, eg., 1, 2, 3, 4 would indicate that presentation #2 was not clear and therefore #4 had to be given.

Stop 5 minutes before the end of the session, question whether she had any problems with the procedure, praise her fine effort and progress, and remind her of her homework assignment.

(5') D. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 3 - EoARP

- (10') A. Review
- (45') B. Avoidance Response Procedure
- (5') C. Feedback

(10) A. Review.

Have E attach electrodes while you engage S in casual conversation.

When E leaves, ask S for her homework checklist, praise, and encourage her. Give her a new checklist.

Spend the remaining time reviewing what happens in ARP and what S is supposed to do.

(45') B. Avoidance Response Procedure.

Have S get comfortable, dim the lights, and begin ARP procedure. Start with 3 presentations of the last item completed in the previous session. Remind her to signal with her thumb whenever she notices any fear or tension.

Proceed with ARP as in Session 2, section C.

(5') C. Feedback.

Escort S to the recording room where she may be left with E for physiological feedback.

Session 4 - EoARP

- (10') A. Review.
- (45') B. Avoidance Response Procedure
- (5') C. Feedback

Session 4 is exactly the same as Session 3 with the following 2 exceptions:

- 1) no homework assignment nor checklist is given,
- 2) after finishing the ARP procedure and while casually talking about the ARP session, ask S what she thought of the procedure in general. After her first sentence, say:

"What did you think of using visualized items like: 'lifting a snake from its cage with both hands'?" Electrodes may be removed 60 seconds after this statement.

Whenever an S finishes the hierarchy early, go ahead and terminate the session. In such cases, record how much time of the 4th session elapsed.

Thank S for her cooperation and effort, and remind her of the second snake exposure condition at which time she will be paid.

Fill out the S Evaluation Form at first opportunity.

The snake lets go and drops to the ground... Visualize yourself turning around and running toward the laboratory door, getting away from that snake... Visualize yourself opening the door and running through the door... Now you're running down the stairs... you run out of the building and now you are on the sidewalk outside... You're away from the lab now... It's a clear, warm day... You sit down on a bench and make yourself comfortable... Cars are driving by... People are walking on the sidewalks, joking and laughing together... You feel relieved and calm and safe, now that you're away from the lab and the snake..... Signal if your images were clear.

APPENDIX E. INSTRUCTIONS FOR FALSE PHYSIOLOGICAL FEEDBACK

APPENDIX E

INSTRUCTIONS FOR FALSE PHYSIOLOGICAL FEEDBACK

F+SD-Feedback Session 1

This is a chart of the physiological responses you made during today's session. It combines both your heart rate and what is called GSR or galvanic skin response. Notice first how your general physiology decreased during the first part of the session. This is to be expected. It's just a matter of becoming accustomed to the general situation.

From what I can tell of your responses during treatment, things are going quite well. Notice the large increase in activation that occurs during the first presentation of each hierarchy item. What's important is that there is much less activation of anxiety on second presentations. And also, activation gets progressively lower throughout the procedure. These facts indicate that a good amount of counterconditioning with relaxation is occurring. Even though the items were getting more and more anxiety-provoking, your physiological anxiety response was decreasing. So this kind of a chart is just what we would expect if treatment was progressing well.

Answer any questions S might have.

E+SD-Feedback Session 2

This is a chart of the physiological responses you made during today's session. The pattern is quite similar to last week's. Again there is the lower anxiety activation on second presentations as compared to first presentations. Activation continues to become progressively lower throughout the procedures. More importantly, the level of activation in response to items was lower this session than last, even though, again, this week's items were more anxious.

E+SD - Feedback Session 3

This is a chart of the physiological responses you made during today's session. Again, counterconditioning with relaxation was significant. This looks really good when compared to the last 2 sessions. The material today was more anxiety-provoking, but your level of anxiety was lower. In fact there was hardly any physiological activation on the last few items.

So based on these recordings, I'd say you must have done a fine job in there.

Answer any questions S might have.

E+IT - Feedback Session 1

This is a chart of the physiological responses you made during today's session. It combines both your heart rate and what is called GSR or galvanic skin response. Notice first how your general physiology decreased during the first part of the session, prior to the actual procedures. This is to be expected. It's just a matter of becoming accustomed to the general situation.

From what I can tell of your responses during treatment, things are going quite well. Over the whole session, your activation increased and then decreased, showing very definite anxiety arousal, necessary for good extinction, and very definite extinction of anxiety to the stimuli. And within each item presentation, extinction was occurring. So this kind of chart is just what we would expect if treatment was progressing well.

Answer any questions S might have.

E+IT - Feedback Session 2

This is a chart of the physiological responses you made during today's session. The pattern is quite similar to last week's. Extinction within each item occurred. And again, your activation throughout the procedures demonstrated the necessary anxiety increase followed by good signs of definite

extinction to the stimuli.

More important is the fact that your general anxiety level was lower this week than last week, even though the stimuli involved more anxiety-provoking material.

Answer any question S might have.

E+IT - Feedback Session 3

This is a chart of the physiological responses you made during today's session. Again extinction within each item and over the entire procedure was significant. This looks really good when compared to the last 2 sessions. Again the material was more anxiety-provoking, but your level of anxiety was lower. In fact, there was hardly any physiological activation on the last few items.

So based on these recordings, I'd say you must have done a fine job in there.

Answer any questions S might have.

E+ARP - Feedback Session 1

This is a chart of the physiological responses you made during today's session. It combines both your heart rate and what is called GSR, a galvanic skin response. Notice first how your general physiology decreased during the first part of the session. This is to be expected. It's just a matter of becoming accustomed to the general situation.

From what I can tell of your responses during treatment, things are going quite well. Notice the large increase in activation that occurs during the first presentation of each hierarchy item. What's important is that there is much less activation of anxiety on second and third presentations. And also, activation gets progressively lower throughout the procedure. These facts indicate that a good amount of successful extinction and avoidance response

learning is occurring. Even though the items were getting more and more anxiety-provoking, your physiological anxiety response was decreasing. So this kind of a chart is just what we would expect if treatment was progressing well.

Answer any questions S might have.

E+ARP - Feedback Session 2

This is a chart of the physiological responses you made during today's session. The pattern is quite similar to last week's. Again there is the lower anxiety activation on the second and third presentations. Activation continues to become progressively lower throughout the procedures. More importantly, the level of activation in response to items was lower this session than the last, even though, again, this week's items were more anxiety-provoking.

Answer any questions S might have.

E+ARP - Feedback Session 3

This is a chart of the physiological responses you made during today's session. Again, extinction and avoidance response learning were significant. This looks really good when compared to the last 2 sessions. The material today was more anxiety-provoking, but your level of anxiety was lower. In fact, there was hardly any physiological activation on the last few items.

So based on these recordings, I'd say you must have done a fine job in there.

Answer any questions S might have.

All Eo Conditions - Feedback Session 1

This is a chart of the physiological responses you made during today's session. It combines both your heart rate and what is called GSR or galvanic

skin response. Notice first how your general physiology decreased during the first part of the session, prior to the actual procedures. This is to be expected. It's just a matter of becoming accustomed to the general situation.

These recordings occurred during the procedures and these are the responses we hope to relate to the various conditions and your reports in order to find the complex functional relationship between physiological responses and subjective reports.

Answer any questions S might have.

Session 2

All Eo Conditions - Feedback

This is a chart of the physiological responses you made during today's session. The pattern is quite similar to last week's. This is a good sign, since we do know now that our measurements are reliable.

Answer any questions S might have.

Session 3

All Eo Conditions - Feedback

This is a chart of the physiological responses you made during today's session. Again the pattern is similar to the previous 2 week's. There is a decrease in activation but this is to be expected since you're becoming accustomed to the procedure.

Answer any question S might have.

APPENDIX F. QUESTIONNAIRES

APPENDIX F

Therapist General Questionnaire

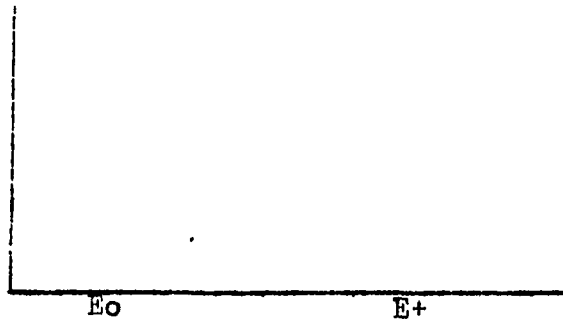
- 1) NAME:
- 2) AGE:
- 3) Years in graduate school:
- 4) Years of clinical experience:
- 5) Number of clients you have treated with SD prior to this study:
- 6) Summarize your general evaluation of SD as a treatment procedure for specific fears as well as for more general neurotic disorders:
- 7) Summarize your general evaluation of IT as a treatment procedure for specific fears as well as for more general neurotic disorders:
- 8) Summarize your general evaluation of ARP as a treatment procedure for specific fears as well as for more general neurotic disorders:

9) Predict changes for your SD, IT, and ARP groups on the following graphs:

•————• = SD •———• = IT = ARP •-•-•-•-• = NT

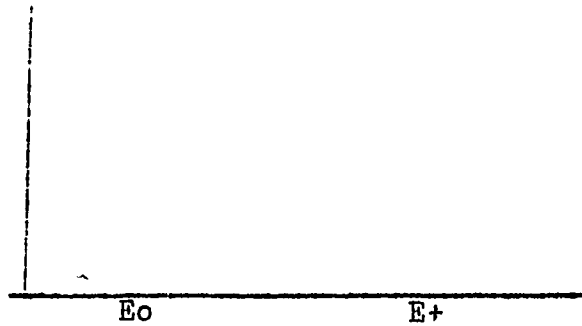
a) Subjective report:

amount of
improvement



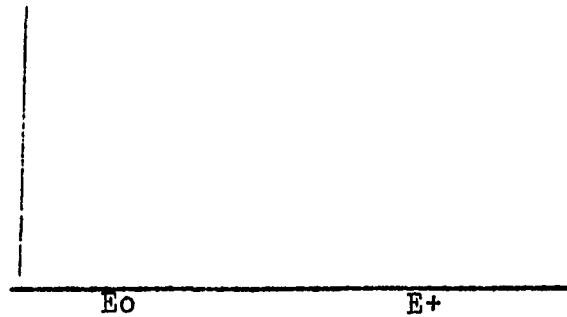
b) Physiology:

amount of
improvement



c) Behavioral avoidance:

amount of
improvement



THERAPISTS' EVALUATION POST QUESTIONNAIRE

- 1) S's name:
- 2) How well did you like her interpersonally?
 Not
 at _____ very
 all _____ much
- 4) How well did she seem to follow the therapeutic directions during the sessions?
 very _____ very
 poorly _____ well
- 5) How much increased approach behavior toward the snake would you predict to have occurred at a consequence of the procedures for her?
 decreased _____ increased
 approach _____ approach
 No
 change
- 60) How much decrease would she report subjectively about her fear of snakes?
 would report _____ would report
 increased _____ decreased fear
 fear _____
 no
 change

SUBJECT EVALUATION QUESTIONNAIRE

The purpose of this form is to get some comments from you concerning your feelings about the sessions you were in for the past four weeks. On all items, please answer as honestly as you can.

- 1) Name :

- 2) Have you ever heard about these procedures from any other source, eg. from a psych class or from a friend ? Yes ____ No ____
 - If yes, please summarize the extent of your knowledge of the procedures and what your source of information was:

- 3) Did you discuss any aspect of the study with anyone ? Yes ____ No ____
 - If yes, was this person also in the same study ? Yes ____ No ____
 - If yes, what was her name ? _____
 -What information did you give to, or receive from, this person?

- 4) In general, how clear were the images you visualized during the procedures ? (Circle one)

very clear	clear	unsure	unclear	very unclear
---------------	-------	--------	---------	--------------

- 5) During the actual procedures, what percent of the time were you able to experience the emotions suggested by the session leader?
 (Circle one)

0%	20%	40%	60%	80%	100%
----	-----	-----	-----	-----	------

- 6) During the actual procedures, what percent of the time did you avoid (or think of something other than) the emotions suggested by the session leader ? (Circle one)

0%	20%	40%	60%	80%	100%
----	-----	-----	-----	-----	------

- 7) Do you think that your fear of snakes has decreased as a result of the procedures ? (Circle one)

My fear:

- | | | | | |
|---------------|---------------------|--------------------------|-----------------------------|---------------------------------|
| 1) increased. | 2) didn't
change | 3) decreased
slightly | 4) decreased
a good deal | 5) decreased
a great
deal |
|---------------|---------------------|--------------------------|-----------------------------|---------------------------------|

-2-

8) Did the physiological recordings accurately correspond to how you felt during the sessions ? (Circle One)

very	slightly	unsure	slightly	very
inaccurate	inaccurate		accurate	accurate

9) If the recordings were not accurately reflecting your physiology, why do you think this might be the case ?

APPENDIX G. RAW SCORE ANALYSIS

APPENDIX G

Raw Score Analysis

Four of the five basic dependent measures (AS, FT, FSP, and PR) were subjected to a secondary analysis. This analysis involved a five-way repeated measures analysis of variance (therapy X expectancy X therapist X time X Ss) on each of the raw scores.

In all of the following over-all analyses, there are four levels of the therapy factor (SD, IT, ARP, and NT), two levels of the expectancy factor (E+ and Eo), and two levels of the therapist factor (Th 1 and Th 2). The time factor involved three levels (pretest, post-test, and follow-up). The 14 NT Ss were randomly assigned to therapists to balance the design, even though no therapist contact occurred for these Ss.

Table 15 reports the summary results of the repeated measures analysis of variance of the four raw score measures.

Approach Score (AS) Analysis. Table 16 presents the raw score AS means for pretest, post-test, and follow-up. Larger scores reflect greater approach.

The results of the repeated measures analysis of variance of the raw score AS summarized in Table 15 showed a significant main effect of time, indicating a large increase in approach behavior toward the snake stimulus over all treatment groups from pretest to later testings. A post-hoc comparison method due to Scheffe (Hays, 1963) between the post-test mean and the follow-up mean revealed that the overall increase from post-test to follow-up was not significant ($.24 - 1.13 \leq Y \leq .24 + 1.13$)*. Thus the main effect

*For a post-hoc comparison by the Scheffe method to be significant, such a confidence interval must not cover zero.

Table 15

Repeated Measures Analysis of Variance Summaries of AS, FT, FSP, and PR Raw Scores
(Therapy (TR) X Expectancy (E) X Therapist (Th) X Time (T) X Ss (S))

Source	df	Dependent Measure							
		<u>AS</u>		<u>FT</u>		<u>FSP</u>		<u>PR</u>	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
TR	3	4.47	.15	3.62	.29	19.33	.89	48.31	1.58
E	1	244.35	8.10**	6.34	.51	.25	.01	.52	.02
Th	1	5.08	.17	2.01	.16	6.61	.30	15.83	.52
TR X E	3	21.45	.71	5.92	.48	53.67	2.47	8.71	.28
TR X Th	3	79.75	2.64	5.91	.48	45.89	2.11	12.24	.40
E X Th	1	6.61	.22	31.46	.55	.60	.03	17.56	.57
TR X E X Th	3	8.80	.29	2.82	.23	49.50	2.27	11.28	.37
Error (S)	34	30.17		12.34		21.76		30.60	
T	2	301.03	58.46*	43.55	17.11*	71.24	19.44*	15.35	3.52***
TR X T	6	2.84	.55	5.52	2.17***	4.39	1.20	9.74	2.23***
E X T	2	67.45	13.10*	5.52	2.17	3.89	1.06	.33	.08
Th X T	2	.97	.19	1.74	.68	2.15	.59	.48	.11
TR X E X T	6	7.97	1.55	2.18	.86	1.96	.53	6.20	1.42
TR X Th X T	6	8.27	1.61	3.82	1.50	2.72	.74	9.19	2.10
E X Th X T	2	.42	.08	.00+	.00+	.57	.15	7.84	1.80
TR X E X Th X T	6	3.57	.69	.64	.25	3.59	.98	6.85	1.57
Error (T X S)	68	5.15		2.54		3.66		4.36	

* $p < .001$

** $p < .01$

*** $p < .05$

Table 16

AS Raw Score Means for Treatment Conditions and Test Times *

		Treatment Condition															
		E+SD		EoSD		E+IT		EoIT		E+ARP		EoARP		E+NT		EoNT	
Therapist :		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
<u>Time</u>																	
Pretest :		2.67	3.17	3.00	3.33	3.33	3.00	4.83	2.33	3.33	3.33	4.67	1.67	3.25	4.00	3.00	4.00
Post-test :		5.67	12.00	5.33	6.33	13.00	9.67	6.17	4.00	10.67	7.67	7.33	3.67	7.00	8.00	4.75	8.00
Follow-up :		5.67	9.67	5.33	6.00	14.00	9.00	5.83	3.00	12.67	9.33	7.67	2.00	7.62	10.67	5.25	9.33

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

of time was due mostly to the pre- to post-test change.

A significant main effect of expectancy was found in the AS raw scores, with E+ Ss showing the greater mean approach distance, regardless of the time factor. Also a significant expectancy X time interaction resulted. Expectancy X time means were calculated from Table 16. E+ means were 3.26, 9.21, and 9.83 for pretest, post-test, and follow-up, respectively; Eo means were 3.35, 5.70, and 5.55. Together with the significant interaction effect, these means indicated that Ss in the E+ conditions showed significantly large gains in terms of increased approach behavior, relative to Eo Ss, from pretest to post-test, and they maintained those gains at follow-up. Post-hoc analyses revealed that this superiority of E+ Ss was significant at both post-test ($3.51 - 2.02 \leq Y \leq 3.51 + 2.02$, $p < .01$) and follow-up ($4.28 - 2.02 \leq Y \leq 4.28 + 2.02$, $p < .01$). The post-test-to-follow-up mean increase of E+ Ss as well as the mean decrease of Eo Ss were not statistically significant ($.62 - 1.61 \leq Y \leq .62 + 1.61$ and $-.15 - 1.61 \leq Y \leq .15 + 1.61$, respectively).

There was a trend toward significance ($p < .065$) for the therapy X therapist interaction. Calculations of these means from Table 16 resulted in mean scores for Th 1 of 4.61, 7.86, 7.72, and 5.15 for SD, IT, ARP, and NT, respectively. Means for Th 2 were 6.75, 5.17, 4.61, and 7.33. These means indicated that among Th 1's groups, Ss in IT and ARP showed the greatest approach behavior increases, while among Th 2's groups it was the SD Ss who indicated the greatest change.

Another trend, although not as strong ($p < .176$), was the three-way interaction among the therapy, expectancy, and time factors. Collapsing the therapist factor and ranking the group means of Table 16 in terms of increased approach behavior on the post-test

revealed that, in the F+ condition, IT Ss made the greatest gains, followed by ARP, SD, and NT Ss. At follow-up, the IT group maintained its superiority despite a lack of further gains, while ARP and NT groups continued to evidence increased approach behavior and the SD group decreased below the NT level. A different picture emerged in the Eo condition, however. The exact opposite rank order occurred at the post-test (NT, SD, ARP, and IT) and this order maintained itself at follow-up. Only the NT group showed any gain from post-test to follow-up. Figure 5 presents this interaction.

Fear Thermometer Analysis (FT). Table 17 presents the raw score FT means for pretest, post-test, and follow-up.

The results of the repeated measures analysis of variance of the raw score FT summarized in Table 15 indicated a significant main effect of time. Means calculated from Table 17 showed a general decrease in subjectively reported fear over time (pretest = 7.03, post-test = 5.97, and follow-up = 5.16). Post-hoc comparisons on these means indicated that the pre-to-post, pre-to-follow-up, and post-to-follow-up decreases were all significant. Respectively, these comparisons were: $1.06 - 1.01 \leq Y \leq 1.06 + 1.01$, $p < .01$; $1.86 - 1.01 \leq Y \leq 1.86 + 1.01$, $p < .01$; and $.8125 - .8032 \leq Y \leq .8125 + .8032$, $p < .05$.

There was also a strong trend for the therapy X time interaction ($p < .057$). Table 18 reports the means for these factors, as calculated from Table 17. Inspection of these means indicated that, from pretest to post-test, the NT group showed no change, while the other groups all evidenced a decrease in subjectively reported fear, particularly the SD group. At follow-up, ARP and IT groups had continued to decrease, SD had shown a slight increase, and NT had evidenced its first decrease.

Figure 5
Mean AS Raw Scores for Therapy Groups, Expectancy
Conditions, and Test Times

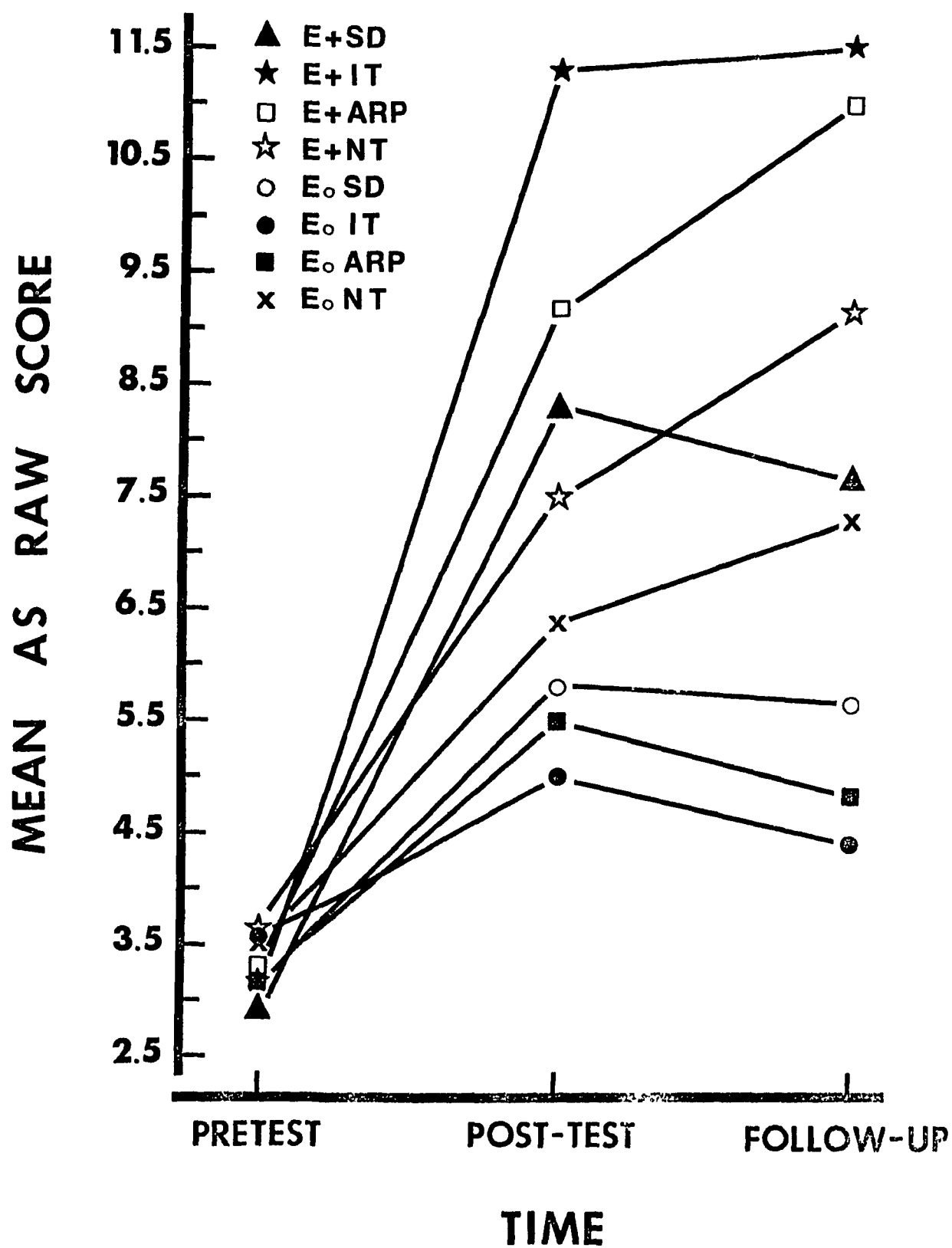


Table 17

FT Raw Score Means for Treatment Conditions and Test Times *

		Treatment Condition															
		E+SD		EoSD		E+IT		EoIT		E+ARP		EoARP		E+NT		EoNT	
Therapist:		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
<u>Time</u>																	
Pretest :		7.67	6.67	7.33	8.67	7.00	6.67	5.33	7.00	7.67	8.67	6.33	8.67	7.25	6.00	5.50	6.00
Post-test:		5.33	5.00	4.00	7.33	5.67	4.00	6.00	6.33	6.00	5.67	8.00	7.00	7.75	5.67	5.75	6.00
Follow-up:		5.67	5.00	4.67	7.00	5.33	3.33	6.33	5.00	2.67	4.33	4.67	7.00	6.25	5.00	4.25	6.00

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

Table 18

FT Raw Score Means of Therapy Conditions and Test Times *

<u>Time</u>	Therapy Condition			
	<u>SD</u>	<u>IT</u>	<u>ARP</u>	<u>NT</u>
Pretest :	7.58	6.50	7.83	6.19
Post-test :	5.42	5.50	6.67	6.29
Follow-up :	5.58	5.00	4.67	5.37

* NT means are based on an n of 14. All others are based on an n of 12.

While the expectancy factor did not enter into any trends, it is interesting to note that the SD groups were the only ones to report decreased fear at the post-test in both expectancy conditions. The other three therapy group means in the Eo condition showed no change.

Finger Sweat Print (FSP) Analysis. Table 19 presents the raw score FSP means for pretest, post-test, and follow-up. Smaller scores indicate lower finger sweat gland activity.

The results of the repeated measures analysis of variance of the raw score FSP summarized in Table 15 indicated a significant main effect of time. Means calculated from Table 19 showed a general decrease in sweat gland activity over the three testing times (pretest = 6.78, post-test = 5.39, and follow-up = 4.39). Post-hoc comparisons of these means revealed that the pre-to-post, pre-to-follow-up, and post-to-follow-up decreases were all significant. These comparisons were, respectively, $1.39 - 1.21 \leq Y \leq 1.39 + 1.21$, $p < .01$; $2.39 - 1.21 \leq Y \leq 2.39 + 1.21$, $p < .01$; and $1.00 - .96 \leq Y \leq 1.00 + .96$, $p < .05$.

A trend ($p < .08$) for the therapy X expectancy interaction was also present. Means for these factors, calculated from Table 19, were 3.81, 7.19, 5.61, and 5.30 for SD, IT, ARP, and NT respectively in the F+ condition, and 5.67, 3.89, 7.33, and 5.35 for the same therapy groups in the Eo condition. These means indicated that, in the Eo condition, the IT group had the least amount of sweat gland activity, followed by NT, SD, and ARP, while in the F+ condition, the rank ordering from least to most activity was SD, NT, ARP, and IT. SD ss and ARP ss evidenced lower gland activity in the F+ condition as compared to the Eo condition, while IT showed higher

Table 19

FSP Raw Score Means for Treatment Conditions and Test Times *

		Treatment Conditiior															
		E+SD		EoSD		E+IT		EoSD		E+ARP		EoARP		E+NT		EoNT	
Therapist :		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
<u>Time</u>																	
Pretest :		4.00	6.50	6.67	7.67	8.17	5.83	5.50	5.50	4.33	10.00	8.67	9.67	9.25	3.50	6.50	6.67
Post-test :		2.67	5.67	6.50	5.67	9.33	6.17	3.83	3.00	2.50	6.50	5.67	7.83	7.25	2.83	5.00	5.83
Follow-up :		1.67	2.33	3.67	3.83	7.83	5.83	2.17	3.33	1.33	9.00	6.50	5.67	5.62	3.33	2.75	5.33

* NT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

activity in E+ and NT had no difference between Eo and E+.

Two other trends appeared. The first was a therapy X therapist interaction ($p < .12$) and indicated lower sweat gland activity for Th 1's ARP and SD groups and higher activity for his IT groups, as compared to Th 2's groups. The second was a therapy X expectancy X therapist interaction ($p < .10$). Inspection of the Table 19 means for this three-way interaction suggested that the therapy X therapist interaction held only for the E+ condition. In Eo, both therapists' groups showed similar FSP scores.

Pulse Rate (PR) Analysis. Table 20 presents the raw score PR means for pretest, post-test, and follow-up. Smaller scores reflect lower pulse rate.

As indicated by Table 15, the repeated measures analysis of variance resulted in a significant main effect of time. Means for pretest, post-test, and follow-up, calculated from Table 20, were 21.50, 20.87, and 20.40 respectively. Post-hoc analysis revealed that only the pretest-to-follow-up decrease in pulse rate was significant ($1.11 - 1.05 \leq Y \leq 1.11 + 1.05$, $p < .05$).

A significant therapy X time interaction also appeared. Table 21 reports the means of these factors. Inspection of the table indicated general decreases in PR for the three therapy groups from pretest to post-test to follow-up, while NT groups showed a consistent increase. Post-hoc analysis revealed that the groups did not differ statistically until the follow-up. At that time, the combination of the SD, IT, and ARP groups showed significantly less PR than the NT groups ($3.69 - 2.85 \leq Y \leq 3.69 + 2.85$, $p < .01$).

Finally, there was a strong trend for a therapy X time X therapist interaction ($p < .064$). Table 20 means indicate that this trend was due to a variety of differences between therapists.

Table 20

PR Raw Score Means for Treatment Conditions and Test Times *

		Treatment Condition															
		E+SD		EoSD		E+IT		EoIT		E+ARP		EoARP		E+NT		EoNT	
Therapist:		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
<u>Time</u>																	
Pretest :		19.33	22.67	20.33	20.67	20.00	24.67	22.33	21.67	21.00	19.33	23.00	21.67	25.50	18.33	22.25	21.33
Post-test:		20.00	20.00	19.33	19.33	22.00	19.33	21.33	20.67	21.00	20.33	20.00	20.67	24.00	20.33	22.25	23.33
Follow-up:		22.00	18.33	17.00	18.33	19.67	18.33	19.67	19.67	20.67	20.33	19.33	20.33	23.25	20.33	24.75	24.33

* IT-Therapist 1 means are based on an n of 4. All others are based on an n of 3.

Table 21

PR Raw Score Means of Therapy Conditions and Test Times *

	Therapy Condition			
	SD	IT	ARP	NT
<u>Time</u>				
Pretest :	20.75	22.17	21.25	21.85
Post-test :	19.67	20.83	20.50	22.48
Follow-up :	18.92	19.33	20.17	23.17

* NT means are based on an n of 14. All others are based on an n of 3.

Th 1's SD groups showed little change over time; his IT groups increased in PR at post-test before decreasing at follow-up; and his ARP groups decreased over testing times. Th 2's SD groups and IT groups showed large and consistent PR decreases over time, while his ARP group evidenced no change.

Contributing to the strength of the trend was the artifactual effect of the NT groups. NT Ss assigned to Th 1's group had decreased PR at post-test and increased PR at follow-up. The opposite was true of Th 2's NT groups. Assignment of NT Ss to therapists, however, was random and there was no therapist contact with NT groups. Consequently the trend described above is actually not as strong as the test statistic suggests.

APPENDIX H**Raw Data**

OUTCOME MEASURE RAW DATA

COLUMN 1 = THERAPY CONDITION

- 1 = DESENSITIZATION
- 2 = IMPLESION
- 3 = AVOIDANCE RESPONSE
- 4 = NO-THERAPY

COLUMN 3 = EXPECTANCY CONDITION

- 1 = POSITIVE EXPECTANCY
- 2 = NEUTRAL EXPECTANCY

COLUMN 5 = THERAPIST

- 1 = THERAPIST 1 (GEORGE ALLEN)
- 2 = THERAPIST 2 (ED CRAIGHEAD)

COLUMN 7 = TEST TIME

- 1 = PRE-TEST
- 2 = POST-TEST
- 3 = FOLLOW-UP

COLUMN 9 = TOUCH--NO-TOUCH AT POST-TEST

- 1 = NO-TOUCH
- 2 = TOUCH

COLUMN 13-14 = SUBJECT NUMBER

COLUMN 16 = FSS SCORE

COLUMN 18-19 = AS OF OBSERVER 1

COLUMN 21-22 = AS OF OBSERVER 2 (RELIABILITY)

COLUMN 24-26 = MEAN AS OF THE 2 OBSERVERS

COLUMN 28-29 = PR

COLUMN 31-32 = FT

COLUMN 34-35 = FSP OF RATER 1

COLUMN 37-38 = FSP OF RATER 2 (RELIABILITY)

COLUMN 40-42 = MEAN FSP OF THE 2 RATERS

1	1	1	1	2	01	6	05	05	050	16	08	01	01	010			
1	1	1	2	2	01	6	08	08	080	14	07	01	01	010	460	468	464
1	1	1	3		01	6	08		080	22	09	01	01	010	212		212
1	1	1	1	1	02	5	02		020	19	05	06	06	060			
1	1	1	2	1	02	5	02	02	020	25	03	04	04	040	900	900	900
1	1	1	3		02	5	02	02	020	23	05	01	01	010	900	900	900
1	1	1	1	1	03	7	01	01	010	23	10	05	05	050			
1	1	1	2	1	03	7	07	07	070	21	06	03	03	030	900	900	900
1	1	1	3		03	7	07		070	21	03	03	03	030	900		900

1 1 2 1 2	04 5 06	060 26 10 08 08 080		
1 1 2 2 2	04 5 17	170 20 05 07 07 070	124	124
1 1 2 3	04 5 14 14	140 18 05 05 03 040	100 102	101
1 1 2 1 2	05 6 02	020 21 03 04 04 040		
1 1 2 2 2	05 6 17	170 20 03 07 08 075	190	190
1 1 2 3	05 6 13	130 18 03 01 01 010	094	094
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1 2 1 1 2	07 6 06 06	060 20 07 07 07 070		
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1 2 1 3	08 6 02	020 15 02 02 02 020	110	110
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1 2 1 3	09 7 06	060 21 06 04 04 040	900	900
1 2 2 1 1	10 5 04	040 24 10 04 04 040		
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1 2 2 3	10 5 04 04	040 17 09 02 02 020	502 511	506
1 2 2 1 2	11 6 04 04	040 16 09 08 08 080		
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1 2 2 3	11 6 03 08	080 13 07 03 02 025	150 158	159
1 2 2 1 1	12 5 02	020 22 07 12 10 110		
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1 2 2 3	12 5 06 06	060 20 05 07 07 070	292 292	292
2 1 1 1 2	13 7 02 02	020 17 06 07 06 065		
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2 1 1 3	13 7 17	170 18 07 07 07 070	090	090
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2 1 1 3	15 7 08	080 23 07 06 04 040	646	646
2 1 2 1 1	16 6 02	020 24 02 07 07 070		
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2 1 2 3	16 6 02	020 19 01 11 10 105	120	120
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2 1 2 3	17 7 08 08	080 17 07 05 05 050	320 324	322
2 1 2 1 2	18 5 06 06	060 25 09 03 04 035		
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2 2 1 3	19 7 02	020 19 06 01 01 010	688	688
2 2 1 1 2	20 6 07 08	075 22 03 06 05 055		
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2 2 1 1 1	21 5 05	050 23 07 06 06 060		
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2 2 1 3	21 5 04 05	045 21 08 01 01 010	900 900	900
2 2 2 1 1	22 7 02	020 26 09 04 05 045		
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2 2 2 3	22 7 02 02	020 20 05 04 04 040	438 384	411

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3	1	1	1	2	26	6	04		040	18	06	03	03	030			
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3	1	2	3		29	5	15		150	24	07	13	13	140	108		108
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3	1	2	3		30	5	05	05	050	19	06	12	13	140	900	900	900
3	2	1	1	2	31	7	04		040	20	11	05	05	050			
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3	2	1	3		32	5	03		030	22	13	01	05	030	252		252
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3	2	2	3		34	7	00	00	000	23	08	07	07	070	900	900	900
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4	1	2	3		37	6	03	06	070	22	07	02	02	020	244	320	282
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4	1	1	3		40	5	03		030	21	04	02	02	020	155		155
4	1	2	1	2	41	5	03		030	17	07	04	05	045			
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4	1	2	3		41	5	03		030	15	05	03	03	030	220		220

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4 1 1 3	43 5 12	120 20 09 03 02 025	104	104
4 2 1 1 2	44 7 03	030 19 08 14 14 140		
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4 2 1 3	44 7 08	080 19 03 05 05 050	128	128
4 2 1 1 1	45 7 01	01 010 27 05 07 07 070		
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4 2 1 3	45 7 00	000 31 07 02 02 020	900	900
4 2 2 1 2	46 7 02	02 020 24 08 03 04 035		
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4 2 2 1 2	47 5 06	06 060 20 03 06 07 065		
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4 2 2 3	47 5 03	03 080 23 06 07 08 075	142	142
4 2 2 1 2	48 7 04	04 040 20 02 16 10 100		
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4 2 2 3	48 7 03	03 080 23 06 08 07 075	278	278
4 2 1 1 1	49 7 02	02 020 21 02 04 04 040		
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4 2 1 3	49 7 05	05 050 22 02 03 03 030	900	900
4 2 1 1 2	50 7 05	06 060 22 07 01 01 010		
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4 2 1 3	50 7 09	09 080 27 05 01 01 010	120	120

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20	10	03	05	090			
19	10	04	04	040	103	110	106
20	09	03	02	025	104		104
19	09	14	14	140			
17	06	12	12	120	250	250	250
19	03	05	05	050	128		128
27	05	07	07	070			
30	06	03	04	035	900		900
31	07	02	02	020	900		900
24	09	03	04	035			
27	03	04	04	040	100	110	105
27	06	01	01	010	110	110	110
20	03	06	07	065			
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23	06	07	08	075	142		142
20	02	10	10	100			
21	04	03	04	040	510		510
23	06	05	07	075	275		275
21	12	04	04	040			
22	02	02	03	025	900	900	900
22	02	03	03	030	900		900
22	07	01	01	010			
20	09	02	02	020	524	512	518
27	05	01	01	010	120		120

0792 CAPDS

DURING-THERAPY PHYSIOLOGICAL RAW DATA

COLUMN 1 = THERAPY CONDITION

1 = DESENSITIZATION

2 = IMPLSION

3 = AVOIDANCE RESPONSE

COLUMN 3 = EXPECTANCY CONDITION

1 = POSITIVE EXPECTANCY

2 = NEUTRAL EXPECTANCY

COLUMN 5 = THERAPIST

1 = THERAPIST 1 (GEORGE ALLEN)

2 = THERAPIST 2 (ED CRAIGHEAD)

COLUMN 7-8 = HIERARCHY ITEM NUMBER

COLUMN 10 = PRESENTATION ORDER

COLUMN 18-19 = SUBJECT NUMBER

COLUMN 21-24 = PRE-ITEM BSC

COLUMN 26-29 = DURING-ITEM BSC

COLUMN 31-34 = AFTER-ITEM BSC (30 SECONDS)

COLUMN 36-39 = AFTER-ITEM BSC (OVER-ALL)

COLUMN 41-44 = PRE-ITEM BSC OF THE NEXT ITEM

1	1	1	01	1	01	0118	0117	0119	0130	0167
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1	1	1	02	2	01	0115	0115	0115	0115	0115
1	1	1	03	1	01	0115	0115	0115	0115	0116
1	1	1	03	2	01	0116	0116	0116	0120	0120
1	1	1	04	1	01	0120	0120	0120	0120	0118
1	1	1	04	2	01	0118	0118	0118	0128	0128
1	1	1	05	1	01	0372	0372	0358	0358	0328
1	1	1	05	2	01	0328	0328	0322	0322	0330
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1 1 1 03 1	02 0968 0977 0999 1014 1014
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1 1 1 04 1	02 1074 1075 1097 1099 1099
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1 1 1 05 1	02 1153 1161 1181 1195 1195
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VITA

Thomas Donald Borkovec was born September 19, 1944, in Chicago, Illinois. He received his B.S. degree at Loyola University, Chicago, Illinois in 1966, his A.M. degree at the University of Illinois, Champaign, Illinois in 1968, and will receive his Ph.D. at the University of Illinois, Champaign, Illinois in 1970. Borkovec has been a research assistant in a behavior modification project for behaviour disordered children and a teaching assistant in an undergraduate introductory psychology course and a graduate psychological assessment course. His internship under Bernard R. Wagner involved administration and supervision of a token economy and individual treatment programs for delinquent and pre-delinquent adolescents, as well as parent retraining and community planning. His masters thesis, under the direction of Herbert C. Quay, was entitled "Autonomic Reactivity to Sensory Stimulation in Psychopathic, Neurotic and Normal Juvenile Delinquents". He can teach courses in abnormal psychology, introductory psychology, clinical research methods, and behavior modification principles and techniques. His dissertation, which involved a comparison of systematic desensitization and implosive therapy under different expectancy conditions, was conducted under the direction of Douglas A. Bernstein. In addition to his masters thesis publication (Journal of Consulting and Clinical Psychology, in press) he has co-authored a book (Progressive Relaxation Therapy, Pergamon Press: New York, in press) with Douglas A. Bernstein and an article ("Exposure of a Behavior Therapist to Dynamic Hypotherapy," in preparation) with C. Scott Moss and James Curran.