A COMPARISON OF SHORT-TERM SYSTEMATIC DESENSITIZATION
AND IMPLOSIVE THERAPY UNDER THERAPEUTIC
LEVEL OF ASPIRATION

DISSERTATION

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

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Denton, Texas
May, 1978

Systematic desensitization and implosive therapy have surfaced as two of the primary behavioral therapy techniques to decrease phobic responses during the past decade. Although attempts have been made to compare the efficiency and effectiveness of these two techniques, results have been unclear because of the failure of researchers to duplicate the procedures as described by their respective originators. Also, previous research of these two techniques has not included the possible therapeutic or motivational effects of the client's level of aspiration.

This experiment is designed to explore the joint effects of the therapies and level of therapeutic aspiration. A second objective, and a byproduct of the data produced in achieving the primary objective, was to analyze the goal discrepancy and attainment discrepancy scores accruing throughout the therapy sessions. Several hypotheses were advanced.

Thirty college volunteers who met several phobic selection criteria were randomly assigned to one of six conditions: (a) systematic desensitization non-goal-setting, (b) systematic desensitization goal-setting, (c) implosive therapy
non-goal-setting, (d) implosive therapy goal-setting, (e) placebo non-goal-setting, or (f) placebo goal-setting.

Each subject received five 50-minute sessions for their respective treatment over a 2-week period. Immediately following each treatment session, subjects in the goal-setting conditions had the opportunity to express their level of aspiration for the approach test and fear thermometer prior to approaching the phobic object. Subjects not in the goal-setting condition merely attempted to approach the rat without expressing their level of aspiration.

To assess the effects of treatment, three measures were employed: (a) distance of approach test scores, (b) fear thermometer scores, and (c) speed of approach scores. Scores on each measure were acquired prior to initiation of treatment and following each of five treatment sessions. Scores acquired during the pretreatment assessment and following the last treatment session were utilized in a 2 X 3 ANOCOV. Results suggested that both systematic desensitization and implosive therapy are as effective in significantly decreasing phobic behavior as measured by the approach test. Significance was not demonstrated while utilizing either fear thermometer or speed scores. Nonsignificant results were also obtained between the goal-setting and non-goal-setting groups when utilizing each of the three criterion measures. Possible explanations for nonsignificant results were discussed.
Further analysis of the three criterion measures by means of ANOVA resulted in significant main sessions effects for each of the three independent analyses. Results suggest that all subjects, regardless of treatment subgroup, did make significant therapeutic gains in their approach scores, fear thermometer scores, and speed of approach scores from the first to the last session. Possible explanations for results were discussed.

Furthermore, approach test absolute goal discrepancy, fear thermometer absolute goal discrepancy, approach test absolute attainment discrepancy, and fear thermometer absolute attainment discrepancy scores were calculated for all goal-setting subjects. Results from independent ANOVA suggest that the typical university student is able to make fairly accurate and consistent predictions concerning his future behavior, based on his past experiences. Discussion centered around explanations for nonsignificant results between the two therapeutic and placebo conditions utilizing all four criterion measures.
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A COMPARISON OF SHORT-TERM SYSTEMATIC DESENSITIZATION
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In view of the number of individuals who presently need psychological services, it is essential to conduct investigations which might lead to more effective and efficient psychotherapeutic procedures. Greving (1958) reported that the ten northeastern states alone spend approximately $23,000,000 annually for the care of about 195,000 patients in long-term treatment in mental institutions. One can imagine comparative costs with today's inflationary prices and increasing number of patients utilizing these institutions (approximately 52,000 additional patients are admitted each year). Pasamanick (1956) reported that 10% of the residents in urban areas can be classified mentally ill; while Rennie (1957) reported that a staggering 80% in certain populations should be thus considered.

While the estimates of individual suffering from psychological problems is staggering, it is quite evident that the number of individuals with doctorates in clinical psychology is relatively small. Cates (1970) suggested that there are only approximately 10,000 individuals with Ph.D. degrees in clinical psychology. Blau (1976), in a recent conference with military psychologists in San Antonio, Texas,
reported that no more than 15% of all recent Ph.D. graduates in clinical psychology will ever be applied practicing psychotherapists. Whatever the true client/pychologist ratio might actually be, it is suggested that even if one were to include all professionals who might have patient contact (psychiatrists, psychiatric nurses, social workers), there would be a dramatic need for more efficient and effective therapeutic intervention programs.

It seems, therefore, that as active members of the mental health delivery system we should investigate the possibility of improving present psychotherapeutic regimes. In the past several decades there has been a substantial increase in the amount of interest shown in the area of behavior modification and behavior therapy. Wenrich (1970) has suggested that one way of assessing the validity of a scientific discipline or movement is to consider the amount of published materials that is directly or indirectly related to the movement. Ernst (1971) has reported a rapid increase in books devoted exclusively to behavior modification and behavior therapy during the past several years, while Bergin (1971) and Hoon and Lindsley (1974) have reported a dramatic increase in the number of research articles devoted exclusively to the behavior therapies.

A major byproduct of this growing interest in the behavior therapies has been the increased attention paid to the procedures developed primarily for the reduction of phobic
behaviors (conditioned fear and avoidance behaviors). Traditionally, a phobia has been defined as an intense and irrational fear of some object or situation which may significantly impede an individual's everyday functioning. Review of behavior modification and behavior therapy research, on the other hand, shows that most researchers include relatively mild forms of anxiety and fear under the phobia definition, and the present research is no exception. It is therefore important to consider the intensity of the "phobic" behavior when generalizing these results to the general clinical population.

Two distinctly different procedures, systematic desensitization (Wolpe, 1958) and implosive therapy (Stampfl, 1967), have been developed and investigated in an attempt to apply behavioristic principles to facilitate reduction in phobic behaviors. Of these two procedures, systematic desensitization has been the major subject of interest in well over 100 investigations, while the newer approach, implosive therapy, has been the concern of comparatively fewer studies (Morganstern, 1973). Moreover, systematic desensitization, according to Paul (1969b), is the "first psychotherapeutic procedure in history to withstand rigorous evaluation" (p. 146). Results of investigations in implosive therapy are promising and, as a result, have cast some doubts on the theoretical and procedural formulation of systematic desensitization (Nelson, 1966; Thompson & Spencer, 1966;
Valins & Ray, 1967). Therefore, it should be useful to compare systematic desensitization and implosive therapy as psychotherapy methods utilizing the same criterion disorder—rat phobia.

Although both systematic desensitization and implosive therapy have been utilized in applied settings (such as public and private clinics, day-care centers, and university clinics), there seems to be the tendency in most controlled investigations to disregard the client's verbalizations during the course of treatment. In most applied situations the client is not merely a passive recipient of the therapist's instructions, so it would appear that an exploratory investigation of the effects of these client verbalizations is presently necessary.

One type of client verbalization which appears to merit investigation is the client's level of aspiration—specifically, level of aspiration during or prior to a therapy session when the subject sets therapeutic goals to achieve. Research concerning the role of level of aspiration in therapeutic situations is extremely limited (if not totally lacking). Therefore, the primary purpose of this experiment is two-fold: (a) to compare the efficiency of traditional systematic desensitization and implosive therapy, and (b) to investigate the effects of level of psychotherapeutic aspiration (goal setting) on the efficiency of both systematic desensitization and implosive therapy. The secondary purpose
is to ascertain relationships between therapeutic achievement and level of aspiration (goal-setting) behavior occurring throughout the therapy sessions.

The remaining introductory section includes relevant studies on systematic desensitization, implosive therapy, comparisons of these two therapies, and level of aspiration methodologies and associated research. These topics lead to a statement of the problem from which the hypotheses are generated.

**Systematic Desensitization**

Systematic desensitization has been a widely investigated therapeutic procedure which rests upon a theoretical foundation differing from that of implosive therapy. Wolpe (1959, 1969), the originator of systematic desensitization, suggested that the effectiveness of the procedure is contingent upon the process of reciprocal inhibition or counter-conditioning. The principle, as stated by Wolpe and Lazarus (1966), is that "if a response inhibitory to anxiety can be made to occur in the presence of anxiety-provoking stimuli, it will weaken the bond between these stimuli and the anxiety" (p. 12). The incompatible response selected by Wolpe is that of relaxation, which is taught to the client using an abbreviated format of progressive relaxation developed by Jacobson (1938). In systematic desensitization, this process is implemented by having the client, while relaxed, imagine scenes in an ascending sequence (from least to most anxiety-arousing)
until he is able to imagine the most anxiety-arousing scene without becoming anxious or experiencing anxiety.

Systematic desensitization, with the counterconditioning paradigm, has been used to ameliorate a broad spectrum of avoidance and anxiety behaviors. For example, Rachman (1959) with injection phobia, Ashem (1963) with disaster phobia, Kraft and Al-Issa (1965) with heat phobia, Davison (1968) with snake phobia, Johnson (1966) with test anxiety, and Lazarus (1961) with impotency and frigidity disorders represent but a few of the successful studies demonstrating the positive effects of systematic desensitization in the reduction of anxiety and phobic behaviors.

Implosive Therapy

Stampfl, conversely, bases the therapeutic success of implosive therapy on the learning principle of experimental extinction. Basing much of the theoretical foundation of implosive therapy on Mower's classic paper, "Learning Theory and the Neurotic Paradox" (1948), Stampfl postulated that the autonomic responses must first be extinguished before appropriate problem-solving behavior can take place. Taking into consideration the success achieved by the use of the psychoanalytic technique of abreaction (the mental reliving of a situation out of the past), Stampfl suggested that the most expedient procedure for reduction of avoidance behavior or conditioned anxiety is ". . . to represent, reinstate, or symbolically reproduce the stimuli [cues] to which the
anxiety responses have been conditioned, in the absence of primary reinforcement" (Stampfl & Levis, 1967, p. 499). A review of recent data demonstrates that the presentation of the conditioned stimuli, under appropriate conditions, can lead to rapid extinction of the conditioned avoidance response (Baum, 1970; Katzer, 1967; Polin, 1959; Poppen, 1968). Thus, Stampfl tries to increase the degree of anxiety experienced by the client, via imagery, in order to facilitate the extinction process; whereas Wolpe requires that his clients be as relaxed as possible throughout the procedure, making every attempt to protect them from experiencing any anxiety.

Implosive therapy has been successfully conducted in the reduction of a wide range of anxiety and avoidance behaviors (Baum & Poser, 1971; Hogan, 1966, 1968; Levis, 1967; Smith & Shape, 1970; Stampfl & Levis, 1968). Moreover, present published controlled research seems to suggest that implosive therapy is a useful procedure for the reduction of conditioned anxiety. Significant differences between implosive therapy and a control group have been reported by Hogan (1966), Kirchner and Hogan (1966), Levis and Carrera (1967), Hogan and Kirchner (1968), Boulougoris, Marks, and Marset (1971), Boudewyns and Wilson (1972), and Silvestri (1977), while negative results have been reported by Hodgson and Rachman (1970) and Watson and Marks (1971).

Although present published research suggests that implosive therapy is beneficial in the reduction of anxiety and
avoidance behavior, there is a continuing debate concerning its efficiency, as well as the methodological soundness of implosive therapy research (Levis, 1974; Morganstern, 1973, 1974). Moreover, while emphatically accepting the principle of reciprocal inhibition as a means of reducing conditioned anxiety, Wolpe (1958) explicitly rejected extinction as a viable alternative for the reduction of conditioned anxiety. He contends that mere exposure to the conditioned stimuli, whether in imagination or in vivo, is not sufficient for the elimination or suppression of an anxiety response. Eysenck (1968) supported Wolpe's contention that individuals who are exposed to an anxiety-evoking stimulus which is too intense will develop a higher level of avoidance behavior. Wolpe (1968) further suggested that implosive therapy should be used as a last resort, because some clients may suffer exacerbation of the phobia. Caution about the use of implosive therapy was also suggested by Morganstern (1973), although there has not been one reported study in which implosive therapy yielded reliably worse results than the controls (Levis, 1974). While Bandura (1969) implied that implosive therapy is likely to be less effective and more time-consuming than systematic desensitization, Stampfl and Levis (1967) proposed that the reduction or elimination of maladaptive behavior can be accomplished more quickly through the implosive therapy technique.
Systematic Desensitization versus Implosive Therapy

Since both systematic desensitization and implosive therapy are procedures developed to reduce conditioned anxiety and/or fear, it is only natural that they be compared in controlled research. However, to date there have been relatively few published studies comparing the two techniques. Of those published, many contain methodological and procedural errors which render interpretation of the results ambiguous at best. Following is a representative sample of such studies.

Rachmann (1965) was the first to publish a controlled comparison of systematic desensitization and implosive therapy. By presenting each anxiety-provoking image for only a 2-minute duration, and thus not following the procedures set forth by Stampfl and Levis (1967), it was nevertheless concluded that systematic desensitization was a more effective technique than implosive therapy. Baum (1969), Staub (1968), and Rachman (1966b) have suggested that one of the crucial components of implosive therapy is the duration of the aversive stimuli presentation. If the duration of the aversive scene is too short, the subject may in fact be engaging in escape behavior which would reinforce his avoidance behavior. It could be postulated that the results obtained by Rachman were due to this particular artifice.

De Moor (1970) compared systematic desensitization and implosive therapy with snake phobic patients. Although the
initial briefing for both groups was radically different (thus affecting the subjects' expectations), it was concluded that systematic desensitization was the more effective procedure. According to De Moor, this conclusion was supported by the fact that relapses did not occur after a 6-month follow-up for the systematic desensitization group, but did occur in three cases in the implosive therapy group. The dropout rates under the two therapeutic treatments were not subjected to any type of statistical test of significance. Consequently, if any significant difference between the dropout rates exists, it is unknown. Furthermore, a procedural error was committed by De Moor in not presenting the anxiety-provoking scenes to the implosive therapy group in a sequential order, as recommended by Stampfl and Levis (1967) and Stampfl (1975, 1976a, 1976b). It should be noted that the deviation from the sequential order of aversive scenes from least to most anxiety-provoking (avoidance serial-cue hierarchy) is one of the most frequently occurring errors in the implosive therapy literature. Although the literature on the implosive therapy procedure seems quite clear on the administration of aversive scenes to the client in a sequential fashion, from least anxiety-provoking to most, it is very unclear on exactly how anxiety-provoking the first scene should be.

Mealia and Nawas (1971) compared the effectiveness of systematic desensitization and implosive therapy, concluding
that systematic desensitization was superior. In this study all the implosive therapy sessions were conducted via pre-programmed tape recordings. Levis (1974) suggested that the use of tape-recorded presentations violated the implosive therapy procedure, since avoidance responses on the part of the subject during the sessions cannot be blocked and therefore extinguished. The inability to block or extinguish these avoidance responses would thus lead to increased avoidance responding and exacerbate the phobia. Although an automatic approach to systematic desensitization seems to be as effective as the live therapist in producing fear reduction (Lang, 1968), it does not appear as successful with implosive therapy. Dee (1970), in an investigation of the efficacy of taped implosive therapy sessions, stated that this approach is questionnable. Stern and Marks (1973) suggested that the failure of tape-recorded sessions might be attributed to attentional variables on the part of the client, i.e., the subject may be attending to stimuli other than those presented to him on the tape recording.

Willis and Edwards (1969) implied that systematic desensitization was more effective than implosive therapy. Their conclusions should be considered tenuous since, among other violations, systematic desensitization was carried out in groups of varying size (with two subjects receiving individual therapy). Moreover, the sessions varied in length, depending on the therapist's judgment, and only the top
three scenes of the avoidance serial-cue hierarchy were used by the implosive therapists.

Barrett (1969) suggested that both systematic desensitization and implosive therapy were effective procedures for the reduction of snake-induced anxiety. However, the systematic desensitization group received from four to eleven training sessions, while the implosive therapy group received only two 50-minute clinical interviews followed by two implosive sessions. Thus, some of the systematic desensitization subjects were seen up to three times as often as the implosive therapy subjects.

Boulougouris, Marks, and Marset (1971) concluded that implosive therapy was superior to systematic desensitization in the reduction of pathological fears. A cross-over design was utilized—one group receiving six sessions of implosive therapy followed by six sessions of systematic desensitization, while the second group received six sessions of systematic desensitization followed by six sessions of implosive therapy. It should be noted that no control or placebo group was included, and that three patients in the implosive therapy group were allowed the practice the implosive technique alone. Furthermore, subjects involved in this study included seven patients with specific phobias, nine patients with agoraphobia, and four diagnosed as manifesting marked free-floating anxiety.
Crowne, Marks, Agras, and Leitenberg (1972), after comparing time-limited systematic desensitization, implosive therapy, and shaping in a cross-over design with each subject receiving four sessions of each treatment modality, concluded that implosive therapy and shaping were superior to systematic desensitization in the treatment of phobias. However, the prime concern of this study was not to compare implosive therapy and systematic desensitization, but a comparison of implosive therapy and shaping—with systematic desensitization used solely as a standard against which to assess the other two procedures. Additionally, it should be stressed that neither a placebo nor a control group was utilized. As in previously mentioned studies, the failure to use an avoidance serial-cue hierarchy constituted a major departure from implosive therapy as formulated by Stampfl.

Calef and MacLean (1970), in a study of speech anxiety, reported that implosive therapy may be a more efficient procedure than systematic desensitization due to its simpler implementation. However, part of the therapy for the systematic desensitization group in this study was devoted to relaxation training using tape-recorded instructions, though Paul (1969a) and Lang (1969) have suggested that tape-recorded relaxation instructions may not be as effective as therapist-led relaxation. Unfortunately, no actual behavioral measures were taken; instead, only the Personal Report of Confidence as a Speaker (Gilkenson, 1942) and the Taylor
Manifest Anxiety Scale (Taylor, 1953), both self-report questionnaires, were used.

Shoberg (1971) concluded that neither implosive therapy nor systematic desensitization was more effective than pseudotherapy and no-treatment in the reduction of snake-phobic behavior of female college students. Since these results, especially the ineffectiveness of systematic desensitization in reducing snake phobia when compared to a no-treatment control, are in sharp contrast to previous research (Davison, 1968; Lang, 1964, 1965; Lang & Lazovik, 1963; Shannon & Wolff, 1967), they should be weighed accordingly. Shoberg states that "procedural difficulties with the palmar sweat index measure and the possible remoteness of the systematic desensitization and implosive procedure used from standard systematic desensitization and implosive therapy [were considered as explanations for the unexpected results]" (p. 5460).

Willis (1968) reported that systematic desensitization was significantly more effective than implosive therapy in the reduction of avoidance behavior associated with mice. Contrary to the procedures of Stampfl and Levis (1967), only the two highest (most anxiety- and fear-provoking) hierarchy items involving fearful situations were used with the implosive therapy group. Thus, a complete direct comparison appears questionable.

Kirts (1968), in an experimental analogue, concluded that both systematic desensitization and implosive therapy
were effective in reducing the anxiety responses related to an experimentally induced neurosis. After conditioning avoidance behavior by pairing mild shock with a finger-tapping key, Kirts initiated both of the psychotherapeutic procedures in an attempt to compare their relative effectiveness. Caution should be exercised in generalizing the effects of a particular therapeutic procedure on an experimentally induced neurosis to environmentally produced and maintained phobias.

It is impossible to draw a concrete conclusion about which of these two therapies is superior from the preceding comparative literature. Of the articles reviewed, nearly half suggest that systematic desensitization is the more effective--the other half lead to an opposite conclusion. The handful of comparative investigations contain numerous methodological and procedural errors, and provide a rather tenuous foundation upon which to base a sound conclusion should it exist.

Other Pertinent Studies in Systematic Desensitization and Implosive Therapy

Following is a summary of technical points relating to systematic desensitization and implosive therapy. The material is included to provide a basis for better understanding the reasons for incorporating or deleting certain procedures into the different treatment combinations to be discussed in the Method section. The points covered are:
(a) efficiency and effectiveness, (b) hierarchies, (c) hierarchy construction, (d) relaxation, (e) "homework," (f) imagery, (g) outcome measures, and (h) expectancy effects and their control.

**Efficiency and effectiveness.** The question of efficiency is of interest to researchers dealing with systematic desensitization and implosive therapy. The efficiency of a particular procedure, along with its effectiveness, have been used as reasons for employing a particular procedure and dismissing others. Murray and Jacobson (1971) stated, "It [systematic desensitization] is a laudatory technique both for the rapidity with which therapists can be taught to use it and its rapid and effective results as a method of treatment" (p. 723). Stampfl (1976b) argues, however, that implosive therapy is not only more efficient, but also that it is a more effective technique than systematic desensitization. Bandura (1969) contends, on the other hand, that implosive therapy is likely to be less effective and more time-consuming than systematic desensitization. Bandura's position is also supported by Morganstern (1973) who suggests further that many of the positive outcome studies in implosive therapy may be attributed to demand characteristics in the situation, as well as to the expectancy of the subjects.

Wolpe (1969) and Eysenck (1968) have discussed the possibility that implosive therapy could have opposite effects than those intended by resulting in increased avoidance or
anxiety behavior. Levis (1974) contends that the assumption that implosive therapy will lead to an increase in avoidance or anxiety behavior is unfounded in light of the results obtained in implosive therapy investigations.

Moreover, Wolpe and Lazarus (1966) reported that the mean number of sessions necessary to reduce a phobia is only 11.2 sessions, when employing systematic desensitization. In contrast, Stampfl and Levis (1967) reported that only one to fifteen one-hour sessions are needed to achieve marked changes in phobic symptomatology when using the implosive technique. However, when reviewing the mean number of sessions required for the reduction of specific kinds of phobias, it appears that the number of sessions necessary for the amelioration of small animal or insect phobias is much smaller when utilizing the systematic desensitization procedure.

Systematic desensitization experiments have produced the following main results. Cooke (1966), in a controlled investigation of rat phobias, achieved significant phobic reduction after five sessions. Significant reductions have also been reported in snake phobia after four sessions (Shannon & Wolff, 1967), spider phobia after eleven sessions (Rachman, 1965), mice phobia after five sessions (Willis & Edwards, 1969), and snake phobia after nine sessions (Barrett, 1969). It would thus be safe to assume that if Stampfl's contention is correct, significant decreases in rat phobic behavior should be attained after a minimum of approximately five implosive therapy sessions.
Hierarchies. Central to both therapies is the hierarchy of cues. While both camps suggest that hierarchy construction should be based upon preliminary responses of the patient for best results, therapist-constructed hierarchies have been employed in both systematic desensitization and implosive therapy research (Calef & MacLean, 1970; Dawley & Wenrich, 1973a, 1973b; Emery & Krumboltz, 1967; Lazarus, 1961). Although Stampfl (1967), in an earlier publication, suggested that psychodynamic materials might be used in the construction of the hierarchies for added potency, Levis (1974) and Stampfl (1975) contend that this dimension is not essential to successful therapeutic intervention. Moreover, Prochaska (1971), who compared dynamic versus nondynamic hierarchies, suggested that hierarchies void of psychodynamic material are as effective as hierarchies employing this dimension.

While the use of calibrated (from least to most anxiety-provoking) hierarchies are an essential feature in both procedures, the amount of anxiety elicited from the patient/client during the hierarchy presentation is varied. Wolpe (1969) contends that the objective of the graded hierarchy is to minimize the degree of discomfort (anxiety) experienced by the client. In systematic desensitization the therapeutic procedures at the same time provide brief, but temporary, escape from the aversive scene. The client is instructed to raise his left index finger if any discomfort is being felt,
and the therapist, when he sees the raised finger, stops the presentation of the aversive scene and again relaxes the client. Alternately, Hogan (1968) states that the objective of the graduated hierarchy in implosive therapy is to elicit the maximum level of anxiety possible from the client without allowing a chance of escape from the avoidance scene. Thus, the graduated hierarchy is used in implosive therapy because it facilitates the therapeutic process by providing scenes, initially, which will elicit anxiety without undue resistance on the part of the client. The implosive therapy literature is somewhat ambiguous, however, as to how much anxiety should be felt by the patient during the initial introduction of the hierarchy. In other words, how anxiety-provoking should the first several scenes be? It is the author's interpretation that the first scene (the least anxiety-provoking relative to the other items in the hierarchy) should be of moderate intensity of aversiveness. Although both systematic desensitization and implosive therapy employ a graduated hierarchy, the first, and least anxiety-provoking, scene in the implosive therapy hierarchy will have a more anxiety-eliciting potential than the first scene employed in the systematic desensitization hierarchy. Likewise, the final scene in the implosive therapy hierarchy will be much more anxiety-provoking than the last scene employed in the systematic desensitization hierarchy.

Since the hierarchy plays an important part in both therapeutic procedures, proper hierarchy construction is
essential. According to Wenrich (1970), "the material must be related to the phobia, and the items must begin at a point tangential to the phobia" (p. 26). Wolpe (1952, 1954, 1958, 1961, 1962) used from three to twenty-five items in the complete hierarchy. Since hierarchies are seldom reported in the literature, and the number of items used seldom mentioned, the range of items used in implosive therapy hierarchies is unknown. It would be safe to assume, however, that the number of items in a hierarchy should consist of discrete stimuli which differ qualitatively, as well as quantitatively, from least anxiety to most anxiety-provoking. Thus, it is not the number of items in a hierarchy but the identification of fundamental (central) rather than irrelevant (peripheral) sources of anxiety that must be taken into account (Paul, 1969b).

Relaxation. Since both procedures use the scenes in exactly the opposite manner, the role of relaxation holds a central position in systematic desensitization, while totally disregarded in implosive therapy. The research on the role of relaxation in systematic desensitization is equivocal. Some researchers conclude that it is necessary (Rachman, 1965, 1967; Schubot, 1966), while others suggest that relaxation can result in increased autonomic arousal (Chapman & Feather, 1971; Van Egeren, Feather, & Hein, 1972). It must be noted, however, that as conceived by Wolpe (1959), relaxation on the part of the client is essential for successful therapeutic outcome.
"Homework." Due to the fact that relaxation is seen as an integral part of the systematic desensitization procedure, relaxation training is received by the patient during the initial phase of the program when employing the Wolpean model. Moreover, the patient is directed to practice the relaxation techniques several times a day, by himself, outside of the therapeutic situation (Wenrich, 1970). "Homework" is used not only in systematic desensitization, but in implosive therapy as well. As one would predict, the "homework" in implosive therapy would necessarily entail the practice of a dimension indigenous to the implosive therapy procedure. Thus, according to Stampfl and Levis (1967), the client is instructed to re-enact (in his imagination) several times daily the scenes which were presented during the treatment sessions. Much as relaxation "homework" provides extra relaxation trials, so the extra re-enactments of the aversive scenes provide additional extinction trials. Nevertheless, due to the inability to control for the additional trials outside of the therapeutic situation, many investigations in systematic desensitization and implosive therapy have eliminated this dimension of the therapeutic procedure (Calef & MacLean, 1970; Hogan, 1968; Mealiea & Nawas, 1971).

Imagery. Another major variable common to systematic desensitization and implosive therapy, suggested by Cohen and Dean (1968), is the imagining of the anxiety-producing scenes. It would be highly improbable, if not impossible,
that either systematic desensitization or implosive therapy would be effective if the client were unable to imagine the scenes that were being verbally communicated to him by the therapist. Meyer (1957) and Meyer and Crisp (1966) suggested that the failure to obtain vivid imagery is one of the factors that can lead to negative results when using systematic desensitization. This suggestion can be generalized to implosive therapy, since it too requires the active imagination of the client as an essential feature for positive results.

**Outcome measures.** Measures used to evaluate the outcome of these two behavior therapies are quite similar. Yet, according to Kiesler (1971), there are no best measures that one can recommend for evaluating the outcome of psychotherapy. In reviewing the literature on the efficacy of implosive therapy and/or systematic desensitization, however, one finds that most of the researchers incorporate measures of the client's subjective evaluation of the discomfort felt towards an object or situation and/or the individual's observable behavior when confronted with the phobic stimulus or event.

Of the measures used to reflect the individual's subjective internal state, self-rating scales are quite often employed (Cooke, 1966; Lang, 1964; Lang, Lazovik, & Reynolds, 1965; Shannon & Wolff, 1967). Among those developed and used frequently in behavior therapy research are the *Fear Survey Schedule* (Lang & Lazovik, 1963), the *Fear Inventory*
and Schedule (Wolpe & Lang, 1964), and the Fear Survey Schedule-II (Greer, 1965). Another measure used to tap the client's subjective feelings while in the presence of an anxiety-provoking object is the "fear thermometer" developed by Walk (1956). The latter procedure has been used by a number of researchers (Davison, 1968; McGlynn, 1968; Rachman, 1965; Walk, 1956).

The most popular measure of the individual's observable behavior is the approach (or avoidance) test (Cooke, 1966; Hogan & Kirchner, 1967; Jaremko & Wenrich, 1973; Rachman, 1966b). To obtain the data, the client is asked to approach and pick up the phobic object, then either the distance from the start point to the stop point (approach) or the distance from the stop point to the phobic object (avoidance) is used as the criterion measure.

In addition to subjective self-rating and approach (or avoidance) criteria, much research in systematic desensitization utilizes physiological variables as dependent measures (Agras, Leitenberg, & Barlow, 1968; Leitenberg, Agras, Thompson, & Wright, 1968). The two most common measures are galvanic skin response (GSR) and rate of heartbeat. There is evidence suggesting that subjects can learn to behave differently towards the phobic stimuli (pick it up) without demonstrating any reduction in physiologically measured anxiety (reduction in heart rate). Leitenberg, Agras, Butz, and Wincze (1971) indicate that behavioral progress in phobic
patients can occur without parallel decline in heart rates. De Toledo and Black (1966) report that conditioned change in heart rate develops later in training than does conditioned suppression of overt avoidance behavior (approach). Furthermore, Leitenberg, Agras, Barlow, and Oliveau (1969) suggest that habituation of galvanic skin response to phobic images may precede the elimination of anxiety signals, although this order may be reversed in some individuals (Agras, 1967). Additionally, Barlow, Leitenberg, Agras, and Wincze (1967) have confirmed the uncontrolled observations of Hoening and Reed (1966) that following systematic desensitization in which there has been a significant reduction in the galvanic skin responses to the imagined scenes, there may be relatively little reduction in the galvanic skin responses to the real phobic object. In summary, the use of physiological criteria as indicators of treatment effectiveness has not been as productive as originally believed.

Expectancy effects and their controls. Of concern to all behavior therapists are the variables which are external to the therapeutic procedure and which have potential for influencing posttest fear behavior. Of these variables, the implicit or explicit communication by the therapist has been investigated. The client may behave in a certain fashion because he believes, as a result of the therapist's communications, it is the appropriate way to behave under those circumstances. Thus, any change in the client's behavior
during the posttest evaluation may not be due to the treat-
ment per se, but to an expectancy effect operating within
the therapeutic procedure.

While studies attempting to demonstrate an expectancy
effect in systematic desensitization are equivocal, strong
expectancy effects have been demonstrated in several inves-
tigations (Leitenberg, Agras, Barlow, & Oliveau, 1969;
In a unique study, Borkovec (1972) randomly assigned fifty
snake-fearful female subjects to one of four conditions:
(a) systematic desensitization, (b) implosive therapy, (c)
avoidance response, and (d) no-therapy. Half of the subjects
received instructions designed to avoid establishing any
expectancy of improvement. The expectancy manipulation
strongly affected overt behavioral measures of fear in all
conditions. Also, it was reported that overt behavioral
measures of fear for the implosive therapy groups were the
most affected by the expectancy manipulation.

Berstein (1974) has proposed that the influence of demand
characteristics can be reduced if investigators employ a
stringent screening procedure which will select truly phobic
subjects. In reviewing investigations that have demonstrated
no expectancy effects, it became evident that subjects select-
ed to participate in the research initially reported a great
deal of fear on a self-report measure (Howlett & Nawas, 1971;
Lomont & Brock, 1971; McGlynn & Mapp, 1970). On the other
hand, investigations reporting expectancy effects employed subjects having a wide range of reported fears (Efran & Marcia, 1967; Parrine, 1971; Rappaport, 1972). Moreover, in investigations demonstrating an expectancy effect, a less stringent selection was also employed by eliminating subjects who were able to touch the phobic object with their bare hands (Leitenberg, Agras, Barlow, & Oliveau, 1969; Oliveau, Agras, Leitenberg, Moore, & Wright, 1969; Persely & Leventhal, 1972). Investigations demonstrating no expectancy effects employed either a cutoff of three feet from the phobic object on the screening avoidance (approach) test (Lomont & Brock, 1971), or eliminated subjects who were able to touch the phobic object with a gloved hand (McGlynn, 1971, 1972; McGlynn, Gynor, & Phur, 1972). Thus, Borkovec (1972) suggested that the external demand characteristics for improved overt behavior in outcome studies have greater effects on low-fearful subjects than on highly fearful ones.

Level of Aspiration Studies

In addition to methods of treatment, the other major independent variable used in the present experiment is therapeutic level of aspiration or subject goal-setting behavior conditions. Frank (1935) has operationally defined level of aspiration as "the level of future performance in a familiar task which an individual, knowing his level of past performance in that task, explicitly undertakes to reach" (p. 119). Typically, in level of aspiration studies, the subject is...
confronted with a particular task and asked, either before or after practice, to predict his future performance in that task. After the task is completed once, the subject is told the score and then asked how well he/she expects to do on the next performance of that task (level of aspiration). The subject is asked to make another estimate after success or failure in reaching his predicted goal. This process may be repeated several times and, in this manner, several dependent measures may be taken. The attainment score is the actual achievement the individual has attained after he has set his level of aspiration. To arrive at the subject's attainment discrepancy score, his actual performance on that trial can be subtracted from the aspiration level (his predicted score for that trial); or, one can subtract the performance on the preceding trial from the aspiration level on the present trial to get a goal discrepancy score.

Evolution in the area of level of aspiration can be traced to studies designed to formulate laws concerning goal responses by students of Kurt Lewin. These studies were primarily initiated by Hoppe (1930), who directly observed behavior following success or failure. Although the earlier studies were mainly concerned with developing techniques which could be beneficial in testing some theoretical hypotheses formulated by the Lewinian group, level of aspiration studies soon became focused upon individual personality differences.
The first published article giving a theoretical rationale for the use of these techniques as a measure of individual differences was by Lewin, Dembo, Festinger, and Sears (1944). Escalona (1948) may be seen as a typical example on how level of aspiration was utilized as a personality measure. Using a technique of graduated puzzles, from very simple to very complex, the subjects were asked to pick a puzzle to complete. After each experience with either success or failure, the subject was then asked to pick another puzzle to work on. It was suggested that the maladjusted group took significantly longer to choose, after each trial, than the adjusted group. Similarly, Sears (1940), using three groups of children (one group which was successful in all subjects, the second group was unsuccessful in all subjects, and the third group was successful in reading but not in arithmetic), had each group predict the number of correct answers they would give on several level of aspiration tests in reading and arithmetic. She suggested that the subjects with a history of failure in all academic subjects had the largest attainment discrepancy scores, and thus made up most of the cases at both extremes of the distribution.

As a logical extension of these earlier studies, researchers soon became concerned with identifying variables which might influence the level of aspiration in subjects. Such variables as success and failure situations (Child & Whiting, 1959), degree of failure (Steilsel & Cohen, 1951),
past achievement (Anderson & Brandt, 1939, Sears, 1940),
social class (Douvan & Adelson, 1958, 1969; Empey, 1956;
Rosen, 1956), mental retardation (Harrison, Singer, Budoff,
& Folsom, 1972; Shaw & Binsberg, 1955; Wenar, 1953), rural-
ity (Edington, 1970) are but a few of the variables which
have been investigated.

Although it would seem only natural that research in
level of aspiration would soon encompass and focus on its
effects on therapeutic success, to date that is not a reality.
At this point, it would be advantageous to understand that
level of aspiration combines two types of behaviors which
have been studied separately. The first of these is know-
ledge of results (Ammons, 1954; Chapanis, 1964; Gibbs &
Brown, 1955). Knowledge of results is merely the fact that
the individual is in a position of knowing how well he is
doing or has done. The other aspect of level of aspiration
is goal-setting behavior--the individual provides for him-
self, or is provided by the examiner, a specific goal which
he attempts to reach (Campbell, Dunnette, Lawler, & Wieck,
1970; Heneman & Schwab, 1972; Latham & Bales, 1975; Latham
& Kline, 1974; Locke, 1968).

Since level of aspiration research is presently absent
in therapeutic outcome literature, a partial review of know-
ledge of results and goal-setting research will be discussed.
Mace (1935) was one of the first researchers to suggest that
knowledge of performance, total score on a target-aiming task,
improved performance, and that withholding of such information reduced the level of performance. In a somewhat different approach, Payne and Hauty (1955) gave some subjects knowledge of their total score in relation to a standard which was actually one standard deviation above the typical performance on that task. Although these subjects were expected to beat the standard only 16% of the time, they performed at a significantly higher level than those subjects who had no knowledge of their scores. Church and Camp (1965) gave some subjects a signal, via a flashing light, if they beat their previous reaction time performance. Subjects with feedback significantly decreased their reaction time compared to subjects with no such information. Similarly, Hundal (1969) suggested increased output of industrial workers can be expected with increase in degree of knowledge of their past performance.

In reviewing a representative sample of goal setting investigations, it is apparent that the boundary between goal setting and level of aspiration has become somewhat clouded. In many studies, the goal-setting behavior on the part of the client is done after receiving either explicit or implicit feedback on his previous performance. In this fashion, the subject's goal-setting behavior is contingent on his previous performance (which has been reported to him).

As an example, Latham and Bales (1975) suggested that goal setting increased the performance of logging truck
operators. However, as the author states, "subsequent to
goal setting, the drivers began to record their truck's
weight on a 'trip sheet' that had previously been used to
record the particular logging site from which the wood had
been hauled" (p. 124). Likewise, Latham and Yukl (1976),
in their investigation of goal setting and its effects on
typing performance, reported that goal setting was effective
in increasing productivity. Each typist received feedback
on her previous week's performance at the same time she
received, or was given, her goal for the subsequent week.

Locke and Bryan (1966a), using a complex psychomotor
task, reported that subjects who were given specific, but
difficult, standards performed at a higher level than sub-
jects who were told to "do their best." Once again, all
subjects received feedback on their previous performance.
Although in this particular study the performance goals were
set by the experimenter, it appears to suggest that perfor-
mance goals do indeed influence level of performance. The
suggestion that specific goals produce a higher level of
performance than instructions to "do your best" has also
been described by Locke and Bryan (1966b, 1967) and Steers
and Porter (1974). As a result of the overlap between level
of aspiration and goal setting, both terms will be used
interchangeably for the purposes of this paper.

Statement of the Problem

In light of the previous research in goal-setting
behavior (level of aspiration), it would seem that verbally
expressed goal-setting behavior on the part of the subject would indeed influence the subject's level of performance. Since most behavior therapy/modification investigations incorporate behavioral measures (i.e., approach test), it follows that the opportunity for the subject to express verbally his anticipated performance on the behavior performance task, throughout the course of treatment, should facilitate improved performance on the task. Moreover, considering the positions of previous researchers in behavior therapy (De Toledo & Black, 1966; Leitenberg, Agras, Thompson, & Wright, 1968) that behavioral progress in phobic patients may precede autonomic suppression of anxiety, techniques which might facilitate progress in phobic patients should ultimately expedite full behavioral and autonomic suppression of phobic responses. Additionally, a review of the studies comparing systematic desensitization and implosive therapy has demonstrated a need for a definitive, and well implemented, investigation which follows the procedures of the originators.

The primary objective of this investigation was to compare the efficiency of systematic desensitization and implosive therapy and simultaneously to determine whether or not subject level of aspiration (goal setting) has a facilitative treatment effect when incorporated into these two therapeutic procedures. A second objective, and a byproduct of the data produced in achieving the primary objective, was to analyze
the goal discrepancy and attainment discrepancy scores accruing throughout therapy sessions. Several hypotheses were advanced concerning both objectives.

Hypotheses

Hypothesis 1. Systematic desensitization and implosive therapy treatments will not differ significantly, but each will be superior to the placebo treatments using distance of approach to the feared object as the criterion measure.

Hypothesis 2. Subjects who are required to set therapeutic goals will experience greater anxiety reduction than will subjects who are not required to set such goals, using distance of approach to the feared object as a criterion measure.

Hypothesis 3. Systematic desensitization and implosive therapy treatments will not differ significantly, but each will be superior to the placebo treatments using fear thermometer scores as the criterion measure.

Hypothesis 4. Subjects who are required to set therapeutic goals will experience greater anxiety remission than subjects who are not required to set such goals, using fear thermometer scores as the criterion measure.

Hypothesis 5. Systematic desensitization and implosive therapy treatments will not differ significantly, but each will be superior to the placebo treatments using speed scores as the criterion measure.
Hypothesis 6. Subjects required to set therapeutic goals will experience greater remission of anxiety than subjects who are not required to set such goals, using speed scores as the criterion measure.

Hypothesis 7. Among goal-setting subjects, those undergoing the systematic desensitization and implosive therapy treatments will set successively more realistic goals (in terms of past performance) with each successive therapeutic session than will those subjects in the placebo group, using absolute goal discrepancy scores for the approach test as the criterion. Operationally, "more realistic goals" are defined as smaller absolute goal discrepancy scores, i.e., goals set will correspond more closely to past achievement.

The level of aspiration literature, although limited, provides rationale for the above hypothesis. Frank (1935) suggested that level of aspiration is markedly influenced by experiences of success or failure. Sears (1940) further suggested that failure on preceding performance trials has the effect of producing discrepancy scores which are generally great and have great variability when compared to discrepancy scores acquired following success on preceding performance trials. In other words, failure tends to render the prediction of performance less accurate, and typically individuals with a history of failure either grossly overestimate or underestimate their future performance, resulting in large discrepancy scores. On the other hand, with success
on previous trials, the prediction of goals becomes closer to past achievement and ensuing discrepancy scores are less. Therefore, in the present study, the hypothesized accumulation of therapeutic success over sessions for subjects undergoing systematic desensitization and implosive therapy should lead to predictions of future behavior increasingly more in line with past performance, resulting in increasingly smaller discrepancy scores. However, for the placebo subjects, having little or no hypothesized success due to lack of therapeutic impact, overestimates or underestimates of future behavior should continue throughout the sessions which will result in the continuation of large discrepancy scores, thereby resulting in a statistical interaction.

**Hypothesis 8.** Among the goal-setting subjects, those undergoing the systematic desensitization and implosive therapy treatments will set successively more realistic goals, with each successive therapeutic session, than will those subjects in the placebo group, using absolute goal discrepancy scores based on the fear thermometer criterion. The rationale corresponds to that specified in Hypothesis 7.

**Hypothesis 9.** Among the goal-setting subjects, those undergoing the systematic desensitization and implosive therapy treatments will estimate their future performance (set goals) more realistically with each successive therapeutic session than will those subjects in the placebo group, using absolute attainment discrepancy scores based on the approach test criterion.
The rationale for Hypothesis 9 is based on a study by Sears (1940) which suggested that as a result of a history of continued failure, individuals may attempt to reach goals by means of trial and error behavior. Thus, prediction of realistic goals does not follow a systematic process based on past events and, consequently, the ensuing discrepancy scores will tend to be large. Conversely, it was hypothesized that subjects who have had success do not require gratification through statements of pseudogoals (overestimates or underestimates of goals), since, as a result of their success, they are deriving gratification from their actual performance. Moreover, Sears hypothesized that individuals with a history of success are more goal-directed than individuals who have had a history of failure and, as a result, will actually try to achieve the performance level which they have set as their level of aspiration. As a result of these two factors, means of gratification and goal directedness, subjects with a history of success would be expected to produce discrepancy scores which are smaller when compared to discrepancy scores attained by individuals with a history of failure. In the present study, therefore, the accumulation of therapeutic success over sessions for subjects in the systematic desensitization and implosive therapy groups should result in gradual attainment of the predicted level of performance and should result in increasingly smaller discrepancy scores. This trend should not be
the case for the placebo subjects as a result of lack of therapeutic impact and should thus lead to the continuation of large discrepancy scores.

**Hypothesis 10.** Among goal-setting subjects, those undergoing the systematic desensitization and implosive therapy treatments will estimate their future performance (set goals) more realistically with each successive therapeutic session than will those subjects in the placebo group, using **absolute** attainment discrepancy scores based on the fear thermometer criterion. The rationale corresponds to that presented in Hypothesis 9.

**Method**

**Subjects**

Subjects were 30 undergraduate college students, 25 females and 5 males, drawn on a volunteer basis from introductory psychology classes at a small west coast college during the 1975-1976 academic year. From a total of 212 volunteers, 31 students achieved the required initial cutoff scores necessary to be accepted into the project. One student was rejected from participating due to ongoing psychiatric care. Each student participating received extra course credit from their instructors.

Selection of students, from those initially volunteering for the project, was based on the following criteria:

1. Willingness to participate in the project for a minimum of five 50-minute sessions;
2. No prior experience with either systematic desensitization or implosive therapy;

3. Signing a Consent Form (see Appendix A).

To control for expectancy effects, or for any demand characteristics which might have been present as a result of the subjects' becoming aware of the nature of the study, only those subjects who met the following additional criteria were included:

4. Score of at least 8 on a 10-point self-rating "fear thermometer;" and,

5. Inability to approach within 36 inches of the phobic object.

The 30 subjects who met all of the above criteria were then randomly assigned, five each, to one of the six treatment conditions employed in the basic experimental design. A breakdown of the principal subject characteristics is presented in Table 1.

All screening, as well as intra- and posttreatment assessment was conducted by a second experimenter who was qualified in the assessment procedure. As an added control precaution, the second experimenter was not aware of the treatment group to which any of the subjects had been assigned, nor was she aware of the specific nature of the experiment itself.
### Table 1
Principal Subject Characteristics
X Independent Variables

<table>
<thead>
<tr>
<th>Level of Aspiration</th>
<th>Characteristic</th>
<th>Treatments</th>
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<tr>
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<td>Systematic Desensitization</td>
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<tr>
<td>Mean Age</td>
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</table>


**Experimenter**

The experimenter/therapist was a third-year doctoral student who had previous supervised experience with both systematic desensitization and implosive therapy. All the treatment sessions were conducted by this one experimenter/therapist.

**Apparatus**

*Setting.* Each subject was seen in the same room for each therapeutic session. The room, used during the day as a specialized library, contained two soft couches and a table.

A different room, which housed the phobic object during the therapeutic sessions, was also used as the assessment room. It was a medium-sized faculty office containing two desks and a small library.

*Phobic object.* The phobic object was a dark brown domesticated rat which measured thirteen inches from nose to tip of tail, used throughout the entire experiment. During the measurement session, the phobic object, which was placed in a cage to prevent escape during the treatment session, was removed from the cage and placed on the floor while leashed to one of the desk legs. The black, 12-inch leash allowed for some movement on the part of the phobic object throughout each of the measurement sessions.

**Criterion Measures**

*Fear Thermometer* (10-point scale). This is a pencil-and-paper, self-rating technique (see Appendix B) assumed to
reflect the degree of internal anxiety or fear experienced by the subject immediately after he has attempted to approach and/or handle the phobic object. The subject simply indicates, on a scale numbered from 0 to 10 (10 = a great amount of fear, 0 = no fear), the degree of anxiety he is presently experiencing by marking the number corresponding to his internal state with an "X". Successful application of this technique has been demonstrated by Lang, Lazovik, and Reynolds (1965), Zeisset (1968), Davison (1968), and Rachman (1965, 1966a) among others. It should be noted that verbal estimates of subjective fear, as reported by the subjects using this technique, have been reported to be reliable and valid discriminators of individuals successfully able to confront a particular object or stimulus and those subjects who have been unable to physically approach the particular object or stimulus (Greer, 1965; Lanyon & Manosevitz, 1966; Walk, 1956).

**Approach test.** This measure of observable distance of approach behavior requires the subject to approach the phobic stimulus and to stop when the approach behavior becomes too unbearable. The usefulness of the approach test has been demonstrated by the researches of Lang and Lazovik (1963), Cooke (1966), Shannon and Wolff (1967), and Davison (1968).

Typically, the distance from where the subject stops to where the phobic stimulus is placed is measured, and this distance defines the "avoidance" score. However, in the present experiment the distance from the start point to the
stop point was used, and it is referred to as the "approach" score. This change was more consistent with the required goal-setting task of the level of aspiration subjects who were asked to state how far they would advance towards the phobic object from the start line.

Following the standard procedure, the floor area in front of the phobic object was marked off in visible units of feet and inches. A continuous 15-foot strip of masking tape attached to a green plastic sheet, 15-feet long by 2-feet wide, was affixed perpendicular to the phobic object. Straight line movement on the part of the phobic subject was therefore facilitated. All subjects began their approach test from a marked spot (line) located 15-feet from the phobic object. When the subject signified that he had approached as closely as he could by saying "stop" and actually stopping, a chalk mark was placed in front of the toe of the foot nearest to the feared object, from which the subject's distance from the start point was measured. The criterion measure was the number of inches advanced from the starting line to the stop point. The total number of possible inches which could be advanced was 180. It should be noted that a score of 180 was given only if the subject touched the phobic object; if not, a score of 179 was given to the subject even though he had advanced 180 inches.

Speed of approach (inches per second). Speed (or duration) of response as a basic criterion measure has been used
in animal and human psychological experiments for at least 100 years, yet it has been neglected as a dependent variable in both systematic desensitization and implosive therapy research. The use of speed as a criterion measure is indeed feasible, providing an added and potentially fruitful dimension to the orthodox approach test. It is assumed, as specified in Hypotheses 5 and 6, that with a reduction of anxiety felt by the subject towards the phobic stimulus, the time taken to approach the phobic object will diminish, and as a result, the subject's speed of approach to the phobic object will increase.

**Absolute goal discrepancy score.** This score is computed by taking the arithmetic difference (disregarding sign) between the announced goal (level of aspiration) on a given trial and the score achieved on the preceding trial. Mathematically, the absolute goal discrepancy scores were computed by the formula: level of aspiration on trial ($X$) - performance on preceding trial ($X - 1$). Two absolute goal discrepancy scores were computed: the **approach test** absolute goal discrepancy score and the **fear thermometer** absolute goal discrepancy score.

It should be noted that goal discrepancy scores were not calculated using the speed score as the criterion measure. It was assumed that subjects typically cannot assess accurately time engaged in an activity, especially for units so small as seconds.
Absolute attainment discrepancy score. The absolute attainment discrepancy score is the arithmetic difference (disregarding sign) between the subject's level of aspiration score on a given trial and the actual performance on the same trial. Computationally, level of aspiration score on trial X - performance on trial X = attainment discrepancy. For all goal-setting subjects, two different absolute attainment discrepancy scores were computed, one for the approach test, and the second for the fear thermometer criterion. It should be noted that the closer the subject's actual performance reflected the level of aspiration for that trial, the closer the absolute attainment discrepancy score approached zero.

Criterion Measurement Instructions

All subjects received the following instructions prior to the screening and postsession approach test:

You have up to five minutes to approach and touch or pick up the rat. This is the starting line (Experimenter points to the point on the floor.) You can stop anywhere along the way. If you are uncomfortable you may stop. When you have reached your final decision, please say "stop" and remain there until I ask you to leave. Do you understand?

Once the subject had crossed the starting line, the experimenter started a stopwatch which continued to mark time until
the subject verbally said "stop" and actually stopped his advance towards the phobic object. At that time, the experimenter stopped the stopwatch and recorded the elapsed time on the subject's Data Sheet (see Appendix C). The total amount of time each subject spent in the room for each measurement was also taken and recorded.

In addition to receiving the instructions just described, the 15 goal-setting subjects received the following verbal instructions which provided the basis for computing the goal discrepancy and attainment discrepancy scores.

Following Session 1, and immediately before entering the room containing the phobic object, subjects were told:

Last time you went ____ feet before you stopped. Now, I would like you to tell me how far you will go, to the nearest foot, before you will stop this time.

Also, you rated your fear as being ____ units on the fear thermometer last time. Now I would like you to tell me, to the nearest unit, how much fear you will experience this time after you stop.

For Sessions 2 through 4, the instructions were modified as follows:

Last time you told me you would go ____ feet. You actually went ____ feet before you stopped. How far, to the nearest foot will you go this time before you stop?
Also, you told me last time that you would experience ___ units of fear after you stopped. You actually experienced ___ units of fear. How many units of fear, to the nearest unit, will you experience this time after you stop?

Once the subject had given his reply, and after the experimenter had recorded the responses on the Data Sheet, the experimenter informed the subject to go to the starting line of the approach test.

Thus, in contrast to non-goal-setting subjects, each goal-setting subject prior to participating in each of the five postsession approach tests: (a) received additional information concerning his actual performance on the previous trial, (b) verbally told the experimenter his performance goal on both the approach test and fear thermometer, (c) received information concerning his previously stated level of aspiration on the approach test and fear thermometer, and (d) after completing the postsession approach test and fear thermometer tasks, had received immediate feedback concerning whether he had over- or underestimated his performance.

Experimental Design

The basic experimental design employed is a standard 2 X 3 factorial analysis of covariance for which the main treatments and their respective conditions are as follows: Treatments (systematic desensitization, implosive therapy, placebo); Level of Aspiration (goal-setting, non-goal-setting).
The design was employed three times, once for each of the three following measures: (a) adjusted approach test distance, (b) adjusted approach test speed, and (c) adjusted fear thermometer scores. Each of these measurements was taken for each subject before any treatment began (pretest) and then following each of the five treatment sessions. However, the score used in each case was the final session score adjusted for differences among initial scores via the covariance model. This design was selected principally because it controls statistically for the possible effects of differences in pretreatment level on the dependent measure or covariate (Weiner, 1971, pp. 752-753). Each subject was randomly assigned to one of the six treatment combinations as represented in Table 1.

Additionally, a standard 3 X 4 factorial analysis of variance, employing goal-setting subgroups only, with repeated measures on the same subject (Type I, Linquist, 1956) was utilized. The two major factors and their respective treatment categories were: Treatments (systematic desensitization, implosive therapy, placebo) and Sessions (1-4). The design was utilized analytically four times, once for each of the four criterion scores: goal discrepancy and attainment discrepancy approach, plus goal discrepancy and attainment discrepancy fear thermometer.
Procedure

Treatment schedules. Each of the 30 subjects was seen for a maximum of five 50-minute periods. Each underwent his respective treatment condition no more than twice weekly, and received two sessions during two consecutive weeks. Additionally, no subject was seen for two sessions on the same day nor on two consecutive days. This schedule of treatment sessions may be classified as traditional versus massed (or marathon), the latter having been employed to a lesser extent in systematic desensitization literature and almost never in the implosive therapy literature. A traditional schedule was used so that the results would be more generally comparable for valid comparison with existing research.

Treatment descriptions. Since the procedure for each of the six design treatment combinations differed, each will be described separately.

At the beginning of the first session, the following introductory statement was read to each subject in the systematic desensitization--non-goal-setting group by the experimenter:

You have been selected to participate in an investigation designed to aid me in studying subjective fear under varying conditions. I want you to understand that if at any time you are unwilling to continue in the project, you have the option to terminate. Is everything clear?
In order to control for the unintentional induction of an improvement expectancy on the part of the subject, words like "therapy," "therapist," "psychology," "psychologist," or "treatment" were not used throughout the sessions. This procedure was thus a modification of that presented by Borkovec (1972) in his neutral expectancy group (subjects having no expectancy for behavior change). After the above statement had been read to the subject, he was asked to read the Consent Form (Appendix A). After the subject had read the form, he was asked if he had any questions. When these were answered, the subject was asked to sign the form.

Each subject then underwent 20 minutes of experimenter-led relaxation training. After the subject had assumed a comfortable position on his sofa, the experimenter introduced the relaxation training by saying:

I am now going to show you the essential activity that is involved in obtaining deep relaxation. I shall ask you to resist my pull at your wrist so as to tighten your biceps. I want you to notice very carefully the sensation in that muscle. Then I shall ask you to let go gradually as I diminish the amount of force exerted against you. Notice, as your forearm descends, that there is a decreasing sensation in the biceps muscle. Notice also that the letting go is an "uncontracting" of that muscle. In due course, your forearm will come to
rest on the arm of the sofa, and you may then think that you have gone as far as possible— that relaxation is complete. But although the biceps will indeed be partly and perhaps largely relaxed, a certain number of its fibers will still, in fact, be contracted. I shall therefore say to you, "Go on letting go. Try to extend the activity that went on in the biceps while your forearm was coming down." It is the act of relaxing these additional fibers that will bring about the emotional effects we want. Let's try and see what happens. (Wolpe, 1969, p. 102)

The experimenter then gripped the subject's wrist and asked the subject to tense and gradually relax his arm. Attention was then focused on the subject's head, followed by the neck and shoulder area, back, abdomen, and thorax. Relaxation continued by means of verbal cues only.

Following the relaxation training during the first session, each subject received 5 minutes of imagery practice. Imagery practice was deemed important, since nonimagery can impede progress in systematic desensitization (Meyer, 1957; Meyer & Crisp, 1966). The subject was introduced to the imagery practice by the following instructions:

Close your eyes. . . . Fine. What I would like you to do is concentrate only on my voice and on what I am saying. Remember, focus only on my
instructions and try to follow them as best you can. I want you to imagine yourself walking in a field and you can see all the green grass around you. If you are able to imagine this, please raise your left index finger. Good. You are walking in the field and you see the blue sky. It is very blue. If you are able to picture the blue sky, indicate that by raising your left index finger. Fine.

Now, I want you to completely erase everything from your mind. I want you now to imagine that you are walking to school for the first class. There are not too many people about since it is rather early. When you have this image clear in your mind, indicate it by raising your left index finger. Okay. Good. You now meet one of your classmates that you know very well and you start to talk about the party you went to last night. When you have this image very clear in your mind, indicate that by raising your left index finger. Fine. Okay, you can now open your eyes.

All subjects reported that they were able to imagine vividly the scenes described above. Therefore, neither additional imagery training nor the exclusion of a subject from the project was necessary.
The remainder of the first session was devoted to the hierarchy presentation. Initially, the experimenter asked the subject to get into a comfortable position on the sofa. Then the experimenter gave the following instructions:

Now, I want you to close your eyes and become as relaxed as you can. Relax. Now your whole body becomes progressively heavier, and all your muscles relax. Let go more and more completely. We shall give your muscles individual attention. Relax the muscles of your forehead. (Pause 5 to 10 seconds.) Let all the muscles of your shoulders relax. Just let yourself go. (Pause.) Now relax your arms. (Pause.) Relax the muscles of your lower trunk. (Pause.) Relax the muscles of your lower limbs. Let your muscles go more and more. You feel so much at ease and so comfortable. (Pause.) If you feel utterly calm--zero anxiety--do nothing; otherwise raise your left index finger.

(Wolpe, 1969, p. 124)

Most of the subjects were completely relaxed and at ease at this point. The few subjects who indicated that they felt the presence of anxiety were given additional verbal cues (by the repetition of the procedure just described), until full relaxation was indicated. No subject required more than two repetitions. Once the subject appeared to be totally relaxed, the hierarchy was introduced:
I am now going to ask you to imagine a number of scenes. You will imagine them clearly and they will generally interfere little, if at all, with your state of relaxation. If, however, at any time you feel disturbed or worried and want to draw my attention, you will be able to do so by raising your left index finger. (Wolpe, 1969, p. 126).

At this time, the experimenter introduced the least anxiety-provoking scene from the hierarchy (see Appendix D). If the subject did not indicate anxiety, by raising his left index finger, then the experimenter/therapist introduced the next scene, and so on. However, once the subject indicated that he was experiencing any anxiety or tension whatsoever, the experimenter stopped the ongoing imagery by saying:

Stop imagining the scene and just think of your muscles. Let go, and enjoy your state of calm.

You are now becoming more relaxed. Very relaxed. When you start to feel totally relaxed, indicate it to me by raising your left index finger.

When the subject again indicated total relaxation by raising the index finger, the preceding scene was reintroduced (a scene in which the subject had previously indicated the absence of any associated anxiety). After successful presentation of the scene, the anxiety-provoking scene was again presented. This procedure was followed until the subject
PLEASE NOTE:

Page 54 is lacking in number only. No text is missing. Filmed as received.

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indicated the presence of no felt anxiety or fear. At this time, the next scene in the hierarchy was introduced. Presentation of the hierarchy continued until the 50-minute time limit had expired.

Immediately following the first of the total of five sessions, the subject was told that part of the procedure required him to approach the phobic object again. This procedure duplicated the format followed for the initial pre-therapy approach test and behavioral thermometer.

For each of the remaining four sessions, each session began with 15 minutes of relaxation, followed by the hierarchy presentation as described above. Following each session, the subject was administered the approach test (distance and speed) and the fear thermometer. The order of presentation was consistent throughout all sessions for all subjects. The scores following the fifth, and final therapy session, constituted the posttreatment assessment. Subjects were required to complete all sessions regardless of success on any of the previous sessions.

During the initial stage of Session 1, the explanation of the research given to the systematic desensitization-goal-setting group duplicated that given to the systematic desensitization--non-goal-setting group. Each subject received the same instructions while undergoing the 5 minutes of imagery practice and 20 minutes of relaxation. The remainder of the first session was devoted to the hierarchy
presentation, which duplicated the procedure and instructions given to the systematic desensitization--non-goal-setting group.

Immediately following the first session, the subjects engaged in the modified approach test and fear thermometer administration utilized for all goal-setting subjects and discussed previously. This procedure was repeated following Sessions 2 and 4. Following Session 5, the administration of the approach test and fear thermometer, in the orthodox manner, constituted the posttreatment assessment. The treatment procedures of Session 1 through 5 duplicated those of the systematic desensitization--non-goal-setting group.

The implosive therapy--non-goal-setting group was given the same introductory statement of the procedures of the research during the initial stage of Session 1 as that given to the systematic desensitization--non-goal-setting group. Once the subject had signed the consent form, he was given 5 minutes of imagery practice. This imagery practice followed the exact procedure and instructions given to the systematic desensitization groups. The remainder of the session was devoted to hierarchy presentation. The hierarchy presented to the implosive therapy group was similar to that presented to the systematic desensitization group, but the instructions differed in a major respect--detailed verbal cues, intended to maximize the anxiety felt by the implosive subjects, were presented so as to fulfill the
implosive therapy requirement. (The hierarchy and verbal instructions are presented in Appendix E.)

As suggested by Hogan (1969) subjects were instructed not to talk during the actual administration of the treatment. This instruction was enforced to try to prevent the subject from engaging in interaction with the experimenter, environment, or himself thereby avoiding the possibility of anxiety-producing contingencies. Prior to the introduction of the first scene of the hierarchy, the experimenter gave the subject the following verbal instructions:

Now, what I want you to do is close your eyes and concentrate only on my voice and the instructions I give to you. I want you to imagine, as vividly as possible, the scenes I am going to describe. You should experience some anxiety. When you no longer experience any anxiety or fear, please indicate that to me by raising your left index finger.

Following the above instructions, the first (and least anxiety-provoking) scene was read to the subject. The scene was repeated, using as much intonation and affect as possible, until the subject raised his left index finger indicating that he no longer felt any anxiety or fear. If the experimenter observed any avoidance behaviors, or anxiety equivalents, on the part of the subject (rolling up of the eyes, head or feet movements, perspiration, heavy breathing, continuous swallowing), he continued with the same scene
presentation until these behaviors ceased. Once there were no indications of anxiety, and the subject had raised his left index finger, the experimenter proceeded to the next scene. Immediately following Session 1, the procedure duplicated that previously outlined for the systematic desensitization--non-goal-setting group.

The remaining four sessions were devoted to the hierarchy presentation. This was followed by the approach test and fear thermometer administration.

Treatment instructions for the implosive therapy--goal-setting group were the same as those outlined for the implosive therapy--non-goal-setting group. The administration of the approach test and fear thermometer criteria, following Sessions 1 through 4, duplicated the procedure of the systematic desensitization goal-setting group.

The placebo--non-goal-setting group's introduction to procedure followed those given to the other groups. After the introduction, however, the subjects were asked to fill out the Animal Attraction Schedule (see Appendix F) which was not required of the systematic desensitization and implosive therapy groups. This was followed by 5 minutes of imagery practice, as outlined previously, and which was administered to both systematic desensitization and implosive therapy subjects.

Since a major component of both systematic desensitization and implosive therapy is the presentation of a fear
hierarchy, the fear hierarchy was left out for the placebo group. The removal of the fear hierarchy, with the substitution of an irrelevant list of neutral scenes, has been used in systematic desensitization and implosive therapy research previously by Lang (1965b), Lang, Lazovik, and Reynolds (1965), Davison (1968), Prochaska (1971), and Dawley and Wenrich (1973b). This procedure requires that the subject engage in all the behaviors common to both the orthodox treatment groups, but in a fashion that should result in ineffectual treatment. However, it is the author's opinion that such "neutral" hierarchies are in fact not neutral, since it seems obvious that the subject should soon realize that he is receiving no treatment but rather is serving in a placebo or control group.

This contention is supported by the results obtained by Foreyt and Hagen (1973) in their investigation of covert sensitization. They devised and employed a placebo procedure which was both novel and effective. The placebo was effective in the sense that there were no significant differences between covert sensitization and the placebo in weight reduction. The Foreyt and Hagen placebo was employed in this study with some modifications to be described.

Upon completion of the Animal Attraction Schedule (see Appendix F) by the subject, the most attractive animal was selected by the experimenter, taking the subject's responses into account. The animal was then utilized in the same
fashion that the phobic animal was used in the hierarchies employed in both the systematic desensitization and implosive therapy groups. The name of the attractive animal was included in the placebo hierarchy (see Appendix C) and used throughout the five sessions.

Immediately following the completion of the Animal Attraction Schedule and the 5 minutes of imagery, the subject was read the following instructions:

Now, what I would like you to do is get into a nice comfortable position. Close your eyes. Good. I am now going to ask you to imagine a number of scenes. I want you to imagine, as vividly as possible, the scenes I am going to describe. The scenes should make you feel pleasant and happy. Once the pleasantness of a particular scene has diminished, or you find it no longer enjoyable, raise your left index finger. If you understand, please indicate that by raising your left index finger.

Immediately following this instruction, the first (and presumably the least, but still enjoyable) scene from the hierarchy was introduced. After approximately 10 seconds, one of the placebo scenes (see Appendix H) was introduced. Each of the placebo scenes was constructed in such a fashion as to be pleasant and enjoyable.

Once the placebo scene was read, the experimenter waited until the subject indicated by raising his left index finger
that he was no longer enjoying that particular scene. At that time, the previously presented hierarchy scene was presented again. This was followed, after approximately 10 seconds, by another placebo scene. This process was followed for approximately 25 minutes. Then the second hierarchy scene was introduced, and the procedure repeated. Only two hierarchy scenes were presented during each session. Thus, each subject was exposed to all ten hierarchy scenes upon completion of the fifth session.

Following Sessions 1 through 5, the approach test and fear thermometer administration portion of the procedure was exactly as that described for the systematic desensitization and implosive therapy non-goal-setting subgroups. Posttreatment assessment consisted of the approach test and fear thermometer immediately following the fifth session.

Instructions and procedures for the placebo-goal-setting group were the same as those given to the placebo-non-goal-setting group. However, the approach test portion, following Sessions 1 through 4, followed the format of the systematic desensitization and implosive therapy-goal-setting treatment groups. Posttreatment assessment consisted of the approach test and the fear thermometer following the fifth and final session.

Results

The results section is organized according to the criterion measures, namely, approach, fear thermometer, speed,
goal discrepancy, and attainment discrepancy scores. Tests of Hypotheses 1 through 6 are based on the first three criterion measures, and Hypotheses 7 through 10 are tested by means of the two discrepancy criteria. The .05 level of significance was used in all statistical tests.

Analysis of Approach Test Scores

Hypothesis 1 predicted that both systematic desensitization and implosive therapy psychotherapeutic treatments would be superior to the placebo treatments using distance of approach to the feared object as a criterion measure. Hypothesis 2 predicted that all treatment conditions requiring goal-setting behavior would be superior to those not requiring goal-setting behavior in the remission of anxiety as measured by the distance of approach to the feared object as a criterion measure. These two hypotheses were tested by subjecting the distance scores to a 3 (systematic desensitization, implosive therapy, placebo) X 2 (goal-setting, non-goal-setting) analysis of covariance in which the pretherapy session scores were used as the covariate to adjust the final session scores (Session 5) for initial differences. Table 2 contains the resulting adjusted means and standard deviations utilized in the analysis.

The trend of the three main treatment effect means in Table 2 are consistent with Hypothesis 1, since both the systematic desensitization and implosive therapy means are relatively equal and both means are greater than that for
Table 2
Adjusted Means and Standard Deviations of Approach Test Scores (Inches) for the Various Treatment and Placebo Groups

<table>
<thead>
<tr>
<th>Level of Aspiration</th>
<th>Statistic</th>
<th>Treatment</th>
<th>Main Effect&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Systematic Desensitization</td>
<td>Implosive Therapy</td>
</tr>
<tr>
<td>Non-Goal-Setting</td>
<td>N</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>167.92</td>
<td>154.61</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>14.44</td>
<td>11.73</td>
</tr>
<tr>
<td>Goal-Setting</td>
<td>N</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>160.33</td>
<td>177.21</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>22.69</td>
<td>7.70</td>
</tr>
<tr>
<td>Main Effect</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Treatment)</td>
<td>M</td>
<td>164.13</td>
<td>170.91</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>18.72</td>
<td>9.40</td>
</tr>
</tbody>
</table>

<sup>a</sup>Level of Aspiration
the placebo treatment. Similarly, the main effect mean for
goal-setting (166.50) is greater than that for non-goal-
setting (144.37), data consistent in direction with Hypothe-
sis 2. The relevant tests of significance involving the
means are shown in the summary of the analysis of covariance
statistics presented in Table 3.

Table 3
Summary of Analysis of Covariance of
Approach Scores (Inches)

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment (A)</td>
<td>8795.62</td>
<td>2</td>
<td>4397.81</td>
<td>4.98*</td>
</tr>
<tr>
<td>Level of Aspiration (B)</td>
<td>804.17</td>
<td>1</td>
<td>804.17</td>
<td>0.91</td>
</tr>
<tr>
<td>A X B</td>
<td>1475.00</td>
<td>2</td>
<td>737.50</td>
<td>0.84</td>
</tr>
<tr>
<td>Error</td>
<td>20313.37</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>31388.16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .02.

Inspection of Table 3 reveals no interaction effect,
F(2, 23) = 0.84, which in turn, leads to consideration of the
overall significance of the two main effects. The main treat-
ment effect is significant, F(2, 23) = 4.98, p < .02, using
an alpha of p = < .05. Subsequent tests among the three
individual adjusted means followed the Newman-Keuls proce-
dure (Appendix I, Table 19), confirming Hypothesis 1 since
the adjusted means of systematic desensitization (164.13) and implosive therapy (170.91) were not significantly different from each other, but each was significantly greater than the placebo treatment adjusted mean \((p < .05\) and \(< .01\) respectively). The nonsignificance of the main level of aspiration effect, \(F(1, 23) = 0.91\), shown in Table 3, does not support Hypothesis 2.

The principal questions as to the tenability of working Hypotheses 1 and 2 were answered in the analysis of covariance just described. However, after the primary analysis was completed, a question arose concerning the possible trend of treatment effects throughout the therapeutic sessions which the analysis of covariance did not reveal. To answer this question, the approach scores were entered into a 3 (treatment) x 2 (level of aspiration) x 6 (sessions) analysis of variance with repeated measures on one factor (sessions). Tables containing the means, standard deviations, and analysis of variance summary statistics are included in Appendix I (Tables 20 and 21).

All interactions and main effects in the analysis of variance were not significant, except for the main sessions effect, \(F(5, 120) = 29.80, p = .000\). The sessions main effect means (treatment and level of aspiration conditions pooled) are presented in Figure 1, which shows an almost perfect linear average increase in the number of inches of approach to the feared object as the number of sessions increased.
Figure 1. Mean approach test scores (inches) as a function of success sessions for the total sample.

The Newman-Keuls sequential range test was applied to the six means to determine the loci of significance among all possible session mean combinations. The Newman-Keuls results are presented in Table 4. These statistics indicate that all session combinations are significantly different from each other, with the exception of combinations 3-4 and 4-5.
Table 4
Newman-Keuls Test of Approach
Test (Inches) Session Means

<table>
<thead>
<tr>
<th>Sessions</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>19.6**</td>
<td>37.5**</td>
<td>44.5**</td>
<td>54.4**</td>
<td>69.5**</td>
</tr>
<tr>
<td>2</td>
<td>---</td>
<td>17.9**</td>
<td>24.9**</td>
<td>34.8**</td>
<td>49.9**</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>---</td>
<td>7.0</td>
<td>16.9*</td>
<td>32.0**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>---</td>
<td>9.9</td>
<td>25.0**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>---</td>
<td>15.1*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
</tr>
</tbody>
</table>

*p < .05.

**p < .01.

Analysis of Fear Thermometer Scores

Hypothesis 3 predicted that both systematic desensitization and implosive therapy psychotherapeutic treatments would not differ significantly, but each would be superior to the placebo treatments, using the fear thermometer scores as a criterion measure. Hypothesis 4 predicted that all treatment conditions requiring goal-setting behavior would be superior in the remission of fear to those not requiring goal-setting behavior as measured by scores on the fear thermometer. These two hypotheses were tested by employing the fear thermometer scores in a 3 (treatments) X 2 (level of aspiration) analysis of covariance in which the pretherapy session fear thermometer...
<table>
<thead>
<tr>
<th>Level of Aspiration</th>
<th>Statistic</th>
<th>Treatment</th>
<th>Main Effect&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Systematic Desensitization</td>
<td>Implosive Therapy</td>
</tr>
<tr>
<td>Non-goal-setting</td>
<td>N</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>1.59</td>
<td>1.82</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.52</td>
<td>2.17</td>
</tr>
<tr>
<td>Goal-Setting</td>
<td>N</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>2.99</td>
<td>2.82</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>2.00</td>
<td>2.95</td>
</tr>
<tr>
<td>Main effect (Treatment)</td>
<td>N</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>2.29</td>
<td>2.32</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.83</td>
<td>2.50</td>
</tr>
</tbody>
</table>

<sup>a</sup> Level of aspiration
scores were used as the covariate and the adjusted fear thermometer scores, following the fifth and final session, served as the criterion measure. The adjusted means and standard deviations employed in the analysis of covariance are presented in Table 5.

As shown in Table 5, the trend for the three main treatment effect means is consistent with Hypothesis 3, since both the systematic desensitization and implosive therapy means are less than that for the placebo treatment. On the other hand, the main effect mean for goal-setting (3.50) is greater than that for non-goal-setting (2.43), a direction inconsistent with Hypothesis 4.

Results of the covariance analysis of the fear thermometer scores, contained in Table 6, reveal no significant interaction effect, \( F(2, 23) = 0.04 \).

Table 6
Summary of Analysis of Covariance of Fear Thermometer Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatments (A)</td>
<td>26.16</td>
<td>2</td>
<td>13.08</td>
<td>1.66</td>
</tr>
<tr>
<td>Level of Aspiration (B)</td>
<td>7.78</td>
<td>1</td>
<td>7.78</td>
<td>0.99</td>
</tr>
<tr>
<td>A X B</td>
<td>0.67</td>
<td>2</td>
<td>0.34</td>
<td>0.04</td>
</tr>
<tr>
<td>Error</td>
<td>181.44</td>
<td>23</td>
<td>7.89</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>216.05</td>
<td>28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The lack of significant interaction effect leads to consideration of the two main effect tests. The main treatment and level of aspiration effects, relating to Hypotheses 3 and 4 respectively, were not significant, $F(2, 23) = 1.66; F(1, 23) = 0.99$ (Table 6), thus neither hypothesis was supported.

As was the case for approach scores, the question concerning a possible trend of treatment effects through the sessions was considered by applying a $3 \times 2 \times 6$ analysis of variance with repeated measures on one factor (sessions), utilizing the fear thermometer scores.

![Figure 2. Mean fear thermometer scores as a function of successive sessions for the total sample.](image-url)
Tables containing the means, standard deviations, and ANOVA summary statistics are presented in Appendix 1, Table 22 and 23 respectively. All interactions and main effects are not significant, except for the sessions main effect, \( F(5, 120) = 38.06, p < .000 \). The main sessions effect means are plotted in Figure 2, which reveals a continuous (almost linear) decrease in the number of units of fear reported by subjects as the number of therapeutic sessions progressed.

Posteriori comparisons of all possible pairs of session means were made by the Newman-Keuls procedure (Table 7). The multiple mean comparisons revealed that all possible session mean combinations are significant, except for combination 3-4.

Table 7

Newman-Keuls Test of Fear Thermometer Session Means

<table>
<thead>
<tr>
<th>Sessions</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>---</td>
<td>1.26**</td>
<td>2.46**</td>
<td>2.70**</td>
<td>4.00**</td>
<td>5.90**</td>
</tr>
<tr>
<td>5</td>
<td>---</td>
<td>1.20*</td>
<td>1.44**</td>
<td>2.74**</td>
<td>4.64**</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>---</td>
<td>0.24</td>
<td>1.54**</td>
<td>3.44**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>---</td>
<td>1.30*</td>
<td>3.20**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>---</td>
<td></td>
<td>1.90**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\*\( p < .05 \).

**\( p < .01 \).
Analysis of Speed Scores

Hypothesis 5 predicted that both systematic desensitization and implosive therapy psychotherapeutic treatments would not differ significantly, but each would be superior to the placebo treatments using speed of approach (inches per second) to the feared object as the criterion measure. Hypothesis 6 predicted that all treatment conditions requiring goal-setting behavior would be superior in the remission of anxiety, as measured by speed of approach to the feared object, when compared to all treatment conditions not requiring goal-setting behavior. These hypotheses were tested by subjecting the speed scores to a 3 (systematic desensitization, implosive therapy, placebo) X 2 (goal-setting, non-goal-setting) analysis of covariance in which the pretherapy session scores were used as the covariate to adjust the final session scores (Session 5) for initial differences. Table 8 contains the resulting adjusted means and standard deviations used in the analysis.

The summary of the analysis of covariance is shown in Table 9, which reveals no significant interaction effect, $F(2, 23) = 0.90$, which in turn leads to consideration of the two main effects. The main treatment and level of aspiration effects, relating to Hypotheses 5 and 6 respectively, were not significant. As a result, both Hypotheses 5 and 6 are rejected.
Table 8

Adjusted Means and Standard Deviations of Speed Scores (Inches per Second) for the Various Treatment and Placebo Groups

<table>
<thead>
<tr>
<th>Level of Aspiration</th>
<th>Statistic</th>
<th>Treatment</th>
<th>Main Effect&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Systematic Desensitization</td>
<td>Implosive Therapy</td>
</tr>
<tr>
<td>Non-Goal-Setting</td>
<td>N</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>7.81</td>
<td>7.33</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>8.08</td>
<td>5.69</td>
</tr>
<tr>
<td>Goal-Setting</td>
<td>N</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>5.28</td>
<td>6.85</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>2.40</td>
<td>3.97</td>
</tr>
<tr>
<td>Main effect (Treatment)</td>
<td>N</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>6.54</td>
<td>7.09</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>6.02</td>
<td>4.69</td>
</tr>
</tbody>
</table>

<sup>a</sup>Level of aspiration
Table 9
Summary of Analysis of Covariance of Speed Scores (Inches per Second)

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatments (A)</td>
<td>145.91</td>
<td>2</td>
<td>72.96</td>
<td>0.11</td>
</tr>
<tr>
<td>Level of Aspiration (B)</td>
<td>344.55</td>
<td>1</td>
<td>344.55</td>
<td>0.48</td>
</tr>
<tr>
<td>A X B</td>
<td>141.56</td>
<td>2</td>
<td>70.78</td>
<td>0.90</td>
</tr>
<tr>
<td>Error</td>
<td>15624.05</td>
<td>23</td>
<td>679.31</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16256.07</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As was the case for the approach and fear thermometer scores, the speed scores were analyzed by a 3 (treatment) X 2 (level of aspiration) X 6 (sessions) analysis of variance (repeated measures on sessions) principally to ascertain the extent to which subjects may have changed as a function of increasing therapeutic sessions. Tables containing the means, standard deviations, and analysis of variance summary statistics are presented in Appendix I, Tables 24 and 25 respectively. All interaction and main effects did not reach significance, except for the sessions main effect, \( F(5, 120) = 12.37, p < .000 \). Figure 3 shows a distinct average increase for all subjects combined in speed of approach to the phobic object as the number of sessions increased.
Figure 3. Mean speed scores as a function of successive sessions for the total sample.

Post hoc comparisons by the Newman-Keuls procedure (Table 10) revealed the following significant pair-wise comparisons: 6-5; 6-4; 6-3; 6-2; 6-1; and 5-1. Although these results are not as striking as those obtained using approach and fear thermometer scores, a continuous positive therapeutic effect, as reflected by increasing speed of approach to the phobic object as the number of therapeutic sessions increased, is suggested.
Table 10
Newman-Keuls Test for Speed Scores (Inches per Second) Session Scores

<table>
<thead>
<tr>
<th>Sessions</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>---</td>
<td>0.45</td>
<td>0.56</td>
<td>1.00</td>
<td>1.65*</td>
<td>3.69**</td>
</tr>
<tr>
<td>5</td>
<td>---</td>
<td>0.11</td>
<td>0.55</td>
<td>1.20</td>
<td>3.24**</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>---</td>
<td>0.44</td>
<td>1.09</td>
<td>3.13**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>---</td>
<td>0.65</td>
<td>2.69**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>---</td>
<td></td>
<td>2.04**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05.

**p < .01.

Analysis of Goal Discrepancy Scores

Approach test. Hypothesis 7 predicted that among goal-setting subjects undergoing systematic desensitization and implosive therapy treatments, successively more realistic goals would be set (in terms of past performance), as compared to those subjects in the placebo group, using absolute goal discrepancy scores for the distance of approach test criterion. Absolute goal discrepancy approach test scores were obtained by the formula: level of aspiration (announced goal) on trail X minus performance on the preceding trial (X - 1), disregarding the algebraic sign. The goal discrepancy scores were analyzed by a standard 3 (treatments) X 4
Table I

Means and Standard Deviations of Approach Test Absolute Goal Discrepancy Scores for the Treatment and Placebo Groups

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Treatments</th>
<th>Main Effect (Sessions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Systematic Desensitization</td>
<td>Implosive Therapy</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1</td>
<td>12.4</td>
<td>8.79</td>
</tr>
<tr>
<td>2</td>
<td>20.8</td>
<td>10.21</td>
</tr>
<tr>
<td>3</td>
<td>13.8</td>
<td>15.30</td>
</tr>
<tr>
<td>4</td>
<td>11.4</td>
<td>17.21</td>
</tr>
<tr>
<td>Main Effect (Treatment)</td>
<td>14.6</td>
<td>12.81</td>
</tr>
</tbody>
</table>

Note: Each cell contains five observations.
(sessions) factorial analysis of variance with repeated measures on same subject over sessions. Table 11 contains the resulting means and standard deviations.

The summary of the analysis of variance is presented in Table 12.

Table 12
Summary of the Analysis of Variance of Absolute Goal Discrepancy Approach Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments (A)</td>
<td>1504.23</td>
<td>2</td>
<td>752.12</td>
<td>0.86</td>
</tr>
<tr>
<td>Error Between</td>
<td>10512.20</td>
<td>12</td>
<td>876.02</td>
<td></td>
</tr>
<tr>
<td>Within Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sessions (B)</td>
<td>1069.25</td>
<td>3</td>
<td>356.42</td>
<td>0.59</td>
</tr>
<tr>
<td>A X B</td>
<td>1537.10</td>
<td>6</td>
<td>256.18</td>
<td>0.43</td>
</tr>
<tr>
<td>Error Within</td>
<td>21659.40</td>
<td>36</td>
<td>601.65</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>36282.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From Hypothesis 7 it was expected that the means for the systematic desensitization and implosive therapy groups would decrease systematically, whereas the mean for the placebo group would remain relatively constant. However, such was not the case. Stated differently, a treatment X session interaction was expected. Therefore, the critical test of
the validity of Hypothesis 7 would be reflected in the corresponding ANOVA F-test. As can be seen in Table 12, the treatment X session interaction effect does not reach the critical significance level, $F(6, 36) = 0.43$. Therefore, Hypothesis 7 is not supported. Also, neither main effect is significant: treatment, $F(2, 12) = 0.86$, and sessions, $F(3, 36) = 0.59$.

**Fear Thermometer.** Hypothesis 8 predicted that among goal-setting subjects, those undergoing the systematic desensitization and implosive therapy treatments would set successively more realistic goals, with each successive session, than would those subjects in the placebo group, using absolute goal discrepancy scores based on the fear thermometer criterion. The absolute goal discrepancy scores were employed in a standard 3 (treatments) X 4 (sessions) analysis of variance with repeated measures on sessions. Means and standard deviations utilized in the analysis are presented in Table 13.

Hypothesis 8 is like Hypothesis 7 in that the test of its tenability rested upon the outcome of the F-test for the treatment X sessions interaction. This test is not significant, $F(6, 36) = 1.06$, as given in Table 14. Therefore, Hypothesis 8 is rejected. Since the interaction was predicted originally, hypotheses were not advanced for the two main effects. However, the analysis presented in Table 14 shows that both main effects are significant (treatment main effect, $F(2, 12) = 3.91, p < .05$; sessions main effect, $F(3, 36) =$
<table>
<thead>
<tr>
<th>Sessions</th>
<th>Systematic Desensitization</th>
<th>Implosive Therapy</th>
<th>Placebo</th>
<th>Main Effect (Sessions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1</td>
<td>3.2</td>
<td>1.92</td>
<td>1.8</td>
<td>0.45</td>
</tr>
<tr>
<td>2</td>
<td>2.0</td>
<td>1.00</td>
<td>1.2</td>
<td>0.45</td>
</tr>
<tr>
<td>3</td>
<td>1.0</td>
<td>1.00</td>
<td>0.8</td>
<td>0.84</td>
</tr>
<tr>
<td>4</td>
<td>1.0</td>
<td>1.00</td>
<td>1.4</td>
<td>1.52</td>
</tr>
<tr>
<td>Main Effect (Treatment)</td>
<td>1.8</td>
<td>1.51</td>
<td>1.3</td>
<td>0.92</td>
</tr>
</tbody>
</table>

**Note:** Each cell contains five observations.
6.13, \( p < .002 \). With respect to the three main treatment means, it is revealed (Table 13) that on an average basis the placebo group predicted future behavior more closely to their past performance (0.7) than was true for the implosive therapy (1.3) and systematic desensitization (1.8) groups. A Newman-Keuls was administered to the three treatment means (Appendix I, Table 26) which revealed that the systematic desensitization group differed significantly from the placebo group. Moreover, the implosive therapy group did not differ significantly from either the systematic desensitization or the placebo group.

Table 14

Summary of Analysis of Variance of Absolute Fear Thermometer Goal Discrepancy Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Subjects</td>
<td>30.73</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments (A)</td>
<td>12.13</td>
<td>2</td>
<td>6.07</td>
<td>3.91*</td>
</tr>
<tr>
<td>Error Between</td>
<td>18.60</td>
<td>12</td>
<td>1.55</td>
<td></td>
</tr>
<tr>
<td>Within Subjects</td>
<td>55.00</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sessions (B)</td>
<td>16.67</td>
<td>3</td>
<td>5.56</td>
<td>6.13**</td>
</tr>
<tr>
<td>A X B</td>
<td>5.67</td>
<td>6</td>
<td>0.96</td>
<td>1.06</td>
</tr>
<tr>
<td>Error Within</td>
<td>32.60</td>
<td>36</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>85.73</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*\( p < .05 \).

**\( p < .002 \).
In general, the session effect means progressed from larger to smaller, except for a reversal between Sessions 3 and 4, which indicates, on an overall basis, all subjects regardless of treatment became more realistic in their goal-setting behavior when compared to past performance. As a result of the significant main sessions F-test, the Newman-Keuls procedure (Appendix I, Table 27) was administered to the four main sessions means. The analysis revealed that Session 1 differed significantly from all other sessions, but the remaining three sessions did not differ significantly among themselves.

Analysis of Attainment Discrepancy Scores

Approach scores. It was predicted in Hypothesis 9 that among goal-setting subjects, those undergoing the systematic desensitization and implosive therapy treatments would estimate their future performance (set goals) more realistically, with each successive therapeutic session, than would those subjects in the placebo group, using absolute attainment discrepancy scores based on the approach test criterion. The absolute attainment discrepancy approach test scores were derived by the formula: level of aspiration score on trial \( X \) minus performance on trial \( X \), and the numerical result employed, disregarding algebraic sign, in a standard 3 (treatments) \( \times \) 4 (sessions) analysis of variance with repeated measures on the last factor. Table 15 contains the resulting means and standard deviations.
<table>
<thead>
<tr>
<th>Sessions</th>
<th>Treatment</th>
<th>Implosive Therapy</th>
<th>Placebo</th>
<th>Main Effect (Sessions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Systematic Desensitization</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>12.8</td>
<td>14.77</td>
<td>15.4</td>
<td>14.67</td>
</tr>
<tr>
<td>2</td>
<td>22.6</td>
<td>24.29</td>
<td>8.4</td>
<td>8.76</td>
</tr>
<tr>
<td>3</td>
<td>5.0</td>
<td>5.05</td>
<td>22.8</td>
<td>27.91</td>
</tr>
<tr>
<td>4</td>
<td>4.6</td>
<td>4.16</td>
<td>4.0</td>
<td>5.87</td>
</tr>
</tbody>
</table>

Main Effect (Treatment) 11.25 15.35 12.65 16.92 15.15 10.09 13.02 14.27

Note: Each cell contains five observations.
The summary of the analysis of variance is shown in Table 16, which reveals no significant interaction effect, \( F(6, 36) = 1.25 \). Moreover, neither the main treatment effect, \( F(2, 12) = 0.43 \), nor the main sessions effect, \( F(3, 36) = 1.86 \), reach the critical level of significance. As a result of the nonsignificant interaction effect, Hypothesis 9 is not supported.

Table 16
Summary of Analysis of Variance of Absolute Attainment Discrepancy Approach Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>( F )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Subjects</td>
<td>2340.73</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments (A)</td>
<td>156.13</td>
<td>2</td>
<td>78.07</td>
<td>0.43</td>
</tr>
<tr>
<td>Error Between</td>
<td>2184.60</td>
<td>12</td>
<td>182.05</td>
<td></td>
</tr>
<tr>
<td>Within Subjects</td>
<td>9666.25</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sessions (B)</td>
<td>1097.78</td>
<td>3</td>
<td>365.93</td>
<td>1.86</td>
</tr>
<tr>
<td>A X B</td>
<td>1475.87</td>
<td>6</td>
<td>245.98</td>
<td>1.25</td>
</tr>
<tr>
<td>Error Within</td>
<td>7092.60</td>
<td>36</td>
<td>197.02</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>12006.75</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Feart Thermometer. Hypothesis 10 predicted that among the goal-setting subjects, those undergoing systematic desensitization and implosive therapy treatments would estimate their future performance (set goals) more realistically, with each successive therapeutic session, than would subjects in
Table 17
Means and Standard Deviations of Absolute Fear Thermometer Attainment Discrepancy Scores for the Treatment and Placebo Groups

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Systematic Desensitization</th>
<th>Implosive Therapy</th>
<th>Placebo</th>
<th>Main Effect (Sessions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1</td>
<td>1.0</td>
<td>1.23</td>
<td>1.4</td>
<td>1.14</td>
</tr>
<tr>
<td>2</td>
<td>1.6</td>
<td>1.52</td>
<td>0.6</td>
<td>0.89</td>
</tr>
<tr>
<td>3</td>
<td>0.4</td>
<td>0.55</td>
<td>2.0</td>
<td>2.45</td>
</tr>
<tr>
<td>4</td>
<td>0.2</td>
<td>0.45</td>
<td>0.4</td>
<td>0.55</td>
</tr>
<tr>
<td>Main Effect (Treatment)</td>
<td>0.8</td>
<td>1.11</td>
<td>1.1</td>
<td>1.48</td>
</tr>
</tbody>
</table>

Note: Each cell contains five observations.
the placebo group, using absolute attainment discrepancy scores based on the fear thermometer test criterion. Means and standard deviations utilized in the analysis are presented in Table 17.

A significant interaction effect is required to confirm Hypothesis 10, however, Table 18 shows that the interaction effect is not significant, $F(6, 36) = 1.28$, thus, the hypothesis is not supported.

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
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<tbody>
<tr>
<td>Between Subjects</td>
<td>20.10</td>
<td>14</td>
<td>1.05</td>
<td>0.70</td>
</tr>
<tr>
<td>Treatments (A)</td>
<td>2.10</td>
<td>2</td>
<td>1.05</td>
<td>0.70</td>
</tr>
<tr>
<td>Error Between</td>
<td>18.00</td>
<td>12</td>
<td>1.50</td>
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<tr>
<td>Within Subjects</td>
<td>66.75</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sessions (B)</td>
<td>8.05</td>
<td>3</td>
<td>2.68</td>
<td>1.99</td>
</tr>
<tr>
<td>A X B</td>
<td>10.30</td>
<td>6</td>
<td>1.72</td>
<td>1.28</td>
</tr>
<tr>
<td>Error Within</td>
<td>48.40</td>
<td>36</td>
<td>1.34</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>86.85</td>
<td>59</td>
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</table>

**Discussion**

As anticipated, both systematic desensitization and implosive therapy treatments were significantly superior to the placebo conditions in terms of distance of approach to
the phobic object; the difference between systematic desensitization and implosive therapy was not significant. These findings confirmed Hypothesis 1 (see Tables 2, 3, and 19). The apparent superiority of systematic desensitization and implosive therapy support the data presented by a number of researchers (Cooke, 1966; Hogan, 1966; Kirchner & Hogan, 1966; Willis & Edwards, 1969). It was predicted (Hypothesis 2) that the half of the sample under systematic desensitization, implosive therapy, and placebo, who were required to set approach goals (goal-setting), would approach significantly closer than the remaining half who did not set approach goals (non-goal-setting). Despite a trend consistent with the expectation, there were no significant approach differences between the goal-setting and non-goal-setting treatments, thus Hypothesis 2 was not confirmed.

At least two explanations appear feasible for the nonsignificant differences between the goal-setting and non-goal-setting treatments. First, it may be that the possible generation of motivational factors gained by participation in the goal-setting condition was not sufficient to override the autonomic activity (fear and anxiety) felt by the subjects in the presence of the phobic stimulus. The nonsignificant results were inconsistent with the data presented by Rutner (1973), Emmelkamp and Ulter (1974), and Leitenberg, Ahras, Thompson, and Wright (1968), who suggested that knowledge of actual performance has a significant positive effect.
It would be interesting to determine, via a level of phobia X level of aspiration X treatment design, whether or not the goal-setting procedure involving feedback would have a more positive effect on less phobic subjects. Perhaps engaging in goal-setting for more fearful subjects in some way increases the anxiety level thus interfering with progress towards the feared object.

A second possible explanation rests upon the research of Locke (1967, 1968), Locke, Cartledge, and Koeppel (1968), and Erez (1977), who suggested that goals mediate the effects of feedback on performance. Although it was initially assumed that subjects in the non-goal-setting group did not engage in goal-setting behavior, this may not be the case. Nonverbalization of future goals need not imply the absence of any covert or implicit goal-setting behavior. Therefore, the non-goal-setting may have been, in fact, a modification of the goal-setting procedure—the goal-setting subjects involved in overt goal-setting and the non-goal-setting subjects in covert goal-setting. Since goal-setting, coupled with feedback, appears to have positive effects on performance, the differences between covert and overt goal-setting, together with the degree of feedback in each group, may not have been sufficiently different to obtain significant results. The utilization of a no-treatment control group, thereby significantly decreasing the possibility of both feedback and goal setting, would have been beneficial in clarifying the issue.
The ANOCOV revealed adjusted treatment differences at the end of therapy; it is important to indicate (from the treatment X level of aspiration X sessions ANOVA [see Tables 4, 20, 21, and Figure 1]), that on an average basis, all subgroups, regardless of treatment condition, did walk significantly closer to the rat from the first to the last session following a linear trend through all sessions. This finding includes the two "placebo" groups (placebo goal-setting, placebo non-goal-setting).

Significant improvement in the systematic desensitization and implosive therapy groups under goal-setting and non-goal-setting conditions was not surprising; however, the significant increase from pretreatment assessment through Session 5 in approach distance by both "placebo" groups (goal-setting, non-goal-setting) was not anticipated and deserves further comment. In the traditional usage of the term "placebo," a subject would receive a procedure or substance which would be expected to have no significant generic therapeutic properties. Restrospectively, an examination of the procedures utilized for the two "placebo" groups of this experiment strongly suggests that the subjects were probably receiving some "treatment" or else they would not have gained significantly in approach. As mentioned previously, feedback and the likelihood of goal setting, either overtly or covertly was present in all groups. Ideally, another group, a no-treatment control, would have been useful.
Further analysis of the procedural variables common to all six treatment combinations is an approach which might be used to attempt to account for the significant approach scores of all groups. Although exposure to the phobic object itself may have been a contributing variable, mere exposure would not seem to be an important variable, since it was at least partially controlled by not allowing any subject more than 30 minutes of total phobic exposure. According to Miller and Levis (1971), increased anxiety may result from exposure of 15 consecutive minutes to the phobic object and exposure of over 30 consecutive minutes may result in decreased anxiety. No subject received more than 11 minutes of total exposure over the six exposure periods (for an average of less than 2 consecutive minutes per exposure period). This exposure period appears to be well within the limits defined by Miller and Levis. Yet, it may be that inadvertently, as a result of the assessment procedure, the six exposure sessions may have been a modified in vivo systematic desensitization program (Freeman & Kenrick, 1964; Haslam, 1965; Murphy, 1964). As a result, all subjects may have been receiving in vivo systematic desensitization as an ancillary procedure. It must be noted that the exposure procedure appears to correspond to Freud's (1924) statement:

One can hardly ever master a phobia if one waits till the patient lets the analysis influence him to give it up. . . . One succeeds only when one
can induce them through the influence of analysis to go about it alone and to struggle with their anxiety while they make the attempt. (p. 400)

Contrary to the results employing the approach criterion, both systematic desensitization and implosive therapy were not significantly superior to the placebo when using fear thermometer scores as the criterion measure. This finding did not support Hypothesis 3 (see Tables 5 and 6) even though after five sessions, the systematic desensitization, implosive therapy, and placebo subjects reported an average of 1.8, 2.5, and 3.4 units of fear respectively (means adjusted by ANOCOV), which indicated a treatment difference trend in the predicted direction. It was predicted (Hypothesis 4) that those subjects under systematic desensitization, implosive therapy, and placebo, who were required to set units of fear goals (goal-setting), would report significantly less fear than those subjects who did not set units of fear goals (non-goal-setting). Nevertheless, there were no significant differences between the two groups, and as a result Hypothesis 4 was not supported.

It is suggested that the employment of the particular placebo procedure in this study was one of the main factors contributing to the nonsignificant differences between the two therapeutic procedures and the placebo procedure. Foreyt and Hagen (1973), in a study of the effectiveness of covert sensitization (Cautela, 1966), using a placebo procedure
similar to the one presently employed, reported nonsignificant results in all self-rating measures (palatability of foods and evaluation of treatment). Also, the present experimenter gathered anecdotal information during the debriefing of all subjects. Deliberate questions were asked of each placebo subject in reference to what the procedure (placebo) was designed to accomplish and by what means it was supposed to occur. Invariably, all subjects in the placebo group responded that the procedure was designed to reduce fear and anxiety in the presence of the phobic stimulus. Moreover, the placebo subjects reported that the experimenter was trying to "fix" the picture of the pleasant scene in their minds so that the rat would appear to be more pleasant, and thus reduce fear and anxiety while in its presence. It seems reasonable to assume that since subjects "believed" that they were involved in a procedure designed specifically to reduce fear, it would lead to verbal reports of fear reduction. This observation suggests that demand characteristics (Orne, 1962) in the placebo procedure itself might have had some effects on the verbal reports of fear. It should be noted that Folkins, Lawson, Opton, and Lazarus (1968) hypothesized that positive therapeutic changes may occur if subjects hit a particular "explanation strategy." It may be that, in addition to the demand characteristics which may have been inherent in the placebo procedure, the explanation strategy arrived at by the placebo subjects of what the procedure was
designed to accomplish may have had some effects on their verbal expression of fear. Similarly, the effects of expectations on the verbal expression of fear should not be overlooked. Control of expectancies for improvement was attempted by eliminating any words which might connote improvement. Furthermore, subjects involved in the investigation were considered highly phobic and all volunteered for an experiment "designed to evaluate subjective fear or phobic responses under varying conditions." Although the experiment did not incorporate a measure of the degree of expectancy (expectation for change), anecdotal material gathered during the debriefing leads the author to assume that indeed many of the subjects entered the experiment under the assumption that it was designed to decrease phobic responses. Several of the placebo subjects reported that they believed that they had participated in a procedure called "systematic desensitization" which had been discussed in class. Although a formal analysis was not made, a cursory examination of the data suggests that those subjects in the placebo group who expressed the belief that they had participated in a specific therapeutic procedure (i.e., systematic desensitization, relaxation therapy) made the most significant positive improvement, especially on the approach test. It should be noted that several experimenters have reported placebo effects operating when employing anxious persons (Beecher, 1959; Fisher & Olin, 1956; Frank, 1961; Kornetsky & Humphries, 1957).
As in the case of approach scores, on an average basis, all subgroups, regardless of treatment condition, did report significantly less felt fear and anxiety from the first to the last session, following an approximate linear function. This generalization is based on the results of the treatment X level of aspiration X sessions ANOVA (see Tables 7, 22, 23, and Figure 2). Possible explanations for this significance have been presented previously in connection with the approach criterion.

Analysis of speed scores resulted in nonsignificant differences among the three treatment categories. The findings did not support Hypothesis 5 (see Tables 8 and 9). Also, it was predicted (Hypothesis 6) that those subjects who were required to set both approach and units of fear goals (goal-setting) would approach the phobic object significantly faster than subjects who were not required to set goals (non-goal-setting). Despite a trend in the predicted direction, there were no significant speed of approach differences between the goal-setting and non-goal-setting treatments, thus Hypothesis 6 was not supported.

Although speed of approach toward goals, as a criterion measure, has been utilized quite frequently in animal studies, it has not been utilized, as far as this author is aware, in studies utilizing human subjects in systematic desensitization or implosive therapy procedures. Leitenberg, Agras, Edwards, Thompson, and Wincze (1970) and Leitenberg, Agras,
Thompson, and Wright (1968) did employ time spent in the presence of the phobic stimulus as a criterion measure and achieved significant results; however, they did not employ rate measures as such. Possible explanations for the nonsignificant differences between the two therapeutic procedures and the placebo, as well as between the goal-setting and non-goal-setting groups, have been discussed previously and can be generalized to the results obtained when using speed of approach as the criterion measure.

As in the case of both approach and fear thermometer scores, on an average basis, all subgroups, regardless of treatment condition, did increase their speed of approach to the phobic object from the first to the last session (see Tables 10, 24, 25, and Figure 3). Possible reasons for the significant therapeutic progress made by the placebo subjects have been previously discussed. However, the apparent relationship among approach, fear thermometer, and speed scores necessitates further comment. It is hypothesized, taking into consideration the significant approach and fear thermometer ANOVA data, that as both overt and covert indicators of fear responses revealed therapeutic progress, a concomitant increase in speed of approach towards the phobic object was observed. It thus appears that the less fearful the phobic object becomes, the faster is the rate of approach towards the object. This finding is consistent with Miller's (1944) conflict theory which would lead to the prediction that
initially the avoidance gradient, with respect to the approach towards the phobic stimulus, would be steeper than the approach gradient, thereby resulting in relatively slower speed of approach towards the phobic object. With continued treatment, and a decrease in the avoidance tendencies, the strength of the approach should begin to exceed that of the avoidance, and the rate of speed towards the phobic object should gradually increase. It would have been revealing to have recorded both speed of approach to the phobic object and speed of departure from the phobic room in order to compare the approach-avoidance speed gradients as a function of therapeutic progress. It should be noted that speed of approach to the phobic object, as a criterion measure, appears to have merit and should be utilized in future studies implementing an approach test.

As a result of the predicted continued success achieved by subjects involved in the systematic desensitization and implosive therapy groups, several secondary hypotheses were generated based on discrepancy scores. It was assumed that because of the predicted continued success of subjects in the two therapeutic procedures (systematic desensitization, implosive therapy) that they would begin to set successively more realistic goals, as compared to those subjects in the placebo group who would continue to set unrealistic goals due to lack of continued therapeutic success. When utilizing approach test absolute goal discrepancy scores (Hypothesis 7) results
of the ANOVA did not reveal a significant interaction as predicted (see Tables 11 and 12), thus Hypothesis 7 was not supported. Also, neither main effect was significant.

The nonsignificant interaction effect leads the author to hypothesize that most university students are able to make fairly accurate and consistent predictions concerning their future behavior, based on their past experiences. It was assumed that phobic subjects would be unable to initially make predictions which would be realistic, in terms of past performance, and as a result of success derived from the therapeutic process, they would begin to make predictions more in line with past achievement. This does not appear to be the case. It is suggested that most university students have had ample opportunities to succeed in a vast number of situations and thereby acquire appropriate environmental feedback concerning their performance and goals. This success appears to be a sufficient condition to provide the phobic student an opportunity for generalization in unsuccessful portions of their lives, and as a result, are able to use failure as a baseline for future goal-setting behavior. This hypothesis can only be supported with future studies in which subject differentiations are made using success or lack of failure in major life areas (i.e., successful college students and high-school dropouts; normal and psychotic subjects).

Analysis of the absolute fear thermometer goal discrepancy scores revealed a nonsignificant interaction effect which
led to the rejection of Hypothesis 8. However, significant treatment and sessions main effects did occur (see Tables 13, 14, 26, 27). Further analysis of the data revealed that the systematic desensitization group was significantly more unrealistic, in terms of absolute fear thermometer goal discrepancy scores, than the placebo group. The differences between implosive therapy and either systematic desensitization or placebo were not significant (see Table 26).

The significant difference between the systematic desensitization and placebo was unexpected and deserves further comment. It has been suggested that most university students are able to make fairly accurate and consistent predictions concerning their future behavior, based on their past experiences. Apparently, the under- or overestimation of future behavior, based on past performance, by the systematic desensitization subjects was a function of the systematic desensitization procedure. It is suggested that subjects in the systematic desensitization group may have perceived their procedure to be more therapeutic than the subjects in the placebo procedure and expressed their perception by setting goals indicating that they would experience significantly less covert fear. Relaxation, and the systematic desensitization procedure itself, may have had the effect of providing the systematic desensitization subjects with the experience of receiving feedback of the presence of some therapeutic internal changes (feeling relaxed and being relaxed in the
presence of the imagined phobic object). The placebo procedure, on the other hand, appears to be relaxing but the relaxation does not appear to be directly related to being relaxed in the presence of the phobic stimulus. This condition (relaxation) may not be sufficient for the subjects to dramatically raise their aspiration for improvement. Subjects in the implosive therapy procedure, however, experienced 50 minutes of intense anxiety, followed by a short period of relative calm following the extinction process. Although the procedure is directly related to the phobic object, the amount of relative calm following the procedure may not have been sufficient to result in significant perceived internal changes.

As mentioned earlier, a significant sessions effect was also obtained. Further analysis revealed significant differences between Session 1 and all other sessions (see Table 27). The significant decrease in discrepancy scores suggest that as sessions progressed all subjects, regardless of treatment condition (systematic desensitization, implosive therapy, placebo), set goals significantly more realistically. The setting of significantly more realistic goals among the two therapeutic treatments was not surprising, since with the accumulation of success one would expect significantly more realistic goal-setting. The fact that on an average basis all subjects in the placebo group also set more realistic goals, as measured by the goal discrepancy criterion, adds
support to the hypothesis that therapeutic variables were in
operation within the placebo condition.

Due to the expected therapeutic effects of both systema-
tic desensitization and implosive therapy, it was predicted
(Hypothesis 9) that these subjects would estimate their
future performance (set goals) more realistically with each
successive therapeutic session, than would those subjects in
the placebo group, using approach test absolute attainment
discrepancy scores. Results of the data did not reveal any
significant effects (see Tables 15 and 16). It is suggested
that university students typically are able to predict rather
accurately their future performance in a wide variety of sit-
uations. The original hypothesis was suggested under the
assumption that university students who were rat phobic would
not be able to initially predict their behavior (performance)
as a result of lack of success in approaching or being around
rats. It appears that as a result of successes in other
areas of life, college students, regardless of being phobic,
have been able to receive feedback concerning their perform-
ance in varied situations and at the same time have learned
to make relatively accurate predictions of their performance
under new and stressful conditions. The ability to accurately
predict future performance may be one condition necessary for
continued life success.

It was hypothesized that among goal-setting subjects,
those undergoing systematic desensitization and implosive
therapy treatments would estimate their future performance (set goals) more realistically with each successive therapeutic session than would those subjects in the placebo group, using absolute attainment discrepancy scores based on the fear thermometer criterion (Hypothesis 10). Results from the analysis of variance did not reveal any significant effects and as a result of the nonsignificant interaction effect, this hypothesis was not supported (see Tables 17 and 18). It appears that not only are rat-phobic university students able to accurately predict overt behavior, but that they can accurately predict covert behavior as well.

Several researchers have reported that implosive therapy was not effective or that anxiety actually increased during intervention using this modality (Fazio, 1970; Hodgson & Rachman, 1970; Kotila, 1969; Mealiea, 1967). Too, Wolpe (1958), Eysenck (1968), and Morganstern (1973) have issued warnings about the use of implosive therapy. The results of the present experiment contrast sharply with their views. Throughout the 50 implosive therapy sessions, the experimenter did not observe any behavior which he interpreted as being detrimental to the welfare of the subjects. Moreover, the data revealed that all 10 implosive therapy subjects did in fact improve, and that there were no cases of increased anxiety or fear manifested by any subject upon termination of the research. It may be true that the implosive therapy procedure is more strenuous on both the subject and the
therapist, but this should not be the reason for dismissing the implosive therapy process. It is felt that implosive therapy, as defined by Stampfl, does have a place in the therapist's arsenal of available procedures, especially in cases in which clients are unable or unwilling to relax and the level of fear and anxiety can be utilized in a beneficial fashion. Unfortunately, in the experimenter's judgment, researchers and practitioners alike sometimes confuse implosive therapy with other techniques such as the technique developed by Malleson (1959), paradoxical intention (Frankl, 1960), and flooding as employed at the Maudsley Hospital (Watson, Grinds, & Marks, 1971; Lamontagne & Marks, 1973) when actually, in and of themselves, these are not "implosive therapy" as conceived by Stampfl.

In conclusion, the results of this investigation suggest that both systematic desensitization and implosive therapy are effective with no significant difference between them using distance of approach to the feared object. In turn, each is significantly superior to the placebo treatment employing the same measures. Although this same conclusion is not justified with respect to covert fear experience (fear thermometer) and speed of approach to the phobic object, the distance of approach criterion is perhaps the most important of the three. Regardless of treatment condition, on an average basis, all subjects did improve significantly, from the first to the last session, as measured by all three criterion
measures. The possibility that an unidentified therapeutic ingredient was present in the placebo procedure is highly likely. From a clinical treatment point of view, then, systematic desensitization, implosive therapy, and indeed placebo treatment as herein defined, are useful treatments. However, the use of goal-setting as a possible facilitator in treatment appears unwarranted on the basis of the evidence.
Appendix A

Consent Form

I, the undersigned, am volunteering my services in an experiment designed to evaluate subjective fear or phobic responses under varying conditions. I do so on my own free will and am not under duress or coercion from any person or institution.

I am currently in good health, do not have and am not being treated for any medical disorder. Moreover, I am not currently under the care of a psychologist or psychiatrist for any type of psychological or psychiatric disorder.

I have been informed that after my participation is no longer needed, I will have the opportunity to discuss any questions which I might have concerning my participation in this project.

I understand that if at any time I desire to withdraw from this project, I will be free to do so.

_________________________  __________________________
Date                        Witness

_________________________  __________________________
Participant                Witness
Appendix B

Fear Thermometer

Directions: Please place an X next to the number which appears on the thermometer below indicating the amount of fear or anxiety you are now experiencing. Notice that the number zero, which appears on the bottom of the thermometer, indicates that you are experiencing no anxiety or fear whatsoever. On the other hand, the number 10, which appears on the top of the thermometer, suggests that you are now experiencing a great deal of anxiety or fear.
Appendix C
Data Sheet

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<td>Session 2</td>
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<td>Post-Treat Assess.</td>
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Appendix D

Systematic Desensitization Hierarchy

1. Having to pick up a live rat.
2. Having a rat run across your feet while eating at home.
3. Having a rat run across your bedroom while you are in bed.
4. Seeing a rat for a moment in your kitchen.
5. Hearing rats in your attic.
6. Having discovered that rats have been eating some food in your home.
7. Being at a friend's house and seeing a rat in their kitchen.
8. Being at a friend's house and being told that they saw a rat in the house.
9. Seeing a movie about rats.
Appendix E
Implosive Therapy Hierarchy

10. You and your friends are having a nice conversation around the dinner table. You have just finished a fine meal and are enjoying an after dinner conversation when suddenly the conversation turns to the topic of rats. You start to feel oozy. One of your friends says that rats multiply very quickly . . . that a pair of rats can generate 100 baby rats every year. They say that rats are everywhere . . . that there have been cases of rats attacking humans . . . devouring them. You start to feel your stomach tighten up. You start to perspire. Concentrate on these feelings. You feel like you are going to get sick. They keep talking about rats . . . about the diseases they carry . . . about a special strain of rat that weighs close to thirty pounds. You start to feel more anxious. Concentrate on the anxiety, on the fear, the tension in your body.

9. Close your eyes again. Picture that you are at a good friend's house. You walk into the kitchen to get a glass of water. As you open the refrigerator door, you see a rat about 10 feet away from you. You want to scream . . . but you can't. The rat sees you for a moment, but it seems hypnotized by you. It just stays there . . . looking at you. You see its head perfectly, his eyes, ears, nose. You feel anxious. You start to tighten up. Your words are tied up
in your throat. The rat just stares. It just keeps looking at you.

8. I want you now to imagine that you are asleep. At about midnight you are awakened by a loud scratching noise in your attic. At first you don't realize what it is . . . but as the noises become louder you realize that the noises are being made by rats. You get out of bed and try to turn on the light, but there has been a power failure. It is pitch black. You are alone . . . all alone . . . except for the rats. You become frightened. Your stomach tightens up. Feel the stomach muscles tighten up. The scratching and the gnawing from the attic becomes louder. You start to hear the noises coming closer. You can hear the scratching of wood made by the rat's nails. You start to sweat. Feel the fear and anxiety. Concentrate on these feelings.

7. Now, I want you to imagine that you decide to go to the kitchen to see if the lights work there. It is still pitch black . . . but you make your way to the kitchen. You try to turn on the lights but they don't work there either. You see a pair of tiny eyes shining in the dark. You hear it eating. The rat doesn't see you. It keeps eating, gnawing at a piece of meat that was left to thaw out during the night. You keep trying to turn on the light. You feel the perspiration all over your body. The rat continues to rip the piece of meat . . . it continues to feed . . . you can hear its jaws working . . . devouring the piece of meat. There is a
sick feeling in your stomach. Your throat is tight. Concentrate on these feelings. Focus in on the anxiety, fear, and panic.

6. You find a candle and light it. For a moment the rat is paralyzed as the light reflects from its yellow-brown eyes. You can see its beady eyes. It is about a foot long, dark and ugly. You notice its long yellow teeth... pieces of meat are still in its mouth. Concentrate on its meat-laden mouth. You start to feel your muscles tighten. The rat starts to move... starts to move towards you. You see its feet take a step in your direction. Concentrate on how the rat makes you feel as it slowly walks in your direction. See it get closer and closer. Its yellow teeth... its hairless tail.

5. Now, I want you to close your eyes again and picture that you are in bed, semi-awake... when suddenly you see a rat start to cross your bedroom. You are alone... and the rat is slowly approaching your bed. You can see its eyes glowing in the dark, its whiskers... the nose... as it sniffs its way closer and closer to your bed. Concentrate on his approach... as he gets closer and closer... until finally he is on your bed. You can smell his fowl breath. You can see its tiny pink tongue... you can see it smacking his lips. Concentrate on the rat as it gets closer... gets even closer.

4. Close your eyes again. Picture the rat in front of you. Now make yourself pick it up. Reach down, pick it up, put it
in your lap. Feel it wiggle around in your lap, feel its claws penetrate your clothing and get your skin. Kind of explore its body with your fingers and hand. You don't like to do it . . . make yourself do it. Make yourself do it. Really grab onto the rat. Squeeze it a little . . . feel it. Feel it kind of start to sniff your body. Let it. Leave your hands there, feel it sniffing your hands and slowly grab your wrist with its claws. Let it sink its claws into your wrist. It hurts . . . let it hurt. Can you feel its claws penetrate the skin?

3. Okay, now I want you to picture yourself putting your finger towards the rat that's in your lap. It heads towards your finger and it starts to bite at your fingers. Let it bite your finger. Oaah, feel the pain going right into your arm and into your shoulders. You want to pull your hand away, but leave it there. Let the rat kind of gnaw at your fingers. Feel it gnawing . . . look at the blood dripping off your fingers . . . right down to the bone. And it is crunching on your finger. Let it, let it bite you, feel it biting you. It is biting your finger . . . now it starts to bite your hand. Again . . . again . . . again it bites. All over your hand, feel it. Now squeeze the rat with your hand. Make it bite you harder. Squeeze it. Make it bite you harder. Okay, slowly put the rat in front of you . . . . Okay, now pick it up again. Put it in your lap. Let him wiggle around your hand and touch it . . . go ahead . . . touch it.
2. Okay, now I want you to imagine the rat crawling in your hand again. He is going up your shoulder and he is crawling there and he is sitting on your chest and he is looking you in the eyes. He is big and he is black and ugly. And you can smell the stench of rotting meat on his breath. He is ready to bite you and he is looking at you. Picture his face. Look at his eyes, look at those long sharp teeth. Those long sharp teeth with blood on them. He strikes you! Feel him bite your face. Feel him bite your face; feel him bite your face, let him bite; let him bite; just relax and let him bite your face; feel his teeth go right into your cheeks, and the blood is coming out on your face now. You are getting sick and nauseated as he gets ready to strike at your face again. He strikes and bites your cheeks once again. Feel him bite, put your head down towards him, put your head down, let him bite your face, let him bite as much as he wants. Feel him snap the flesh on your cheeks. He starts to bite your eyes and he is pulling at them and tearing at them and ripping at them. Picture what your face looks like. Get that sick feeling in your stomach and now he is gnawing at your nose, and biting your mouth. Just take a deep breath and let him do it. Now he is crawling in your hair. Put your hand up there in your hair by him and let him snap at your hand. Pick him up now in your hand and bring him down by your face and squeeze him; squeeze him real hard and make him bite you; look at those fangs; he is going to bite; put your hand right
by your face. Let him bite you. Let him bite you. Feel him snap at you. Get that sick feeling in your stomach, feel him biting you; he is gnawing at your cheeks. Now feel him, feel him gnawing.

1. Now, picture the rat by your eye and it is going right down to bite it. It is going to pull it right out. Feel it biting your eye and he is going to pull your eye right out and down your cheeks. It is kind of gnawing on it and eating it, eating at your eye. Your little eye is down on your cheek and it is gnawing and it is biting and eating your eye. Your little eye is being eaten. Picture that. Now it is crawling into your eye socket and it is gnawing and biting its way into your head. Feel it crawling around. Feel it crawling. And now it crawls out of your eye, and now it is crawling up into your nose. Feel it crawling right up into your nose, into your head, crawling and biting and eating its way into your nose, into your head, crawling around and it is gnawing and eating its way through the other eye, from the inside--from the inside out. Feel him biting its way out.

*A modification of the scenes presented by Hogan (1968).*
Appendix F

Animal Attraction Schedule

The items in this questionnaire refer to the amount of pleasure you receive from certain domesticated animals. Please place an "X" in the column that describes how much you like the particular animal nowadays.

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<th>A Fair Amount</th>
<th>A Little</th>
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Appendix G

Placebo Hierarchy

1. Walking with your _____ on the beach.
2. Having your pet _____ do tricks for your friends.
3. Petting a friendly _____.
4. Attending a/an _____ pet show.
5. Having a friend and his/her _____ over for the evening.
6. Being at a friend's house and seeing their _____ in their kitchen.
7. Seeing some _____ playing in your yard.
8. Seeing a movie about _____.
10. Being at a friend's house and being told that they saw a _____ playing in the yard.
Appendix H

Placebo Scenes

1. You are walking through a field of beautiful flowers (spoken in a slow, relaxed voice). It is a warm sunny day, and you feel very relaxed and happy. You look up at the sky... it is a beautiful clear blue... little puffy clouds form all sorts of pictures. There is a warm breeze on your face. You feel as if you could stay here forever.

2. Picture yourself once again out in the field of flowers. You are barefoot and you feel the cool soft grass beneath your feet. You have a blanket under your arms, and you decide to spread the blanket and stretch out in this beautiful peaceful field. The breeze is soft... the smell of the flowers delightful... you feel completely relaxed and very happy... relaxed and very happy.

3. Quickly switch once again on the beautiful field of flowers. You are lying on your back on the blanket. Around you, you can see lovely flowers. The odor is fresh and sweet. Above you, the blue sky looks so peaceful. You have a wonderful sense of deep relaxation and happiness. You feel completely satisfied. You would like to lie there forever.

4. Once again, quickly change scenes and put yourself back into the field. Notice the deep sense of peace and relaxation which you feel. Look around you and notice the colors, the sweet odors. You are in an open field, lying among colorful flowers. It is a warm day and you are feeling very
Appendix H--Continued

drowsy and warm and wonderful. The sun and the flowers make you feel very relaxed and happy. Nothing else matters . . . you have no worries . . . you feel only the warmth of the sun and the beautiful flowers.

5. Imagine now, that you are lying on a raft on a calm, cool lake. You can feel the gentle cool breeze against your face. It is a beautiful . . . very beautiful day. The sun is shining . . . the sky is so very blue. There are traces of clouds. You can smell the flowers and trees and hear the faint chirp of crickets in the distance. You feel very joyful about being all alone and enjoying the wonders of nature.

6. Switch now to the scene where you are floating on a raft. You are very serene . . . just floating on the raft . . . with nothing to worry about. You brush your fingertips across the calm blue water. It is a wonderful sensation. You notice the sun reflect off the clear blue water. The reflection seems like a thousand fireflies dashing about. You are at peace with yourself . . . totally enjoying the communion with nature.

7. Picture yourself once again on the raft. The raft is moving very slowly. You feel as if time has slowed down. You feel very pleasant . . . as you continue to float so very slowly. The wind continues to blow softly. It feels so good against your face. In the distance you can see a fawn eating some grass near the shore. It seems so peaceful and tranquil. You continue to watch the fawn as it slowly finishes eating
Appendix H--Continued

and disappears into the woods. You feel so at ease and pleasant that it is very hard to describe in words.

8. You now imagine yourself on the raft. It is so calm and serene. There is total tranquility. You start to doze off . . . you are totally satisfied . . . totally at ease. You now decide to take a cold drink from the thermos. It feels so good as the cold drink is slowly swallowed. It is so refreshing . . . so delightful. You lay back and soon you start to doze off feeling so very good.

9. Now imagine yourself in a canoe in a slow-moving river. It is very calm and pleasant. The sun is partially blocked out by the trees on the river's bank. You are in no hurry. You are just enjoying the view and the total tranquility of the river. You are paddling very slowly . . . the canoe inching itself down the river. You feel so pleasant and serene.

10. Imagine yourself in the canoe once again. The river is still very gentle. You are enjoying the view. The water is very clear. You can see the river's bottom without any trouble. The white sand sparkles as the sun reflects from the bottom. As you continue to slowly guide the canoe down the river, you feel so at ease . . . you think about nothing but the wonders of the river. You feel as if you could do this forever.

11. Once again, you are in the canoe. You notice a leaf that is slowly floating down the river. The leaf reminds you once again about the serenity and tranquility that you are
enjoying. As you look to the bottom of the river, you can see several fish slowly swimming in search of food. You decide to throw them some crumbs of bread. As the fish come up and eat the crumbs, their splashes send ripples... the ripples become larger and larger... until they disappear altogether. You continue to enjoy the view of the river and its bank. It is so pleasant... so very pleasant.

12. Now, I want you to imagine yourself lying on a hammock. It is barely dark. You can hear the crickets in the distance. You are just lying there, enjoying the peace and serenity that comes with the night. You are thinking about nothing except of how content and happy you are feeling. The night breeze is cool against your face. It is so calm... so very calm.

13. Switch now back to the hammock. You are lying in the hammock. It has now become somewhat darker. You can see the fireflies in the distance. As you look up at the sky, you can see several bright stars that have just appeared. You feel so at ease and happy. You feel completely satisfied. As you continue to look up, you start to see more and more stars. You can see the different colors... red... silver... blue. The night breeze continues to blow. You feel as if you could stay here forever.

14. You are back in the hammock. The fire that you had started is now glowing in the dark. It is such a warm and safe feeling. You can smell the odors of the woods... of
the flowers. Off in the distance you can hear the sound of
the creek. You feel so safe . . . so serene . . . so very
happy. Nothing in the world matters to you . . . you have
no worries . . . you feel only the warmth of the fire . . . the
coolness of the night breeze.
15. Once again, quickly change scenes and put yourself back
into the hammock. It is darker now . . . the sky is filled
with stars. In the distance you can hear the faint howl of
a coyote. It is so very tranquil . . . so very peaceful.
The fire is dimly glowing . . . yet it still gives you the
feeling of total security. You slowly start to go back and
forth in the hammock . . . slowly go back and forth. You can
feel the night breeze against your face. It is so very peace-
ful. You feel completely satisfied . . . so completely at
ease with yourself.
16. You are in your apartment and decide to start a fire in
the fireplace. Once the fire is started, you lie down on the
thick, soft rug and start to watch the fire dance about. You
feel so at ease and comfortable. You feel at peace with your-
self. You can see the flames dancing about. The fire changes
colors . . . from deep red to light orange . . . and back
again. You feel so serene and comfortable just lying on the
rug enjoying the comfort of your apartment. It is so enjoy-
able, so very peaceful.
17. Once again you are back in your apartment. The fire is
dancing about and you can see the shadows on the walls. You
are feeling so at ease, so at peace with yourself. You now
decide to play your favorite record on your stereo. You get
up, put the record on and then lie down on the rug once again.
It is so pleasant just to be alone and enjoy the serenity and
tranquility of your apartment. You can hear the music, see
the fire . . . you feel so at ease, so serene, so very happy.
18. You are back in your apartment. The fire is now glowing
in the dark. You can still hear your favorite record in the
background. You feel so very relaxed and serene. So at
peace. You now can hear it begin to rain. The raindrops
and the wind add to the serenity and peace. You feel so safe,
so warm, so very serene. It is so enjoyable just to lie
there on the rug . . . seeing the fire, hearing the record,
and enjoying the peace and serenity that comes with the rain.
You feel you could stay there forever.
Appendix I
Additional Related Tables

Table 19
Newman-Keuls Sequential Range Test for Approach Score (Inches) Totals

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<th>Treatment</th>
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<th>Implosive Therapy 2</th>
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*p < .05.

**p < .01.
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Appendix I--Continued

Table 21
Summary of the Analysis of Variance of Approach Scores (Inches)

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*p < .000.
Table 22
Means and Standard Deviations of Fear Thermometer Scores
for Groups Over Sessions

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Table 23

Summary of the Analysis of Variance of Fear Thermometer Scores

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<td>127.96</td>
<td>38.06*</td>
</tr>
<tr>
<td>A X C</td>
<td>30.39</td>
<td>10</td>
<td>3.04</td>
<td>0.90</td>
</tr>
<tr>
<td>B X C</td>
<td>8.47</td>
<td>5</td>
<td>1.69</td>
<td>0.50</td>
</tr>
<tr>
<td>A X B X C</td>
<td>17.90</td>
<td>10</td>
<td>1.79</td>
<td>0.53</td>
</tr>
<tr>
<td>Error W</td>
<td>403.47</td>
<td>120</td>
<td>3.36</td>
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</tbody>
</table>

*p < .000.
Table 24

Means and Standard Deviations of Speed Scores (Inches Per Second) for Groups Over Sessions

<table>
<thead>
<tr>
<th>Group</th>
<th>Statistic</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
<th>Session 5</th>
<th>Session 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic Desensitization</td>
<td>M</td>
<td>3.1</td>
<td>4.2</td>
<td>4.8</td>
<td>5.6</td>
<td>6.6</td>
<td>8.6</td>
</tr>
<tr>
<td>Non-Goal-Setting</td>
<td>SD</td>
<td>2.0</td>
<td>1.7</td>
<td>2.0</td>
<td>2.4</td>
<td>4.8</td>
<td>8.1</td>
</tr>
<tr>
<td>Systematic Desensitization</td>
<td>M</td>
<td>1.9</td>
<td>2.3</td>
<td>2.8</td>
<td>2.6</td>
<td>3.4</td>
<td>4.6</td>
</tr>
<tr>
<td>Goal-Setting</td>
<td>SD</td>
<td>1.7</td>
<td>1.9</td>
<td>2.4</td>
<td>2.4</td>
<td>2.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Implosive Therapy</td>
<td>M</td>
<td>2.6</td>
<td>2.9</td>
<td>2.8</td>
<td>3.6</td>
<td>3.9</td>
<td>7.5</td>
</tr>
<tr>
<td>Non-Goal-Setting</td>
<td>SD</td>
<td>1.8</td>
<td>1.9</td>
<td>2.4</td>
<td>3.6</td>
<td>2.8</td>
<td>5.7</td>
</tr>
<tr>
<td>Implosive Therapy</td>
<td>M</td>
<td>1.9</td>
<td>2.0</td>
<td>2.8</td>
<td>2.1</td>
<td>3.1</td>
<td>6.1</td>
</tr>
<tr>
<td>Goal-Setting</td>
<td>SD</td>
<td>1.7</td>
<td>0.9</td>
<td>1.9</td>
<td>1.1</td>
<td>1.6</td>
<td>4.0</td>
</tr>
<tr>
<td>Placebo</td>
<td>M</td>
<td>3.0</td>
<td>2.8</td>
<td>3.8</td>
<td>3.4</td>
<td>4.2</td>
<td>4.7</td>
</tr>
<tr>
<td>Non-Goal-Setting</td>
<td>SD</td>
<td>2.4</td>
<td>2.3</td>
<td>4.0</td>
<td>4.0</td>
<td>5.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Placebo</td>
<td>M</td>
<td>2.2</td>
<td>3.2</td>
<td>2.8</td>
<td>3.5</td>
<td>3.6</td>
<td>5.5</td>
</tr>
<tr>
<td>Goal-Setting</td>
<td>SD</td>
<td>1.8</td>
<td>2.3</td>
<td>2.0</td>
<td>2.9</td>
<td>1.6</td>
<td>3.9</td>
</tr>
<tr>
<td>Main Effect</td>
<td>M</td>
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<td>2.9</td>
<td>3.3</td>
<td>3.5</td>
<td>4.1</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.8</td>
<td>1.9</td>
<td>2.4</td>
<td>2.8</td>
<td>3.3</td>
<td>5.0</td>
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Table 25

Summary of the Analysis of Variance of Speed Scores (Inches per Second)

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Subjects</td>
<td>1104.34</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A (Treatments)</td>
<td>19.85</td>
<td>2</td>
<td>9.93</td>
<td>0.24</td>
</tr>
<tr>
<td>B (Level of Aspiration)</td>
<td>65.62</td>
<td>1</td>
<td>65.62</td>
<td>1.61</td>
</tr>
<tr>
<td>A X B</td>
<td>44.43</td>
<td>2</td>
<td>22.22</td>
<td>0.55</td>
</tr>
<tr>
<td>Error B</td>
<td>974.43</td>
<td>24</td>
<td>40.60</td>
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</tr>
<tr>
<td>Within Subjects</td>
<td>811.51</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C (Sessions)</td>
<td>258.96</td>
<td>5</td>
<td>51.80</td>
<td>12.37*</td>
</tr>
<tr>
<td>A X C</td>
<td>26.23</td>
<td>10</td>
<td>2.62</td>
<td>0.62</td>
</tr>
<tr>
<td>B X C</td>
<td>4.55</td>
<td>5</td>
<td>0.91</td>
<td>0.22</td>
</tr>
<tr>
<td>A X B X C</td>
<td>19.22</td>
<td>10</td>
<td>1.92</td>
<td>0.46</td>
</tr>
<tr>
<td>Error X</td>
<td>502.50</td>
<td>120</td>
<td>4.19</td>
<td></td>
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</table>

*P < .000.
### Table 26

**Newman-Keuls Sequential Range Test for Absolute Fear Thermometer Goal Discrepancy Treatment Mean Scores**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Placebo</th>
<th>Implosive Therapy</th>
<th>Systematic Desensitization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>---</td>
<td>0.6</td>
<td>1.1*</td>
</tr>
<tr>
<td>2</td>
<td>---</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05.

### Table 27

**Newman-Keuls Sequential Range Test for Fear Thermometer Absolute Goal Discrepancy Session Mean Scores**

<table>
<thead>
<tr>
<th>Sessions</th>
<th>3</th>
<th>4</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>---</td>
<td>0.27</td>
<td>0.47</td>
<td>1.40**</td>
</tr>
<tr>
<td>4</td>
<td>---</td>
<td>0.20</td>
<td></td>
<td>1.13**</td>
</tr>
<tr>
<td>2</td>
<td>---</td>
<td></td>
<td>0.93**</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p < .01.**
References


Ashem, B. The treatment of a disaster phobia by systematic desensitization. *Behavior Research and Therapy*, 1963, 1, 81-84.


Blau, T. Personal communication, November 9, 1976.


Boulougouris, J. C., Marks, I. M., & Marset, P. Superiority of flooding (implosion) to desensitization for reducing pathological fear. *Behavior Research and Therapy, 1971, 9,* 7-16.


Gilkenson, H. Social fears as reported by students in college classes. Speech Monographs, 1942, 9, 141-160.


Greving, F. Basis for more effective use of community resources for mental health. Mental Hygiene, 1958, 42, 570-577.
Harrison, R., Singer, J., Dudoff, M., & Folsom, R. Level of aspiration as a function of learning-potential status in the educable retarded. Psychological Reports, 1972, 30, 47-57.


Hogan, R. A. The implosive technique. Behavior Research and Therapy, 1968, 6, 423-432.


Hogan, R. A., & Kirchner, J. H. Preliminary report of the extinction of learned fears via short-term implosive


Kornetsky, C., & Humphries, O. Relationship between effects of a number of centrally acting drugs and personality. *AMA Archives of Neurological Psychiatry, 1957, 77, 325.*


Dissertation Abstracts International, 1968, 28, 3090-B.
(University Microfilm No. 69-3258)


Murray, E., & Jacobson, L. The nature of learning in traditional and behavioral psychotherapy. In A. E. Bergin &


Orne, M. T. On the social psychology of the psychological experiment with particular reference to demand characteristics and their implications. American Psychologist, 1962, 17, 776-783.


Paul, G. L. Outcome of systematic desensitization II: Controlled investigations of individual treatment, technique


Stampfl, T. G. Personal communication. San Francisco, Calif., 1976. (b)


Willis, R. W. A study of the comparative effectiveness of systematic desensitization and implosive therapy (Doctoral


Wolpe, J. Reciprocal inhibition as the main basis of psychotherapeutic effects. Archives of Neurology and Psychiatry, 1954, 72, 205-226.


