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The effects of differential language conditioning on fear responses

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University of Hawaii, 1989
THE EFFECTS OF DIFFERENTIAL LANGUAGE CONDITIONING ON FEAR RESPONSES

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN PSYCHOLOGY

December, 1989

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ACKNOWLEDGEMENTS

This dissertation would not have been possible without Velma Kameoka and Walter Nunokawa’s helpful accomodation of my "last minute deadlines", Kelly Bemis’ helpful suggestions on the proposal, and the considerable support of colleagues at the State University of New York at Binghamton and at the University of Mississippi Medical Center in Jackson.

Undoubtedly there are several people who have played important deterministic roles during one’s graduate career; however, I am particularly indebted to four who have been integral to my professional and personal development. Elaine Heiby has been most influential as a superior mentor and an outstanding role model, and has been instrumental in shaping my professional aspirations and progress. Through their example and guidance Arthur Staats and Karl Minke have significantly enriched my Basic Behavioral Repertoires by expanding my scientific and personal growth respectively. Finally, Darryl Lum’s deep and unwavering friendship over the years has been especially important and special to me; I have been truly privileged to be able to reciprocate such sentiments fraternally.
Fear has long been associated with advances in behavioral theory and in the innovation behavioral change techniques. Inadequacies with traditional learning theory conceptualizations of fear and the introduction of eclectic cognitive explanations as alternatives have led to a schismatic state of affairs even in this well defined, thoroughly researched area. This paper outlines an approach to bridge the learning-cognitive gap which characterizes the field today through the extension of Paradigmatic Behavioral theory’s approach to language conditioning.

Sixty-five subjects who self-reported to have a fear of spiders participated in this study. Subjects were divided into four treatment groups or two control groups. In each of the treatment groups subjects viewed slides of a tarantula as they listened to and repeated statements describing response-referent (RR) and stimulus-referent (SR) characteristics which were phrased positively or negatively. Subjects in an affective control condition saw the same slides, but heard no statements and subjects in the behavioral control condition only underwent a Behavior
Approach Test, as did all subjects. Ratings of subjective discomfort and fear (affective measures) were obtained before, midway through, and immediately after the language conditioning trials, and after the BAT.

Results indicate that (1) subjective ratings of fear and discomfort were significantly increased over treatment through negative language conditioning (negative RR and negative SR statements) but remained close to baseline levels after positive language conditioning (positive RR and positive SR); (2) approach behavior was significantly increased with positive language conditioning and inhibited by negative language conditioning; (3) affective ratings were most affected by RR descriptions and unaffected by SR descriptions; and (4) both RR and SR statements affected approach behavior, but the magnitude of change was greater for subjects who heard SR statements.

These results are discussed in terms of the potential efficacy of language conditioning in treating fear, the need for standardization of language conditioning procedures, the implications for behavior therapy in general, and the implications for Paradigmatic Behavioral theory and therapy.
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I. INTRODUCTION

Fear has been an area of intense interest to behavioral psychologists over the past sixty years. From Watson and Rayner's (1920) and Mary Cover Jones' (1924) pioneering work, the study of fear has shaped the very fabric of contemporary behavioral psychology. Advances in behavioral theory have come from basic fear experiments (e.g. Delprato & McGlynn, 1984; Eysenck, 1987; Rachman, 1984) and it is in this area that we find some of the earliest attempts to extend laboratory procedures to applied areas (e.g. Wolpe, 1958; 1982). In this regard no other field of investigation has been so singularly responsible for the development of behavior therapy as has fear, and in no other area than fear is behavior therapy so widely acknowledged as the treatment paradigm of choice, even among the most ardent detractors from a behavioral perspective (see Barlow & Wolfe, 1981; Marks, 1972).

The increase in our scientific understanding of fear over the past sixty years due to work within behavioral perspectives is unparalleled in any other area of human emotion (Marks, 1987). One reason for this may be that fear is practically seductive as a forum for testing
behaviorism's theoretical premises. The parameters of fear (e.g. conditions which evoke fear) are well defined and associated behaviors are reliably identifiable; in its extreme form fear is highly prevalent (e.g. phobias: Marks, 1987; Reich, 1986), and results from animal studies (e.g. Mineka, 1987) and analogue populations such as college students are more readily generalized to clinical samples than is true of any other area of psychopathology.

However, the lengthy and productive association between behavioral psychology and fear has not been without controversy, the most contemporary schism in the field being that engendered among cognitive psychologists. As with the parent field of psychology in general, a growing disenchantment with the more traditional learning perspectives (e.g. classical conditioning; instrumental learning) has led to an almost complete abandonment of these basic laws of human behavior in favor of more loosely stated and constructed "cognitive-behavioral" theories. Such a state of affairs in the area of fear was brought about with the inability of traditional early learning theories to
accommodate or explain several clinically observed and empirically validated aspects of fear (Rachman, 1976; 1977).

One of the major premises of this paper is that this rejection of learning theory has been grossly premature. It is suggested that the more common complaints leveled at earlier learning theories are better accommodated within a third generation learning theory, Paradigmatic Behaviorism (Staats, 1963; 1975; 1983), which presents an integrated framework from which to investigate the role of language and cognitive variables more comprehensively. Following an analysis of the earlier theories of learning related to fear, the general framework and application of Paradigmatic Behaviorism theory will be outlined, followed by a critical examination of the literature on language conditioning. The results of an experiment will be presented which represent the first of a series which attempts to extend the basic premises of language conditioning in fear.
Fear and Theories of Fear

As noted earlier, fear is perhaps the most researched and best defined of all human emotions, especially with respect to its extreme form (e.g. phobias). In an attempt to organize our understanding of the parameters of fear, Rachman (Hodgsen & Rachman, 1974; Rachman, 1984; Rachman & Hodgsen, 1974) offered a tripartite view of fear responses. Fear is conceptualized as an emotional state characterized by patterns of behavioral, physiological, subjective-cognitive patterns of responses and Rachman proposes that there are three pathways to the development of fear: through conditioning, through observation, and through information exchange (Rachman, 1984). These pathways are seen as distinct yet related in an otherwise loose fashion. Furthermore, Rachman does not explain how such pathways to fear truly differ from one another, especially in light of evidence that some of these are not mutually exclusive (see Eysenck, 1987).

Although the tripartite attempt to organize fear responses is seen as a step toward a more comprehensive view of fear, this approach is not without controversy. Most of the arguments raised stem from disagreements among fear
theorists as to which of these response systems should be afforded primacy in the etiology and maintenance of fear, as if this were a valid question to begin with. Thus, for example, with respect to avoidance behavior, Lang (1979; 1983; 1984) demotes the primacy of this most defining of all fear responses in his information-processing theory to the status of a symptom of fear, whereas Marshall (1985; Gauthier & Marshall, 1977; Marshall & Gauthier, 1983; Marshall, Gauthier, Christie, Currie, & Gordon, 1977) and Marks (Marks, 1972; 1987; Marks, Viswanathan, Lipsedge, & Gardner, 1972) give a primary role to avoidance behavior in his approach to fear.

One of the reasons for the development of such disparate views of even the most defining of all fear responses is likely due to the lack of a comprehensive and integrated theory of fear. The earliest conditioning studies laid the groundwork for much of what we know about the parameters of fear; however, inadequacies in these early theories soon became apparent as the phenomenon was more closely studied (Eysenck, 1987; Rachman, 1984).
An early attempt at reconciling the behavioral viewpoint into a more comprehensive theory of emotion and fear was made by Mowrer (1939; 1960) whose initial work was most widely accepted among the implosion theorists (e.g. Boudewyns & Shipley, 1983; Levis, 1980; 1982; Stampfl & Levis, 1967; 1973). Based upon his two-factor theory, in which Mowrer attempted to relate classical and instrumental conditioning principles more closely, Mowrer developed and later refined his two-stage theory of fear (Mowrer, 1939; 1960). This theory emphasized the development of a negative emotional response (subjective fear) first, which subsequently leads to the development of avoidance behavior. Levis (1982) argues that focusing primarily upon avoidance behavior neglects the complexity of fear as a concerted series of emotional responses, and argues that effective treatments must be targeted at the CS complex of fear, which (upon closer inspection of Levis' theory and contrary to what Levis might argue) appears largely subjective in nature.

However, two-factor theory (and the two-stage model) suffered from the same fate as previous learning theories in dealing with fear: these theories could not explain or
accommodate some key and common features of fear. Rachman and Hodgson (1974; Hodgson & Rachman, 1974) have provided the most critical analysis of the learning theories of fear. From their analysis and those of others (e.g. Eysenck, 1987) it appears that there are four primary and inter-related problems which early learning theories could not address adequately: 1. The development of fear after a single exposure trial; 2. the greater ability of some classes of stimuli to evoke conditioned fear responses over others; 3. the failure in some people to develop fears during periods of heightened and sustained negative emotional arousal (e.g. during air raids); and, 4. the inability to explain increases in fear long after UCS-CS pairing was discontinued. This last criticism refers directly to Eysenck's (1987) notion of incubation, in which fear responses increase during what should be extinction trials.

Rather than attempt further reformulations from the learning viewpoint, or attempt to apply alternative learning perspectives to the study of fear (e.g. Staats' 1975 Social Behaviorism model) the zeitgeist of the parent field of psychology dictated the movement of fear research to the
cognitive domain. Cognitive theorists, such as Lang (1979; 1983; 1984), Meichenbaum (Meichenbaum & Cameron, 1974), and Bandura (1969) were quick to openly and vociferously reject or demote the applicability of the basic laws of learning in their theories. Lang's theory, in particular, has become the primary cognitive alternative to the learning approaches.

What is important, according to Lang, are the representational functions served by fear responses, such as avoidance behavior, and not the actual behavior itself; that is, that avoidance represents an action indicative of an underlying negative emotional state and is associated with an array of personal and stimulus referent cues (which Lang calls response and stimulus propositions). A complex network of memory pathways and cognitive schemata is constructed to accommodate this analysis, and Lang and his associates (e.g. Cuthbert, Vrana, & Bradley, in press) have conducted numerous studies purporting to support this thesis.

The obvious problems of most cognitive theories are accentuated in Lang's model, notably the convoluted use of vaguely defined constructs and the resulting untestable
nature of many of the basic premises of the theory. Although several empirical studies exist attesting to the predicted outcomes of the theory (e.g. to the development of fear), on closer inspection Lang's analysis is not the only one which could have explained these results and is very likely the most complex of all theories put forth concerning fear. Furthermore, Lang's theory, like other cognitive theories, does not obviate a learning perspective, although the traditional models could not, or would not, accommodate cognitive factors (e.g. Skinner, 1957).

This characterizes the current status of the field of fear research in general, and what is needed most now is an integrated approach to fear. One such approach is offered in Staats' Paradigmatic Behavioral theory.
An Integrated Behavioral Theory of Fear

Paradigmatic Behaviorism is a third generation learning theory (Staats, 1983; 1988) which has successfully integrated the basic premises of classical and instrumental learning theories into a comprehensive theory of human behavior (Staats, 1963; 1975). What makes Staats' theory unique are two features hitherto eschewed or undeveloped among the earlier learning perspectives: 1. the notion that stimuli serve three inter-related functions; and 2. the inclusion of what may be generically called "personality variables" within the behavioral analysis.

Staats conceptualized that stimuli may acquire attitudinal (A), reinforcing (R), and directive (D) functions which operate on internal (e.g. imagery) and external (e.g. motor) responses. The attitudinal function refers to the ability of stimuli to elicit affective responses in an individual (Eifert, 1987; in press), the reinforcing function concerns the ability of a stimulus to strengthen behaviors, and the directive function to the ability of stimuli to lead a person to engage in approach or avoidance responses. These functions define the affective valence of a stimulus, wherein stimuli which are judged to
be positive in affective valence (A) are those which will likely be stronger reinforcers of behavior (R) and are more likely to be approached (D) than those which are evaluated negatively. It is important to note that these functions are transferred to neutral stimuli during the process of classical conditioning and that larger class behaviors (e.g. meaning; attitudes) may be similarly classically conditioned to acquire such functions (Staats & Staats, 1957; 1958).

The second notable difference between Staats' integrated theory and earlier learning theories is the attention paid to individual differences. This is accommodated in the theory through the inclusion of three Basic Behavioral Repertoires which collectively constitute what can generically be called "personality". These repertoires refer to emotion-motivational, sensory-motor, and language-cognitive responses (Staats, 1975). It is important to note that these responses can acquire the three stimulus functions noted above, thereby allowing greater flexibility in the theory by allowing responses themselves to be investigated as both dependent and independent variables (Staats, 1968; 1983; 1988). This was a feature
which earlier learning theories could not accommodate and is another example of the depth of integration afforded in this theory.

Of particular interest in Paradigmatic Behaviorism is the study of language, and it is upon such studies that most of the tenets of the theory were initially laid out (e.g. Staats, 1963; 1968; Staats, Gross, Guay, & Carlson, 1973; Staats & Staats, 1957; 1958). Language behavior, such as imagery and verbal responses, are hypothesized to follow the same rules and laws of learning as any other response. As such, these behaviors may acquire ARD functions which subsequently will affect and determine a person's response in a given situation. In addition, language behaviors can elicit other responses within the language-cognitive repertoire (e.g. a description of a scene eliciting imagery of the scene), or in the other repertoires (e.g. pleasant imagery eliciting a smile or physiological arousal). This concept of reciprocal determinism (Staats, 1975) between repertoires and between functions of stimuli is perhaps the most central of all in the basic theory.

The general model proposed by Staats has been successfully extended to clinical phenomena (e.g. to
depression: Staats & Heiby, 1985; Campos, 1987; to anxiety disorders: Campos, 1985; 1986; Eifert, in press; 1987; Hekmat, 1987; to chronic pain: Campos & Cahill, 1987; Hekmat, 1987; in press). With respect to anxiety disorders, the majority of studies have been concerned with language-cognitive aspects and have been conducted within language conditioning paradigms (e.g. Hekmat, 1972; Eifert, 1984), in line with Staats' contention (1972; 1988) that therapy is primarily a verbal/language enterprise.

The basic theory, as applied to fear, would hold that fear is best conceptualized as a constellation of responses which have been conditioned to that particular emotional state through prior learning and conditioning trials. Like Rachman's analysis (1984) a diversity of responses and response systems is implicated; however, unlike Rachman Paradigmatic Behavioral theory would predict that these responses are intimately related, are determined by laws of learning, and can acquire ARD functions which can serve to maintain and/or elicit subsequent fear responses. In addition, Staats' theory allows for individual diversity in responses without sacrificing the basic laws of learning
which determine human behavior. Thus, one person may acquire a fear of snakes as the direct result of previous learning trials in which snakes were described as "ugly", "fearsome", or "dangerous", whereas in another culture where snakes are venerated (e.g. India) such a stimulus would be associated with reverent and positive terms. Fear of snakes in such a culture would more likely arise from direct negative personal encounters with snakes, than through informational bases.

Once a fear response to the object (e.g. a snake) is acquired not only the object itself would come to elicit fear responses but stimuli associated with the object should do so as well; the effect of such stimulus generalization would be to maintain fear over time. If responses themselves can acquire ARD stimulus functions, as described in the theory (Staats, 1975), then such responses can also serve to maintain fear. Thus, following an initial (even a one-trial) learning session and individual's responses (e.g. imagery of a snake) may serve to maintain a negative emotional state (A) which reinforces (R) and directs (D) avoidance behavior in the absence of the actual stimulus or of continued pairing of the original UCS-CS.
One of the most potent response systems in this regard is the language-cognitive repertoire, wherein imagery and verbal behavior about a feared stimulus can serve to maintain, induce, or reduce fear responses. Studies investigating this function of language in fear have focused upon the language conditioning paradigm set forth by Staats and Staats (1957; 1958), and this topic is the focus for the remainder of this paper and the subsequent experiment described herein.
Language Conditioning and Fear

The first major series of studies to systematically examine the role of language conditioning in fear was conducted by Hamid Hekmat and his colleagues (Hekmat, in press; 1972; 1977; Hekmat, Deal, & Lubitz, 1985; Hekmat & Lee, 1970; Hekmat, Lubitz, & Deal, 1984; Hekmat & Vanian, 1971). In the earliest investigations (Hekmat, 1972; Hekmat & Vanian, 1971) single words of positive affective valence (e.g. "calm") were paired with feared stimuli (e.g. the word "snake") and fearful subjects were simply asked to listen to these pairings. A control group received pairings of the adjectives with a neutral word ("peach") and the procedures were methodologically similar to those used in the original studies by Staats and Staats on the effects of language conditioning on meaning (1957) and attitudes (1958) in general. Through this simple manipulation Hekmat reported that not only did subjects' affective evaluations of previously feared stimuli change in a positive direction, but positive therapeutic effects were found insofar as treated subjects could more easily approach a live stimulus at the end of the studies.
Hekmat's group continued to refine their technique of semantic desensitization by pairing images, not words, in a similar fashion (Hekmat, 1987; Hekmat, Deal, & Lubitz, 1985; Hekmat, Lubitz, & Deal, 1984) and obtained comparable results. Anxiety and fear in all cases were significantly reduced through language conditioning procedures using imagery and such effects were, in general, greater than any changes found in control groups and as great as those found when words were used instead of images. Although these later studies were concerned with the generation and change of imagery and not verbal behavior per se, the positive results may be interpreted to provide broader support for Staats (1972) notion that much of the change that takes place in therapy may occur on a verbal (i.e. language-cognitive) basis.

Weiss and Evans (1978) took language conditioning procedures one step further by utilizing four different types of words as unconditioned stimuli: Positive words (e.g. mother; justice), calming words (e.g. tame; sedative), words reflecting both of these dimensions (e.g. refreshed; secure), and neutral words which reflected neither of these dimensions (e.g. pigment; clerk). These words were paired
with the label of a particular feared stimulus as a conditioned stimulus (e.g. "snake"; "lizard"). The results of their study indicate that both positive and calming words similar effects in decreasing immediate ratings of fear, but that calming words in general were the most potent in producing the greatest axiolytic effects; the combination of positive and calming words did not enhance performance beyond either type presented alone. Examining the post-treatment mean scores on the semantic-differential anxiety scale reveals that the positive-word group's ratings (21.9) were not only similar to those of the combined-word group (21.4), but also to those of the neutral-word group (22.0); all three groups had mean anxiety ratings which were significantly higher than scores for the calming-word group (18.6).

This led Weiss and Evans (1978) to conclude that in using language conditioning procedures to decondition anxiety "the most effective counterconditioning is accomplished by ... the antonyms of anxiety" (p. 119). Calming words are more specifically directed at, and conceptually related (and hence, relevant) to anxiety, which
would explain their greater potency in decreasing subjectively rated anxiety at post-treatment, as compared with positive or neutral words. The failure of the combined group to perform as well as the calming-word group may have been due to the fact that these positive/calming words were also conceptually irrelevant to, and not specifically directed at the emotional state of interest. This is in line with Levey and Martin's (1987; Martin & Levey, 1978) cautions about semantic relevance and conceptual relevancy in evaluative conditioning and with Watson and Marks (1971) finding that relevant fears were more easily extinguished in flooding.

This notion of conceptual relevancy is similar to the issue of matching presenting deficits to specific treatments in clinical work (Staats & Heiby, 1985), where the closer the match, the greater the efficacy of therapy in relieving concurrent distress and the greater the chances of preventing future relapse. Some recent studies of depression have shown initial evidence in support of this notion (e.g. Campos, Heiby, Keller, & Remick, 1988; Heiby & Campos, 1986; Heiby, Campos, Remick, & Keller, 1987; Heiby, Ozaki, & Campos, 1984) and studies of the
synchronous/desynchronous changes of fear response systems (e.g. Campos, 1987; Campos, Solyom, & Koelink, 1984; Hodgsen & Rachman, 1974; Rachman & Hodgsen, 1974) suggest a similar need for specificity in the area of anxiety disorders in general (Campos, 1986) and phobias in particular (Campos, 1985; 1986; 1987).

The results of Weiss and Evans' (1978) study highlight a further implication of specificity in language conditioning. It was noted that the calming words used in their study were more specific to an emotional state opposite to anxiety than were the positive or the combined words; however, when paired with the CS word (e.g. "snake"), the calming words were also more descriptive of the behaviors associated with the feared stimulus (e.g. "tame-snake") than were positive words (e.g. "justice-snake"), positive/calm combined words (e.g. "refreshed-snake"), or neutral words (e.g. "pigment-snake"). A subsequent study by the same authors (Evans & Weiss, 1978), but not focused on fear, reaffirmed the notion that stronger results can be obtained in language conditioning with greater thematic relevance between the UCS and the CS (Eifert, 1984).
The notion of thematic relevance between fear stimuli and responses has been an area of interest among cognitive-oriented theorists as well, especially Lang and his associates (e.g. Cuthbert, Vrana, & Bradley, in press; Lang, 1979; 1983; 1984; Lang, Melamed, & Hart, 1970). Lang (1979; 1983; 1984) posits in his bioinformational theory of emotion that there are two classes of cognitive stimuli which must be differentiated yet emphasized in treating fear and that the relevance of each of these classes of stimuli will bear upon the person's subsequent behavior. These two classes refer, respectively, to the way subjects describe their own personal reactions ("response propositions") and the feared stimulus itself ("stimulus propositions").

Whereas empirical studies exist to substantiate the importance of such a division in response sets the area of fear (e.g. Cuthbert, Vrana, & Bradley, in press), the underlying theoretical assumptions, based on a highly complex and convoluted information processing theory, obfuscate their significance. For example, Lang argues that these propositions are cognitive schemata which may or may not develop independently of one another in the process of one's becoming fearful, that these constructs are
conceptually orthogonal yet related, and are formed by complex information processing stages which in turn are shaped by the nature of the propositions themselves (Lang, 1984). Aside from the inexact statement of premises and framing of conclusions from such premises, the theory is incomplete in its outline of the processes by which such propositions are formed, the conditions under which they will change, and the exact nature of these constructs (e.g. the degree to which they are imagery related representations of actual events or of self-constructed or predicted events).

As argued previously, such a theory does not obviate an explanatory conditioning framework and studies of these different "propositional states" from such a perspective would appear to be fruitful. The next major series of language conditioning studies on fear examined some of these thematic and conceptual relevance issues from a unified behavioral perspective. These studies were conducted by Eifert (1984; Eifert & Schermelleh, 1985) in Australia and they differ from the previously cited work in three general but key ways; some of the more specific differences between
the series of studies will be discussed in greater detail when each of Eifert's studies are presented below.

First and most important was the greater attention paid to the broader theoretical perspective provided in Paradigmatic (Social) Behaviorism theory (Staats, 1975). Although Hekmat (e.g. 1972; Hekmat & Vanian, 1971) and Weiss and Evans (1978) acknowledged that the early work of Staats and his colleagues on language conditioning (e.g. Staats & Staats, 1957; 1958) was instrumental in forming the basis for language conditioning, it was Eifert who first appreciated the complexity of the more formal theory presented in Paradigmatic Behaviorism and who used the procedure of language conditioning to test aspects of the broader theory. This will be outlined in greater detail below when the two studies are more closely examined.

A second way in which Eifert's studies differed from earlier work concerned his reliance on first inducing fear in his subjects prior to fear deconditioning (or extinction) trials. Subjects in his studies underwent language conditioning trials to induce fear prior to extinction procedures, whereas in previous studies no such trials were used. By doing so Eifert not only provided greater control
over the degree of fear in his subjects prior to the experiments than in previous studies, but more importantly this opened up the process of negative-language conditioning and the opportunity to test for the induction of fear through language-based methods.

Eifert also departed from previous studies in a significant way with respect to the UCS themselves. The most obvious difference in this regard is Eifert's use of sentences, and not just single words. Instead of simply pairing UCS with CS words (e.g. "pretty" with "snake"), Eifert placed these pairings within the context of a sentence which was conceptually closer to what subject's verbal reports of their feelings about the feared stimulus might be (e.g. "The snake is pretty").

The use of sentences, as opposed to single words enhances language conditioning by giving "maximum semantic relevance" (Eifert, 1984, p. 14) to the process. Furthermore, embedding a UCS within a sentence allows the experimenter to manipulate the affective tone and semantic focus of the conditioning trials more precisely. Therefore, using this approach Eifert was able to compare differences
between response and stimulus referent verbalizations (or propositions, to Lang) and to manipulate the hedonic valence of each. Other smaller differences between the earlier studies and Eifert's will be noted as each of the latter's experiments are examined in greater detail.

In his first study, Eifert (1984) paired slides of snakes (the feared stimuli) with UCS words in sentences and used a procedure similar to Hekmat's (Hekmat & Vanian, 1971). The sentences were constructed with two UCS descriptors referring to positive or negative descriptions of the feared stimulus (e.g. "The pretty snake lies peacefully in the sun"; "the ugly snake is disgusting": Eifert, 1984, p. 15). Eifert departed from previous work by having his subjects play a far more active and structured role in this study than in previous experiments. Rather than having subjects passively listen to the paired words or evoke highly individualized imagery scenes, Eifert (1984) engaged his subjects in active repetition of the word pairs, first aloud then sub-vocally, throughout the conditioning trials. This appeared to have the added effect of making the process even that much more relevant and personable to
the subjects, thereby perhaps enhancing the chances of response generalization later.

However, analysis of the results of Eifert's study is made difficult by the complexity of the design. In addition to dividing his subjects into positive versus negative language conditioning groups, Eifert partitioned them into subsequent groups of those who were high or low in initial fear, and also those who were or were not given a pre-experiment in-vivo exposure trial. The result of this division into six experimental groups was to introduce several possible confounding, uncontrolled variables into the analysis.

Perhaps the most serious of these concerns the possible effects of the preexposure trials. Half the subjects in the study were exposed to a live snake (the feared stimulus) immediately after they received the aversive conditioning trials (in which slides of snakes were paired with electric shock to induce fear) and prior to the extinction trials (slides with positive or negative statements but no shock). Although exposure did not appear to affect negative-language conditioning, subjects in the positive-conditioning group evidenced greater treatment results if they had not had
prior exposure to the snake. However, by Eifert's own admission, subjects who had seen the snake prior to conditioning already rated their fear snakes "very favourably before language conditioning was implemented which was probably due to Ss' having been able to observe the snake" (p. 18). Thus, the exposure trial could have confounded any significant results among half the subjects by introducing an uncontrolled treatment procedure for fear into the study.

It is well established in the literature on in-vivo exposure that extremely fearful subjects require closely spaced, lengthy (e.g. greater than one hour) continuous exposure sessions to affect optimal gains from flooding (e.g. Stern & Marks, 1973; Watson, Gaidn, & Marks, 1971; 1972). However, less fearful subjects can show significant anxiolytic effects from even a brief (e.g. less than 10 minute) exposure session, and in Eifert's study this might have actually occurred. The procedure of choice, if preexposure is to be used, would have been to perform this task prior to any experimental trials and to eliminate from the study any subjects who report significant anxiolytic
effects from the brief exposure session. As the advantages offered by this procedure in the study do not seem to have been worth the possible methodological problems it might have caused, the better procedure actually would have been not to use any preexposure trials at all.

With these concerns in mind, the clearest result to emerge was the definitive illustration of the potency of language conditioning not only in facilitating fearlessness through positive adjective trials, but in hampering extinction through negative adjective trials. Previous studies had focused exclusively on the positive anxiolytic effects of positive-language conditioning (i.e. the pairing of positive adjectives, words, descriptions, or images with fearful stimuli) and Eifert's study was the first to demonstrate that a similar language conditioning paradigm using negative descriptors would lead to increased fear and decreased approach behavior. Taken together with previous studies, Eifert's work provides further empirical evidence that language variables may play central etiologic and maintenance roles in fear.

The second study conducted by Eifert (Eifert & Schermelleh, 1985) was a direct extension of the first and
was designed to test some more specific theoretical aspects of language conditioning. In this study subjects were divided into two groups, wherein they either heard positively phrased statements emphasizing response- versus stimulus-referent (or "proposition", in Lang's terms) descriptions of a fear-relevant (snake) versus fear-irrelevant (rabbit) stimulus. In the case of the stimulus-referent (SR) descriptions general affective labels were applied to the snake (e.g. "beautiful"), whereas specific motor actions were described for response-referent (RR) descriptions (e.g. "can approach"). The purpose of such specificity in describing SR and RR characteristics in this manner was to target emotional and behavioral repertoires respectively.

Thus, it was hypothesized that targeting RR descriptions specifically at approach behavior would facilitate the development of adaptive motor responses to snakes, whereas targeting SR descriptions specifically at emotional characteristics of snakes would facilitate the reduction of physiological and evaluative responses toward snakes.
In this experiment as in the previous one, subjects were first habituated to the experimental setting and then exposed to conditioning trials in which an aversive stimulus was paired with slides of snakes or rabbits. Following this subjects underwent extinction trials in which the same slides were presented with positively phrased RR or SR sentences describing the snakes or rabbits.

The results indicated that: (1) aversive conditioning to snakes led to greater negative evaluations and higher physiological arousal than for rabbits; (2) SR verbalizations were more effective in reducing negative emotional ratings and physiological arousal; and (3) there were no differences in approach behavior between RR and SR groups. These will be discussed in some detail individually.

Eifert and Schermelleh found that snakes were rated more negatively and evoked higher physiological arousal than rabbits in the aversive conditioning trials. Although some researchers would interpret such findings as evidence for the preparedness theory of phobias (e.g. McNally, 1986; Ohman, Dimberg, & Ost, 1985), Eifert correctly noted that this finding is also in line with learning interpretation.
predicted by Paradigmatic Behavioral theory. In such an
analysis the increased negative emotional reaction to snakes
as opposed to rabbits is interpreted to be reflective of
subjects' prior cultural learning history in which a
considerable repertoire of negative associations to snakes
and positive associations to rabbits was attained.
Especially in western cultures snakes have traditionally and
consistently been associated with negative connotations
(e.g. in the bible where the devil is equated with a
serpent), are described with negative words such as "slimy",
"cunning", "sneaky" (even though these are inaccurate and
anthropomorphic), and are portrayed as stimuli which should
evoke negative reactions in people (e.g. in the movie
"Raider's of the Lost Ark"). Rabbits, on the other hand,
are associated with positive images and labels (e.g. in
children's books such as "Peter Rabbit" or Thumper in
"Bambi"), are described by positive labels which are more
accurate ("fluffy"; "soft"), and are presented in such a way
to evoke positive or sympathetic emotional responses.

These early associations, especially in equating
positive or negative labels to the stimuli, result in
numerous emotional conditioning trials without the need of the actual stimulus. As noted earlier, among the cardinal criticisms of the earlier learning theory approaches to fear were their failure to adequately explain the acquisition of fear in the absence of discrete stimuli, the phenomenon of fear-incubation (Eysenck, 1987), and the differential potency of stimuli to produce conditioned fear responses. Eifert's study has provided initial evidence that a more contemporary behavioral theory which integrates cognitive behaviors can accommodate each of these issues without invoking a complex information processing approach (e.g. Lang, 1984) or appealing to genetics (e.g. Ohman, Dimberg, & Ost, 1985).

It was beyond the nature of Eifert's study to further examine the learning history of subjects for their emotional reactions to snakes and rabbits; such specific studies from a cross-cultural perspective (e.g. in locations where snakes are revered or where they are uncommon) are being planned by the present author.

The second major finding from Eifert's second study was that SR verbalizations facilitated extinction of attitudinal and physiological responses greater than RR verbalizations.
This was expected, as SR descriptions were specifically targeted at emotional, attitudinal reactions whereas RR descriptions were more focused on motor behavior. This substantiates the earlier finding by Weiss and Evans (1978) that language conditioning is facilitated when semantic relevance is heightened; in this case, the statements more closely associated with emotional arousal and attitudes toward the stimulus changed responses in these repertoires.

However, the third major finding from Eifert's study was that approach behavior was not significantly different between RR and SR groups, although the former tended to have slightly better behavior approach test (BAT) performance. This suggests that RR verbalizations might have facilitated approach behavior, although more specific analyses of differences between these two forms of language conditioning in this study are made difficult because no actual outcome data on the BAT performance was reported. On the basis of this it would appear to have been premature for Eifert to conclude that "language conditioning may only affect responses to words, images, and symbols of the phobic animals -- second signaling system abstractions -- rather
than responses to the real animals themselves" (1987, p. 174).

In summary, although there were methodological shortcomings to some of the earlier language conditioning studies, two trends are noteworthy. First, the studies are becoming increasingly focused on testing aspects of the more general framework of Paradigmatic Behaviorism theory, and so far have been supportive of the basic tenets. Second, the studies are becoming increasingly complex and more sophisticated with respect to the presentation of UCS words and the use of standardized procedures and measures. The next logical extension of language conditioning studies would be to examine the specific differences between RR and SR behaviors, the relationship of these to the different behavioral repertoires, and the effects of diverse stimulus presentations and formats. The present author is engaged in a series of such studies and the experiment described below is the first in this series.
Purpose of the Experiment

This study was designed to extend previous work in the language conditioning of fear. The work by Hekmat’s (e.g. Hekmat & Vanian, 1972) and Eifert’s (e.g. Eifert, 1984) groups formed the basis for studying the effects on fear responses from the specific pairing of verbal stimuli with feared stimuli. Such trials were utilized both to induce fear (in using negative verbal stimuli) or to extinguish fear (in using positive verbal stimuli). As such, the present study retains two important features found in earlier work: (1) Language conditioning trials were presented in a standardized format utilizing audiotaped statements during a slide presentation; and (2) the underlying theoretical rationale for this and previous studies was based upon the same unified third-generation behavioral theory (Paradigmatic Behaviorism).

The present study differs from previous work in its standardization of certain procedures and use of measures, and in its manipulation of the content of the verbal statements in order to examine some specific effects of language conditioning. These changes include: (1) Using both response-referent (RR) and stimulus-referent (SR)
verbal stimuli within the same verbal statement; (2) presenting the verbal stimuli in combinations of positive and negative hedonic properties; (3) targeting the statements specifically at the Emotion/Motivation Basic Behavioral Repertoire; (4) standardizing the generation of adjectives for the verbal statements from responses based on the subjects' peer group, rather than from previous groups or studies; (5) using a concurrent measure of affective disturbance before, during, and after conditioning phases; (6) using a standardized format for the BAT; and (7) utilizing two separate non-treatment control groups.

These changes would permit a more specific examination of the effects of language conditioning. First, the general effects of language conditioning on fear responses can be studied by examining its differential effects on affective and behavioral indices among four treatment and two control groups. In the present study subjects who underwent language conditioning trials followed procedures similar to those used in Eifert's work: The subjects were exposed to analogue fear stimuli (slides) as they heard and repeated verbal statements.
However, in this study each of these statements included references to both RR and SR descriptions, forming a compound statement and the hedonic property of these references was varied, resulting in four groups: In one group RR and SR references were both positive (R+S+), in a second group both references were negative (R-S-), and in the two remaining groups the references were of mixed types (R+S-; R-S+). This presents a more precise test of the hypothesis that RR or SR verbalizations differentially affect various behavioral components of fear as the use of compound statements add to the conceptual relevancy of language conditioning.

Thus, instead of emphasizing only words or simple embedding descriptive words in simple sentences, the compound sentence would include relevant information concerning the stimulus and the person involved. General examples would be the negative statement "Cold winters distress me" and the positive statement "I love beautiful sunsets", both of which refer to aspects of the stimulus ("winters" and "sunsets") and to aspects of the subject. Examples specific to fear would include statements referring to spiders (the feared stimulus in this study) which
emphasize RR and SR attitudinal responses in positive or negative directions. Specific examples are given in the "Method" section, below.

In addition to the four treatment groups two other groups of subjects were included which constituted the control conditions: those who viewed slides but were not exposed to language conditioning statements (Affective Control) and those who only underwent the BAT (Behavioral Control). This is a departure from all but the Weiss and Evans (1978) studies on language conditioning, wherein no adequate control groups were employed.
Hypotheses

1. Subjects in the R+S+ condition will have significantly higher BAT scores and lower SUDS ratings at the end of the experiment than subjects in any other group. This hypothesis relates to an expected general extinction effect on fear responses by pairing positively oriented language stimuli with feared stimuli. According to Paradigmatic Behavioral theory, subjects who are exposed to positive descriptions of a spider and of their own behavior should evidence extinction of their fear responses as compared to those subjects who hear statements with negative descriptions or those in control groups. Previous studies by Eifert and Hekmat's groups have substantiated this in finding anxiolytic effects from language conditioning trials using positively oriented words or phrases which were paired with slides of snakes. In this study the pairing of positive statements with feared stimuli is predicted to decrease negative emotional responses of a subject (as rated on the SUDS scales, the BAT, and the FSS Spider Item question) toward feared stimuli.
2. Subjects in the R-S- condition will have significantly lower BAT scores and higher SUDS ratings at the end of the experiment than subjects in any other group.

This hypothesis relates to an expected general conditioning effect of increasing fear responses by pairing negatively oriented language stimuli with feared stimuli. According to Paradigmatic Behavioral theory, subjects who are exposed to negative descriptions of a spider and of their own behavior should evidence increases in their fear responses as compared to those subjects who hear statements with positive descriptions or those in control groups. This has also been substantiated in Eifert and Hekmat's research in which fear is conditioned in minimally fearful subjects through pairings of negative words with slides of snakes. In this study the pairing of negative statements with feared stimuli is predicted to increase negative emotional responses of a subject (as rated on the SUDS scales, the BAT, and the FSS Spider Item question) toward feared stimuli.

3. Ratings of affective disturbance (SUDS Discomfort and Fear scores) will be more affected by RR descriptions than by SR descriptions. Specifically, the difference between
RR+ and RR- descriptions at the end of treatment will be significantly greater than the difference between SR+ and SR- descriptions.

This hypothesis concerns the differential effects of RR versus SR language conditioning focused on responses related to the Emotion/Motivational Basic Behavioral Repertoire (BBR). The positive and negative RR and SR descriptions used in language conditioning statements were focused specifically on descriptions of affect (emotion) and are expected to change affective ratings differentially (as noted in the previous hypotheses). However, RR descriptions used in this study are specifically targeted at stimuli closely associated with the emotional dimensions measured by the SUDS, whereas SR descriptions are only generally related to the dimensions measured by the SUDS. Therefore, it is predicted that although a difference between positive and negative descriptions will be found for both RR and SR groups, the difference will be greater in the RR group than in the SR group. The predicted direction of change for both groups would be that SUDS scores at the end of the experiment will be significantly lower among subjects who
heard positive descriptions than among those who heard negative descriptions. Subjects in the Affective Control group are expected to score midway between the positive and negative groups by the end of treatment.

4. Approach behavior (as measured by the BAT) will be more affected by SR descriptions than by RR descriptions. Specifically, the difference between SR+ and SR¬ descriptions at the end of treatment will be significantly greater than the difference between RR+ and RR¬ descriptions.

This hypothesis concerns the differential effects of RR versus SR language conditioning focused on responses related to the Sensory/Motor Basic Behavioral Repertoire (BBR). According to Paradigmatic Behavioral theory, approach behavior would likely be influenced more by SR statements which emphasized positive aspects of the feared stimulus than by RR statements which emphasized positive personal feelings. Some general cognitive theories, on the other hand, would posit that such RR statements would be equal, if not superior, to SR descriptions in facilitating approach behavior (e.g. in increasing self-efficacy: Bandura, 1968). Although positive and negative groups are expected to show
differential BAT responses for both the RR and the SR conditions, it is specifically hypothesized that the difference between positive and negative SR groups on the BAT will be greater than that found between the RR groups.
II. METHOD

Subjects

Subjects were recruited from undergraduate students registered in the introductory psychology course at the State University of New York at Binghamton in the Spring 1989 semester. A total of 546 students were asked to complete the Fear Survey Schedule II (FSS: Geer, 1965) during each of two ninety-minute group administrations. Because fearful subjects were desired, a criterion on the FSS Spider Item of 4 (some fear) or greater (maximum 7: terror) was used to select subjects for the study. This criterion is similar to criteria used to select "fearful subjects" in Eifert’s studies (Eifert, 1984a; Eifert & Schermelleh, 1985) and in Hekmat’s work (Hekmat, 1971; Hekmat & Vanian, 1972); however, it should be noted that in those studies no such clearly defined ratings were actually used.

Using this criterion, 114 students (21% of 546) were eligible for the study: Fourteen rated their fear of spiders as "7" (terror), 21 rated their fear "6" (very much fear), 39 rated their fear "5" (much fear), and 40 rated their fear "4" (some fear). These students were then telephoned
sequentially, starting with those scoring highest on the FSS
Spider item. Thirteen students could not be reached or had
given incorrect telephone numbers, 21 stated they had
already committed themselves to other experiments and
refused participation, and 12 stated they did not wish to
participate in an experiment about fear. The remaining 68
subjects were available for the experiment and volunteered
to participate. Three subjects did not show up for their
scheduled appointment times and could not be reached to
reschedule an appointment; therefore, a total of 65 subjects
(57% of 114) completed the study.

The mean age of the sample was 19.45 years (sd = 1.24),
and the majority was female (N = 58; 89%). Sixty-one
subjects were Caucasian (94%) and four were Asian (6%).
None of the subjects had ever taken part in an experiment on
fear and none had ever sought treatment for their fear of
spiders. The mean pre-experiment FSS Spider item score for
the sample was 5.37 (sd = 0.96); ten subjects scored "7",
16 scored "6", 27 scored "5", and 12 scored "4". These
frequencies represent 71, 76, 69, and 30 percent of the
students with those respective scores in the original subject pool.

Subjects were randomly assigned to one of the four treatment groups (R+S+, R+S-, R-S+, R-S-), or to one of the two control groups (Affective or Behavioral). The treatment groups represented four distinct forms of language conditioning in which response-referent (R) and stimulus-referent (S) descriptions which were either positive (+) or negative (−) in affective valence were used in the statements.

Four experimenters were used in the study; each treated an equal number of subjects in all conditions. This team consisted of the primary investigator (PEC), a masters-level graduate student in clinical psychology (JSA), and two psychology undergraduate majors who were research assistants in the lab (RN; DC). All investigators were male.
Materials

The Fear Survey Schedule (FSS) was originally developed by Lang and Lazovik (1963) based upon their work in fear desensitization (Agras & Jacob, 1980). This original version consisted of 50 rationally derived items representing a wide range of inanimate (e.g. needles), animate, (e.g. spiders), social (e.g. attending parties), and abstract (e.g. death) phenomena. Subjects rate the degree of fear or discomfort they feel toward each item using a 1 (None at all) to 7 (Terror) scale.

The original FSS was replaced soon after its development by two alternative versions: the FSS III (Wolpe & Lang, 1964) and the FSS II (Geer, 1965). The FSS III was developed primarily as a clinical assessment device and is not used extensively in fear research studies. Its 76 items (rated along a 5 point scale) were selected by Wolpe and Lang (1964) from other existing fear schedules and from their clinical experience in conducting behavior therapy for fear (Ammerman, 1988; Bellack & Lombardo, 1984). The FSS II is an empirically derived (Geer, 1965) 51-item version of the original FSS which retains a 7-point rating scale and most fear research has employed this schedule. Originally
developed on a sample of college students (Geer, 1965), the FSS II has been extensively evaluated in factor analytic studies (see Klorman, Weerts, Hastings, Melamed, & Lang, 1974). The psychometric properties of the FSS II are typically high for internal consistency (KR-20 r = .98: Ammerman, 1988) and test-retest (r = .97: Tasto, 1977) reliability and moderately high convergent validity with other anxiety measures (from r = .46 to r = .57 with the Taylor Manifest Anxiety Scale: Bates, 1971; Hersen, 1971). Factor analytic studies report five to six primary factors which account for almost half the variance of the FSS (Klorman, et al., 1974; Geer, 1965), including specific fears of live organisms, social interaction, negative social evaluation, personal illness or death, water, and illness or death of others. Mean total scores for female and male college students of 108.47 and 81.81 respectively have been reported, with means for the spider item (#35) of 3.46 and 2.55 respectively. Because of its empirical basis and more extensive use in research studies, the FSS II was selected as the primary recruitment measure for this study. A copy of the FSS is included in Appendix B.
Two Subjective Unit of Distress Scales (SUDS) were used to measure self-rated discomfort and fear, the affective dimensions of interest in this study. The first SUDS on the form requested subjects to rate their current level of general discomfort and the second SUDS requested subjects to rate their current level of fear. A 1 to 10 rating scale was used for both SUDS, with 1 being "None at all" and 10 being "Extreme". Subjects are asked to circle the number corresponding to how they currently felt on each dimension.

The SUDS is another commonly used measure in fear studies, primarily because of the simplicity of its administration and scoring. The exact origin of the SUDS is unknown, but it was most likely derived from Wolpe's work in systematic desensitization (Wolpe, 1958; 1982) and from a similar measure, the Fear Thermometer (FT: Lang & Lazovik, 1963), which was based on Walk's research on fear during parachute jumping (1956).

The basic concept of the SUDS and the FT is the same: subjects are given an interval scale along some dimension of affective distress (e.g. fear; discomfort) and are asked to mark a place along this scale which best represents how they feel on that dimension at that moment. Typically, the scale
ranges from 1 or 0 at the low end to 10 or 100 at the high end of the dimension. There are no standardized criteria for selecting one or the other score at either extreme of the scale; in this study a 1 to 10 scale will be used as the finer measurement afforded by a 100 or 101 point scale was judged to be unnecessary for the purposes of this experiment.

Because of the diverse methods of scoring the SUDS and the different conditions assessed by such a scale, psychometric studies of this measure are practically non-existent. Thyer, Papsdorf, Davis, and Vallecorsa (1984) found significant correlations up to \( r = .60 \) range between the SUDS (which they termed the "Subjective Anxiety Scale") and measures of peripheral vasoconstriction and heart rate in fearful subjects. Psychometric research with the FT is only somewhat more extensive. Test-retest reliabilities have ranged from \( r = .68 \) to \( r = .98 \) for immediate retest (Borkovec & Craighead, 1971), and up to \( r = .75 \) over several weeks without treatment (Kleinknecht & Bernstein, 1988). Validity coefficients, primarily convergent construct validity, range from \( r = .29 \) with heart rate and \( r = .41 \)
with the Behavior Approach Test (Craighead, 1973), to \( r = .83 \) with fear ratings of the subject provided by therapists (Watson & Marks, 1971). A copy of the SUDS forms is included in Appendix B.

A Behavior Approach (or Avoidance) Test (BAT) was used as a primary outcome measure of behavioral change in the study. The BAT is a widely used procedure in fear research and is derived from Lang and Lazovik's (1963) original work with fearful subjects and live stimuli. The basic format of the BAT requires that a subject engage in approach behaviors with a feared stimulus and that such interactions are ordered along an increasing hierarchy of fear. As with the SUDS, the very simplicity of this test led to its widespread clinical and research application, which subsequently led to considerable diversity in its administration and a lack of standardization in its procedures (Bernstein, 1973; Bernstein & Nietzel, 1973).

Reviewing the literature on the BAT, Bernstein's (1973) analysis reveals some salient and important influences on BAT scores which would affect the reliability or validity of the measure and offer suggestions on standardization of this technique. For example, subjects are more likely to
approach a feared stimulus and complete the more difficult (i.e. higher fear) items on the BAT if an inert or analogue stimulus is used, if the subjects are accompanied by a therapist, if approach behavior is prompted, encouraged, or rewarded, and if instructions were delivered personally, rather than by audio tape.

Although studies have not been conducted on the effects of prior exposure to feared stimuli on subsequent BAT responses, the research on in-vivo exposure treatment offers further considerations in applying the BAT. Research with highly fearful subjects suggests that initial brief exposures to feared stimuli might increase fear responses and delay treatment gains (Watson, Gaind, & Marks, 1973). However, with mildly fearful or non-phobic subjects it is likely that such brief exposures (as in a BAT) might serve to decrease fear responses due to behavioral rehearsal effects or flooding (Marks, 1987). Therefore, to reduce the chances that this would happen with our sample the BAT was used only as a post-treatment assessment and was not used as a pre-treatment screening device for fearful subjects.
The steps involved in a BAT range from less fear provoking interactions through sequentially higher fear provoking stages. As with other aspects of the test, individual researchers are left to decide upon the number of steps involved, the range of behaviors sampled, and the degree of interaction desired of the subjects.

Subjects were asked to approach a live Tarantula which was located at the bottom corner of a 10 gallon Plexiglas cage. There were fifteen discrete steps involved, and each step defined a specific action to be performed by the subject in relation to the live spider. These steps were rationally derived by the author and are characterized by three broad categories of behavior: General Approach Behavior; Limited Interaction; Active Interaction. The specific steps are listed in the Treatment Manual in Appendix D and are summarized below.

The initial five steps represent general approach behaviors ranging from opening the door to the room where the spider is kept (Step 1), to eventually observing the spider from a distance of one foot in front of its cage (Step 5). The next five steps involve limited interactions in which subjects begin by placing their hands on the table
near the side of the cage where the spider is resting (Step 6) and progress to opening the lid on the top of the cage and looking down at the spider (Step 10). The final five steps involve more active interactions with the spider, from subjects placing their non-dominant hand just inside the cage through a 5-inch by 5-inch opening (Step 11) to the last step (15), touching the spider's hind leg with a 3 inch glass pointer. The final BAT score was the last successfully completed step, which is the standard method of scoring this test.

The live fear stimulus used in this study was a male Mexican Red-Legged Tarantula (Aphonopelma emilia). It measured approximately six inches from the furthest extensions of its hind and front legs, with a cephalothorax and abdomen of approximately four inches in diameter. The spider was purchased at a local pet store two months prior to the start of the study and acclimated to the laboratory environment. The spider was kept in a 10 gallon Plexiglas cage equipped with a hinged door on the top of a plastic mesh cover. The door could be opened without having to remove the entire lid from the cage.
Stimulus slides were prepared by the author using the tarantula as the subject. A 35mm single lens reflex Konica T-3 camera equipped with an F2.0 28mm wide-angle Vivitar lens was used with two rolls of 24-exposure 1600-ASA Fujicolor print film. The photographic session was performed in the lab with overhead fluorescent lighting. The spider was removed from its cage and placed on a 3 X 5 foot white cardboard sheet on a table and was photographed from four different angles: from directly above; from directly in front; from each side. Lighting conditions were kept constant for all shots; regular fluorescent lighting in the lab was used. Forty photographs were taken in total, with ten from each perspective, from a distance of twelve to eighteen inches.

Both rolls of film were processed commercially using standard procedures for that grade of film (Kodak Colorwatch Process C-41) by a professional photography studio and twenty of the clearest, most focused, and best contrast negatives, as judged by the author, were selected to generate color slides. There was an equal distribution of photographs from each of the four different angles. Each negative was processed into two color slides, for a total of
forty stimulus slides. When projected onto a blank white wall eight feet away, the resulting slides depicted an image of approximately six inches in diameter. The Kodak slide projector was controlled by the experimenter by a remote control extension.

In addition to these stimulus slides two non-fear provoking slides were made. These were shown when matching statements to illustrate the language conditioning procedure were presented. These slides were placed in the first two slots in the carousel and were separated from the stimulus slides by a blank slot. These two slides were of the room where the experiment was taking place and of a recent snowfall outside the psychology building (see next section for an explanation of the relevance of these slides).

Statements for the audiotaped language conditioning trials were developed by the author. First, a list of thirty positive and thirty negative descriptors (adjectives and verbs) was rationally derived from a thesaurus; fifteen of the items in each of these conditions concerned descriptive verbs of people's reactions (Response Referent: RR), and the other 15 concerned adjectives attributed to
objects or animals (Stimulus Referent: SR). Twelve undergraduate psychology majors who were research assistants in the lab were asked to inspect the lists and to sort the words into these two categories. Five clinical psychology graduate students then served as judges and rated the affective valence of each descriptor along a 1 (very positive) to 7 (very negative) scale. Mean scores were then computed for each word and these were ranked to reflect the most positive to most negative descriptors for RR and SR conditions. Words with the lower scores (nearer 1) were rated more positively and those with higher scores (nearer 7) were rated more negatively. Appendix C contains a list of all 60 descriptors ranked by their mean scores. This comprised the Adjective Checklist (ACL) which included all 60 words (including verbs and adjectives), each of which was to be rated along an affective valence continuum from 1 (very positive) to 7 (very negative) by the subjects.

Ten descriptors in each category (RR+, RR-, SR+, SR-) were chosen on the basis of the judges' ranked mean scores. The ten RR and ten SR words receiving the lowest (i.e. most positive) and highest (i.e. most negative) ratings were selected to be used in the language conditioning tapes.
These words are prefaced by an asterisk (*) in the list in Appendix C. The words were then paired based on their ranked mean score: the highest ranked negative descriptor was paired with the highest ranked positive descriptor.

The language conditioning statements were then created by placing an adjective or verb into standardized, generic sentences which reflected both a person's behavior and the behavior of a spider. In order to control for the possible confounding effects of repeatedly presenting either RR or SR descriptions first in the sentence, two generic sentences were used; one referenced the spider first ("The +/-SR descriptor spider +/-RR descriptor me") and the other referenced the person first ("I am +/-RR descriptor by the +/-SR descriptor spider"). The "+" and "-" refer to positive and negative affective valences of the RR and SR descriptors (adjectives or verbs).

Complete examples of each type of statement in each condition would be:

R+S+: The attractive spider fascinates me
   I am fascinated by the attractive spider

R+S-: The disgusting spider fascinates me
I am fascinated by the disgusting spider

R-S+:
The attractive spider terrifies me
I am terrified by the attractive spider

R+S+:
The disgusting spider terrifies me
I am terrified by the disgusting spider

where R+S+ refers to statements which used both positive RR and positive SR descriptors, R-S- to statements which used both negative RR and negative SR descriptors, and the remaining two conditions to statements which used a mixture of positive and negative RR and SR descriptors, as noted.

In total, there were two statements for each unique pair of words, one of each form, for a total of 20 statements.

The statements were recorded onto sixty-minute BASF audiotapes by one of the research assistants (RN). Each tape contained statements for only one of the treatment conditions on one of its sides. Each tape was prefaced by specific instructions to the subject on the procedures used during language conditioning trials. At the end of this introduction were two practice exercises with which the subject was prompted on the exact procedures for repeating statements vocally and sub-vocally during slide
presentations. The statements were presented on a Sony portable cassette tape player (Model CSF-7000).

Following this introduction the first trial of 20 statements was presented, followed by a brief pause, and then the final trial of 20 statements. The same 20 statements specified above were used in both trials in the same order; within each trial, however, the order of presentation of the statements was randomized. The only other stipulations were that statements beginning with either RR or SR descriptors were presented alternately, and that consecutive statements did not contain the same adjective pairs.

There was a fifteen second pause after each statement. An entire set of 20 statements took five minutes to present (including pauses after each statement). With two conditioning trials, subjects received a total of ten minutes of language conditioning.

Additional materials for the study include the Informed Consent Form and handouts specifically prepared for the experimenters to standardize experimental procedures and data collection. These include a Treatment Manual, a
Recruitment Check-Off Form, and a Treatment Check-Off Form. Copies of all of these are included in Appendix C.
Procedure

Experimenters' Training: All experimenters were trained in all experimental and recruitment procedures by the principal investigator before the study commenced. To ensure that procedures were followed in standardized fashion, four pilot subjects were recruited from the subject pool during the Fall semester and the same experimental procedures were followed for each (including informed consent procedures and debriefing). Each subject was seen by one of the experimenters while the other three observed from behind a two-way mirror. The experimenters met before and after each subject's appointment to discuss the session and to address or correct any discrepancies from established procedure. From these four pilot subjects the Treatment Manual, Recruitment Check-Off Form, and Treatment Check-Off Form were constructed.

Recruitment: Subjects who scored 4 or greater on the FSS-Spider item during Mass Testing were telephoned by one of two research assistants (RN; DC) who scheduled appointments for all four experimenters. Subjects were told that this was an experiment dealing with "Personal Reactions and Fear", but were not told the exact purpose of the study.
If they agreed to participate they were given an individual appointment time with an experimenter.

Pre-treatment: Subjects were seen individually in the experimental room. This room (G-53) was located in the psychology building and adjoined a second room (G-51) in which the spider was kept for the BAT. Upon arrival at G-53 subjects were seated at a table and asked to read the Informed Consent Form. Any questions they had about the study were then answered and the form was signed and witnessed by the experimenter. Assignment to one of the treatment or control conditions was then made by the experimenter using a predetermined log (this log is reproduced in the Treatment Manual in Appendix C). Based upon this assignment, subjects were involved in one of the following three possible treatment procedures: Treatment Group; Affective Control Group; Behavioral Control Group.

Treatment Procedures for Treatment Group Subjects: Following the Informed Consent procedure subjects were given the Pre-Treatment SUDS form and the ACL to complete. Subjects were then seated across from the blank wall upon which the slides would be shown. To the subject's left was
the tape recorder, with the speakers facing the subject; the slide projector was situated behind it. The experimenter sat on the opposite side of the table, behind the tape recorder and next to the slide projector.

The experimenter explained that the study concerned personal reactions to fearful stimuli, and that the subjects had been selected based on their responses to the Fear Survey Schedule. Subjects were told that there were two parts to the study. They would first be asked to listen to some statements while they viewed colored slides of a spider. They were told that the purpose of this procedure was to standardize some of these stimuli. They were also told that they might or might not derive any direct benefit from such interventions for their fear of spiders. Subjects were then told that the second part of the study would be explained after the second set of statements and slides were completed.

The subject was then asked to look directly ahead at the white wall and to observe the first control slide. A color slide of the experimental room (which was assumed to be a non-arousing stimulus), was projected onto the wall and the contrast level, focus, and brightness of the image
adjusted to the subject's satisfaction. The projector was then turned off and the tape recorder turned on. The subject was then asked to listen to the instructions on the tape and to follow them exactly. The instructions are listed in the Treatment Manual in Appendix D. When the tape reached the section describing the first of the two practice statements, the slide projector was turned on again with the slide of the room matching the first practice statement "This room is large and spacious". The subject was instructed by tape and prompted by the experimenter to repeat the statement out loud and then sub-vocally while they viewed the slide. The second practice statement ("It will likely snow before the end of term") was then given while the second practice slide was shown (of the outside of the psychology building during a recent large snowfall).

At this point the tape was paused and the slide projector advanced to the blank slot after the second practice slide. Subjects were then given the chance to ask any questions about the procedures. When the experimenter had ensured that all questions were answered, the recorder
was turned on again and the first set of twenty stimulus slides and statements was delivered.

The first slide was then projected on the wall as the first statement was read; the experimenter advanced the slides to coincide as closely as possible with the onset of each new statement. At each presentation the subject listened to the statement, repeated it aloud once, and then continued to repeat it sub-vocally until the next slide/statement combination was presented. This continued until twenty slides had been shown and twenty statements had been heard.

At the end of this first language conditioning trial the tape recorder was turned off and the slide projector was advanced to a blank slide. Subjects were then asked to complete the Mid-Treatment SUDS rating. Following this, the tape recorder was turned on again and the instructions briefly repeated. The second set of twenty-statements and slides was then presented following the same procedures as in the first trial.

At no time during the trials did the experimenter interact with the subject in any way. The experimenter avoided direct eye contact with the subject and did not
comment upon or correct any mistakes made by the subject. The only exception to this was during the first slide and statement presentation of each trial, when the experimenter reminded the subject just before the presentation that they should repeat the statement out loud and then to themselves until the next statement began. At the end of the last trial (i.e. 15 seconds after the last statement was delivered) the Post-Treatment Procedures were followed.

**Treatment Procedures for the Affective Control Group:**
Subjects assigned to this condition underwent the same procedures as the Treatment Group subjects, but did not undergo language conditioning trials. Subjects were seated at the table with a slide projector next to them and shown the control then stimulus slides exactly as described above. Each slide was shown for 15 seconds, simulating the exposure time given to the Treatment Group subjects. At the conclusion of the last slide, the projector was turned off and the Post-Treatment procedures were followed.

**Treatment Procedures for the Behavioral Control Subjects:** Subjects assigned to this condition did not view slides, complete SUDS and ACL ratings, or undergo language
conditioning. After the consent procedures these subjects were told that this was an experiment on "Personal Reactions and Fear" and that they would be asked to approach a live tarantula in the next room. They were then taken through the BAT steps, as described below.

Post-Treatment: Fifteen seconds after the last slide was shown the Treatment Group and Affective Control Group subjects were asked to complete a SUDS form and an ACL. The experimenter then told these subjects that the last phase of the study involved approaching a spider in the adjoining room as closely as possible and the BAT was described. The following procedures were used for all subjects.

The BAT steps and procedures were then read out to the subject by the experimenter. Subjects were reminded that they could stop at any point they wished, and that they did not have to touch the spider directly with their hands at any time. Subjects were told that the experimenter would follow behind them at all times and that they were to determine when the BAT would stop. Subjects were prompted on the next stage only once, and only after they had paused for more than 30 seconds at one step or specifically
requested clarification of the steps involved. No more than two prompts were given during the BAT.

Following a question period, the subject was then instructed to leave the room and start the procedure. The experimenter remained approximately five feet behind the subject at all times during the BAT, and out of the subject's view. The subject continued the BAT until they completed step 15 ("touching the spider's leg with a pointer"), or when they paused more than 30 seconds at one step despite receiving a prompt to continue, or when they requested to stop and refused to continue following a prompt.

After completing the BAT the subject and experimenter returned to G-53 where the subject was immediately given a SUDS form (Treatment and Affective Control subjects only) and the FSS to complete. Upon completion of these measures the subject was debriefed as to the other conditions in the experiment and were given an experiment-credit slip. Subjects were also given informational handouts which described spiders, fears and phobias, and approaches commonly used to treat these problems. The subject was then
free to leave, after being reminded not to discuss the
details of this experiment with anyone in the class.
III. RESULTS

Data Analysis

Subjects who underwent treatment were compared to control subjects in a condition relevant to the analysis. For tests of hypotheses relating to affective ratings, the relevant control group was that which was exposed to stimulus slides without semantic conditioning. These control subjects completed SUDS Discomfort and Fear ratings at all four treatment points. For tests of hypotheses relating to behavioral approach, the relevant control condition was that in which subjects underwent the BAT without being exposed to stimulus slides or to semantic conditioning trials.

Data from treated subjects were analyzed in three ways. First, subjects were divided into their assigned treatment conditions: subjects who underwent R+S+, R+S-, R−S+, or R−S− semantic conditioning trials. Second, subjects were divided into those who heard positive versus those who heard negative Response-Referent (RR) statements during semantic conditioning trials, irrespective of how the stimulus was described. Such analyses permit specific comparisons of the
effects of positive and negative RR statements on affective and on behavioral aspects of fear. The third division of the data involved separating the sample into those subjects who heard positive versus those who heard negative Stimulus Referent (SR) statements during semantic conditioning, irrespective of how their own behavior was described. As with the previous division, this permits greater specificity in comparisons of the effects of such statements on affective and behavioral aspects of fear.

Statistical analyses were conducted in three phases and all analyses involved tests using all three divisions of the sample, as described above. First, analyses were conducted on all pre-treatment measures to describe the sample and to discern any differences between groups. Descriptive statistics (means, standard deviations, minimum, and maximum scores; Pearson Product Moment correlations) were computed for pre-treatment SUDS Discomfort and Fear ratings, Mass Testing FSS total scores, and ACL ratings. Statistics involving the latter were computed with grouped scores for positive and negative RR and SR adjectives, rather than with the forty individual adjectives' ratings themselves. Univariate analyses of variance (ANOVAs) were computed to
compare differences on these measures between the levels of each group (treatment group; RR group; SR group). For these and all subsequent tests of significance a 0.05 alpha level was set.

The second phase of data analysis involved examining differences between levels of groups for affective ratings over treatment. Repeated measures ANOVAs were conducted with Group (treatment group, RR group, or SR group and the Affective-Control group) as the between-subjects factor, SUDS ratings (Discomfort or Fear) as the dependent variable, and Treatment Phase (Pre-Treatment; Mid-Treatment; Post-Treatment; Post-BAT) as the repeated measures factor. In total, six analyses were conducted: one on SUDS-Discomfort and one on SUDS-Fear ratings for each of the three groups. It should be noted that such a number of analyses might increase the experiment error variance; therefore, interpretations will be made with this in mind.

The third phase of data analysis involved examining differences in approach behavior between levels of groups. Three separate one-way analyses of variance of BAT scores were conducted, one for each of the types of groups
(treatment group; RR group; SR group) with the Behavioral-Control group. As previously noted, the chances of increasing experiment-wise error variance may be increased with the number of such analyses; therefore interpretations will be made with this in mind.
Descriptive Analyses of Pre-Treatment Data

One-way analyses of variance were computed on pretreatment SUDS Discomfort and Fear ratings, the Mass Testing FSS total score, and the grouped ACL ratings. There were no significant differences on any of these measures between levels among treatment groups, the RR groups, and the SR group, or between these groups and the control conditions. Table 1 lists the means, standard deviations, minimum values, and maximum values for the Fear Survey Schedule total and spider scores, the two SUDS ratings, and the four grouped ACL scores for the overall sample. The latter ratings were similar to those provided by the judges when the semantic conditioning tapes were made. Both RR and SR positive adjective groups had means around 22; as each of these groups consists of ten adjectives each, the mean score of each positive RR and SR adjective would be approximately 2.2, which would place it well toward the more positive end of the 1 (Very Positive) to 7 (Very Negative) rating scale that was used. Negative SR and RR adjectives were similarly
skewed toward the higher (i.e. more negative) end of the scale, with grouped mean scores from 58 (RR) to 60 (SR), or individual mean scores of approximately 5.8 and 6.0 on the 1 to 7 scale. Inspection of the data revealed that no subject had given a positive adjective a rating higher than 3.0 or a negative adjective a rating lower than 5.0.

Mean SUDS-Discomfort and -Fear ratings were close to 3, which is indicative of "Mild" discomfort or fear on the 0 (No Fear/Discomfort) to 10 (Extreme Fear/Discomfort) SUDS that was used for each rating. This level of discomfort and fear was expected at pre-treatment, given that subjects were volunteers for a study on "Personal Reactions and Fear" and had just read an Informed Consent Form which explicitly stated that they would view slides of a spider and would be asked to approach a live tarantula later.

The mean FSS total score (188.48) was similar to what has been reported in the literature on fearful college students (e.g. Tasto, 1977). The FSS Spider Item mean (5.37) and the restricted variance associated with this score value (sd = 0.96) were expected, given that the sample
was specifically selected for those who scored 4 or greater on the 7 point scale used for this item.

Pearson Product Moment Correlations were computed between SUDS Discomfort, SUDS Fear, FSS Total, ACLRP, ACLRN, ACLSP, and ACLSN ratings; the resulting correlation matrix is presented in Table 2. The correlation between SUDS Discomfort and Fear ratings was high ($r = .73$) and was the highest correlation in the matrix. Neither SUDS ratings were strongly correlated with any other score. Discomfort, but not Fear, ratings were negatively correlated with positively stated adjectives; however, both correlations were weak and neither was significant. Other significant correlations were found between the FSS Total Score and Spider Scores ($r = .47$), between positive RR and positive SR adjectives ($r = .46$), between positive RR and negative RR adjectives ($r = -.40$), and between negative SR adjectives and positive RR ($r = .39$) and negative RR ($r = -.39$) adjectives. All other correlations were weak, ranging from $r = .01$ to $r = -.25$. 

Insert Table 2 About Here

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Insert Table 2 About Here

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Contingency tables were constructed which outlined the relationship between FSS Spider item score and group assignment (Table 3). Chi-Square analyses revealed no significant relationship between these Spider Item levels (4 to 7) and any of the group levels (treatment; RR; SR; Control). In general, subjects were equally represented in all treatment, Control, RR, and SR groups. However, as noted previously, 27 of the 65 subjects in this sample scored 5 and therefore were disproportionately represented in some cells.
Effects of Treatment on Affective Ratings

SUDS discomfort and fear ratings were used as the dependent variables in repeated measures ANOVAs, with Intervention Phase (Time: Pre-Treatment; Mid-Treatment; Post-Treatment; Post-BAT) as the Within Subjects (Repeated Measures) Factor, and the Affective Control group and either treatment group, RR group, or SR group used as the Between Subjects Factor. Means and standard deviations for each measure for all levels of each group are given in Table 4.

Insert Table 4 About Here

Inspection of the means indicates that, for both SUDS variables, there was a marked separation of groups at the Post-BAT assessment point, as illustrated in Figure 1 (SUDS-D) and Figure 2 (SUDS-F). Both R-S- and R-S+ groups increased over two SUDS points by that time, and the other two groups (R+S+; R+S-)

Insert Figures 1 and 2 About Here
showed only a slight increase over time; the control group mean at Post-BAT fell between both these extremes and closer to the latter two groups. The repeated measures ANOVAs indicated significant overall and Time main effects, but no significant effects for the Between Subjects (Group) Factor or for the Group by Time interaction for both SUDS-D and SUDS-F analyses (see Table 6 for the ANOVA Source Tables for each of the analyses).

Table 7 outlines the source tables for the repeated measures ANOVAs for SUDS-D and SUDS-F ratings using RR Group as the Between Subjects Factor. These results show a clear separation between SUDS-D and SUDS-F ratings when positive versus negative RR adjectives were used, irrespective of how the stimulus was described. That is, whether the stimulus was described positively or negatively, if the person's
behavior was described negatively they were much more likely to report greater discomfort and fear than when their behavior was described positively (Figures 3 and 4). The ANOVA results for each measure were essentially similar. Significant overall and Time main effects were found, but neither analysis resulted in significant Group main effects.

A significant Group X Time interaction was found only in the SUDS-Fear analysis. Although there was no significant main effect for Group, the results did approach significance in both analyses.

The last repeated measures ANOVAs were computed for SUDS-Discomfort and SUDS-Fear ratings by SR Group (Table 8). These analyses were similar to those for the RR Group, with significant overall and Time main effects, but no significant Group or interaction effects. Inspection of the
graphs of the means for these analyses (Figures 5 and 6) and the resultant F values for the Group main effects indicates

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Insert Figures 5 and 6 About Here
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that, although no significant Group effects were found in any of these four analyses using the special statement groups, there was a tendency for the levels of the RR Group to be more divergent at Post-BAT than those in the SR Group.
Effects of Treatment on Approach Behavior

The effect of treatment upon subsequent approach behavior to a live tarantula was evaluated by comparing differences on the BAT between subject groups. A one-way analysis of variance was used to analyze differences between the levels of each factor (treatment group; RR group; SR group) and the behavioral control group. Table 9 summarizes the resulting source tables for all three analyses and Table 10 summarizes the mean BAT scores across all groups. A significant difference between groups was found on all analyses. In the analysis of the differences among the four treatment groups and the control group, the highest mean BAT scores were attained by those who heard the most positive statements (R+S+: 14.33) with the lowest score attained by those who heard the most negative statements (R+S−: 12.82); the latter was lower than the control group’s mean score (11.4) (Figure 7). Post-hoc Scheffe’s comparisons of these means indicated three significant
differences (95\% alpha level): between R+S+ and R-S-, between R+S+ and the control condition, and between R-S+ and R-S-. Scheffe analyses were selected primarily because of the groups contained an unequal number of subjects and Scheffe's test is specifically suited for such analyses.

Analysis of differences on the BAT for the RR and for the SR groups were both significant; however, the differences were more pronounced between mean scores for SR+ (14.13) and SR- (11.48) than between RR+ (13.61) and RR- (12.00) groups (Figures 8 and 9). In all three analyses the control group score was lower than these groups.

Post-hoc Scheffe tests of comparisons between means indicate significant differences between the positive and negative conditions for both RR and SR groups; in addition, the SR+ group was significantly different from the control group.
A subsequent analysis of the current data was undertaken in order to enable comparisons between these results and those from the Eifert and Schermelleh (1985) study. In that study BAT performance was analyzed using an "all or nothing" approach in which subjects were divided into two groups: those who completed all steps of the BAT successfully versus those who did not. Using such a division, Eifert and Schermelleh found that 64 percent of their subjects completed the BAT in its entirety.

Data from this study were similarly analyzed by dividing subjects into those who completed the last, most demanding, BAT step successfully (i.e. touching the spider with the pointer) and those who did not. The distribution of subjects in these groups were compared across the treatment and control groups (see Table 10).

The resulting distributions indicate that only one group (S+) exhibited a similar percentage of subjects who completed the BAT (64%) as that reported by Eifert and
Schermelleh (1985). The number of subjects who successfully completed the BAT was lowest in the S- (26%) and R- (39%) groups, and approximately half the R+ subjects successfully completed the test. Chi-Square analyses indicate a statistically significant relationship between SR group membership and successful completion of the BAT (Chi-Square = 11.76; df = 2; p < .003); the relationship between RR group membership and BAT completion was not significant (Chi-Square = 5.20; df = 2; p = .07).
IV. DISCUSSION

Only the hypothesis concerning the general anxiogenic effects of negative-language conditioning (i.e. Hypothesis 2) was fully supported; only partial support was obtained for hypotheses 1, 3, and 4. To summarize the results: It appears that the use of negative descriptions in verbal statements significantly raises subjective levels of fear and discomfort and significantly interferes with approach behavior. Although approach behavior was significantly associated with positive-language conditioning, ratings of subjective distress did not significantly decrease as expected. Regarding the specific effects of language conditioning on responses related to the emotional/motivational and the sensory/motor Basic Behavioral Repertoires, positive-language conditioning significantly affected both systems when personal responses were described, but only overt behavior was affected by positive SR descriptions. Negative RR and SR descriptions tended to increase fear and discomfort ratings and decrease approach behaviors. These results will be discussed in greater detail.
Ratings of discomfort and fear significantly increased during language conditioning when the adjectives used in the statements were both negative (R-S- group) and scores on these SUDS measures for this group were significantly different from the other groups at the Post-BAT assessment. This is consistent with several other studies on inducing fear through negative language conditioning (Eifert, 1984; Eifert & Schermelleh, 1985; Hekmat, 1972; Hekmat & Vanian, 1971; Weiss & Evans, 1978) and supports the second hypothesis, that fear responses may be significantly increased through negative-language conditioning.

Rachman (1976; 1977; 1984) has argued that simple conditioning approaches to fear are inadequate, and he presents several criticisms of these early positions based on clinical observations and research. Three such criticisms are especially problematic to the earlier learning theories, which did not incorporate language variables:

1. How extreme fear responses or phobias could be acquired through one-trial learning;
2. How fear responses could be maintained over time in the absence of discernible discriminative, reinforcing, or punishing stimuli; and

3. How fear responses could exacerbate, rather than extinguish, over time in the absence of continued pairings of a discernible UCS and CS.

The results of language conditioning studies address these criticisms, as they are based upon an integrated behavioral theory (Paradigmatic Behaviorism) which includes attention to language behaviors. The basic premise from these studies is that fear responses may be acquired and maintained over time through classical conditioning trials involving language behaviors alone. The results of Eifert's (1984; Eifert & Schermelleh, 1985) and Weiss and Evans' (1978) research illustrate this with subjects who were not fearful of certain stimuli to begin with, and the results of this study and Hekmat's research (1972; 1987; Hekmat & Vanian, 1987) support the notion that fear may be maintained or exacerbated through continued classical conditioning with language alone.

According to Paradigmatic Behavioral theory, words acquire emotional properties through classical conditioning,
which applies to negative labeling of a feared stimulus or of personal responses. These are not simply descriptive or symptomatic of fear; such labeling behaviors have negative emotional (ARD) properties which other stimuli may acquire through higher-order classical conditioning. It is important to note that these other stimuli may be responses within any of the Basic Behavioral Repertoires. Thus, for example, negative emotional properties associated with the words "disgusting", "fearful", "grotesque" may be paired with motor behavior (during approaches to a non-feared rabbit: Eifert & Schermelleh, 1985) or with imagery (while imagining a non-fearful scene: Hekmat, 1972); in these examples, both approach behavior and imagery of these stimuli would be inhibited or restricted through such conditioning trials, as was found in the cited studies.

Although no long-term follow-up studies have been conducted on the effects of language conditioning, it is likely that fear induced through such procedures would be as prevailing as that induced through more "typical" classical conditioning experiments. It is argued that continued negative labeling of a stimulus (or of one's reactions to a
stimulus) would serve as further "covert" classical conditioning trials, thus maintaining fear in the absence of discernible stimuli. This would be an area of future long-term investigation using follow-up studies and studies are currently being planned by the investigator in this regard.

The first hypothesis of this study, that the R+S+ group would show significant reductions in fear and discomfort measures as compared with the other groups, was not generally supported. SUDS discomfort and fear ratings showed a slight, non-significant tendency to increase over the course of language conditioning, after an initial decrease at mid-treatment. At first it appears that positive-language conditioning had deleterious effects on subjective ratings of affective disturbance. However, although the R+S+ group's affective ratings did increase over time, these scores were below those found in any other group, including those in the affective control group, at all assessment points after treatment had begun.

One possible explanation for the failure of positive-language conditioning to decrease ratings of affective disturbance may have been the relatively low initial values for both SUDS indices. The Pre-Treatment values for both
SUDS indices were similar in all groups (mean discomfort scores from 3.09 to 3.83; mean fear scores from 2.73 to 3.08) and represent "mild" levels of disturbance. It is not likely that the language conditioning procedures used in this study would decrease ratings below this already low level; it may be that a stronger anxiolytic effect would have been found had these initial ratings been higher.

Only one previous study in the area measured subjective distress at any point during treatment, and it is noteworthy that a significant decrease in relatively high initial subjective fear ratings was achieved through positive-language conditioning. In that study Weiss and Evans (1978) used a ten-point fear thermometer (FT) scale (10=maximum fear), which is conceptually similar to the SUDS-Fear rating in the present study, and they reported initial mean FT scores ranging from 8.0 to 8.45 across all treatment groups. Using a procedure in which calm words were paired with phobic words, this subjective rating decreased to 5.83 at Post-Treatment and was significantly lower than ratings in other treatment and control groups.
It should be emphasized that all SUDS ratings were completed in the absence of feared stimuli, live or analogue, and that subjects were instructed to rate their general personal feelings of discomfort and fear at the time, and not their feelings while such feared stimuli might be present. Therefore, it is likely that the effects of language conditioning on subjective ratings might be biased against finding significant differences for response-referent statements, as general affective ratings might not be strongly correlated with such states while in the presence of feared stimuli. Furthermore, the number of analyses run on the data might present a bias in the interpretation of results by increasing the experiment-wise error rate. Future studies are planned to replicate the experiment with modifications which would allow ratings in the presence of feared stimuli and which would employ planned comparison tests instead of several ANOVAs. The latter argument also applies to behavioral performance analyses.

The differences in BAT performance among the groups offer more substantive evidence for the fear-reduction effects of positive-language conditioning for Hypotheses 1
and 2. Subjects in the R+S+ group had the highest BAT scores, significantly higher than those in the behavioral control and R-S- conditions (Scheffe's post-hoc comparisons). This last group obtained the lowest mean BAT score, lower than that found in the behavioral control condition and significantly lower than the R+S+ and the R-S+ groups. These results are interpreted to be supportive of both hypotheses relating to the general effects of language conditioning: that positive-language conditioning would increase approach behavior (Hypothesis 1) and negative-language conditioning would inhibit approach behavior (Hypothesis 2).

These findings are consistent with those found in previous studies, but specific comparisons with previous work are made difficult because of the diverse and unique variations in the BAT. This is a problem not only in the current area, but among all studies in which the procedure has been used. Bernstein and Nietzel (1973) summarized the procedural variations in the BAT and found several non-specific factors which affected performance on the test. These ranged from the more obvious (e.g. in-vivo
demonstrations and practice of what to do at each step) to the more subtle (e.g. use of tape recorded versus live delivery of instructions). The different applications of the BAT among language conditioning studies and how such variations might have affected the comparability of the results are discussed later. The general effects of language conditioning, however, are comparable across studies and the results of this investigation are consistent with those reported in the literature.

In summarizing the general effects of language conditioning on fear responses, the results of this study indicate that the use of negatively-phrased descriptions of a person's behavior and a stimulus lead to a significant increase in subjective discomfort and fear and to a significant decrease in approach behavior. On the other hand, the evidence for using positively-phrased descriptions to attenuate fear responses was not strong, except in the case of approach behavior. As regards the relative failure to decrease ratings of fear and discomfort through positive-language conditioning, it is likely that had Pre-Treatment SUDS scores been higher, a clearer and possibly significant effect might have been found. As it stands,
these results suggest that positive-language conditioning at least serve to maintain low ratings of fear and discomfort during the presentation of feared stimuli.

The discussion so far concerned R+S+ and R-S- treatment groups and the control groups almost exclusively. The performance of the other two treatment groups, R+S- and R-S+, generally fell within the expected range between the double-positive and double-negative groups and were similar to the control conditions. Specific differences between these groups were not significant for the BAT or for SUDS ratings; however, there was a noteworthy trend in the performance of these subjects relative to others.

Regarding affective ratings, the R+S- group showed a pattern of change parallel to that found with the R+S+ group, whereas the R-S+ group's performance was similar to the that found with the R-S- group. The affective control group scored between both sets of subjects. This indicates that subjective ratings might be more influenced by RR statements than by SR statements, wherein negative RR statements would increase affective distress and positive RR statements would maintain low fear and discomfort levels. A
more specific test of this hypothesis was performed by partitioning subjects into positive or negative RR and SR groups.

Using such analyses the difference between subjects hearing positive versus negative SR statements was not significant but the difference between the two RR groups approached significance. This implies that the manner in which personal behavior is described has greater effects on subjective ratings of fear and discomfort than the manner in which the feared stimulus is described. As these results only approached significance for the RR groups, this is interpreted as only partial support for the third hypothesis of this study.

Approach behavior, on the other hand, appears to be significantly and differentially affected by SR and RR descriptions. BAT scores for both R+ and R- groups were similar and both were higher than the control condition (only the R+ group was significantly different from the control condition). However, this was only true for the S+ group, which was significantly different from the S- and behavioral control groups. The relative performance of these last two groups on the BAT were similar.
These results are similar to those obtained by Eifert and Schermelleh (1985), who found that groups exposed to SR versus RR statements exhibited similar BAT scores. When data from this study were analyzed by dividing subjects into groups consisting of those who completed the last, most demanding, BAT step successfully and those who did not, only one group (S+) exhibited results similar to those reported by Eifert and Schermelleh for their stimulus-referent group (i.e. 65% of the subjects completed the BAT successfully). The number of subjects who successfully completed the BAT was lowest in the S− (26%) and R− (39%) groups, which is interpreted to indicate that negative-language conditioning significantly impeded subjects' approach behavior. Approximately half the R+ subjects successfully completed the test, indicating that positive response-referent statements were only partially beneficial in promoting approach behavior and not as beneficial were as positive stimulus-referent statements.

Taken together, these results support the fourth hypothesis, that stimulus-referent positive-language conditioning is more effective than response-referent
positive-language conditioning in increasing approach behavior.

Eifert and Schermelleh (1985) reported that RR descriptions were associated with greater approach behavior than SR descriptions, although this difference was not significant. One reason for finding the opposite in the present study may lie in the nature of the verbal statements themselves. In the 1985 study RR descriptions were focused on approach behavior and SR descriptions on stimulus properties; in the present study both RR and SR references were affectively descriptive and RR adjectives were purposefully not descriptive of approach behavior. It appears from both studies that approach behavior is greatly facilitated by positive descriptions of both the stimulus and of personal reactions, especially if the latter are targeted specifically at the behaviors themselves.

The present study differs from previous language conditioning studies in a few important ways. First, subjects in this study were predominantly fearful of spiders, ranging in self-rated fear from mild to terrified. Only Hekmat and Vanian (1971) reported using more stringent criteria in selecting subjects and their subjects are very
likely closer to clinically fearful persons than were those in this study. However, in the other language conditioning studies there was either no objective index of how fearful the subjects were initially (Weiss & Evans, 1978) or a general pool of subjects underwent conditioning trials to induce a specific fear (Eifert, 1984; Eifert & Schermelleh, 1985). Therefore although generalization of the results of the present study to clinical populations is limited due to the heterogeneity of the sample, these findings are more likely closer to what may be found clinically than most of the other language conditioning studies.

One feature in this study which merits improvement in future work is the selection of subjects based on the SUDS ratings. Subjects were not selected for high initial SUDS ratings, nor were any procedures used to purposefully increase SUDS ratings before language conditioning. This resulted in a "bottoming out" of the initial SUDS scores, which were generally at or below a "mild" level, and rendered interpretations of the effects of positive-language conditioning on affective responses more difficult. A
greater range in Pre-Treatment SUDS ratings might have led to clearer effects from this form of intervention.

A third point concerns the use of the BAT as a pre-treatment measure in some studies (Hekmat & Vanian, 1971; Weiss and Evans, 1978) and the decision not to use it as such in this study. Although studies have yet to be done to confirm this, it was hypothesized that a pre-treatment BAT might present a "mini in-vivo exposure" session to the subject and induce or exacerbate fear. There is considerable evidence that brief exposures to live feared stimuli, of the duration of a BAT, is anxiogenic rather than anxiolytic (e.g. Marks, 1987). Furthermore, there is also the possibility that a pre-treatment BAT would result in a significant practice effect in the procedure, and the effects of similar non-specific factors have been well documented (e.g. live versus taped instructions: Bernstein & Nietzel, 1973). The pre-test BAT is used primarily to screen out non-fearful subjects, who are defined as those who complete the BAT successfully before treatment; however, the use of a behavioral control group in this study addressed this concern. For these reasons a pre-test BAT
was not used in this study, and these possible confounds should be kept in mind when results of this study are compared with those from studies employing such a procedure.

The fourth deviation in the present study from other language conditioning research involves the application of the technique. Each of the previous studies employed a unique variation in pairing verbal statements with fear stimuli; in Eifert's studies not only did his procedures differ from others (e.g. Hekmat, 1972) but they differed within the experimental session. Variations in the presentation time of fearful slides, the nature and quality of the slides themselves, the construction of verbal statements, the origin of adjectives used in those statements, instructions given to the subjects, and the timing between trials and sets of statements all differ across studies, indicating a lack of standardization. The present study attempted to address some of these concerns by standardizing the presentation time of visual and auditory stimuli, by randomizing the statements and presenting them in two discrete sets, by constructing statements with adjectives whose hedonic value was rated by a peer group from which the subjects were drawn, by automating as much of
the instructional aspects of the study as possible (e.g. using audio taped instructions), and by having experimenters who were explicitly trained in the procedures and who had access to standardized procedure manuals. Because of the diversity of the approaches to language conditioning, it is unclear what procedures afford the most reliable and valid methodology. This would be an area of future development and studies which manipulate procedural variations are needed before further comparative studies are undertaken (e.g. as in the complex Eifert and Schermelleh (1985) study).

Finally, it is remarkable that the only other study in which subjective fear was recorded was that by Weiss and Evans (1978). Rachman and Hodgsen (1974) have noted that subjective/affective, behavioral, and autonomic fear responses co-vary at different rates over time (i.e. are desynchronous) under high-demand fear conditions, which implies that measurement of all three components of fear are essential. Furthermore, in a study of flight-phobics (Campos, Solyom, & Koelink, 1984), high subjective distress persisted despite significant inhibition of autonomic
arousal with a cardiac medication during in-vivo exposure sessions (i.e. during actual flights), indicating that affective components of fear are likely the most resistant of all fear responses to extinction. Thus, it is surprising that only one other study included an index of subjective distress. It is suggested that future studies on the effects of language conditioning should include such measures.

The results of language conditioning studies offer further support Staats' (1972) contention that language-based interventions can exert significant and powerful influences upon emotional and behavioral responses. This functional conceptualization of language as a medium for changing emotional and behavioral states is quite at odds with the more contemporary "cognitive-behavioral" perspectives on fear (e.g. Lang, 1984), as well as the more traditional learning theorists (e.g. Skinner, 1957).

It was noted earlier that traditional learning theories could not accommodate or explain certain clinical features of fear reactions (Rachman, 1976; 1977). Criticism of these approaches grew and with the advent of cognitivism in psychology in general it was inevitable that the field of
fear would succumb to the zeitgeist of the abandonment of the conditioning paradigm in general. Alternative explanations of fear were offered from more cognitive (e.g. Bandura, 1969) and information-processing (e.g. Lang, 1984) perspectives which were not themselves truly explanatory, but rather alternatively descriptive of the phenomena in question. Language behaviors themselves (e.g. verbal and imagery responses) in such theories are considered symptomatic manifestations of faulty "deeper" cognitive schemata, rather than as functional stimuli which are affected by, and which can affect, emotional responses. Basic learning and conditioning tenets governing human behavior are relegated to cursory acknowledgement, if any, in the ontology of fear. Approaches such as Lang's bioinformational theory typify the extreme of the cognitive and information processing position and are reminiscent of traditional psychodynamic theorizing in their complexity and lack of specificity (Eysenck, 1987).

A coherent, integrated, theory of fear must include attention to various fear responses (e.g. Rachman's tripartite systems of avoidance behavior, autonomic arousal,
and subjective distress), including language behavior, without disavowing the most basic laws of learning which govern all behavior. One such integrated approach is offered in Staats' Paradigmatic Behavioral theory, a third-generation behavioral theory which is not only integrated in its treatment of the basic laws of learning, but also in its incorporation of variables hitherto eschewed by traditional learning theorists. In this way, Staats' approach offers a framework from which integration is possible in the specific area of fear, especially in reconciling the schism which exists today between cognitive theorists who have abandoned learning theory and laws, and learning theorists who continue to ignore cognitive perspectives and variables.

From this perspective the study of language conditioning offers a unique arena in which to investigate the parameters of fear and to enhance not only our understanding of this common and complex phenomenon, but also our control of its more debilitating aspects.
### Table 1

**Descriptive Statistics on Pre-Treatment Measures (N = 65)**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>sd</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSS Total Score</td>
<td>188.48</td>
<td>34.71</td>
<td>105</td>
<td>267</td>
</tr>
<tr>
<td>FSS Spider Score</td>
<td>5.37</td>
<td>0.96</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Positive RR Adjectives</td>
<td>22.68</td>
<td>4.77</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Negative RR Adjectives</td>
<td>58.25</td>
<td>3.67</td>
<td>50</td>
<td>65</td>
</tr>
<tr>
<td>Positive SR Adjectives</td>
<td>22.17</td>
<td>4.54</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>Negative SR Adjectives</td>
<td>59.71</td>
<td>4.46</td>
<td>50</td>
<td>68</td>
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<tr>
<td>SUDS-Discomfort</td>
<td>3.32</td>
<td>1.72</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>SUDS-Fear</td>
<td>3.05</td>
<td>1.88</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

**Legend:**
- FSS = Fear Survey Schedule
- RR = Response-Referent
- SR = Stimulus Referent
- SUDS = Subjective Units of Discomfort Scale
Table 2

Correlations Between Pre-Treatment Measures (N = 65)

<table>
<thead>
<tr>
<th></th>
<th>FSS-</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Sp.</td>
<td>.47*</td>
<td>+RR</td>
<td>Des.</td>
<td>-.11</td>
<td>.01</td>
<td>-RR</td>
<td>Des.</td>
<td>.06</td>
<td>.19</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+SR</td>
<td>Des.</td>
<td>-.16</td>
<td>.04</td>
<td>.46*</td>
<td>-.02</td>
<td>-SR</td>
<td>Des.</td>
<td>.07</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SUDS-</td>
<td>Fear</td>
<td>.12</td>
<td>.06</td>
<td>.09</td>
<td>.15</td>
<td>.03</td>
<td>.20</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>SUDS-</td>
<td>Disc.</td>
<td>.06</td>
<td>.03</td>
<td>-.05</td>
<td>.08</td>
<td>-.25</td>
<td>.14</td>
<td>.73*</td>
<td></td>
</tr>
</tbody>
</table>

FSS FSS +RR -RR +SR -SR SUDS

* 1-tailed t-test; p < .001

Legend: FSS = Fear Survey Schedule (Sp = Spider score; Tot = Total Score); Des. = Type of descriptor used in semantic conditioning statements (+ = Positive Affective Valence; - = Negative Affective Valence; RR = Response Referent; SR = Stimulus Referent); SUDS = Subjective Units of Discomfort Scale (F = Fear Ratings; D = Discomfort Ratings)
### Table 3

**Distribution of Subjects by Initial FSS Spider Score**

<table>
<thead>
<tr>
<th>N of Subjects with an FSS Spider Score of:</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
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<tbody>
<tr>
<td>Overall Sample (N = 65):</td>
<td>12</td>
<td>27</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Control Groups:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective (N = 9)</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Behavioral (N = 10)</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Treatment Groups:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R+S+ (N = 12)</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>R+S- (N = 11)</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>R-S+ (N = 11)</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>R-S- (N = 12)</td>
<td>0</td>
<td>8</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>RR Statement Groups:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive (N = 23)</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Negative (N = 23)</td>
<td>1</td>
<td>12</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>SR Statement Groups:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive (N = 23)</td>
<td>2</td>
<td>12</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Negative (N = 23)</td>
<td>4</td>
<td>10</td>
<td>5</td>
<td>4</td>
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</tbody>
</table>
Table 4

Descriptive Statistics for SUDS Ratings over Time

A. SUDS-Discomfort Ratings By:

<table>
<thead>
<tr>
<th></th>
<th>Pre-Tx Mean (sd)</th>
<th>Mid-Tx Mean (sd)</th>
<th>Post-Tx Mean (sd)</th>
<th>Post-BAT Mean (sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Sample (N = 55):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.32 (1.72)</td>
<td>3.71 (1.81)</td>
<td>4.15 (1.97)</td>
<td>4.71 (2.43)</td>
</tr>
<tr>
<td><strong>Affective Control Group (N = 9):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.22 (1.48)</td>
<td>3.67 (1.32)</td>
<td>4.44 (1.24)</td>
<td>4.22 (2.33)</td>
</tr>
<tr>
<td><strong>Treatment Groups (N = 11 for R+S+, R-S-; N = 12 for R+S-, R-S+):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R+S+:</td>
<td>3.17 (1.53)</td>
<td>2.92 (1.56)</td>
<td>3.33 (2.02)</td>
<td>3.83 (2.33)</td>
</tr>
<tr>
<td>R+S-:</td>
<td>3.45 (2.02)</td>
<td>3.36 (2.16)</td>
<td>3.55 (2.34)</td>
<td>4.00 (2.72)</td>
</tr>
<tr>
<td>R-S+:</td>
<td>3.09 (2.07)</td>
<td>4.18 (1.83)</td>
<td>4.73 (2.10)</td>
<td>5.45 (2.58)</td>
</tr>
<tr>
<td>R-S-:</td>
<td>3.83 (1.95)</td>
<td>4.42 (1.88)</td>
<td>4.75 (1.71)</td>
<td>5.92 (2.54)</td>
</tr>
<tr>
<td><strong>RR Statement Groups (N = 23 each group):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RR+:</td>
<td>3.30 (1.74)</td>
<td>3.13 (1.84)</td>
<td>3.43 (2.13)</td>
<td>3.91 (2.47)</td>
</tr>
<tr>
<td>RR-:</td>
<td>3.48 (2.00)</td>
<td>4.30 (1.82)</td>
<td>4.74 (1.86)</td>
<td>5.70 (2.51)</td>
</tr>
<tr>
<td><strong>SR Statement Groups (N = 23 each group):</strong></td>
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</tr>
<tr>
<td>SR+:</td>
<td>3.13 (1.77)</td>
<td>3.52 (1.78)</td>
<td>4.00 (2.13)</td>
<td>4.61 (2.54)</td>
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<td>SR-:</td>
<td>3.65 (1.95)</td>
<td>3.91 (2.04)</td>
<td>4.17 (2.08)</td>
<td>5.00 (2.75)</td>
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</table>
Table 4 (Continued): Descriptive Statistics for SUDS Ratings over Time

B. SUDS-Fear Ratings By:

<table>
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<tr>
<th></th>
<th>Pre-Tx Mean (sd)</th>
<th>Mid-Tx Mean (sd)</th>
<th>Post-Tx Mean (sd)</th>
<th>Post-BAT Mean (sd)</th>
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<tbody>
<tr>
<td>Overall Sample (N = 55):</td>
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<tr>
<td></td>
<td>3.05 (1.88)</td>
<td>3.35 (2.09)</td>
<td>3.69 (2.12)</td>
<td>4.54 (2.56)</td>
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<tr>
<td>Affective Control Group (N = 9):</td>
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<tr>
<td></td>
<td>2.89 (1.27)</td>
<td>3.56 (1.13)</td>
<td>4.11 (1.17)</td>
<td>3.78 (1.48)</td>
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<td>Treatment Groups (N = 11 for R+S+, R-S; N = 12 for R+S-, R-S-):</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R+S+:</td>
<td>3.08 (1.51)</td>
<td>2.67 (1.78)</td>
<td>3.08 (1.98)</td>
<td>3.33 (2.71)</td>
</tr>
<tr>
<td>R+S-:</td>
<td>2.91 (2.12)</td>
<td>2.91 (2.07)</td>
<td>3.00 (2.32)</td>
<td>3.55 (2.73)</td>
</tr>
<tr>
<td>R-S+:</td>
<td>2.73 (2.45)</td>
<td>3.82 (2.68)</td>
<td>4.09 (2.43)</td>
<td>5.27 (2.76)</td>
</tr>
<tr>
<td>R-S-:</td>
<td>3.75 (2.45)</td>
<td>3.83 (2.41)</td>
<td>4.25 (2.34)</td>
<td>6.00 (2.26)</td>
</tr>
<tr>
<td>RR Statement Groups (N = 23 each group):</td>
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<td></td>
</tr>
<tr>
<td>RR+:</td>
<td>3.00 (1.78)</td>
<td>2.78 (1.88)</td>
<td>3.04 (2.10)</td>
<td>3.43 (2.66)</td>
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<tr>
<td>RR-:</td>
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<td>3.83 (2.48)</td>
<td>4.17 (2.33)</td>
<td>5.65 (2.48)</td>
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<td>SR Statement Groups (N = 23 each group):</td>
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</tr>
<tr>
<td>SR+:</td>
<td>2.91 (1.98)</td>
<td>3.22 (2.28)</td>
<td>3.57 (2.21)</td>
<td>4.26 (2.85)</td>
</tr>
<tr>
<td>SR-:</td>
<td>3.35 (2.29)</td>
<td>3.39 (2.25)</td>
<td>3.65 (2.37)</td>
<td>4.83 (2.74)</td>
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</table>
Table 5

Behavior Approach Test Scores for all Groups

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<th>Mean</th>
<th>sd</th>
<th>Min</th>
<th>Max</th>
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<td><strong>Overall Sample</strong></td>
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<tr>
<td>(N = 56)</td>
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<tr>
<td><strong>Behavioral Control Group</strong> (N = 10)</td>
<td>11.40</td>
<td>1.96</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td><strong>Treatment Groups:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R+S+ (N = 12)</td>
<td>14.33</td>
<td>0.98</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>R+S- (N = 11)</td>
<td>12.82</td>
<td>2.56</td>
<td>9</td>
<td>15</td>
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<tr>
<td>R-S+ (N = 11)</td>
<td>13.91</td>
<td>2.02</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>R-S- (N = 12)</td>
<td>10.25</td>
<td>1.96</td>
<td>7</td>
<td>15</td>
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<tr>
<td><strong>RR Statement Groups:</strong></td>
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<tr>
<td><strong>SR Statement Groups:</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SR+ (N = 23)</td>
<td>14.13</td>
<td>1.55</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>SR- (N = 23)</td>
<td>11.48</td>
<td>2.57</td>
<td>7</td>
<td>15</td>
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</tbody>
</table>
Table 6
Repeated Measures ANOVA Source Tables for Affective Ratings by Treatment Group

A. **Between Subjects (Group) Factor:** Treatment Group (N = 55)

**Levels:** R+S+; R+S−; R−S+; R−S−; Affective Control

**Repeated Measures (Time) Factor:** SUDS-Discomfort Ratings

**Levels:** Pre-Tx; Mid-Tx; Post-Tx; Post-BAT

<table>
<thead>
<tr>
<th>Source</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
<th>p &lt;</th>
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<td>Overall</td>
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<td>.0001</td>
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<td>Group</td>
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<td>15.44</td>
<td>1.33</td>
<td>.28</td>
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<tr>
<td>Time</td>
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<td>1.68</td>
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</table>
Table 6 (Continued)
Repeated Measures ANOVA Source Tables for Affective Ratings by Treatment Group

B. Between Subjects (Group) Factor: Treatment Group (N = 55)
   Levels: R+S+; R+S--; R−S+; R−S--; Affective Control
Repeated Measures (Time) Factor: SUDS-Fear Ratings
   Levels: Pre-Tx; Mid-Tx; Post-Tx; Post-BAT

<table>
<thead>
<tr>
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<th>MS</th>
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<tbody>
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<td>Overall</td>
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<td>2867.54</td>
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<td>Group</td>
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<td>.30</td>
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<td>13.43</td>
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<tr>
<td>Time</td>
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<td>17.47</td>
<td>8.96</td>
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<td>Group X Time</td>
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<td>1.95</td>
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Table 7
Repeated Measures ANOVA Source Tables for Affective Ratings by RR Statement Group

A. Between Subjects (Group) Factor: RR Group (N = 55)
   \textbf{Levels}: Positive RR; Negative RR; Affective Control

\textbf{Repeated Measures (Time) Factor}: SUDS-Discomfort Ratings
   \textbf{Levels}: Pre-Tx; Mid-Tx; Post-Tx; Post-BAT

<table>
<thead>
<tr>
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<td>.09</td>
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<td>3.19</td>
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<tr>
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<td>156</td>
<td>1.62</td>
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</table>
Table 7 (Continued)
Repeated Measures ANOVA Source Tables for Affective Ratings by RR Statement Group

B. Between Subjects (Group) Factor: RR Group (N = 55)

Levels: Positive RR; Negative RR; Affective Control

Repeated Measures (Time) Factor: SUDS-Fear Ratings

Levels: Pre-Tx; Mid-Tx; Post-Tx; Post-BAT

<table>
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<tr>
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<tr>
<td>Overall</td>
<td>2389.18</td>
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<td>.0001</td>
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<td>Group Main</td>
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<td>31.17</td>
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<td>12.87</td>
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<td>Group X Time</td>
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<td>4.90</td>
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<td>Error</td>
<td>297.27</td>
<td>156</td>
<td>1.91</td>
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Table 8

Repeated Measures ANOVA Source Tables for Affective Ratings by SR Statement Group

A. **Between Subjects (Group) Factor**: SR Group (N = 55)

   **Levels**: Positive SR; Negative SR; Affective Control

**Repeated Measures (Time) Factor**: SUDS-Discomfort Ratings

   **Levels**: Pre-Tx; Mid-Tx; Post-Tx; Post-BAT

<table>
<thead>
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<th>p &lt;</th>
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<tr>
<td>Overall</td>
<td>2854.49</td>
<td>1</td>
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<td>233.65</td>
<td>&lt; .0001</td>
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<td>Group Main</td>
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<td>2</td>
<td>3.33</td>
<td>0.27</td>
<td>.77</td>
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<tr>
<td>Error</td>
<td>635.27</td>
<td>52</td>
<td>12.22</td>
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<td>Time Main</td>
<td>42.78</td>
<td>3</td>
<td>14.26</td>
<td>8.29</td>
<td>.0001</td>
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<tr>
<td>Group X Time</td>
<td>4.09</td>
<td>6</td>
<td>0.68</td>
<td>0.40</td>
<td>.88</td>
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<tr>
<td>Error</td>
<td>268.32</td>
<td>156</td>
<td>1.72</td>
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</tr>
</tbody>
</table>
Table 8 (Continued)
Repeated Measures ANOVA Source Tables for Affective Ratings by SR Statement Group

B. Between Subjects (Group) Factor: SR Group (N = 55)

Levels: Positive SR; Negative SR; Affective Control

Repeated Measures (Time) Factor: SUDS-Fear Ratings

Levels: Pre-Tx; Mid-Tx; Post-Tx; Post-BAT

<table>
<thead>
<tr>
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<th>F</th>
<th>p</th>
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<tbody>
<tr>
<td>Overall</td>
<td>2389.18</td>
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<td>2389.18</td>
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<td>.0001</td>
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<td>Group Main</td>
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<td>2.35</td>
<td>0.17</td>
<td>.85</td>
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<tr>
<td>Error</td>
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<td>52</td>
<td>14.13</td>
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<tr>
<td>Time Main</td>
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<td>3</td>
<td>12.87</td>
<td>6.32</td>
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<td>Group X Time</td>
<td>8.82</td>
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<td>1.47</td>
<td>0.72</td>
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<td>317.88</td>
<td>156</td>
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</table>
Table 9
ANOVA Source Tables for BAT Analyses

A. **Between Subjects Factor**: Treatment Group (N = 56)

*Levels*: R+S+; R+S-; R-S+; R-S-; Behavioral Control

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
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<th>p</th>
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<tr>
<td>Explained</td>
<td>135.98</td>
<td>4</td>
<td>33.99</td>
<td>8.94</td>
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<td>Residual</td>
<td>193.86</td>
<td>51</td>
<td>3.80</td>
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Significant Post-Hoc Scheffe Comparisons found for:

- R+S+ versus R-S-
- R+S+ versus Behavioral Control
- R-S- versus R-S+
Table 9 (Continued)
ANOVA Source Tables for BAT Analyses

B. Between Subjects Factor: RR Statement Group

Levels: RR+; RR-; Behavioral Control

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
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<th>MS</th>
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<tbody>
<tr>
<td>Explained</td>
<td>45.96</td>
<td>2</td>
<td>22.98</td>
<td>4.29</td>
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<td>283.88</td>
<td>53</td>
<td>5.36</td>
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Significant Post-Hoc Scheffe Comparisons found for:

RR+ versus Behavioral Control

C. Between Subjects Factor: SR Statement Group

Levels: SR+; SR-; Behavioral Control

<table>
<thead>
<tr>
<th>Source</th>
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<td>.0001</td>
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<td>232.75</td>
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<td>4.39</td>
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Significant Post-Hoc Scheffe Comparisons found for:

SR+ versus SR-
SR+ versus Behavioral Control
Table 10
Successful BAT Completion by Groups

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<thead>
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<th>Number of Subjects who:</th>
<th>Completed All BAT Steps</th>
<th>Did Not Complete All BAT Steps</th>
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</thead>
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<tr>
<td><strong>Overall Sample (N = 56):</strong></td>
<td>22 (39%)</td>
<td>34 (61%)</td>
</tr>
<tr>
<td><strong>Behavioral Control Group (N = 10):</strong></td>
<td>1 (10%)</td>
<td>9 (90%)</td>
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<tr>
<td>(Note: for all Chi-Squares reported below the Behavioral Group was included in the analyses)</td>
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<tr>
<td><strong>Treatment Groups:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R+S+ (N = 12)</td>
<td>7 (58%)</td>
<td>5 (42%)</td>
</tr>
<tr>
<td>R+S- (N = 11)</td>
<td>5 (45%)</td>
<td>6 (54%)</td>
</tr>
<tr>
<td>R+S+ (N = 11)</td>
<td>8 (73%)</td>
<td>3 (27%)</td>
</tr>
<tr>
<td>R+S- (N = 12)</td>
<td>1 (8%)</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>Chi-Square = 15.57; df = 4; p &lt; .004</td>
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<tr>
<td><strong>RR Statement Groups:</strong></td>
<td></td>
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</tr>
<tr>
<td>RR+ (N = 23)</td>
<td>12 (52%)</td>
<td>11 (48%)</td>
</tr>
<tr>
<td>RR- (N = 23)</td>
<td>9 (39%)</td>
<td>14 (61%)</td>
</tr>
<tr>
<td>Chi-Square = 5.20; df = 2; p = .07</td>
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<tr>
<td><strong>SR Statement Groups:</strong></td>
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<tr>
<td>SR+ (N = 23)</td>
<td>15 (65%)</td>
<td>8 (35%)</td>
</tr>
<tr>
<td>SR- (N = 23)</td>
<td>6 (26%)</td>
<td>17 (74%)</td>
</tr>
<tr>
<td>Chi-Square = 11.76; df = 2; p &lt; .003</td>
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Figure 1
Changes in SUDS-Discomfort Ratings over Time by Treatment Group
Figure 2
Changes in SUDS-Fear Ratings over Time
by Treatment Group

**SUDS FEAR**

**TIME**

- PRE-TX
- MID-TX
- POST-TX
- POST-BAT

- **R+S+**
- **R+S-**
- **R-S+**
- **R-S-**
- **AFF. CTL**
Figure 3
Changes in SUDS-Discomfort Ratings over Time by RR Statement Group

![Graph showing changes in SUDS-Discomfort Ratings over time by RR Statement Group.](image-url)
Figure 4
Changes in SUDS-Fear Ratings over Time
by RR Statement Group
Figure 5
Changes in SUDS-Discomfort Ratings over Time by SR Statement Group
Figure 6
Changes in SUDS-Fear Ratings over Time
by SR Statement Group

![Graph showing changes in SUDS-Fear Ratings over time by SR Statement Group.](image)
Figure 7
BAT Scores by Treatment Group

<table>
<thead>
<tr>
<th>TX GROUP</th>
<th>BAT SCORE</th>
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<tbody>
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<tr>
<td>R+S-</td>
<td>14</td>
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<tr>
<td>R-S+</td>
<td>13</td>
</tr>
<tr>
<td>R-S-</td>
<td>12</td>
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<tr>
<td>CTRL</td>
<td>11</td>
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</table>
Figure 8
BAT Scores by RR Statement Group
Figure 9
BAT Scores by SR Statement Group
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REFERENCES


Behavioral theories and treatment of anxiety (pp. 1-49).
New York: Plenum Press.


(Eds.), *Anxiety and the anxiety disorders* (pp. 247-272). Hillside, NJ: Earlbaum.


Staats, A. W., Gross, M. C., Guay, P. F., & Carlson, C. C. (1973). Personality and social systems and attitude-


