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A COMPARISON OF GRADUATED EXPOSURE, TRAINING IN VERBAL COPING SKILLS, AND A COMBINATION OF THOSE PROCEDURES IN TREATING FEAR OF THE DARK IN FOUR- AND FIVE-YEAR OLD CHILDREN.

University of North Carolina at Greensboro, Ph.D., 1978

A COMPARISON OF GRADUATED EXPOSURE, TRAINING IN VERBAL COPING SKILLS, AND A COMBINATION OF THOSE PROCEDURES IN TREATING FEAR OF THE DARK IN FOUR- AND FIVE-YEAR OLD CHILDREN

by

David V. Sheslow

A Dissertation Submitted to
the Faculty of the Graduate School at
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Approved by

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APPROVAL PAGE

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SHESLOW, DAVID V. A Comparison of Graduated Exposure, Training in Verbal Coping Skills, and a Combination of Those Procedures in Treating Fear of the Dark in Four- and Five-Year-Old Children. (1978) Directed by: Dr. Rosemery O. Nelson. Pp. 123

While a great deal of effort by behavioral researchers and therapists has been directed at demonstrating the success of their treatment techniques in modifying adult fears (Marks, 1974), relatively little effort has been devoted to the treatment of fears and phobias in children. Reports of previous research with childhood populations have suggested therapeutic effects for treatment procedures based on the graduated exposure to the fearful stimulus or situation (Jones, 1924a; Lazarus, 1960), training in verbal coping skills (Kanfer, Karoly, & Newman, 1975), and a combination of verbal skill acquisition and graduated exposure (Jersild & Holmes, 1935). However, no systematic research comparing these treatment approaches with children has been reported.

The purpose of the present study was to compare the effectiveness of a graduated exposure procedure, a verbal coping skill procedure, and a combination of the two procedures, in the treatment of fear of the dark behavior in 4- and 5-year-old children using both behavioral and subjective measures of fearfulness. Thirty-two children attending a private day care center were selected on the basis of their minimal dark tolerance as measured by two Behavioral Avoidance Tests. Children who failed to remain in total darkness for 30 seconds on both behavioral tests were operationally defined as dark fearful and eligible for treatment.

Children were matched on the basis of pretest dark tolerance scores and randomly assigned to one of four treatment groups: the Graduated Exposure group received gradual increased contact with the dark in a playful context; the Verbal Coping Skills group, while in full illumination, received training and practice in specific verbal strategies to deal more effectively with the dark; the Coping Skills/Graduated Exposure group received training in verbal coping strategies but practiced these verbal strategies in gradually decreasing illumination; the Contact Control group received training and practice in nursery rhymes.

Dependent measures included fear indicants from two response modes. The behavioral indicant measured the duration of dark tolerance (seconds) during a behavioral avoidance test while the subjective indicant measured a verbal rating of fearfulness on a five-point rating scale. Further, two behavioral avoidance posttests, a low demand posttest and a high demand posttest which differed in instructional demand to remain in the dark, were administered in counterbalanced order to determine the potential for modifying fear behavior through direct instruction (Kelly, 1976).

The results failed to find significant differences among the treatment groups across the three tests for both the behavioral and subjective fear measures. However, a significant main effect for tests was found for both the behavioral and subjective measures indicating that there was a significant change in the children's behavior across the three tests when all groups were considered together. Further analyses revealed that, compared to pretest

dark tolerance scores, significant increases in dark endurance were found on both the low and high demand posttests, which did not differ from each other. Children's fear ratings on the high demand posttest signified less fearfulness than did their ratings on the pretest and low demand posttest which did not differ from each other.

Within-group analyses for the behavioral measure indicated that compared to pretest scores, the Graduated Exposure group demonstrated significant increases in dark tolerance on both the high and low demand posttests which did not differ from each other. The Coping Skills/Graduated Exposure group showed a significant increase in dark tolerance on the high demand posttest relative to pretest scores. The Verbal Coping Skills and Contact Control groups failed to show significant within-group changes in dark tolerance. Within-group analyses on the subjective fear measure failed to show significant decreases in posttest ratings compared to pretest ratings for all groups.

The results were discussed (a) as supporting Marks' (1974) exposure hypothesis of fear reduction in that only groups which received direct contact with the dark during intervention demonstrated significant posttest dark tolerance changes relative to pretest scores; (b) in terms of limitations in the children's cognitive and language skills in utilizing treatment procedures presented purely in verbal form; (c) in terms of the questionable ability of 4- and 5-year-old children to label validly behaviorally measured fear; and (d) in terms of suggestions for assessing analogue fear behavior in children.

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CHAPTER I.

INTRODUCTION

While a great deal of effort by behavioral researchers and therapists has been directed at demonstrating the success of their techniques in modifying adult fears (Bandura, 1969; Leitenberg, 1976; Marks, 1974), relatively little effort has been devoted to the treatment of fears and phobias in children (Graziano, 1975; Miller, Barrett, & Hampe, 1974). As noted by Graziano (1975, p. 283): "Adults seem to minimize the importance of children's fears and to view such fears as common, expected, transitory, and thus not a particularly serious part of normal development". Although there seems to be a transient quality to many childhood fears (Agras, Sylvester, & Oliveau, 1969), this finding is by no means universal. For example, in a retrospective study of adult phobics, Marks and Gelder (1965) found that the onset of most animal phobias was in early childhood and that agoraphobia can occur at any age but appears to have a peak onset age during adolescence. An additional point to consider is that the relative transience of some excessive childhood fears does not mitigate the subjective discomfort nor the disruptive effects of such behavior.

The purpose of this investigation was to compare the effectiveness of several treatment procedures in modifying childhood fears. Specifically, the effectiveness of graduated exposure, verbal

coping skills training, and a combination of the two treatment procedures were compared in modifying fear of the dark behavior in 4- and 5-year-old children. Since the treatment of childhood fears has historically resulted from the concerns of psychoanalytic and behavioral clinicians, the review will continue with a brief discussion of traditional treatment approaches and a more extended discussion of behavioral approaches to the treatment of childhood fears.

Psychoanalytic Treatment Approaches

The psychoanalytic interpretation of excessive fears and phobias in children began with Sigmund Freud's (1909) classic case of 5-year-old Little Hans, who manifested a horse phobia. According to psychoanalytic theory, as presented by Miller et al. (1974):

> When an instinctual impulse arises which clashes with realistic, self-preservative, or conscious-directed interests, a slight degree of anxiety is used as a signal to warn of impending danger. The anxiety signal mobilizes defensive maneuvers aimed at keeping the instinct under control, while simultaneously permitting the person to function. Since the instinctual danger is internal and inescapable, externalization transfers the danger to an external object which can be avoided, while displacement removes the danger from the intimate family relationships to neutral objects. (p. 113)

Freud postulated the source of the phobia to be a fixation at the Oedipal stage of psychosexual development. While the theory has been elaborated and modified (Maeder, 1944; Sperling, 1952), most analysts have generally followed Freud's lead (Berecz, 1965). Rachman and Costello (1961) have more specifically summarized

the steps in the etiology of phobic behavior from a psychoanalytic point of view:

> The theory states that the basis for phobic disturbances is the Oedipus Complex. The child desires to possess the mother sexually and is jealous and hostile toward the father. The child fears the father because of these hostile wishes and, in particular, dreads castration. The fear of the avenging father is projected onto some external and formerly innocuous object. The outbreak of the phobia is generally preceded by a period of privation and/or intensified sexual excitement. (p. 97)

As noted by Berecz (1965) it is often difficult to distinguish clearly between etiology and treatment in the anecdotal accounts of psychoanalytic writers, owing to the implicit premise that when the "true" source of the neurosis is thoroughly understood, the overt behavioral manifestations will recede. Illustrative of the difficulty in separating etiology from treatment is Maeder's (1944) treatment of his 7-year-old nephew who developed a fear of dogs following an illness. Based on the premise that "the dog is a sexual symbol", Maeder questioned the boy about material related to sexual guilt. Upon learning that the boy began to masturbate during his illness, he convinced the boy that if he gave up masturbation, the danger and consequent fear would disappear. Maeder reported the child's fear disappeared the next day and that he was symptom-free during the fifteen year follow-up.

Psychoanalytically oriented therapists assert that treatment of symptomatic phobic behavior without regard to the "underlying cause" will lead to symptom-substitution. In their review on this issue, Mahoney, Kazdin, and Lesswing (1974) render the following conclusion:

> It may therefore be concluded that the development or intensification of maladaptive response patterns after behavioral treatment is a testable but as yet unsupported argument. While there are a few cases which have reported such developments, the vast majority have revealed no counter-therapeutic findings and many have actually reported positive transfer to non-treated areas of adjustment. (p. 25)

Empirically oriented psychologists have remained unconvinced of the efficacy of analytic approaches due to the difficulty in experimentally examining these treatment approaches. Treatment procedures, however, must be open to empirical test to insure their relative effectiveness and to determine the viability of the theoretical principles underlying the treatment procedures.

The difficulty in testing analytic theory, and hence treatment procedures based on dynamic theory, is illustrated by Sperling's (1952) treatment of Linda, a 2-year-old animal phobic. In part Sperling rendered the following interpretation:

> By the mechanism of condensation all these impulses, wishes, and fears, directed toward her mother and brother were condensed in her phobias in accordance with the unconscious identification of nipple-breast-stool-penis-finger. (p. 123)

It is difficult to see how one would operationalize such an unconscious identification. Obviously, this paragraph has been removed from its rich context; nevertheless, reading the case in toto still leaves the nonanalytic psychologist with Ellis' (1950) summary statement, "The ratio of speculative statements to empirically adduced facts is slightly overpowering".

In summary, analytic approaches to the etiology and treatment of fearful and phobic behavior have been based on a hydraulic model

of personality which views the fear as a symptom of a deep-seated personality problem. The difficulty in testing psychoanalytic theory and treatment procedures based on such theory have been pointed out. The review will continue with a discussion of behavioral approaches to the conceptualization and treatment of fearful and phobic behavior.

Behavioral Treatment Approaches

Behavioral theorists approach fearful and phobic behavior as learned behavior. The most famous account of the acquisition of a fear under laboratory conditions is the classic demonstration of Watson and Raynor (1920) in which 11-month-old Little Albert was classically conditioned (the unconditioned stimulus was loud noise) to exhibit fear in the presence of a white rat (conditioned stimulus). The fear, once established, was noted to generalize to similar stimuli along a generalization gradient; i.e., white rabbit, furry objects. Rachman and Costello (1961) summarized the essentials of the theory:

1. Phobias are learned responses.
2. Phobic stimuli, simple or complex, develop when they are associated temporally and spatially with a fear-producing state of affairs.
3. Neutral stimuli which are of relevance in the fear-producing situation and/or make an impact on the person in the situation, are more likely to develop phobic qualities than weak or irrelevant stimuli.
4. Repetition of the association between the fearful situation and the new phobic stimuli will strengthen the phobia.

5. Associations between high intensity fear situations and neutral stimuli are more likely to produce phobic reactions.

6. Generalization from the original phobic stimulus to stimuli of a similar nature will occur. (p. 110)

Maintenance of phobic behavior, according to two-factor theory of avoidance conditioning (Mowrer, 1947), is thought to result from the fear reduction produced by instrumental avoidance responses which prohibit contact with the phobic stimulus and the occurrence of extinction.

Several difficulties with usual hypotheses as to the etiology of phobic behavior based on learning theory have surfaced. For example, the stress placed on the actual experiential association between "a fear producing state of affairs" and the phobic stimulus contrasts to some extent, with the data presented by Jersild, Markey, and Jersild (1933). In an interview study with 398 children, ages 5 to 12, Jersild et al. compared the children's answers to their "actual worst happening" with their fear responses. The overwhelming majority of children's answers in response to their "actual worst happening" reflected experienced danger, such as bodily injury, physical illness, and traffic accidents. In contrast, the majority of fears reported were without recalled correspondence to actual physical trauma. Similarly, replications of Watson and Rayner's (1921) demonstration of fear acquisition through classical conditioning which used as conditioned stimuli such common household items as curtains and blocks (Bregman, 1934), or a wooden duck paired repeatedly with a loud sound (English, 1929) met with

little success. As noted by Rachman and Seligman (1976):

> That all stimuli have an equal chance of being transformed into fear signals, is not borne out by surveys of the distribution of fears.... What we find instead, however, is that some fears are exceedingly common - far too common for the conditioning theory. Others are far too rare. Fear of the dark is commonly seen in young children, but not pajama phobias. (p. 334)

An additional point raised by Seligman (1971) is the implicit assumption that phobias can be learned in one trial. "It must be enough for one traumatic experience paired with a conditioned stimulus (CS) to produce a phobia. One-trial conditioning of fear is the exception, not the rule, in laboratory fear conditioning" (Seligman, 1971, p. 311).

For learning-based theory of the etiology of phobic behavior to deal more effectively with the above difficulties, Seligman (1971) has introduced the concept of preparedness. Generally, Seligman notes that associations that are readily acquired are defined as "prepared" while those that are acquired with difficulty are "unprepared". "Phobias are highly prepared to be learned by humans, and, like other highly prepared relationships, they are selective and resistant to extinction, learned even with degraded input, and are probably noncognitive" (Seligman, 1971, P. 312). Seligman goes on to note that from an evolutionary perspective, the majority of phobias are of natural importance to the survival of the species. While he does not deny that other phobias are possible, he notes that such phobias should be less frequent, since they are less "prepared" (Rachman & Seligman, 1976).

While the notion of preparedness adds conceptual strength to behavioral accounts of the etiology of fearful and phobic behavior, other issues surrounding the development of fear behavior are far from settled. For example, if some stimuli are so highly prepared to become fear signals, how does one account for individual differences in the development and maintenance of fearful behavior? Additionally, how does the concept of preparedness interact with the developmental changes in the frequency of reported fears found in normative studies with children (Baurer, 1976; Jersild et al., 1933; Maurer, 1965)? Undoubtedly, a complex of factors including organismic variables, direct and vicarious conditioning (Bandura, 1969), reinforcement for avoidance behavior (Marks, 1969), and symbolic and cognitively mediated stimuli (Mahoney, 1974) affect the development of fear behavior.

It naturally follows from behavioral accounts of the etiology of fearful behavior as learned behavior that treatment procedures be centered around the acquisition of a more appropriate response in the presence of the fearful stimulus. The present study examined two treatment procedures and a combination thereof in the modification of a childhood fear. The first procedure, in keeping with more established behavioral approaches, was based on the extinction of the fear response through the gradual re-exposure of the fearful stimulus in a nonfearful context (Jones, 1924a; Wolpe, 1969). The second approach, in keeping with the more recent "cognitive-

behavioral trend" (Meichenbaum & Turk, 1975), stressed the development of a verbal coping repertoire in dealing with the fearful stimulus. The remainder of the review will therefore discuss treatment techniques based on graduated exposure followed by a brief discussion of more cognitive-behavioral treatment techniques.

Interestingly, the roots of contemporary intervention techniques utilized by benavior therapists may be traced to the early part of the twentieth century. Jersild and Holmes (1935) presented results of interview data with 47 mothers as to specific methods used in dealing with their children's fears. The most effective techniques were those that gradually exposed the child to the fearful stimulus complex and/or helped the child become more skillful in dealing with the fear. Among the most helpful techniques cited by the mothers interviewed were:

> 1. Prompting the child to acquire skills that may be of specific aid to him in coping with the feared situation.
>
> 2. Leading the child by degree into active contact with, and participation in, the situation he fears: Presenting the stimulus at first in a less intense form, or without some of the frightening features, or in conjunction with reassuring features, and then gradually introducing all of the conditions that initially evoked fear.
>
> 3. Giving the child the opportunity to become acquainted with the feared stimulus of his own accord by making it readily accessible to him in his normal environment, but in circumstances that permit him in his normal environment to inspect or ignore it; approach or avoid it as he sees fit. (p.103)

The least effective methods included ignoring, coercion by force or ridicule, and removing the stimulus causing the fear.

Hagman (1932) found that mothers reported that a combination of explanation and gradual re-exposure produced the best effect.

The first systematic attempt at behaviorally modifying fear reactions was presented by Mary Cover Jones (1924a) in her treatment of 3-year-old Peter. According to Jones, Peter, at the sight of a rabbit, screamed and "fell flat on his back in a paroxysm of fear." The treatment procedure consisted of "direct conditioning," gradually exposing Peter to the fearful stimulus in the presence of a pleasant stimulus (food), and modeling by three fearless peers. Jones (1924b) also suggested methods based on "negative adaptation", "verbal appeal" (extinction procedures), and "social adaptation" (modeling nonfearful behavior). Weber (1936) reported the successful treatment of a 19-month-old child who had a phobia of her own shadow. The child was gradually exposed to objects casting shadows while seated on her father's lap. She overcame her fear in one session.

Much of the impetus for the expanding literature on the behavioral treatment of anxiety and fear behavior may be traced to Wolpe's (1958) Psychotherapy by Reciprocal Inhibition and specifically to the development of the technique of systematic desensitization. According to Wolpe (1969) the technique involves three separate sets of operations:

1. Training in deep muscle relaxation.

2. The construction of anxiety hierarchies.

3. Counterposing relaxation and anxiety-evoking stimuli from the hierarchy. (p. 100)

Although the effectiveness of desensitization has been well documented (Bandura, 1969), explanations as to the process responsible for the effectiveness of systematic desensitization have differed. According to Wolpe's reciprocal inhibition hypothesis, "If a response inhibitory of anxiety can be made to occur in the presence of anxiety-evoking stimuli it will weaken the bond between the stimuli and the anxiety" (Wolpe, 1969, p. 15). Deep muscle relaxation is routinely used in standard desensitization, but Wolpe also suggested feeding, sexual, and assertive responses as anxiety-inhibiting agents. "One may also use, inter alia, external inhibition, or words, or images eliciting counter-anxiety emotions; or the anxiety inhibiting potential of the non-anxious emotions that the therapeutic environment inadvertently arouses in many patients" (Wolpe, 1976, p. 113). Clearly, if the "universe" of possibilities in the therapeutic environment may serve as responses antagonistic to anxiety, Wolpe's reciprocal inhibition hypothesis is rendered empirically irrefutable and becomes, as Yates (1975) notes, "almost as slippery as a psychoanalytic proposition" (p.155).

Alternative hypotheses as to the underlying mechanism responsible for the positive effects of systematic desensitization have been many and varied. Lader and Mathews (1968) proposed a "maximal habituation hypothesis" which in general states that whatever lowers the subject's arousal (e.g., relaxation) would tend to maximize the role of habituation to anxiety-related stimuli. An extinction hypothesis has been advanced by Davison and Wilson (1973).

According to this view, the extinction of avoidance behavior is achieved by the repeated exposure of threatening scenes without the occurrence of any adverse consequences. Relaxation may not be a necessary component in desensitization, but it may facilitate the nonreinforced exposure of the fearful stimulus complex (Wilson & Davison, 1971). In his attempt to develop a unified theory of fear reduction, Marks (1974) points to the critical role of "exposure of the frightened subject to a frightening situation until he acclimatizes" (p. 107). Thus, Marks' approach is consistent with that of Wilson and Davison (1971) in stressing extinction in fear reduction. Alternatively, Goldfried (1971) has reconceptualized desensitization as a self-control strategy in which the client acquires skill (such as relaxation) in coping with anxiety-related stimuli. Even though there has been much debate and criticism of the various theories underlying the effectiveness of desensitization (VanEgeren, 1971; Wolpe, 1976; Yates, 1975), the issue is far from settled. As Goldfried and Davison (1976) state: "In our opinion greater confusion reigns today than ten years ago" (p. 113).

The host of terms used to label behavioral treatment procedures adds much confusion to the task of comparing treatment results (Marks, 1974). As described by Marks (1974):

> When exposure to a phobic situation is slow, graded, and brief, but with a minimum of tension and with some contrasting experience such as relaxation or meditation, the term desensitization is appropriate" (p. 71).

Lazarus (1960) applied systematic desensitization to an intense fear of "maternal deprivation" in a 9-year-old female. Following five sessions of relaxation training, hierarchy construction, and imaginal desensitization, the child was completely relieved of the "subjective threat of maternal deprivation". In the same report, Lazarus noted successful treatment of 18 phobic cases ranging in duration from three to 12 years using "direct deconditioning based on the principle of reciprocal inhibition" without any evidence of relapse at follow-ups of six months to 2-1/2 years. This and other reports of the utility of muscular relaxation with children (Graziano & Kean, 1971; Tasto, 1969; Wish, Hasazi, & Jurgela, 1973) are in contrast to Eysenck and Rachman's (1965) view that "for obvious reasons, it is not possible to use relaxation with many children, especially young ones" (p. 210). Tasto (1969) reported the successful use of relaxation and graded in vivo presentation of noise stimuli with a 4-year-old boy "who developed extreme psychophysiological and motor reactions to loud sounds." With a similar presenting problem, Wish et al. (1973) utilized relaxation, automated systematic desensitization, and reinforced practice (parental reinforcement following each completed session) with an 11-year-old boy. At a nine-month follow-up, all sounds on the hierarchy received a zero rating of subjective units of disturbance.

Other techniques based on desensitization notions of fear modification have also been reported with children. Common to

these techniques is the gradual exposure of the child to the fearful stimuli in a positive context. In these procedures, it is assumed that the positive context (i.e., food, relaxation) will have inhibitory effects on the anxiety associated with the gradual presentation of the fear-evoking stimulus complex. Although the positive context may serve an anxiety-inhibiting function, it is as likely that the positive context serves to facilitate the exposure of the fearful stimulus without negative consequences. The successful use of several "anxiety inhibitors" or "exposure inducers" has been reported in the literature. As already mentioned, Jones (1924b) used feeding responses as an anxiety inhibitor while the phobic rabbit stimulus was brought progressively closer to the child. Bentler (1962) reported a mother's successful treatment of her 1-year-old child's aquaphobia through the gradual exposure to water-related stimuli in a positive context; "...distraction, affective responses toward attractive toys, and body-contact with mother, as well as other mother-related stimuli were used to elicit responses incompatible with anxiety" (p. 186). Lazarus and Abramovitz (1962) reported on their technique of "emotive imagery" in which the therapist gradually exposes the child to fearful stimuli carefully "woven in a story concerning his favorite hero or alter ego". Lazarus and Abramovitz assumed that the imagery associated with the stories would "arouse feelings of self-assertion, pride, affection, mirth, and similar anxiety-inhibiting responses" (p. 197). Conn (1941), utilizing a play/interview technique,

presented results of a case study of a 9-year-old girl who was fearful of kidnappers. In this procedure, dolls were utilized to help the child act out fearful fantasies and aid in the desensitization process. Recently Kelly (1976) reported the results of a controlled study on variations of play desensitization, placebo play control, and no-treatment control groups with 4- and 5-year-old children who were afraid of the dark. The play desensitization sessions in this study involved dolls which were gradually exposed to greater levels of darkness in a playhouse. Results of this study showed that none of the treatment conditions resulted in significant decreases in fear of darkness on either behavioral or verbal measures; however, an overall increase in dark tolerance occurred when children were posttested under a high instructional demand condition, as compared to their performance under the low instructional demand posttest condition. Kelly found that children who were in the intermediate range of avoidance on the pretest increased their dark endurance most in response to the high demand condition. Children who were most avoidant on pretest measures tended to increase their subjective fear ratings on the high demand, compared to low demand posttest. As Kelly (1976) summarized the results: "One conclusion to be drawn from the demand results is that maximal behavioral change can be produced quickly and effectively by direct instruction when attempting to modify avoidance of darkness in normal children" (p. 81). The fact that Kelly failed to counterbalance high and low demand posttests suggests a

confounding between practice effects and the effects of high demand instructions. In spite of the fact that direct instruction to maximally confront the fearful stimulus may be a viable treatment procedure with children, additional research is required before firm conclusions can be drawn.

An alternative method of providing the exposure to fearful stimuli in a nonthreatening context is through the use of modeling procedures. In their often-cited study, Bandura, Grusec, and Menlove (1967) had dog-fearful children, ages 3 to 5, participate in eight brief sessions during which they observed fearless peer models engage in increasingly more intimate contact with a dog. Compared to appropriate control groups, the modeling groups exhibited significantly greater approach behavior to both the experimental dog and an unfamiliar dog. Upon completion of the study, 55 percent of the initially most avoidant children in the modeling group were able to remain alone with the dog in the playpen (terminal step on the behavioral avoidance test) as compared to 13 percent of the most avoidant children in the control conditions. Comparing these results with results of a later study uitilizing symbolic models (brief movie presentations) presented to 3- to 5-year-old children, Bandura and Menlove (1968) concluded that, although symbolic modeling may be less powerful than live modeling in changing behavior, this effect may be offset by utilizing a broader sample of models and fearful stimuli. The finding that model characteristics affect the degree of behavior change may be

important in Kelly's (1976) failure to find significant treatment effects for her play desensitization groups. It is possible that the children in Kelly's study failed to identify with the doll models sufficiently for vicarious extinction to occur.

A technique that combines modeling with direct physical contact with the phobic stimulus plus instructions and feedback from the therapist has been variously labeled guided participation or contact desensitization. Ritter (1968) compared the effectiveness of the guided participation procedure with a vicarious desensitization procedure (the graduated exposure of fearful stimuli to live models) with 5- to 11-year-old snake fearful children. The results showed that the modeling procedure was significantly superior to a control procedure but that the guided participation procedure "yielded results over and above" those obtained by the modeling procedure alone. Analyses on subjective fear ratings failed to yield significant results. In discussing the results, Ritter (1968) hypothesized that the guided participation procedure may have been more effective than modeling because guided participation:

> provides a stronger counter response to anxiety (physical contact with models) and a greater sampling of graduated aversive stimuli (physical contact with the phobic object in addition to visual stimulation). (p. 2)

A technique similar to guided participation but without the benefit of viewing a model engaging in the desired behavior has been labeled reinforced practice (Leitenberg, 1976). Basically, reinforced practice combines four therapeutic elements:

> (1) repeated graduated practice in approaching actual phobic stimuli; (2) social reinforcement for small gains in performance; (3) trial by trial feedback of precise measures of performance; (4) instructions designed to arouse expectation of gradual success (Leitenberg, 1976, p. 142).

Leitenberg and Callahan (1973) have shown their reinforced practice technique to be significantly superior to no treatment in reducing fear of the dark behavior in children. Children in the reinforced practice group had a mean age of 6 years while the untreated controls had a mean age of 5 years and 4 months. In this study, children were able to choose a prize each time they remained in a dark room longer than their previous longest time. The fact that no explicit or assumed anxiety inhibitor is utilized in this technique questions counter-conditioning hypotheses of fear and avoidance behavior change. Leitenberg (1976) noted that, "Patients could gradually learn to act differently in spite of anxiety, and that as a result of such changed behavior, anxiety would subsequently subside" (p. 145).

Whereas the above studies have, in their different forms, presented aversive stimuli initially in attenuated form with a gradual increase in the intensity of the fearful stimuli, fear modification techniques such as implosive therapy (Stamfl & Levis, 1967) or flooding (Marks, 1974) have emphasized prolonged exposure to high-intensity phobic stimuli either imaginally or in vivo. Procedurally "flooding" as currently used refers to the prolonged exposure to phobic situations in reality; "implosion" signifies solely the description of high-intensity scenes in imagination

(Leitenberg, 1976). Additionally, implosion, as described by Stampfl and Levis (1967), includes the exaggerated imaginal presentation of "real life" phobic scenes as well as scenes involving hypothesized psychodynamic content.

Two cases of successful implosive therapy have been reported with child patients. Ollendick and Gruen (1972) imploded an 8-year-old boy having a severe bodily injury phobia. Smith and Sharpe (1970) utilized the implosive technique with a 13-year-old school phobic. Although both reports indicate positive treatment outcomes, it is important to underscore Graziano's (1975) concern over:

> the obvious ethical and humanitarian issues involved in deliberately, maximally, and repeatedly frightening children...[who are]...not allowed the option of walking out of the session and summarily disengaging the therapist (p. 286).

The behavioral treatment procedures reviewed thus far have, to a greater or lesser degree, utilized exposure to fear stimuli as a treatment component. While many of the treatment techniques described (systematic desensitization, emotive imagery, implosive therapy) have implicitly assumed a functional relationship between the imaginal exposure to the fearful stimulus and a decrease in avoidance behavior, the utility of specifically manipulating covert events as a modality for the treatment of childhood fears has received little attention. This is in contrast to the recent behavior therapy trend in the treatment of adult fears and anxiety (Goldfried, 1971, 1973; Meichenbaum & Cameron, 1973; Meichenbaum, Gilmore, & Fedoravicius, 1971; Meichenbaum & Turk, 1975; Suinn &

Richardson, 1971; Wein, Nelson, & Odom, 1975). Further, until recently (Bandura, 1969; Goldfried & Merbaum, 1973; Mahoney, 1974) little explanatory merit was assigned to verbal-mediational accounts of behavior therapy procedures. Because one of the treatment approaches utilized in the present study was based on cognitive-behavioral intervention strategies, a brief review of cognitive-behavioral treatment procedures with special reference to child fear modification will follow.

Meichenbaum and Cameron (1974) offer the following view of the role of cognitive factors in behavior therapy:

> Behavior therapies in their present form have overemphasized the importance of environmental consequences, thus underemphasizing (and often overlooking) how the subject perceives and evaluates those consequences...it is not the environmental consequences per se that are of primary importance but what the subject says to himself about the consequences. However, what the subject says to himself - that is, how he evaluates and interprets these events - is explicitly modifiable by many of the behavior therapy techniques. (p. 264)

Mahoney (1974) reiterates Meichenbaum and Cameron's emphasis on the importance of cognitive factors:

> An individual responds - not to some "real" environment - but to a "perceived" environment. The frightened airline passenger reacts not to a purely external stimulus (loud noise after take-off) but to his perception (i.e., labeling of those stimuli (My God! We've lost an engine!). (p. 5)

Illustrative of the cognitive-behavioral approach with children is the work of Meichenbaum and his colleagues (Meichenbaum, 1971; Meichenbaum & Goodman, 1971). Meichenbaum, using a self-instructional training procedure, successfully trained impulsive children

to talk to themselves as a means of developing self-control. As described by Meichenbaum and Cameron (1974) the technique proceeded as follows:

> First the experimenter performed the task while the subject observed (the experimenter acted as model); then the subject performed the same task while the experimenter instructed the subject aloud; then the subject was asked to perform the task again while instructing himself aloud; then the subject performed the task while whispering; and finally the subject performed the task instructing covertly. (p. 266)

Recently, Kanfer, Karoly, and Newman (1975) investigated the effectiveness of two verbal responses in increasing dark endurance in children who were dark fearful. Children of 5 and 6 years of age were assigned to a competence group which emphasized personal control in the fearful situation ("I am a brave boy. I can take care of myself in the dark."), a stimulus group which emphasized a reduction in the aversiveness of the fearful stimulus ("The dark is a fun place to be. There are many good things in the dark."), and a contact control group which was taught a nursery rhyme sentence. Generally, both verbal training procedures were effective in increasing dark tolerance relative to the control group. On some measures, the stimulus group did not differ from the controls.

Holmes (1935) demonstrated the powerful influence of teaching children coping skills in overcoming their fears. Holmes attached a small phosphorescent pendant to a light switch in a dark room and taught dark-fearful nursery school children (who initially refused to enter the dark room) to "look for the little light at the end of the chain...that's fine. You found it all by yourself, didn't

you?". A similar procedure was utilized for fear of heights. Holmes summarized the procedure:

> The method was essentially that of directing and aiding the child in learning various ways of coping with the fear situation. It required the child to be an active participant in the procedure. The procedure also included verbal reassurance, gradual familiarization with the fear situation, and a pleasant conclusion to each performance in the form of a game. (p. 29)

It is interesting that Holmes' explanation seems to parallel the themes stressed by Goldfried's (1971) self-control interpretation of desensitization and Meichenbaum's (Meichenbaum & Turk, 1975) "stress innoculation" training procedures. Developed to treat multiphobic adult clients, stress innoculation was designed to accomplish three goals: "The first was to 'educate' the client about the nature of stressful or fearful reactions; the second, to have the client rehearse various coping behaviors; and the third, to give the client an opportunity to practice his new coping skills in a stressful situation" (Meichenbaum & Cameron, 1974, p. 285). It should be mentioned that the procedures utilized in Holmes' and Meichenbaum's stress innoculation training procedures actually combine exposure to the stressful situation with training in coping strategies. Additional support for the combination of training in verbal coping skills with direct or imaginal contact with the fearful situation comes from Meichenbaum's work with adult clients. For example, in an outcome study, Meichenbaum (1972) compared systematic desensitization, systematic desensitization combined with self-instructional training, and no treatment in the

alleviation of test anxiety in college students. The results suggested that systematic desensitization combined with self-instructional training was the most effective treatment approach on measures of test performance, subjective anxiety, and grade point average. The beneficial effects of adding a self-instructional training component to treatment strategies based on modeling procedures (Meichenbaum, 1971) and anxiety relief procedures (Meichenbaum & Cameron, 1974) have also been reported.

While it appears that cognitive-behavioral approaches hold considerable promise for the treatment of fears and anxieties, minimal empirical evidence from outcome studies with a childhood population necessitates only cautious optimism. Although one may speculate that cognitive development and/or language development may place limitations on the utility of cognitive training procedures with children (Ginsburg & Opper, 1969), no research directly bearing on this question has been reported.

Results of clinical case studies as well as controlled research studies have suggested that gradual exposure methods, both in vivo and imaginal (Bentler, 1962; Jones, 1924a; Lazarus, 1960; Leitenberg & Callahan, 1973), have been effective in treating a wide range of childhood fears at all age levels. Evidence also suggests that training in coping skills (Kanfer et al., 1975) and a combination of skill-acquisition procedures and gradual exposure (Holmes, 1935; Jersild & Holmes, 1935; Meichenbaum, 1971) may be effective in treating fearful and phobic behavior. No systematic

research comparing these treatment approaches with children has been reported, however.

Purpose of the Present Study

The purpose of the present study was to compare the effectiveness of: (a) a graduated exposure procedure, (b) a verbal coping skill procedure, and (c) a combination thereof in the treatment of fear of the dark in 4- and 5-year-old children. The first procedure entailed exposing the children to increasing levels of darkness in a positive context (Jones, 1924a). The second procedure, based loosely on the work of Meichenbaum (Meichenbaum & Cameron, 1974; Meichenbaum & Turk, 1975) and the work of Kanfer et al. (1975), taught verbal skills to cope more effectively with the fearful stimulus complex. The last procedure combined elements of the gradual exposure and verbal coping skills procedures. A contact control group was also included. Dependent measures included fear indicants from two response modes. The behavioral indicant measured the duration of dark tolerance while the verbal measure assessed a rating of fearfulness on a 5-point rating scale ranging from "not at all" afraid to "very much" afraid. Further, in order to investigate the potential for modifying fear behavior through direct instruction (Kelly, 1976), two posttests differing in degree of instructional demand were administered in counterbalanced order.

It was predicted that only the two groups receiving direct exposure to the dark as a treatment component would significantly

increase their dark endurance on posttesting. No differences in verbal fear ratings were expected across all groups. Further, no differences in dark endurance or subjective ratings were expected to result from differences in posttest instructional demand. The bases for these predictions were as follows: (a) Graded exposure to the fearful stimulus complex has been shown to be an effective treatment procedure across all age ranges (Bentler, 1962; Jones, 1924a; Lazarus, 1960; Tasto, 1969; Wish et al., 1973); (b) It is possible that direct exposure to the dark would provide a greater opportunity for extinction to occur in the presence of the fearful stimulus complex. Limitations in the children's cognitive and language development may prevent effective use of treatment procedures taught purely in verbal form; (c) Results of studies by Kelly (1976) and Ritter (1968) failed to find significant changes in subjective fear ratings. It is possible that 4- and 5-year-old children may not be able to label their behaviorally measured fear validly; (d) Kelly (1976) found significant effects for high instructional demand when the high instructional demand posttest was administered following a low instructional demand trial. It is possible that counterbalancing high and low demand posttests would eliminate practice effects and possibly the effects of the high demand instructions.

CHAPTER II

METHOD

Subjects

Thirty-two 4- and 5-year-old children attending a private day-care center in Greensboro, North Carolina, served as subjects. Sixteen children were male and 16 were female. Initially, 74 parents gave permission for their children to participate in the study (see Appendix A for letter of permission). Thirty-eight children were eliminated because of their failure to meet the pretest criteria of a strong fear of the dark. In addition, two children were eliminated as a result of their refusal to participate in the pretest, and two children were excused because of signs of extreme fearfulness during the pretest. Thus, the remaining 32 children, who showed a minimal tolerance of the dark (mean baseline dark endurance of less than nine seconds) but who did not manifest intense emotional reactions, were selected. Subjects were matched in blocks of four on the basis of sex and dark tolerance scores and randomly assigned to the three treatment conditions and one control group condition.

Setting and Material

The behavioral avoidance tests were carried out in a 4 x 6 ft. room adjacent to the 14 x 18 ft. room utilized during the treatment phase. The windows in the treatment room were covered with opaque cardboard and curtains so that the room could be fully darkened.

The testing and treatment rooms were divided by a barrier so that it was not possible to see from one room into the other. The testing room was furnished with a table and two chairs. On the table, within easy reach of the child, was a bicycle horn and a plastic box containing a rheostat switch (Aladdin Light Dimmer Model 129). The bicycle horn could be sounded to call the experimenter back into the testing room during the behavioral avoidance test. The rheostat switch controlled the amount of illumination of a 60-watt bulb mounted in a decorative desk lamp, 18 in. high. Children were taught to manipulate the rheostat switch to increase the illumination in the room if they felt afraid. Also on the table was a visual Fear Thermometer (Appendix B). The Fear Thermometer consisted of a 5 x 20 in. wooden board with an attached arrow lever which could be moved by the children into one of five different levels of fearfulness, differentiated by colors. The five colors represented ratings of "not at all," "a little," "some," "much," and "very much."

All four treatment procedures were carried out in the treatment room, which was furnished with a rug, several toys, a bookcase, and overhead fluorescent lights controlled by a wall switch. The lamp and horn used during the behavioral avoidance tests were also present. Illumination measurements were made with a Lafayette CDS Light Exposure Meter. The duration of the children's dark tolerance was measured with a stopwatch.

Experimenters

Two advanced psychology graduate students, one male and one female, who had taken both academic and practicum courses in behavioral treatment techniques, conducted both testing and intervention. Both experimenters had had previous experience in treatment settings with children. Each experimenter pretested half the children. Experimenters were randomly assigned to treatment conditions so that each experimenter treated half of the children, balanced for males and females, for each intervention condition. The posttest was administered by the experimenter who had had no contact with the particular child during intervention.

Experimental Design and Dependent Measures

This study employed a pretest-treatment-posttest 1-posttest 2 design. A 4(treatments) x 2(experimenters) x 3(tests) factorial design with repeated observations on the last factor was employed. The four treatments differed as a function of the presence or absence of graduated exposure to the dark and as a function of the presence or absence of coping skill training. The two posttest trials differed as a function of the instructional demand to remain in the dark and were experimentally counterbalanced.

Dependent measures consisted of a behavioral fear measure and a subjective fear measure. The Duration Behavioral Avoidance Test measured the number of seconds a child tolerated the dark (without the experimenter present) in the testing room, prior to increasing

the illumination in the room or sounding the horn to call the experimenter. The Duration Behavioral Avoidance Test was administered as a pretest and re-administered following intervention under low and high instructional demand conditions. Inter-observer agreement on duration of dark tolerance was assessed on 85% of pretest subjects and on 43% of posttest subjects by the two experimenters, standing on opposite sides of the treatment room adjacent to the testing room and each measuring duration with a stopwatch. The chances of the observers biasing each other's recordings were minimized by the fact that the treatment room was fully darkened. Inter-observer agreement, calculated with the Pearson product moment correlation coefficient, exceeded .98 for all behavioral avoidance tests (see Appendix C, Tables 1-3). Appendix C lists all raw data used in statistical calculations. The average between observers' ratings is shown when disagreements occurred. In the testing room, following each behavioral avoidance test, each child was asked to indicate a fear rating on the visual Fear Thermometer. Response choices were presented verbally by the experimenter.

Procedure

To insure that the dark was the only salient stimulus (Kanfer et al., 1975), steps were taken to familiarize the children with the experimenters and the testing room prior to the experiment. Each experimenter spent approximately two hours working and playing with the children in the day care center. Additionally, the children's teacher introduced the experimenters and indicated

that the children would engage in a special activity with the experimenters in the future. Prior to the pretesting, the experimenters escorted the children on a "tour" of the testing room.

Pretests

On the day of the pretest, the experimenter accompanied each child individually to the testing room and said, "I would like to find out some things about 4- (5-) year-old children. Will you help me?" Once the child was seated comfortably at the table in the testing room, the experimenter said, "I am trying to find out how long 4- (5-) year-old children can stay in the dark without feeling afraid. Before we begin, I would like to show you these things on the table." The experimenter modeled the operation of the rheostat, pointing out the increasing brightness of the 60-watt bulb in the lamp on the table. The child practiced turning the rheostat switch several times with the ceiling lights on. The child demonstrated his understanding of the rheostat switch when the experimenter opened the door, switched off the lights, and instructed the child to "make the light go on." The child was then introduced to the bicycle horn and told that the horn "can call me (the experimenter) when I am in the next room." The experimenter then left the room, with the lights on, and waited compliance with the instructions to "beep the horn to bring me back in the room.". The final aspect of pretest preparation was to familiarize the children with the Fear Thermometer. Children were told that "this toy can tell me how much

you like some things and how much you are afraid of some things by moving the arrow." Several trials were given with such items as MacDonald's hamburgers, spinach, ice cream, chicken, lions, and sharks, to assure the understanding of the rating system. When the child had completed all aspects of the pretest preparation, the following instructions for the Duration Behavioral Avoidance Test were given: "Now we are ready to begin. I will leave the room and turn out the lights so that the room will be dark. Try to stay in the dark as long as you can without feeling afraid. If you feel afraid, you can turn the dial to make more light in the room and beep the horn and I'll come right back in the room. Remember, try to stay in the dark as long as you can without feeling afraid. I am going to leave now and turn out the lights. Do you have any questions?"

If there were no questions, the experimenter stepped into the adjacent treatment room, switched off the lights and started the stopwatch. Children who tolerated the dark for more than 30 seconds were not considered fearful or eligible for treatment. If a child emitted an escape response, i.e., manipulated the rheostat or beeped the horn within 30 seconds, he then qualified for a second behavioral pretest.

The second pretest, the Rheostat Behavioral Avoidance Test, was utilized to further eliminate minimally fearful children. At the initiation of this pretest, the experimenter stepped into the adjacent treatment room and turned off the overhead ceiling

lights so that the only illumination in the testing room was from the 60-watt bulb mounted in the desk lamp on the table in front of the child. From the treatment room, the experimenter gradually reduced the illumination of the desk lamp in the testing room until full darkness was reached. Following the gradual decrease in illumination, the child remained in full darkness for 30 seconds. During the test, a child could emit an avoidance response prior to reaching full darkness or an escape response during the 30 seconds in the dark, by manipulating the rheostat or sounding the horn. On an a priori basis, it was decided that the Rheostat Behavioral Avoidance Test would be used solely as a criterion to eliminate minimally fearful subjects and not as a dependent measure, inasmuch as the gradual decrease in illumination was not standardized and the use of two behavioral dependent measures would have been excessive. Further, since this investigation was primarily concerned with increasing the duration of dark tolerance, the data from the initial Duration Behavioral Avoidance Test were utilized as the main behavioral dependent measure.

As with the Duration Behavioral Avoidance Test, the duration of dark tolerance on the Rheostat Behavioral Avoidance Test was measured with a stopwatch. An avoidance response prior to complete darkness was considered zero seconds of dark tolerance. Instructions prior to the administration of the Rheostat Behavioral Avoidance Test were as follows: "This time we will be doing something

different. I will leave the room again, but this time the lights will stay on. While you sit here, the room will slowly get darker until it becomes very dark. Try to stay in the room as long as you can without feeling afraid. You remember what to do with the dial or the horn if you feel afraid. Remember, try to stay as long as you can in the room without feeling afraid. I am going to leave now. Do you have any questions?"

If the child did not emit an avoidance response while the illumination was being decreased and remained in the dark for the 30-second duration on the Rheostat Behavioral Avoidance Test, he was not considered fearful and was eliminated from the study. Of the children who met pretest criterion on the Rheostat Behavioral Avoidance Test, 10 children emitted an avoidance response prior to complete darkness and 22 children emitted an escape response during the 30-second duration of full darkness (see Appendix C, Table 3). Thus, pretest criteria for subject selection included both an escape response on the Duration Behavioral Avoidance Test prior to 30 seconds of dark tolerance and an avoidance response or an escape response on the Rheostat Behavioral Avoidance Test prior to tolerating full darkness for 30 seconds. Thirty children were eliminated as a result of failing to meet the behavioral criterion on the Duration Behavioral Avoidance Test and an additional 8 children were eliminated as a result of failing to meet the behavioral criterion on the Rheostat Behavioral Avoidance Test.

Following completion of each pretest, the experimenter entered the testing room and asked each child to indicate how fearful she or he was on the Fear Thermometer. The experimenter read each response choice aloud to the child before having the child indicate a subjective rating. The experimenter recorded the response, thanked the child for helping, and returned the child to the classroom.

Treatment Procedures

Thirty-two children matched for sex and duration of dark tolerance on the pretest Duration Behavioral Avoidance Test were randomly assigned to either one of three treatment groups or to a control group (n = 8 per group). Children were told that they would be playing some different games and were asked for their cooperation. All children were told that the games would help them become less afraid of the dark. Each child was seen individually for a maximum of three treatment sessions on three consecutive school days. Treatment sessions were between 20 and 30 minutes long. Sessions were carried out in the treatment room with the experimenter present, under the illumination of the desk lamp used in the behavioral avoidance tests (see Appendix D for complete treatment protocols for each group).

Graduated Exposure Group

Children in this condition were gradually exposed to nine decreasing levels of illumination matching the light exposure values on the Layfayette CDS Light Exposure Meter. Illumination

measurements were taken 18 in. from the base of the lamp (used in the behavioral avoidance tests) which was approximately where the children sat during treatment. The rheostat dial was calibrated by the experimenters prior to intervention. At each light intensity level, children received two exposures for each of three different intervals of time; 10 seconds, 20 seconds, and 30 seconds, as measured by the experimenter's stopwatch; therefore, a minimum of 54 exposures was administered to each child. During each exposure, children were asked to indicate their fear verbally or to activate the bicycle horn (used during the behavioral avoidance tests) if they felt afraid. A fear signal was met with an immediate return to full illumination. The next trial was initiated at the last tolerated illumination level. During treatment sessions, as well as during the exposures, the child and the experimenter talked, sang songs, played with toys, and played games. Cookies were also administered randomly during the sessions. All children in this group required three sessions to complete the decreasing illumination hierarchy.

Verbal Coping Skills Group

Training procedures in this group were based loosely on Meichenbaum's stress innoculation procedures (Meichenbaum & Cameron, 1974; Meichenbaum & Turk, 1975) and Kanfer et at.'s (1975) verbal coping skills training procedures. Three training phases were included. The first phase was educational and included discussions

(while playing with the same toys and games as were used in the Graduated Exposure condition) of three potential sources of fear of the dark: "seeing things," "hearing things," and "pretending (imagining) things" in the dark. Children were encouraged to participate actively in the discussions; e.g., "Sometimes we think we see things in the dark, but they are just shadows. Do you have a shadow? Sometimes things in the dark have shadows, too." In the second phase, children were taught a coping phrase ("special words") for each of the three potential sources of fearfulness discussed during the educational phase; e.g., "sometimes we might pretend that scarey things like ghosts or monsters are in the dark room, but we won't be afraid because we can always turn the lights on." The children were asked to learn (memorize) the final phrase ("special words") of each sequence. To insure that the child learned the "special words," the experimenter repeated the initial part of the coping statement and asked the child what he or she would do (say). When the child correctly completed the sequences with the appropriate coping phrases, the final treatment phase was initiated. In this phase, the child was provided with an opportunity to practice the "special words" during "pretend (imaginal) games,", e.g., "Let's pretend that you are in your room at night. You are safe in bed. You hear some noises, but you are not afraid because...." If the child failed to provide the appropriate coping response, the experimenter modeled the response and asked the child to repeat it. All children required three sessions to reach the

criterion of three successful "copings" to each of the three "pretend" games.

Coping Skills/Graduated Exposure Group

Training procedures in this group were the same as in the Verbal Coping Skills group except for the final phase of treatment. During the final phase of training for this group, the three coping phrases were practiced at each of the nine levels of decreased illumination used in the Graduated Exposure procedures. Each exposure lasted approximately 30 seconds while the "pretend" sequence was practiced. As with the Graduated Exposure group, children were asked to indicate if they felt afraid or to signal fearfulness with the bicycle horn. If a fear signal occurred, the next trial was initiated at the last tolerable level of illumination. Children were then asked to repeat the performance at the previously avoided (escaped) level of illumination. All children in this group required three sessions to reach the criterion of one successful "coping" (providing the appropriate phrase and no fear signal) at each level of illumination.

Contact Control Group

Children in this condition learned (memorized) the final line of three different nursery rhymes; e.g., "Jill came tumbling after." The experimenter modeled the complete nursery rhyme and upon repetition asked the child to provide the appropriate final phrase. Nursery rhymes were learned in the same positive context that was

used for the other treatment groups. Two children required two sessions, and the other six children required three sessions, to reach the criterion of three successful completions of each of the three nursery rhymes.

Posttests

On the day following criterion performance of three treatment sessions, the child was escorted to the testing room and told that he would be "playing an old game this time." The children were told that the experimenter was "again interested in how long 4- and 5-year-old children could stay in the dark without feeling afraid." Children were reminded about the rheostat, bicycle horn, and the Fear Thermometer as in the pretest instructions.

Low demand and high demand behavioral avoidance tests were administered in counterbalanced order. Both posttests were the same as the pretest Duration Behavioral Avoidance Test with the exception of the instructions for the high demand posttest. In addition to the instructions given for the pretest Duration Behavioral Avoidance Test, the high demand posttest instructions added: "This time I want you to try as hard as you can to stay in the dark as long as you can without feeling afraid. Remember, try very, very hard this time." Each posttest was terminated by the experimenter if the child remained in the dark for 150 seconds. Following each posttest, the child was asked to indicate a fear rating on the Fear Thermometer.

CHAPTER III

RESULTS

Behavioral Avoidance Test

The means and standard deviations for the duration (seconds) of dark tolerance for the three treatment groups and one control group on the Duration Behavioral Avoidance pretest, low demand posttest, and high demand posttest are presented in Table 1 (Appendix E). A 4(treatments) x 2(experimenters) x 3(tests) repeated measures analysis of variance yielded a significant main effect for tests, F (2, 48) = 16.02, $p < .01$ (Appendix E, Table 2). A Newman-Keuls post hoc analysis showed that both low and high demand posttest scores significantly differed from pretest scores but did not significantly differ from each other (Appendix E, Table 3). All other main effects and interactions failed to reach significance. Utility Indices, calculated with within-subject variability removed (Gaebelein & Soderquist, Note 1), indicated a Utility Index for treatments of 6% and a Utility Index for tests of 49% (Appendix E, Table 4).

Planned comparisons on the treatment x test interaction using the Newman-Keuls statistic, were performed to determine within-group changes in dark tolerance from pretest to posttest. The means for duration of dark tolerance (seconds) for each group on each test are presented in Figure 1 (Appendix F). Results of these analyses (Appendix E, Tables 5 - 8) showed that, compared to mean pretest scores, the Graduated Exposure group demonstrated

significant increases in mean dark tolerance on both the low demand and high demand posttests which did not differ from each other (Appendix E, Table 5). The Coping Skills/Graduated Exposure group showed a significant increase in mean dark tolerance on the high demand posttest compared to mean pretest scores; however, non-significant differences were obtained between high and low demand posttest scores and between low demand posttest scores and pretest scores (Appendix E, Table 6). The Verbal Coping Skills group and Contact Control groups failed to show significant dark tolerance changes on either high or low demand posttests compared to pretest scores (Appendix 5, Tables 7 & 8).

Fear Thermometer

The means for subjective fear ratings on the Fear Thermometer for all groups on the pretest, low demand posttest, and high demand posttest are presented in Table 9 (Appendix E). The results of a 4(treatments) x 2(experimenters) x 3(tests) repeated measures analysis of variance revealed a significant main effect for tests, F (2, 48) = 4.93, $p < .05$ (Appendix E, Table 10). The effect of the high demand instructions in lowering subjective fear ratings can be seen from the Newman-Keuls post hoc analysis (Appendix E, Table 11) which indicated that the high demand posttest significantly differed from both the pretest and the low demand posttest, which did not differ from each other. Other main effects and interactions failed to reach significance. Utility Indices calculated with within-subject variability removed (Gaebelein & Soderquist,

Note 1), showed that 22% of the variance could be accounted for by the main effect for tests, 2% of the variance could be accounted for by the experimenter x tests interaction, and 12% of the variance could be accounted for by the group x experimenter x tests interaction (Appendix E, Table 12).

Planned comparisons on the group x test interaction using the Newman-Keuls statistic were performed to determine within-group changes in subjective fear ratings. The means for each group on each test are presented in Figure 2 (Appendix F). The results of these analyses failed to show significant differences in subjective ratings for any group (Appendix E, Tables 13 - 16).

Figure 3 (Appendix F) presents the overall distribution of Fear Thermometer responses for the Duration Behavioral Avoidance pretest, low demand posttest, and high demand posttest. It can be seen by examining the pretest distribution that 58% of response choices fell within the "not at all" and "a little" categories. This can be contrasted to the brief duration of darkness tolerated when measured behaviorally (Table 1, Appendix E). Figure 3 also shows that for the pretest distribution, 59% of responses occurred at the bipolar extremes of the Fear Thermometer scale, with 28% of the children indicating that they were "not at all" afraid and 31% indicating that they were "very much" afraid. On the low demand posttest, 81% of response choices were at the bipolar extremes, with 50% at the "not at all" end and 31% at the "very much" end. The high demand posttest yielded results more consistent with

expectation; 62% of choices were rated as "not at all" and 8% rated as "very much" afraid. Further, no child rated his fear as "much" afraid on either posttest, while only one child selected this response on the pretest. Thus, under some conditions, it appears that the children's response choices may be over-represented at the extremes of the scale.

Inter-, and Intra-Response Correlations

Two forms of behavioral avoidance tests were utilized as pretest criterion measures for subject selection. The main behavioral dependent measure, the Duration Behavioral Avoidance Test, measured the duration of dark tolerance (seconds) prior to emitting an escape response. The secondary behavioral selection measure, the Rheostat Behavioral Avoidance Test, measured either each child's avoidance response prior to reaching total darkness or duration of dark tolerance prior to emitting an escape response. As mentioned previously, the Rheostat Behavioral Avoidance Test was solely utilized to eliminate minimally fearful children.

Data from the Duration Behavioral Avoidance Tests were used in all statistical calculations, but a Pearson product moment correlation coefficient was calculated to determine the relationship between both types of avoidance test procedures. (See Appendix C for raw data used in all calculations.) For statistical purposes, an avoidance response emitted prior to complete darkness was considered zero seconds of dark tolerance. The Pearson product

moment correlation coefficient between the two behavioral measures of dark fearfulness was .24 (n = 32, p < .09).

Interestingly, the correlation between Fear Thermometer scores on both pretests yielded an r = -.35 (n = 32, p < .02). The correlation between behavioral and subjective fear indicants on the Rheostat Behavioral Avoidance Test was r = .01 (n = 32, p > 1). Similarly, the correlation between both fear measures on the Duration Behavioral Avoidance pretest yielded an r = -.15 (n = 32, p > 1).

On posttesting, two forms of the Duration Behavioral Avoidance Test were employed differing only in the nature of instructional demand. For the behavioral measure, the correlation coefficient between low and high demand posttests was .69 (n = 32, p < .001). The correlation between Fear Thermometer scores on both posttests was .38 (n = 32, p < .01). The intercorrelation between subjective and behavioral measures yielded a correlation of -.20 (n = 32, p > 1) for the low demand posttest and -.33 (n = 32, p < .03) on the high demand posttest.

CHAPTER IV

DISCUSSION

The results of this study have clinical and theoretical implications for the treatment and assessment of childhood fears. The implications for treatment and for assessment will be discussed under two headings, "The Treatment of Childhood Fears" and "The Assessment of Childhood Fear Behavior."

The Treatment of Childhood Fears

Lack of Between-Group Treatment Effects

In the present study, significant main effects for tests were found for both behavioral and subjective fear indices, indicating that there was a change in the children's behavior over the three tests when all treatment groups were considered together. Further analyses reveal that, compared to pretest dark tolerance scores, significant increases in dark endurance were found on both the low demand and high demand posttests, which did not differ from each other. For the subjective fear measure, children's ratings on the high demand posttest indicated significantly less fearfulness than did their ratings on both the pretest and low demand posttest, which did not differ from each other.

This investigation failed to find significant differences among the Graduated Exposure, Coping Skills/Graduated Exposure, Verbal Coping Skills, and Contact Control groups on the Duration

Behavioral Avoidance Tests or on the Fear Thermometer ratings. Several factors may have contributed to the lack of significant differences among the groups over the three tests. The major contributor to the lack of significance may have been the wide variability in posttest scores, indicated by the large standard deviations for the behavioral fear measure (Table 1, Appendix E) and for the subjective fear measure (Table 9, Appendix E). Contributing to the wide variability in posttest scores may have been: (a) individual differences in the children's cognitive and language development; (b) the small number of treatment sessions; and (c) problems in assessing "analogue" fear behavior in children.

Individual differences in the children's cognitive and language development. Luria (1960) has suggested that the 4- to 5-year age range is a transitionary period when "the regulatory function...[of speech]...is transferred from the impulse side of speech to the complex system of elective significative connections" (p. 23). It is possible that individual differences in the children's language development resulted in a differential ability to utilize some of the treatment procedures employed.

The small number of treatment sessions. It is possible that longer exposure to the dark during treatment and/or a more extended verbal skill training procedure (e.g., Meichenbaum & Goodman, 1971) might have reduced some of the variability and yielded greater treatment benefits.

Problems in assessing "analogue" fear behavior in children. The validity of children's subjective fear ratings is questioned when the distribution of subjective fear responses on the behavioral avoidance tests is examined (Figure 3, Appendix F). Concerns as to the most appropriate method of assessing behaviorally measured fearfulness in children are also raised. A more detailed discussion of these factors will be offered in this section as they relate to treatment issues or in the following section as they relate to the assessment of childhood fear behavior.

Marks' Exposure Hypothesis

The results of the within-group comparisons of the behavioral data showed that only the Graduated Exposure and Coping Skills/ Graduated Exposure groups demonstrated significant increases in dark tolerance from pretest to posttest. These results are consistent with Mark's (1974) "exposure" hypothesis which states:

> When many methods [of fear reduction] appear to have a similar effect, it is natural to search for a common mechanism of action, and an important mechanism shared by all these methods is exposure of the frightened subject to the frightening situation until he acclimatizes. (p. 107)

In the present study, only those treatment approaches which included in vivo exposure to the fearful stimulus complex demonstrated significant pretest to posttest changes in dark tolerance. The Verbal Coping Skills group and the Contact Control groups, which did not come into direct contact with the dark during intervention, failed to demonstrate significant increases in dark tolerance on either the low demand or the high demand posttest compared to initial pretest scores.

Two lines of research have pointed to the importance of exposure to the fear-evoking stimulus for successful fear modification. Evidence from the systematic desensitization literature has shown that deep muscle relaxation or the pairing of relaxation with phobic imagery are non-essential for fear reduction (Agras, Leitenberg, Barlow, Curtis, Edwards, & Wright, 1971; Aponte & Aponte, 1971; Nawas, Welch, & Fishman, 1970). Additionally, graduated hierarchies and gradual progression through the hierarchy are not necessarily required for successful outcome (Krapfl & Nawas, 1970; Miller & Nawas, 1970; Nawas, Fishman & Pucel, 1970).

The second line of research that supports the exposure hypothesis is the success of treatment techniques like flooding (Leitenberg, 1976; Marks, 1974), in which the client is directly and repeatedly exposed to the fearful stimulus or situation without benefit of anxiety-competing responses. Thus, it appears that the only necessary component for fear modification is the non-reinforced exposure of the "frightened subject to the frightening situation" (Marks, 1974).

Results of recent research have not only shown exposure to be important to fear reduction strategies, but have also suggested that duration of contact with the fear-evoking stimulus complex is an important treatment parameter. Findings from animal studies on conditioned avoidance (Baum, 1970) have generally found a direct relationship between duration of exposure to the conditioned stimulus and extinction effects. Results from studies with human

subjects also suggest greater therapeutic effects with greater exposure durations (D'Zurilla, Wilson, & Nelson, 1973; Miller & Levis, 1971; Ross & Proctor, 1973; Sue, 1975). The results of the present research also suggests that the extent of direct contact with the fearful stimulus complex is related to the degree of behavior change. This statement is based on the finding that the Graduated Exposure group which received maximal contact with the dark demonstrated significant increases in dark tolerance on both high demand and low demand posttests while the Coping Skills/ Graduated Exposure group, which received a lesser degree of dark contact, demonstrated increases in dark tolerance only on the high demand posttest.

It is also possible that the overall change in dark tolerance found for all groups on the analysis of the behavioral data resulted in part from the beneficial effects of exposure to the dark during pretesting. Positive effects of repeated behavioral avoidance test experiences have also been found by Rachman (1966) and by Lang and Lazovick (1963).

Other Variables in Fear Reduction Strategies

Early behavioral investigations into fear reduction strategies stressed the importance of counterposing "a response inhibitory of anxiety...in the presence of anxiety evoking stimuli" (Wolpe, 1969, p. 15). Alternative treatment approaches have taken account of the interacting roles of approach and avoidance contingencies in

fearful and phobic behavior (Costello, 1970; Hayes, 1976; Leitenberg, 1976). As Leitenberg (1976, p. 15) pointed out: "patients could gradually learn to act differently in spite of anxiety and that as a result of such changed behavior, anxiety would subsequently subside." Techniques such as reinforced practice and shaping, based on gradually increasing approach behavior in the presence of the fearful situation have not only been successful (Leitenberg, 1976; Marks, 1974) but have also pointed out the importance of performance feedback in fear reduction procedures (Leitenberg, Agras, Thomson, & Wright, 1968; Rutner, 1973) and the therapeutic effects of therapist reinforcement for positive behavior change (Agras, Leitenberg, & Barlow, 1968; Agras, Leitenberg, Barlow, & Thomson, 1969).

Although performance feedback was not specifically manipulated in the present study, it should be noted that both the Graduated Exposure and Coping Skills/Graduated Exposure groups received implicit feedback for increased approach behavior by "graduating" to a lower level of illumination. Additionally, children in these treatment groups may have also received self-administered praise (reinforcement) for direct behavior change, praise unavailable to the children in the Verbal Coping Skills and Contact Control groups Thus, the within-group dark tolerance changes may have resulted from an interaction of exposure to the dark and reinforced practice.

While the potential for modifying approach behavior has been illustrated, the present study failed to find significant

differences in overall dark tolerance for high versus low demand instructions on the behavioral avoidance posttest ($r=.69$, $p<.001$ between high and low demand dark tolerance scores), suggesting limits on the effects of demand instructions. The current results stand in contrast to the results of a study of dark-fearful children reported by Kelly (1976) who, after finding significant effects for high instructional demand, concluded that "maximal behavioral change can be produced quickly and efficiently by direct instruction when attempting to modify avoidance of darkness in normal children" (p. 81). Kelly, however, failed to control for the potential sequencing effects of administering the high demand test following the low demand test. Thus, while it appears that "direct instruction" in the form of a reinforced practice procedure (Leitenberg & Callahan, 1973) is an efficacious treatment strategy, the effect of simply instructing the child to remain exposed to the fear-evoking stimuli remains unclear.

Developmental Factors

The results of the present study indicates that only those groups receiving direct contact with the dark significantly increased mean dark tolerance scores compared to initial pretest scores. Further, the finding that the Verbal Coping Skills group failed to increase dark tolerance scores significantly as a result of training is in contrast to the results of a recent study with dark-fearful children reported by Kanfer, Karoly, and Newman (1975).

In their study, Kanfer et al. reported significant benefits resulting from two types of verbal training procedures, one emphasizing verbal mastery over fear (i.e., "I am a brave boy. I can take care of myself in the dark.") and the other emphasizing reattribution of the fearful stimuli (i.e., "The dark is a fun place to be. There are many good things in the dark."). Several differences between the Kanfer study and the present study may account for the contrasting results. Most apparent are the differences in age and initial level of dark tolerance of the respective subject samples. Each of these differences will now be elaborated. In the present study, the children selected were 4- to 5-year-olds and attending a private day care center, whereas the children in the Kanfer study were 5- to 6- year-olds and attending a Montessori school. While it is impossible to determine the degree of overlap between the respective samples, it is possible that the younger children may have been less able to actively utilize verbal strategies to mediate their overt motor (escape) behavior. Similarly, Kelly (1976) failed to find significant treatment effects for her play-desensitization treatment with 4- to 5- year-old dark-fearful children.

Luria (1960) provides some interesting insights into the role of speech in the regulation of motor behavior which are relevant here. According to Luria (1960), "connections called forth by speech gradually become predominant and substantially change the natural force relations of stimuli" (p.6). This is illustrated

in studies reported by Luria (1960) and by Meichenbaum (1971). Luria (1960) reported the results of a discrimination experiment in which

> a thorough explanation of the task and naming of the figures by the experimenter at the moment of presentation failed to appreciably affect the development of a generalized discrimination between triangles and squares in three 4-year-old children. [However], if prior to the basic experiment the child held the given object in his hands, feeling its contours and counting its angles, and then accordingly named it, the picture considerably changed.. (p.14)

Meichenbaum (1971) reported a study in which impulsive children learned to modify their response style through verbal sequential training procedures commencing with external verbal control and terminating with training in utilizing internally generated verbal strategies to control the subjects' own behavior.

In the present study, the finding that training in verbal coping skills combined with exposure to the dark facilitated significant within-group changes in dark tolerance on the high demand posttest, while training in verbal coping skills alone failed to lead to significant behavioral changes, suggests the possibility that children at this age level were unable to utilize coping stategies presented in purely verbal form. As Luria (1960) notes: "The regulatory function [of speech] is steadily transferred from the impulse side of speech to the complex system of elective significative connections...this takes place in the child at the ages of 4-1/2 to 5-1/2" (p.23).

It is possible that further mastery over the fearful stimulus complex might have occured if training procedures had been extended

to include the development of coping strategies on a covert level in a way more closely resembling Meichenbaum's procedure, i.e., audible verbalizing of coping strategies by the child, then whispering strategies, then self-instructing covertly. This is especially relevant in light of the observation reported by Kanfer et al. (1975) and confirmed in the present study, that children failed to verbalize the learned coping strategies during posttesting.

Piagetian theory may provide an alternative conceptualization as to why the treatment groups which received direct exposure to the dark showed significant within-group changes. According to Piaget

> the child's language, especially in the early portion of the years from 4 to 5 to 6 years, does not entirely serve the function of communication. Often, the child does not assume the point of view of the listener; he talks of himself, to himself, and by himself (Ginsburg & Opper, 1969, p.89).

Both the language and the reasoning of children at this age are evidence of the child's "egocentrism"; that is, the inability to take the other person's point of view. Piaget finds the reasoning of children at this stage of cognitive development to be marked by an inability to think about several aspects of a situation simultaneously.

> The child cannot focus simultaneously both on the difference among things and on their common relationships, he is apt to see a succession of unrelated events or a conglomerated whole (Ginsburg & Opper, 1969, p. 112).

Ginsburg and Opper go on to interpret an interesting observation by Piaget that "while children may fail a problem when the solution

requires verbal expression, they may be quite able to deal with the same dilemma on a practical, behavioral level" (p. 113).

An extrapolation from the above line of reasoning suggests that, while children in the present study may not have had the "cognitive equipment" to benefit from coping strategies presented in purely verbal form, they may have been able to utilize their behavioral experiences (exposure to the dark) to tolerate significantly greater durations of darkness on the posttest assessment Similiarly, it is possible to speculate that the children's level of cognitive development precluded the generalization of coping strategies learned in a nonthreatening environment to one in which the children were confronted with the dark stimulus complex. The level of cognitive development of the children in this study may have prevented the "crossing of the imaginal to real bridge," so that children may have viewed the training in verbal coping skills in the "pretend" situation and the behavioral avoidance test situation as "a succession of unrelated events" (Ginsburg & Opper, 1969). In contrast, the two treatment groups which received direct exposure as a treatment component had the opportunity for the extinction of anxiety to occur in the presence of the fearful situation itself (Barlow, Agras, Leitenberg, & Wincze, 1970).

The children's initial level of dark tolerance is an additional factor to consider in the transfer of training from the "pretend" situation to the one in which the children were presented with the dark stimulus complex. In the Kanfer et al. (1976) study, which

found significant benefits resulting from training in verbal strategies, the mean initial level of dark tolerance was reported to be 27 seconds. In the present study, which failed to find significant increases in dark tolerance resulting from training in verbal strategies, the mean pretest dark tolerance score was between seven and eight seconds. If these differences realistically reflect differences in fearfulness, it is possible that lesser degrees of fear might be more amenable to verbal control in children, while greater degrees of fear might require some degree of direct contact with the fear-evoking stimulus complex for successful modification. This notion is consistent with the cautionary note sounded by Davison and Wilson (1973) on reattribution processes in fear modification:

> This issue is important since it does not seem likely that the extremely fearful subject...can be deceived into believing that he is not acting fearfully in exposure to an aversive object or situation with which he has had considerable experience. (p. 75)

Thus, it appears that age and initial level of measured fear behavior may be important variables to consider in cognitive fear behavior modification procedures. An interesting idea for future research would be to compare the effectiveness of verbal coping skills procedures with a graduated exposure procedure using children at two different age levels and with two different levels of measured fearfulness.

Summary

In summary this section examined some of the possible reasons for the lack of significant between-group differences in dark tolerance as well as some of the factors believed to be important in the significant within-group changes in dark tolerance for the Graduated Exposure and Coping Skills/ Graduated Exposure groups. The following section will examine issues related to the assessment of fear behavior in childhood.

The Assessment of Childhood Fear Behavior

Self Report Measures with Children

In reporting on the validity of self-reported fear with adult subjects, Rachman (1965) concluded:

> In brief, the evidence seems to indicate that subjective fear estimates provide reliable but gross discrimination between people who are frightened of particular stimuli and those who are fearless. There are indicators, however, that the finer differences reported on subjective reports regarding the intensity of fear are not always borne out by the subject's own behavior in real life avoidance situations. For this reason the scale must be used with a degree of caution. (p. 26)

Data from the present study with children as self-report agents serve further to amplify Rachman's cautionary note. Analyses on the verbal report measure utilized in the present study failed to yield significant between-group or within-group changes across tests. Overall fear ratings on the high demand posttest , however, indicated significantly less fearfulness than did ratings on the pretest and low demand posttest which did not differ significantly from each other.

Questions concerning the validity of subjective fear assessment with children are raised by examining the distribution of Fear Thermometer response choices (Figure 3, Appendix F) for both the pretest and low demand posttest distributions. It can be seen from Figure 3 that on the pretest, 28% of response choices fell within the "not at all" category while 31% of response choices fell within the "very much afraid" category. On the low demand posttest, 50% and 31% of response choices, respectively, fell at the two ends of the Fear Thermometer scale. Similarly, Kelly (1976), using a five-point subjective rating scale with 4- and 5-year-old children who were dark fearful, also reported that two-thirds of her subjects' responses fell within the most extreme categories. It seems that the child's method of choosing a response from among several presented choices may be influenced by the "primacy" and "recency" effects of response choice presentation. It is possible to speculate that the child's tendency to select categories at the beginning or end of the scale may be related to the normal attentional or memory limitations in 4- and 5-year-old children. The inability of some children to focus on and/or remember all of the response alternatives may have functionally reduced the five-point rating scale into a two- or three-point rating scale. The finding that only one child rated his fear as "much afraid" (Figure 3, Appendix F) on any of the behavioral avoidance tests lends support to this notion.

If the children tended to focus on the extremes of the scale, then the significant differences between fear ratings on the high and low demand posttests may have resulted from the greater "demand" to avoid the "very much afraid" end category as a result of the instructions "to try as hard as you can" rather than from validly appraising changes in subjective fearfulness. This finding is especially interesting when contrasted with the findings from several studies of adult fear (Lick & Bootzin, 1970; Miller & Bernstein, 1972; Smith, Denier, & Beaman, 2974) which indicated that the effects of variation in experimental demand characteristics tend to be most pronounced on behavioral measures of fearfulness. In the present study, non-significant differences in dark tolerance were found between the high and low demand posttests but children rated themselves as being significantly less fearful on the high demand posttest compared to their ratings on the low demand posttest. Among the possible hypotheses that may account for the differences in children and adult behavior resulting from varying experimental demand are (a) adults may be more willing to engage briefly in stressful behavior despite subjective anxiety because of their more "sophisticated" perception of the experimenter as expecting them to do so (Smith et al., 1974), and (b) children may have viewed the behavioral test situation and the subjective rating situation as unrelated. As Ginsburg and Opper (1969) note: "Even in the period under discussion (4 to 7 years), the child has not fully grasped the relation between word and thing" (p. 90). It is possible that the

child perceived no inconsistency in noting that he or she was "not at all" afraid and yet remaining only briefly in the dark during the test. The child may have simply viewed himself as being unafraid of the dark "because he said so."

Some additional data from this study also question the validity of self-reported fear with children. A large counter-intuitive dissociation between verbal and behavioral fear indices is apparent in noting that 58% of response choices on the pretest Fear Thermometer (Figure 3, Appendix F) fell within the "not at all" and "a little" categories. These tolerant self-ratings are in contrast to the minimal tolerance for the dark recorded on the pretest Duration Behavioral Avoidance Test (Table 1, Appendix E). The non-significant correlation of -.15 between subjective and behavioral measures on the pretest Duration Behavioral Avoidance Test further illustrates the dissociation between fear measures. A similar dissociation was indicated on both the Rheostat Behavioral Avoidance Test ($\underline{r}$ = .01) and on the low demand posttest ($\underline{r}$ = .20). It appears that the questionable ability of children to indicate a valid subjective fear rating contributed to these low correlations.

Generally, a low but statistically significant relationship between subjective and behavioral fear measures has been reported with adult populations leading Rachman (1965) to conclude that "subjective fear estimates provide reliable but gross discrimination between people who are frightened of particular stimuli and those who are fearless" (p.26). For example, Schroeder and Craine (1971)

found a correlation of .41 between a snake-touching behavioral avoidance test and the Lang snake questionnaire. Fazio (1969), with an unselected college female population found a correlation of .37 between verbal and behavioral indicants of fear of cockroaches. In the present study, the only correlation between behavioral and subjective fear measures reaching statistical significance was obtained on the high demand posttest ($r = -.33$, $p < .03$). The negative correlation indicated that lower ratings of fearfulness were associated with greater durations of dark tolerance. While this may be a valid relationship, it is also possible that the obtained correlation on the high demand posttest resulted from the more frequent ratings at the "not at all" end of the Fear Thermometer scale (Figure 3, Appendix F) as a result of the high demand instructions.

Additional concern over self-reporting practices with children is raised by examining the relationship between subjective ratings on the Duration Behavioral Avoidance Test and the Rheostat Behavioral Avoidance Test. The obtained correlation of -.35 ($p < .02$) between subjective ratings on both pretests may indicate that 4- and 5-year-old children cannot reliably label their behaviorally measured fear, may be ambivalent about reporting their fear, or may have simply been "playing" with the Fear Thermometer toy, rather than accurately rating their fearfulness. These speculations, while providing seeds for future research, should be treated cautiously, since differences between pretests may render direct comparison between them inappropriate. However, as Miller, Barret, and Hampe

(1974) concluded:

"We used a fear thermometer with children, but did not analyze the data since our clinical observer thought that many of the estimates were random guesses by children" (p. 99).

The somewhat higher correlation between verbal fear ratings on high and low demand posttests (r = .38, p < .01) appears to have resulted from the majority of fear ratings occurring at the lower end of the Fear Thermometer scale for both posttests. It is possible that several factors may have contributed to this finding. Children may have rated themselves as less fearful as a result of dark exposure during treatment and/or during the behavioral avoidance tests. Additional influences may have been experimental demand characteristics during posttesting or social demand characteristics (to be less fearful) resulting from both peers and teachers in the day care environment (Bernstein & Paul, 1971; Orne, 1961).

The questions previously raised concerning the validity of subjective fear reports with children raises an interesting methodological question concerning behavioral fear assessment procedures with children. Traditionally, subject preselection procedures for adult analogue fear research are based on a verbal rating as to the extent of fearfulness to a target stimulus (Wolpe & Lang, 1964). Because adults' approach behavior during a behavioral avoidance test often exceeds their verbal ratings of fearfulness (Bernstein & Paul, 1971) minimally fearful subjects may be eliminated from

the subject pool through behavioral test procedures. Thus, a hierarchical subject elimination procedure was developed based on initial subjective ratings. If future research using verbal fear measures prior to behavioral testing confirms the suggestive findings that young children may not report validly on their behaviorally measured fear, then it appears that subjective fear ratings could not be used in subject selection procedures.

Summary

In summary, several concerns were raised about the validity and reliability of subjective fear measures with children. It would be interesting for future research to examine the potential interaction between cognitive development and the validity of subjective fear ratings. This may be done by examining the correlation between scores on an unobtrusive behavioral test (i.e., going into a dark room to obtain an object [Holmes, 1935]) and subjective fear ratings in groups of children at two different levels of cognitive development operationally defined through differential performance on Piagetian conservation tasks.

Behavioral Avoidance Tests in the Assessment of Childhood Fears

To allow the generalizability of results to clinical populations, researchers (Bernstein & Paul, 1971; Kazdin, 1973) have advocated subjecting persons taking a behavioral avoidance pretest to maximal demand for approaching the fearful object. Clearly, this suggestion, when applied to children, presents moral and ethical concerns since children are "captive" subjects.

An alternative to a high demand pretest situation would be to utilize multiple pretests spaced over a period of time. This procedure would not only determine the strength of fearful behavior but might also yield data on the potential therapeutic effect of brief exposure to the fear-evoking situation. In the present study, two behavioral pretests were utilized to eliminate minimally fearful children. The correlation between behavioral measures of .24 ($p < .09$) may, however, be a spurious relationship because of the differences between both tests. The operational definition of an avoidance response on the Rheostat Behavioral Avoidance Test is zero seconds of dark tolerance may have served to lower the correlation between both behavioral tests.

An additional alternative to a high demand behavioral avoidance test is to obtain behavioral fear measures through unobtrusive means, i.e., ask a child (without the experimenter present) to obtain several objects equally spaced in a long dark corridor (Holmes, 1935) and utilize either the number of obtained objects or duration of time in the dark as the dependent measure.

Bernstein and Paul (1971) also recommended that subjects be informed of how to handle the stimulus object during a behavioral test to reduce the novelty of the situation. While precautions were taken in this study to reduce the novelty of the room in which the behavioral avoidance test was administered, it is possible that the uniqueness of the pretest situation was associated with some degree of anxiety which, in turn extinquished on posttest

assessment. As noted previously, the use of multiple pretests may reduce the novelty of the testing situation. An additional recommendation, using unobtrusive fear assessment procedures, would be to assess fear behavior in an environment familiar to the child and/or to provide instructions (Bernstein & Paul, 1971) as to the most appropriate way to approach the potentially fearful object or situation. It appears that a merger of creativity and concern might best insure the rights of children and the rigor of experimental methodology.

Directions for Future Research

It should be stressed that research efforts into the assessment and treatment of childhood fears is still in its early development. Directions that future research might take include: (a) the interaction of cognitive development and the children's ability to utilize treatment procedures based on verbal coping skills training; (b) the interaction of cognitive development and the ability of children to label validly subjective fearfulness; (c) the effects of duration of exposure on fear reduction; and (d) the relationship between different modes of fear expression (including physiological measures) with a childhood population. Additionally, researchers should be concerned with the relationship between unobtrusive fear assessment procedures and the more "standard" behavioral avoidance test procedure.

CHAPTER V.

SUMMARY

While a great deal of effort by behavioral researchers and therapists has been directed at demonstrating the success of their treatment techniques in modifying adult fears (Marks, 1974), relatively little effort has been devoted to the treatment of fears and phobias in children. Reports of previous research with childhood populations have suggested therapeutic effects for treatment procedures based on the graduated exposure to the fearful stimulus or situation (Jones, 1924a; Lazarus, 1960), training in verbal coping skills (Kanfer, Karoly, & Newman, 1975), and a combination of verbal skill acquisition and graduated exposure (Jersild & Holmes, 1935). However, no systematic research comparing these treatment approaches with children has been reported.

The purpose of the present study was to compare the effectiveness of a graduated exposure procedure, a verbal coping skill procedure, and a combination of the two procedures, in the treatment of fear of the dark behavior in 4-and 5-year-old children using both behavioral and subjective measures of fearfulness. Thirty-two children attending a private day care center were selected on the basis of their minimal dark tolerance as measured by two Behavioral Avoidance Tests. Children who failed to remain in total darkness for 30 seconds on both behavioral tests were operationally defined as dark fearful and eligible for treatment.

Children were matched on the basis of pretest dark tolerance scores and randomly assigned to one of four treatment groups: the Graduated Exposure group received gradual increased contact with the dark in a playful context; the Verbal Coping Skills group, while in full illumination, received training and practice in specific verbal strategies to deal more effectively with the dark; the Coping Skills/Graduated Exposure group received training in verbal coping strategies but practiced these verbal strategies in gradually decreasing illumination; the Contact Control group received training and practice in nursery rhymes.

Dependent measures included fear indicants from two response modes. The behavioral indicant measured the duration of dark tolerance (seconds) during a behavioral avoidance test while the subjective indicant measured a verbal rating of fearfulness on a five-point rating scale. Further, two behavioral avoidance posttests, a low demand posttest and a high demand posttest which differed in instructional demand to remain in the dark, were administered in counterbalanced order to determine the potential for modifying fear behavior through direct instruction (Kelly, 1976).

The results failed to find significant differences among the treatment groups across the three tests for both the behavioral and subjective fear measures. However, a significant main effect for tests was found for both the behavioral and subjective measures indicating that there was a significant change in the children's

behavior across the three tests when all groups were considered together. Further analyses revealed that, compared to pretest dark tolerance scores, significant increases in dark endurance were found on both the low and high demand posttests, which did not differ from each other. Children's fear ratings on the high demand posttest signified less fearfulness than did their ratings on the pretest and low demand posttest which did not differ from each other.

Within-group analyses for the behavioral measure indicated that compared to pretest scores, the Graduated Exposure group demonstrated significant increases in dark tolerance on both the high and low demand posttests which did not differ from each other. The Coping Skills/Graduated Exposure group showed a significant increase in dark tolerance on the high demand posttest relative to pretest scores. The Verbal Coping Skills and Contact Control groups failed to show significant within-group changes in dark tolerance. Within-group analyses on the subjective fear measure failed to show significant decreases in posttest ratings compared to pretest ratings for all groups.

The results were discussed (a) as supporting Marks' (1974) exposure hypothesis of fear reduction in that only groups which received direct contact with the dark during intervention demonstrated significant posttest dark tolerance changes relative to pretest scores; (b) in terms of limitations in the children's cognitive and language skills in utilizing treatment procedures

presented purely in verbal form; (c) in terms of the questionable ability of 4- and 5-year-old children to label validly behaviorally measured fear; and (d) in terms of suggestions for assessing analogue fear behavior in children.

Note 1

Gaebelein, J. W., & Soderquist, D. R.: Computational formulae for utility indices. Unpublished Manuscript. Greensboro, North Carolina, 1974.

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Appendix A

Letter to Parents Seeking Permission for Experimental Participation

THE UNIVERSITY OF NORTH CAROLINA

AT GREENSBORO

April 9, 1976

Department of Psychology

Dear Parent,

This letter is a request for permission for both you and your child to participate in a study to investigate the incidence of comm childhood fears, and the best methods of teaching children to cope with their fears. Dr. Rosemery Nelson and Mr. David Sheslow of the Psychology Department of UNC-G are asking a group of children and parents to complete a questionnaire designed to further our understanding of common fears in childhood. Your child would complete th questionnaire verbally at the daycare center. A similar questionnai would be sent home for you to fill out. Completion of the questionnaire should take approximately 15 minutes. The questionnai will not have your name or your child's name on it.

Children who report being afraid of the dark will then particip in up to three sessions to teach them to cope with their fears. Eac session will last from 20 - 30 minutes and will be carried out duri your child's school day. The teachers will be two graduate student at UNC-G who are about to receive their doctorate degrees. Great care and consideration will be given to insure that each child rece positive benefits for participating. The results of this study wil be shared with you so that our mutual understanding of the world of children will increase. If you have any further questions please contact Dr. Nelson at 379-5013. Please return the permission slip to the nursery school. In advance, thank you for your cooperation.

Sincerely,

Rosemery O. Nelson

Rosemery Nelson, Ph.D.

David Sheslow

David Sheslow, M.A.

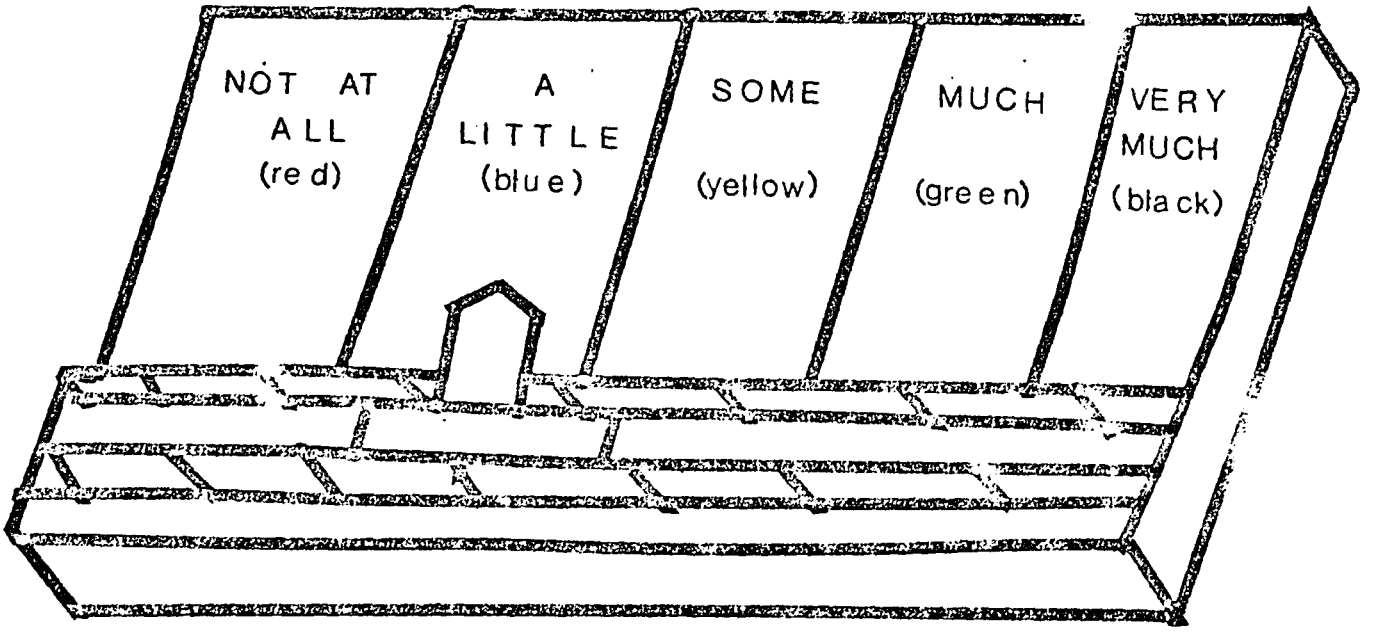
___ I give permission for my child to participate in this study an for the questionnaire to be sent home.

___ I do not give permission for my child to participate in this s and for the questionnaire to be sent home.

Name_____ Date_____

Appendix B

Fear Thermometer



FEAR THERMOMETER

Appendix C

Raw Data for All Statistical Calculations

Appendix C

Table C1

Individual Data (in Seconds) for Inter-Observer Agreement on the Duration Behavioral Avoidance Pretest and on the Rheostat Behavioral Avoidance Pretest

Subjects	Duration Behavioral Avoidance Pretest[a,b]		Rheostat Behavioral Avoidance Pretest[a,c]	
	Observer 1	Observer 2	Observer 1	Observer 2
S 1	0	0	-[a]	-[a]
S 2	11	10.5	5	5
S 4	15	15	24	24
S 5	6	6.5	1	1
S 6	10	10	-	-
S 7	4.5	4.5	2	2
S 9	5.5	5.5	3.5	4.0
S 10	12.5	12.5	-	-
S 11	4.5	4.5	6	6
S 12	12.5	12	13	13.5
S 13	4.5	4.5	9	9
S 14	10	9.5	-	-
S 15	4.5	4.5	-	-
S 16	11	11	5	5
S 17	4	3	-	-
S 18	5.5	5.5	-	-
S 19	5	5	27.5	28
S 20	7	7	15	16
S 21	7.5	7.5	7.5	7
S 23	9	9	28	28
S 25	4	4	-	-
S 27	11	11	17	17
S 28	17	17.5	1.5	1.5
S 29	2	2	1	1
S 30	7	7	-	-
S 32	5	5	9	8

[a] Maximum score permitted on either test was 30 seconds.

[b] $r = .99$, $p < .001$ between observers.

[c] $r = .99$, $p < .001$ between observers.

[d] No score on the Rheostat Behavioral Avoidance Test indicates an avoidance response prior to complete darkness.

Appendix C

Table C2

Individual Data for Inter-Observer Agreement for Duration in Seconds on Low Demand and on High Demand Behavioral Avoidance Posttests

Subjects	Low Demand Posttest[a]		High Demand Posttest[b]	
	Observer 1	Observer 2	Observer 1	Observer 2
S 1	150	150	11	11
S 5	9	9	66	67
S 10	12.5	12.5	11	12.5
S 11	55	54	20	19
S 13	7	6	7	8
S 20	116	116	38	38
S 21	44	44	114	115
S 22	24	24	64	64.5
S 23	19	19	32	33
S 24	6	5	3	3
S 25	4	3	17	16
S 26	0	0	0	0
S 29	150	150	150	150
S 30	78	77	41	40

[a] $r = .99$, $p < .001$ between observers.

[b] $r = .99$, $p < .001$ between observers.

Appendix C

Table C3

Individual Subject Pretest Data for Duration Behavioral Avoidance Test and for Rheostat Behavioral Avoidance Test

Subjects	Duration Behavioral Avoidance Test		Rheostat Behavioral Avoidance Test	
	Behavioral[a,b] Measure	Subjective[b,c,e] Measure	Behavioral[a,d] Measure	Subjective[c,d,e] Measure
S 1	0	5	-[f]	1
S 2	10.8	2	5	1
S 3	13	2	19	3
S 4	15	2	24	1
S 5	6.2	2	1	3
S 6	10	3	-	5
S 7	4.5	5	2	1
S 8	9	3	6	5
S 9	5.5	1	3.8	5
S 10	12.5	1	-	5
S 11	4.5	1	6	2
S 12	12.3	3	13.3	1
S 13	4.5	5	9	2
S 14	9.8	5	-	3
S 15	4.5	1	-	3
S 16	11	4	5	1

[a] $\underline{r} = .32$, $\underline{p} < .09$ between behavioral measures.

[b] $\underline{r} = .01$, $\underline{p} > 1$ between subjective and behavioral measures on Duration Behavioral Avoidance Test.

[c] $\underline{r} = .35$, $\underline{p} < .02$ between subjective measures.

[d] $\underline{r} = .15$, $\underline{p} > 1$ between subjective and behavioral measures on the Rheostat Behavioral Avoidance Test.

[e] Code for subjective ratings: 1 = not at all; 2 = a little; 3 = some; 4 = much, 5 = very much.

[f] No response on the Rheostat Behavioral Avoidance Test indicates an avoidance response prior to complete darkness and was considered zero seconds of dark tolerance.

Appendix C

Table C3 (continued)

Subjects	Duration Behavioral Avoidance Test		Rheostat Behavioral Avoidance Test	
	Behavioral[a,b,] Measure	Subjective[b,c,e] Measure	Behavioral[a,d] Measure	Subjective[c,d,e] Measure
S 17	3.5	2	-	1
S 18	5.5	5	-	1
S 19	5	1	27.8	1
S 20	7	1	15.5	1
S 21	7.5	1	7.3	3
S 22	12	1	3	4
S 23	9	2	28	5
S 24	12	5	3	1
S 25	4	5	-	1
S 26	12	5	3	2
S 27	11	1	17	2
S 28	17.3	2	1.5	1
S 29	2	2	1	2
S 30	7	3	-	1
S 31	2	5	-	1
S 32	5	5	8.5	2

[a] r = .32, p < .09 between behavioral measures.

[b] r = .01, p > 1 between subjective and behavioral measures on Duration Behavioral Avoidance Test.

[c] r = .35, p < .02 between subjective measures.

[d] r = .15, p > 1 between subjective and behavioral measures on the Rheostat Behavioral Avoidance Test.

[e] Code for subjective ratings: 1 = not at all; 2 = a little; 3 = some; 4 = much, 5 = very much.

[f] No response on the Rheostat Behavioral Avoidance Test indicates an avoidance response prior to complete darkness and was considered zero seconds of dark tolerance.

Appendix C

Table C4

Individual Data (in Seconds) for Pretest, Low Demand and High Demand Duration Behavioral Avoidance Tests

Group	Pretest[a]	Low Demand Posttest[b]	High Demand Posttest[b]
Graduated Exposure			
S 1	0	150	11
S 2	10.8	64	136
S 3	13	45	98
S 4	15	150	150
S 5	6.2	9	66.5
S 6	10	150	150
S 7	4.5	17	19
S 8	9	19	16
Mean	8.56	75.50	80.81
Verbal Coping Skills			
S 9	5.5	7	8
S 10	12.5	12.5	11.8
S 11	4.5	54.5	19.5
S 12	12.3	21	15
S 13	4.5	6.5	7.5
S 14	9.8	150	150
S 15	4.5	7	11
S 16	11	8	9
Mean	8.07	33.31	28.97

[a]Maximum score permitted on pretest was 30 seconds.

[b]Maximum score permitted on posttests was 150 seconds.

Appendix C

Table C4 (continued)

Group	Pretest[a]	Low Demand Posttest[b]	High Demand Posttest[b]
Coping Skills/ Graduated Exposure			
S 17	3.5	18	57
S 18	5.5	50	48
S 19	5	40	45
S 20	7	116	38
S 21	7.5	44	114.5
S 22	12	24	64.3
S 23	9	19	32.5
S 24	12	5.5	3
Mean	7.68	39.56	50.28
Contact Control			
S 25	4	3.5	16.5
S 26	12	0	0
S 27	11	81	55
S 28	17.3	30	54
S 29	2	150	150
S 30	7	77.5	40.5
S 31	2	5	6
S 32	5	5	25
Mean	7.53	44.00	43.37

[a]Maximum score permitted on pretest was 30 seconds.

[b]Maximum score permitted on posttests was 150 seconds.

Appendix C

Table C5

Fear Thermometer Scores[a] for Individual Subjects for Pretest, Low Demand and High Demand Duration Behavioral Avoidance Tests

Group	Pretest	Low Demand Posttest	High Demand Posttest
Graduated Exposure			
S 1	5	5	1
S 2	2	1	1
S 3	2	1	1
S 4	2	1	1
S 5	2	1	1
S 6	3	1	1
S 7	5	2	5
S 8	3	3	1
Mean	3.00	1.87	1.50
Verbal Coping Skills			
S 9	1	5	3
S 10	1	5	1
S 11	1	3	2
S 12	3	1	1
S 13	5	1	1
S 14	5	1	1
S 15	1	2	3
S 16	4	1	1
Mean	2.63	2.37	1.62

[a]Code for subjective ratings: 1 = not at all; 2 = a little; 3 = some; 4 = much, 5 = very much.

Appendix C

Table C5 (continued)

Group	Pretest	Low Demand Posttest	High Demand Posttest
Coping Skills/ Graduated Exposure			
S 17	2	3	2
S 18	5	1	1
S 19	1	1	2
S 20	1	5	3
S 21	1	5	2
S 22	1	1	1
S 23	2	5	5
S 24	5	5	1
Mean	2.25	3.25	2.12
Contact Control			
S 25	5	5	2
S 26	5	5	5
S 27	1	1	1
S 28	2	1	1
S 29	2	1	1
S 30	3	3	1
S 31	5	5	1
S 32	5	1	3
Mean	3.50	2.75	1.87

[a]Code for subjective ratings: 1 = not at all; 2 = a little; 3 = some; 4 = much, 5 = very much.

Appendix D

Treatment Protocols for All Groups

Treatment Protocol

Graduated Exposure Group

General Instructions

"Today we are going to play some games that will help you become less afraid of the dark. Sometimes I will turn the lights down a little bit and make the room a little bit darker. When I do, I want you to tell me if you are even a little bit afraid or beep the bicycle horn as we did in the games we played before. Right now, let's play with these toys and games. What would you like to play with?"

Graduated Exposure Procedure

"While we are playing these games (eating cookies, etc.), let's turn the lights down just a little bit. If you feel even a little bit afraid, I want you to tell me when I ask you or beep the bicycle horn. O.K. (Initiate 10-second exposure at first level of decreased illumination.) Are you even a little bit afraid?" If the child signaled fear, the rheostat was returned to full illumination. The child was then engaged in playing games again or engaged in conversation. The first trial was once again initiated with the same instructions. If no fear signal occurred, the experimenter continued. Following a brief play period, he said, "Let's turn the lights down a little bit like we did before. Remember to tell me if you feel a little bit afraid." (Initiate

the second 10-second exposure at the first level of decreased illumination.) If the child indicated fear, the procedure was again initiated as indicated above. If no fear signal occurred, the next trial was initiated for the next interval of time following a brief play period. The experimenter said while playing, "Let's turn the lights down again but this time for just a little bit longer. Remember to tell me if you feel even a little bit afraid when I ask you. O.K. (Initiate 20-second exposure.) If the child signaled fear, the rheostat was returned to full illumination. The next trial was initiated at the last tolerated illumination level for the last tolerated duration of exposure. If no fear signal occurred, the next trial was begun when the child was comfortable and playing with the experimenter. The experimenter said, "Let's turn the lights down again just the way we did before. Remember to tell me if you feel a little bit afraid." This procedure was followed so that each level of decreased illumination was exposed to the child for two trials at 10, 20, and 30 seconds without fear signals.

When changing levels of illumination, the experimenter said, "Let's turn the lights down again for a little bit, but this time we'll make it a little bit darker than before. Remember to tell me if you are even a little bit afraid." (Initiate 10-second exposure.) If the child indicated fear, the rheostat was immediately returned to full illumination. The next trial was then initiated at the last tolerated level of illumination for the last

tolerated duration of exposure. The experimenter then said (while engaging the child), "This time we won't turn the lights down quite so low. I'm ready to turn the lights down a little now. Tell me if you feel afraid." (Exposure.) The general procedure as described above was followed for each of the ten steps of the darkness hierarchy. The nine levels of decreased illumination coincided with the exposure values on the Layfayette CDS Light Exposure Meter. A criterion of successful completion of the hierarchy or three sessions was employed.

Treatment Protocol

Verbal Coping Skills Group

General Instructions

"Today we are going to play some games that will help you become less afraid of the dark. While we play with some of these toys, I would like to talk to you about some things."

Verbal Coping Skills Procedure

Educational phase. The discussion, while playing included:

1. Seeing things; Sometimes we think we see things in the dark but they are just shadows. You have a shadow. You have a shadow when you are outside, things in the dark sometimes have shadows, too. (Discussion on shadows.)

2. Hearing things; Sometimes we think we hear things in the dark but they are just people talking, or sometimes the T.V. makes noises when we are in bed at night. (Discussion on noises in the dark and at bedtime.)

3. Pretending (imagining) things; It's fun to pretend. Sometimes we pretend that our toys can talk or that we can fly like superman (woman). Sometimes we pretend things in the dark, too. Sometimes we pretend that there are scarey things in the dark, like ghosts or monsters. (Discussion on pretending.)

Coping phase instructions. "Now I would like to teach you some special words. The words are special because if we say them when we are even a little afraid in the dark, they can make us feel better (less afraid). Would you like to learn the special words with me?"

1. Seeing things; "If I think I see things in the dark, I know they are just shadows. I know that things have shadows in the light and in the dark. So, if I see things in the dark, I won't be afraid because it's just shadows." The special words are "it's just shadows". The child is asked to repeat the special words. The experimenter modeled the special words, if necessary. The sequence was repeated until the child spontaneously responded appropriately.

2. Hearing things; "If I hear things in the dark, I know it's just people talking or the T.V. I can listen very carefully and know I don't have to be afraid because it's just people talking." The special words are "it's just people talking." Can you say the special words?" The same procedure was followed as in Number 1 above until the child spontaneously responds appropriately.

3. Pretending things; "Sometimes I might pretend that there are scarey things in the dark. If I pretend that something scarey like ghosts or monsters are in the dark, I can always turn the lights on." The special words are "I can always turn the lights on." Can you tell me the special words?

Pretend games instructions. "I would like to play some different games now. I would like to play some pretend games and use the special words we learned before. Would you play with me?"

1. Seeing things; "Let's pretend that we are in a dark room in your house. You are safe and sound. You see something in the room and you don't know what it is but you are not afraid because.... Do you know the special words?" If the child did not respond appropriately, the experimenter modeled the appropriate "special words." Training continued until the child supplied the appropriate coping statement to the sequence.

2. Hearing things; "Let's pretend that you are alone in your room at night. You are safe in your bed. You hear some noises but you know that there is nothing to be afraid of because.... Do you know the special words?" Training continued until the child supplied the appropriate coping statement to the sequence.

3. Pretending things; "Let's pretend that you are going into your room and it is dark in there. You look in and you pretend that there is something scarey in there like a ghost or a monster. You are not afraid because.... Do you know the special words?". Training continued until criterion.

The sequence of pretend statements was 1, 2, 3, 2, 3, 1, 3, 2, 1. criterion of successful coping on all presentations or three sessions was employed.

Treatment Protocol

Coping Skills/Graduated Exposure Group

The treatment protocol in this group was the same as the treatment protocol of the Verbal Coping Skills group with the following exception: The "pretend games" in the Verbal Coping Skills group were carried out in the decreased levels of illumination utilized in the Graduated Exposure group. Each "pretend" sequence was practiced during a 30-second exposure. If the child indicated fear during an exposure, the rheostat was returned to the full illumination level. The next trial was initiated at the last tolerated illumination level. The child was then asked to repeat his performance at the previously avoided illumination level. If a fear signal occurred, the procedure was repeated. The practice sequence was the same as in the Verbal Coping Skills group.

The educational phase and coping skill phases were identical to the Verbal Coping Skill group.

Instructions for pretend games with exposure. "I would like to play some different games now. I would like to play some pretend games and use the special words we learned before. Would you like to play with me?" After the child learned all the coping phrases during the coping skill phase, the experimenter said, "That's good. Now let's see if we can say it again. This time we will make the

room a little bit darker. If you are even a little bit afraid, I want you to tell me when I ask you or beep the bicycle horn. O.K. Let's do it again and make the room a little bit darker."

A criterion of successful coping at all nine levels of decreased illumination or three sessions was employed.

Treatment Protocol

Contact Control Group

General Instructions

"Today we are going to play some games that will help you become less afraid of the dark. We will play with some of these toys and learn some nursery rhymes."

The experimenter during play read three nursery rhymes:

1. Jack and Jill
2. Jack Be Nimble
3. Humpty Dumpty

The child was asked to help the experimenter by completing the last line of the nursery rhyme. A criterion of three successful completions of each of the three nursery rhymes was employed.

Appendix E

Tables and

Statistical Data and Analyses

Appendix E

Table E1

Mean Seconds and Standard Deviations for Dark Tolerance on Pretest[a], Low Demand Posttest, and High Demand Posttests[b] on Duration Behavioral Avoidance Tests

Group	Pretest		Low Demand Posttest		High Demand Posttest	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Graduated Exposure	8.56	4.91	75.50	56.55	80.81	57.00
Coping Skills/ Graduated Exposure	7.68	2.93	39.56	32.31	50.28	29.77
Verbal Coping Skills	8.07	3.42	33.31	46.62	28.97	45.89
Contact Control	7.53	5.02	44.00	50.37	43.37	44.65

[a]Maximum score on pretest is 30 seconds.

[b]Maximum score on each posttest is 150 seconds.

Appendix E

Table E2

Summary of Analysis of Variance for the Duration Behavioral Avoidance Tests

Source	SS	df	MS	F
Treatments	13139.8	3	4379.9	1.50
Experimenters	46.6	1	46.6	0.01
Tests	36886.1	2	18443.0	16.02**
Treatments x Experimenters	8953.9	3	2984.6	1.02
Treatments x Tests	6797.8	6	1132.9	0.98
Experimenter x Tests	961.0	2	480.5	0.41
Subjects(Treatments x Experimenters	69814.6	24	2908.9	
Treatments x Experimenters x Tests	6417.8	6	1069.6	0.92
Subjects x Tests (Treatments x Experimenters)	55254.4	48	1151.1	

**$p < .01$

Appendix E

Table E3

Newman-Keuls Analysis on Tests for the Behavioral Avoidance Tests

Pretest	Low Demand Posttest	High Demand Posttest	r	Critical Value
	40.13*	42.90*	3	25.94
		2.77	2	22.70

*$p < .05$

Appendix E

Table E4

Utility Indices

Behavioral Avoidance Tests

Non-additive Model (Fixed $AB\overline{C}s$) - Gaebelein and Soderquist (Note 1)

Numerators:

Treatments:

$$SS_{Treatments} - df_{Treatments}\ MS_{Subjects(Treatments \times Experimenters)} = 4413.1$$

Tests:

$$SS_{Tests} - df_{Tests}\ MS_{Subjects \times Tests(Treatments \times Experimenters)} = 34583.9$$

Denominator:

$$UI_{:s} = SS_{Total} - (abn-1)\ MS_{Subjects(Treatments \times Experimenters)} + abn\ MS_{Subjects \times Tests(Treatments \times Experimenters)} = 71,260.9$$

$UI_{Treatments} = .06$

$UI_{Tests} = .49$

Appendix E

Table E5

Newman-Keuls Analysis for the Graduated Exposure Group Behavioral Avoidance Tests

Pretest	Low Demand Posttest	High Demand Posttest	r	Critical Value
	66.94**	72.25**	3	51.80
		5.31	2	45.44

**$p < .01$

Appendix E

Table E6

Newman-Keuls Analysis for the Coping Skills/
Graduated Exposure Group on the
Behavioral Avoidance Tests

Pretest	Low Demand Posttest	High Demand Posttest	r	Critical Value
	31.88	42.60*	3	41.01
		10.73	2	34.05

*$p < .05$

Appendix E

Table E7

Newman-Keuls Analysis for the Verbal Coping Skills Group on the Behavioral Avoidance Tests

Pretest	Low Demand Posttest	High Demand Posttest	r	Critical Value
	20.90	25.24	3	41.01
		4.34	2	34.05

Appendix E

Table E8

Newman-Keuls Analysis for the Contact Control Group on the Behavioral Avoidance Tests

Pretest	Low Demand Posttest	High Demand Posttest	r	Critical Value
	35.84	36.47	3	41.01
		0.63	2	34.05

Appendix E

Table E9

Means and Standard Deviations for Fear Thermometer Ratings[a] on Pretest, Low Demand Posttest, and High Demand Posttest

Group	Pretest		Low Demand Posttest		High Demand Posttest	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Graduated Exposure	3.00	1.27	1.87	1.31	1.50	1.33
Coping Skills/ Graduated Exposure	2.25	1.63	3.25	1.85	2.12	1.26
Verbal Coping Skills	2.63	1.72	2.37	1.65	1.62	0.85
Contact Control	3.50	1.58	2.75	1.74	1.87	1.37

[a]Rating scale values on the Fear Thermometer:

1 = Not at all
2 = A little
3 = Some
4 = Much
5 = Very much

Appendix E

Table E10

Analysis of Variance for the Fear Thermometer on the Behavioral Avoidance Test

Source	SS	df	MS	F
Treatments	5.45	3	1.89	0.47
Experimenters	.66	1	.66	0.17
Tests	19.39	2	9.69	4.93*
Treatments x Experimenters	2.83	3	.94	0.24
Treatments x Tests	11.35	6	1.89	0.96
Experimenter x Tests	5.77	2	2.88	1.46
Subjects(Treatments x Experimenters)	92.66	24	3.86	
Treatments x Experimenters x Tests	20.47	6	3.41	1.73
Subjects x Tests(Treatments x Experimenters)	94.33	48	1.96	

*$p < .05$

Appendix E

Table E11

Newman-Keuls Analysis on Tests
for the Fear Thermometer

High Demand Posttest	Low Demand Posttest	Pretest	r	Critical Value
	.78*	1.06*	3	.86
		.28	2	.71

*$p < .05$

Appendix E

Table E12

Utility Indices

Fear Thermometer

Non-additive Model (Fixed $AB\bar{C}s$) - Gaebelein and Soderquist (Note 1)

Numerators:

Tests:

$SS_{Tests} - df_{Tests} MS_{Subjects \times Tests(Treatments \times Experimenters)} = 15.47$

Experimenters
x Tests:

$SS_{Experimenters \times Tests} - df_{Experimenters \times Tests}$

$MS_{Subjects \times Tests(Treatments \times Experimenters)} = 1.85$

Treatments
x Experimenters
x Tests:

$SS_{Treatments \times Experimenters \times Tests}$

$-df_{Treatments \times Experimenters \times Tests}$

$MS_{Subjects \times Tests(Treatments \times Experimenters)} = 8.71$

Denominator $UI_{:s}$

$SS_{Total} - (abn-1) MS_{Subjects(Treatments \times Experimenters)} + abnMS_{Subjects \times Tests(Treatments \times Experimenters)} = 70.53$

$UI_{Tests} = .22$

$UI_{Experimenters \times Tests} = .02$

$UI_{Treatments \times Experimenters \times Tests} = .12$

Appendix E

Table E13

Newman-Keuls Analysis for the Graduated Exposure Group

Fear Thermometer Ratings

High Demand Posttest	Low Demand Posttest	Pretest	r	Critical Value
	.37	1.50	3	1.67
		1.13	2	1.38

Appendix E

Table E14

Newman-Keuls Analysis for the
Coping Skills/Graduated Exposure Group

Fear Thermometer Ratings

High Demand Posttest	Pretest	Low Demand Posttest	r	Critical Value
	.13	1.13	3	1.67
		1.00	2	1.38

Appendix E

Table E15

Newman-Keuls Analysis for the Verbal Coping Skills Group

Fear Thermometer Ratings

High Demand Posttest	Low Demand Posttest	Pretest	r	Critical Value
	.75	1.00	3	1.67
		.25	2	1.38

Appendix E

Table E16

Newman-Keuls Analysis for the Contact Control Group

Fear Thermometer Ratings

High Demand Posttest	Low Demand Posttest	Pretest	r	Critical Value
	.88	1.63	3	1.67
		.75	2	1.38

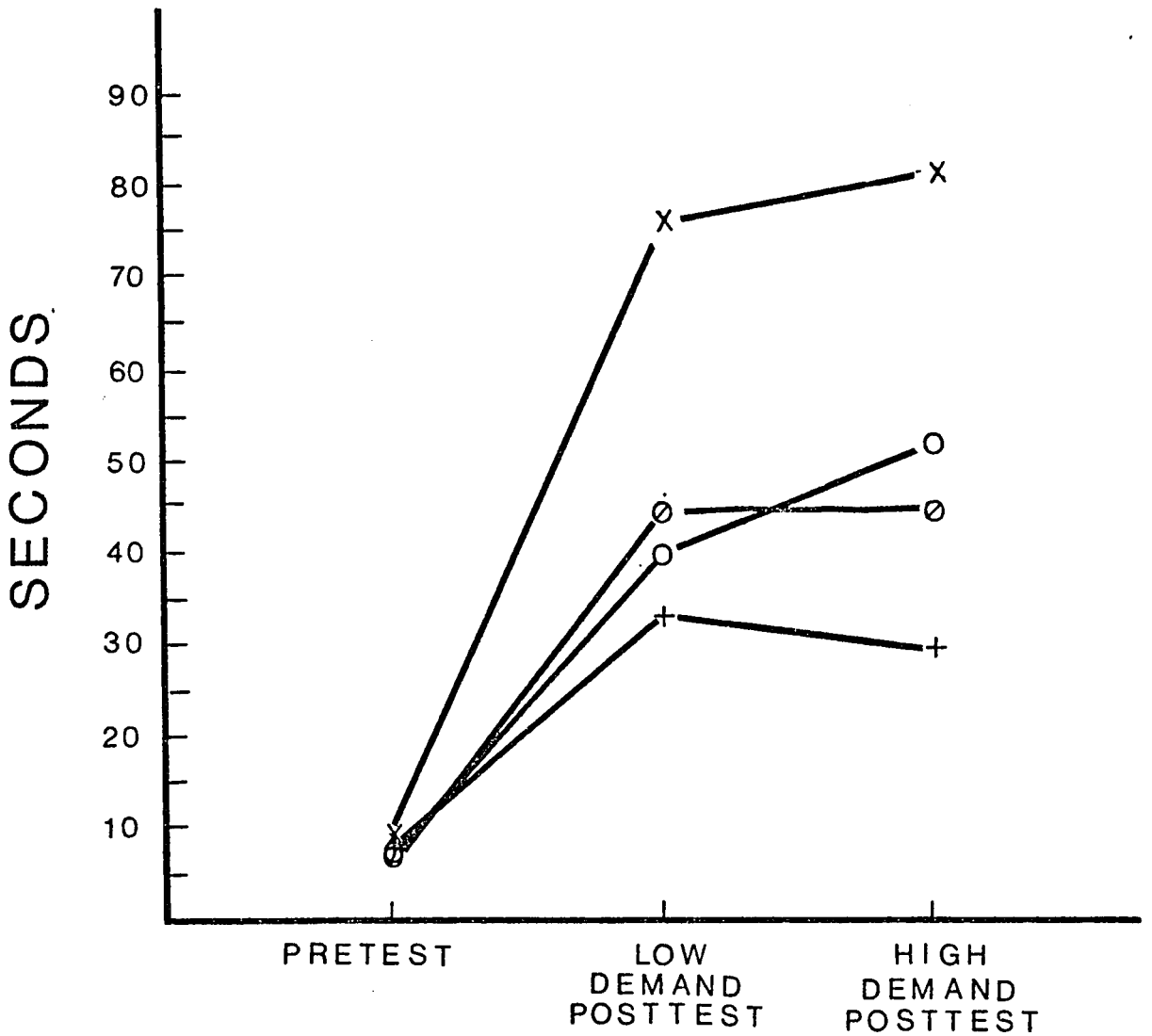
Appendix F

Figures 1F, 2F, and 3F

Appendix F

Figure 1F

Mean Seconds of Duration of Dark Tolerance for All Groups on Duration Behavioral Avoidance Pretest, Low Demand Posttest, and High Demand Posttest



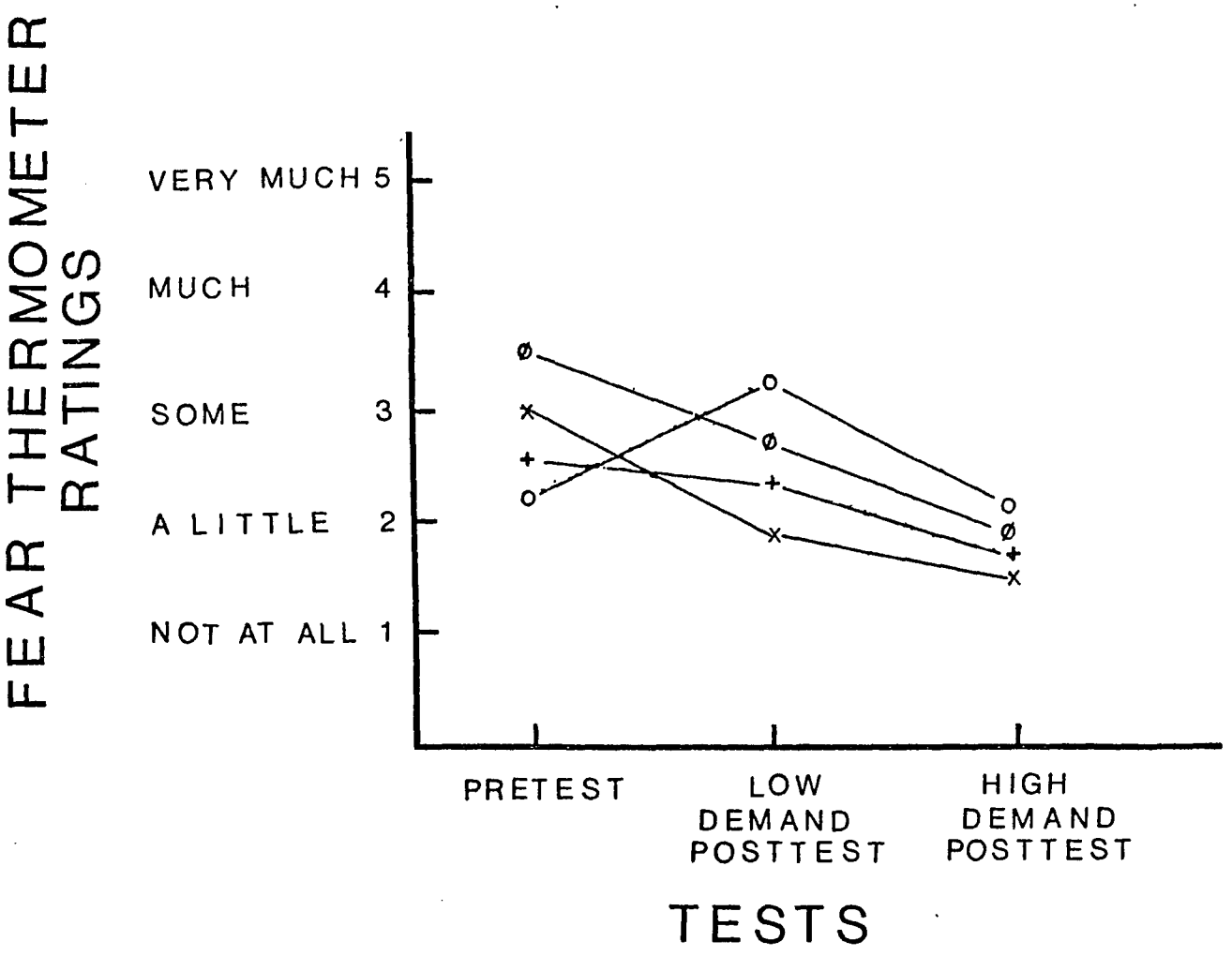
DURATION BEHAVIORAL AVOIDANCE TESTS

x——x graduated exposure
+——+ verbal coping skills
o——o coping skills/graduated exposure
ø——ø contact control

Appendix F

Figure 2F

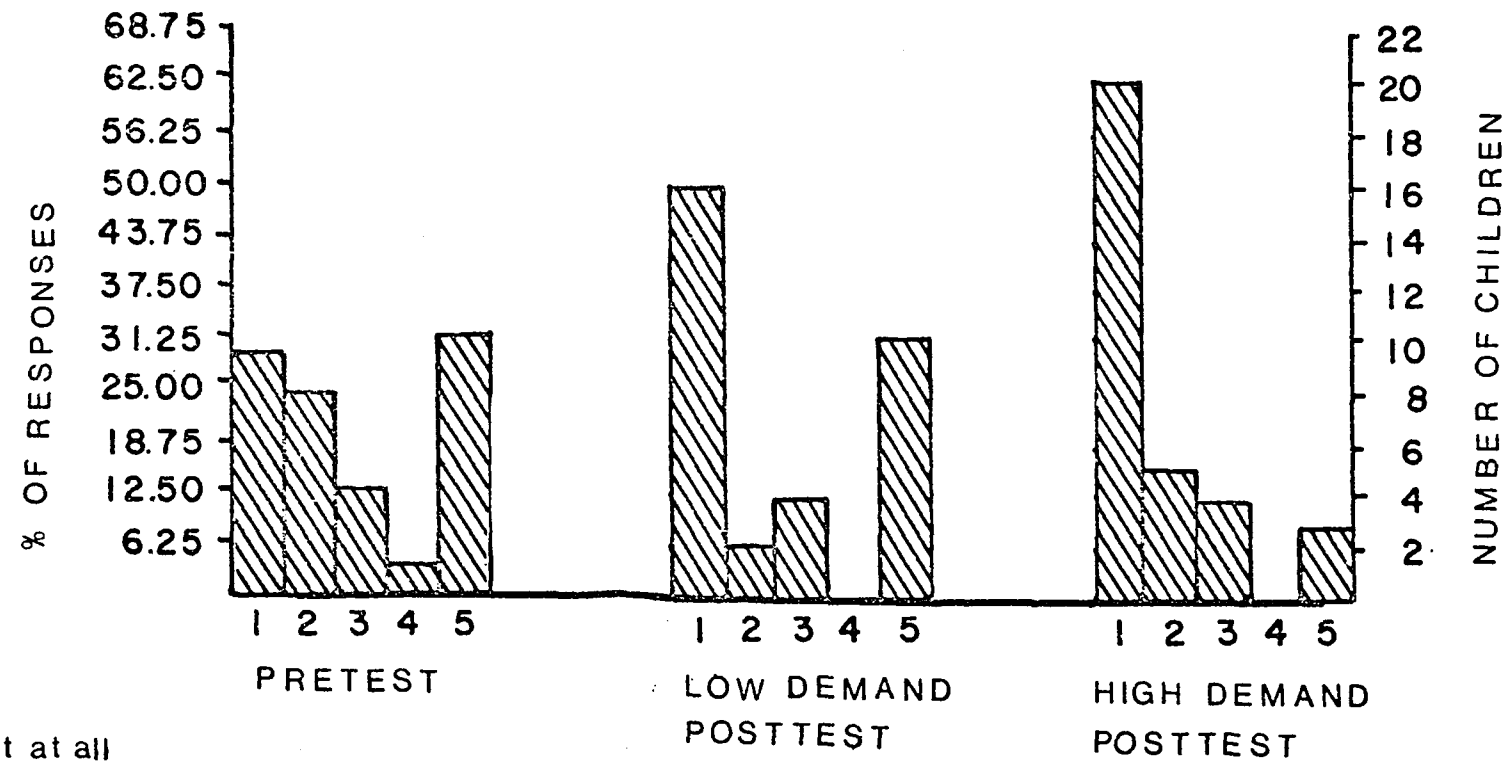
Means for Subjective Fear Ratings for All Groups
on Duration Behavioral Avoidance Pretest,
Low Demand Posttest, and
High Demand Posttest


FEAR THERMOMETER RATINGS
VERY MUCH 5
MUCH 4
SOME 3
A LITTLE 2
NOT AT ALL 1
PRETEST
LOW DEMAND POSTTEST
HIGH DEMAND POSTTEST
TESTS
x—— x graduated exposure
+—— + verbal coping skills
o—— o coping skills/graduated exposure
ø—— ø contact control

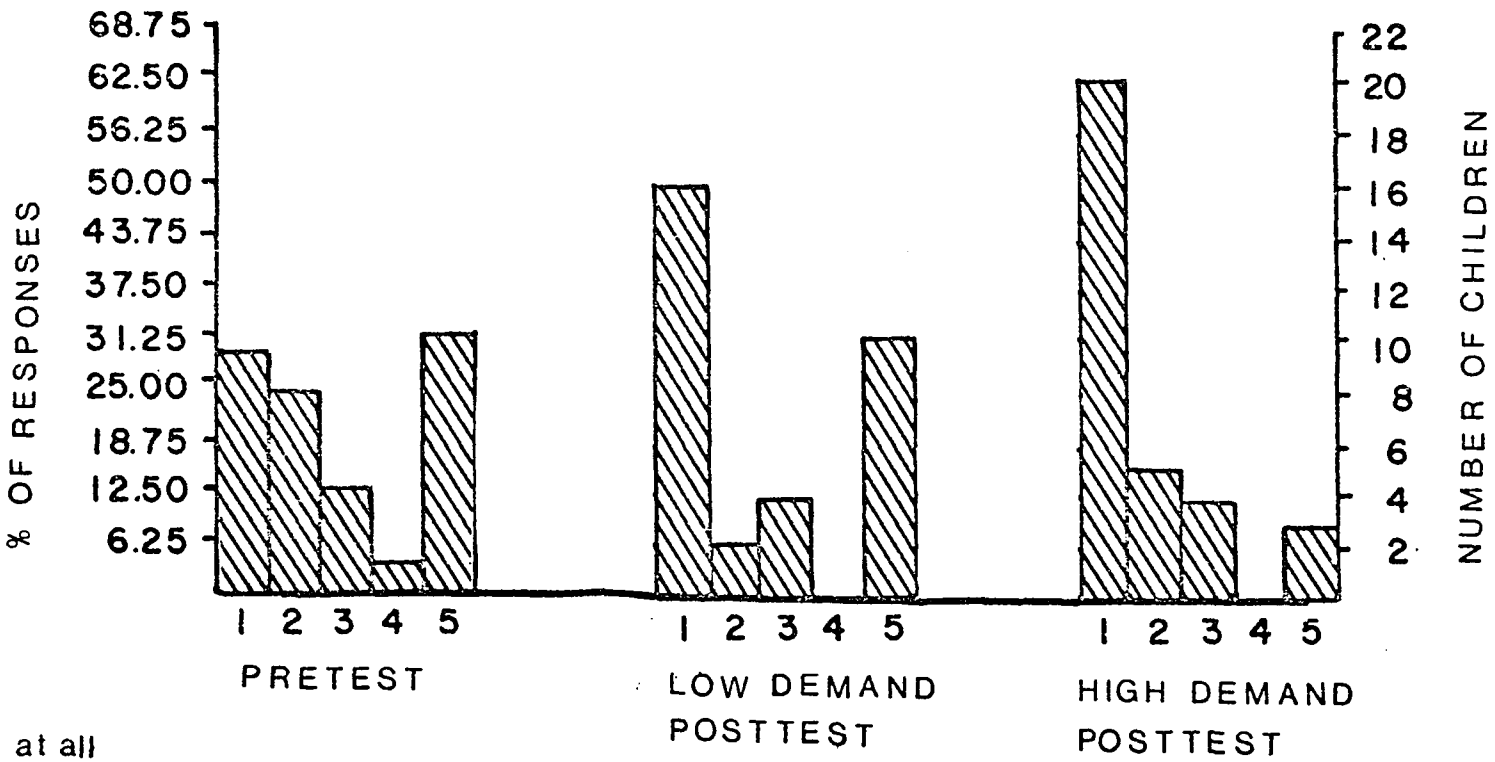
Appendix F

Figure F3

Overall Distribution of Fear Thermometer Responses
on Duration Behavioral Avoidance Pretest,
Low Demand Posttest, and
High Demand Posttest



1 not at all
2 a little
3 some
4 much
5 very much



1 not at all
2 a little
3 some
4 much
5 very much