SELF- VERSUS EXPERIMENTER-ADMINISTERED RELAXATION TRAINING

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ABSTRACT

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Bandura has emphasized the importance of self-efficacy expectations in psychological treatment. The present study sought to increase self-efficacy expectations during relaxation training through the self-administration of the relaxation procedures. It was predicted that increased efficacy expectations would produce increased relaxation skills. Forty-three subjects from introductory psychology courses were assigned to one of three conditions: (1) experimenter-administered relaxation training, (2) self-administered relaxation training, or (3) a placebo group. Training effectiveness was assessed by the state scale of the State-Trait Anxiety Inventory, the subjects' self-rating, and a behavioral checklist. No significant differences between groups were found. A check on the success of the efficacy manipulation revealed that self-administering the procedures did not significantly increase efficacy expectations. The absence of differential levels of self-efficacy precluded conclusions concerning Bandura's

theory. Implications for clinical practice were discussed along with suggestions for strengthening the experimental procedures.

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INTRODUCTION

History and Development

Progressive relaxation training encompasses a group of behavior change techniques loosely based on Edmund Jacobson's research on tension and neurotic anxiety (Jacobson, 1938, 1957, 1964, 1970). Jacobson developed a conceptualization of neurotic behavior as being a form of tension disorder, in which the individual experiences a failure to relax. He states that

> the neurotic individual has partially lost the natural habit or ability to relax. Usually he does not know what muscles are tense, cannot judge accurately whether he is relaxed, does not clearly realize that he should relax, and does not know how. These capacities must be cultivated or re-acquired (1938, p. 31).

Recovery, then, from a neurotic condition would be characterized by a return to the normal relaxed state, a diminuation of "neuromuscular excitability." While several indirect methods for achieving this relaxation had already been developed, i.e., hypnosis and psychoanalysis, Jacobson's interest was in a more direct, physiologically-based method for removing tension. He concluded that the tension which characterizes neurosis is the result of the shortening of muscle fibers, which leads to the subjective experience of anxiety. Therefore, relaxation could be reinstated by

simply inducing the physiologically opposite state, the absence of muscular contraction, since "to be excited and to be fully relaxed are physiological opposites. Both states cannot exist in the same locality at the same time" (Jacobson, 1938, p. xv).

Accordingly, the method which Jacobson developed for achieving this relaxation had as its essential feature the elimination of all muscular contractions, even the "residual tensions" which remain at the point at which individuals would normally consider themselves relaxed. It was necessary to develop in his clients a refined awareness of their muscular activity, an ability to detect even a slight degree of muscular contraction. This awareness and localization of the sensations accompanying muscular contractions allowed the client to attempt the elimination of the various sources of tension, and was termed by Jacobson the "muscle sense." Since Jacobson's technique for identifying and removing these tensions differs in many respects from more current methods, it will be briefly described.

The development of the muscle sense is accomplished by accentuating the tension sensations in each of many small groups of muscles throughout the body. The client is asked to steadily contract a particular muscle group as the therapist calls attention to the accompanying sensations of tension. Passive resistance against a muscle may be provided as a method of increasing tension sensations;

for example, the therapist might block the upward movement of the hand in order to increase tension in the biceps. When the sensation is clearly perceived the client is informed that tension is "his/her doing," an active response, and that relaxation is the opposite of that; not doing anything. The client "begins to realize that progressive relaxation is not subjectively a positive something different from contraction, but simply a negative" (Jacobson, 1938, p. 49). Therefore, after a muscle has been tensed and the accompanying sensations recognized and localized, the client is simply asked to do the opposite, to not tense the muscle. Once this process has begun the therapist allows the client to continue relaxing for 10-15 minutes on his/her own, attempting to become more deeply relaxed.

Three specific features of Jacobson's technique are particularly noteworthy in their deviation from current modifications and merit special attention. (1) Jacobson's method is extremely time consuming. Each training session concentrates on the addition of only one or a few muscle groups, thus protracting training to 100-200 sessions. In addition, lengthy home practice sessions, lasting 1-2 hours, are required each day. (2) The tensing procedures are not seen as a direct aid in the attainment of relaxation. Jacobson states instead that

> contraction is performed as a rule in order to acquaint the patient with the experience of tenseness--<u>in order that he may know what not to do</u>. It is therefore not well to have him contract during practice when alone:

> he should relax from the outset and relax only (1938, pp. 397-398).

(3) Jacobson also places an emphasis on obtaining "mental relaxation," or the absence of mental activity, as a direct result of muscular contraction. Mental activity is seen as closely linked to minor contractions of the eye muscles and vocal chords and, accordingly, relaxation of these muscles is expected to result in the absence of the accompanying mental activity.

Other researchers and practitioners have since extended and modified Jacobson's methods. Perhaps most notable among these is Joseph Wolpe (Wolpe, 1958; Wolpe & Lazarus, 1966) who modified the original method and integrated it into a systematic psychotherapeutic program. Wolpe's early work with cats led him to conclude that a conditioned fear reaction could be eliminated by evoking a response incompatible with anxiety in the presence of the fear producing stimulus. With cats, a convenient incompatible response was the positive sensation of eating when hungry; however with humans this was neither convenient or practical as a competing response. Wolpe then located Jacobson's work and found in progressive relaxation an appropriate incompatible response for use with humans, except that the length of training was prohibitive. As a result, Wolpe followed Jacobson's procedure in all essential respects except that the length of training was reduced to 6-7 sessions with home practice and training

sessions reduced to 30 and 20 minutes

might also be noted that there appears to be a contradiction in Wolpe's position concerning the function of the muscle tensing procedures. On some occasions Wolpe seems to concur with Jacobson that tensing serves mainly as an introduction to a muscle group rather than as part of the relaxation process itself (Wolpe & Lazarus, 1966). However, the contradiction lies in a transcript of relaxation instructions contained in the same work. In this transcript relaxation is attained through repetitions of brief tension-relaxation cycles more in accordance with Paul (1966; see below) than Jacobson. It is unclear as to how the two are to be reconciled.

Of particular importance also is the work of Paul (1966) and Bernstein and Borkovec (1973). As indicated above, Paul's technique involves a series of brief tension-relaxation cycles in each muscle group, with progress to the next group contingent on the degree of relaxation in the current group matching that of the previous one. In this way Paul further abbreviated Wolpe's method; all muscle groups are now relaxed in every session as opposed to progressively adding more muscle groups across sessions. Bernstein and Borkovec (1973) altered Paul's methods somewhat, particularly in terms of muscle groupings, but followed his technique closely enough to be viewed as simply a variation of Paul. Their major contribution was a detailed manual for the use of relaxation training.

In addition to the brevity of training, both of these newer methods differ from Jacobson in the two other major respects outlined earlier. First, neither of them mention the mental relaxation which was supposed to follow from muscular relaxation; in fact, Bernstein and Borkovec separate mental from physical relaxation and offer methods for achieving the former when it proves necessary. Second, neither of them view the muscle tensing procedures as simply a method of attaining a muscle sense, but instead view it as an important part of the muscle relaxation process itself. By initially requiring tensing of each muscle group, the depth of relaxation is thought to increase: "if the muscles are first tensed, they will relax more deeply when they are released" (Paul, 1966, p. 118). This is in sharp contrast to Jacobson's stand on the appropriate use of muscle tensing.

Applications of Progressive Relaxation Training

The major focus of the present study is the effectiveness of relaxation training as a treatment in itself, as determined by the client's skill in self-producing the relaxed state. However, much of the research concerning relaxation has focused on the application of this skill, once it has been acquired, to a variety of medical and psychological disorders. Such studies provide indirect evidence of the success of the relaxation training procedures and will be briefly reviewed.

As a physician, Jacobson often stressed the medical applications of his work, especially the use of relaxation as a scientifically-based method of obtaining the "rest" often prescribed to patients. Many case studies are presented of the application of relaxation to a variety of medical problems which may be amenable to relaxation training. Among the latter are exhaustion, toxic goiter, "nervousness" accompanying a variety of diseases, colonic spasm, peptic ulcer, chronic pulmonary tuberculosis, and general use for pre- and post-operative care. Of course, Jacobson also realized the applications of his method to various psychological problems and suggested its use as treatment for phobias, compulsions, and the inability to concentrate.

More recently, other researchers have also applied relaxation training as a treatment for medical and psychological ailments. Concerning medical or medical/psychological problems, relaxation has been used in the treatment of insomnia (Geer & Katkin, 1966; Borkovec & Fowles, 1973; Pendleton & Tasto, 1976), stomach pain and tranquilizer use in an ulcer patient (Bernstein & Borkovec, 1973), high blood pressure (Deabler, Fidel & Dilenkoffer, 1973; Shoemaker & Tasto, 1975), tension headaches (Lutker, 1971; Tatso & Hinkle, 1973), symptoms of Huntington's chorea (MacPherson, 1967), asthma (Rathus, 1973), and chronic back pain (Scheiderer & Bernstein, 1976). Concerning more purely psychological problems, relaxation has been applied

toward the treatment of debilitating anxiety in psychological or psychiatric interviews (Zeisset, 1968; Bernstein & Borkovec, 1973), speech anxiety (Russel & Wise, 1976), and test anxiety (Chang-Liang & Denny, 1976). In general, Bernstein and Borkovec (1973) suggest it may be used for the treatment of any high level tension response which interferes with the performance of other behaviors. It should also be noted that relaxation training may be applied to a host of problems as part of other treatment packages, most notably systematic desensitization, but also including other treatments such as covert sensitization (Cautela, 1966) and induced anxiety (Sipprelle, 1967; Ascough, 1972).

Physiological Effects of Relaxation Training

The results of studies just cited would seem to indicate that relaxation training is indeed an effective treatment for a variety of ailments. However, by what mechanisms does relaxation achieve these results? In most instances some reference to the physiological effects of relaxation must be made in order to answer this question, particularly in the case of more physiologically-based ailments such as high blood pressure. Accordingly, the physiological effects of progressive relaxation training will be briefly reviewed.

From its inception there has been interest in the physiological underpinnings of relaxation training. Jacobson's strong research orientation led him to undertake

several investigations of this nature (see Jacobson, 1938). Included among his findings were that relaxation training resulted in decreased muscle tension in comparison to untreated controls (1934), relaxation reduced blood pressure (1939) with an accompanying reduction in heart rate (1940), and subjects who simply took daily rests failed to produce low levels of muscular tension (1942). However, these and other conclusions drawn by Jacobson have since been called into question. For example, Mathews (1971) concludes that Jacobson's results

> are of little scientific value due to his neglect of statistical procedures and of appropriate control groups. None of the controls used had regular contact with the therapist or the testing environment, as did the trained patients. It is quite possible to account for all the reported results in terms of either adaptation effects or the spontaneous remission of symptoms over time (pp. 78-79).

Mathews' conclusions have been partially supported by the difficulty of more recent researchers to consistently verify specific claims concerning physiological effects of relaxation training. At the extreme, some have even supported the position that progressive relaxation may have no autonomic effects whatsoever. Greenwood and Benson (1977), in a paper supporting a more meditative approach to relaxation, conclude that

> the unclear function [in systematic desensitization] of abbreviated training in progressive relaxation may be a result of the ineffectiveness of this relaxation method as a competitive response to anxiety. Results from initial studies of abbreviated training in progressive relaxation have been inconsistent and generally

> do not support the contention that muscular relaxation, as produced by progressive relaxation, reduces autonomic nervous system activity (p. 338).

Although such a conclusion may be somewhat premature, a review of the literature would seem to concur with Mathews (1971) that the results of physiological research on relaxation training have been equivocal. In an early study, Grossberg (cited by Mathews & Gelder, 1969) compared three methods of attaining relaxation; listening to tape-recorded relaxation instructions, listening to music, and simply making a conscious effort to relax (self-relaxation). Monitoring forehead and forearm EMG, skin resistance, and heart rate as physiological indices of relaxation, Grossberg found no significant differences between groups. Similarly, Benjamin, Marks, and Huson (1972) also found no significant differences between relaxation and control groups in heart rate; however, they did report significant differences in skin conductance fluctuations. Paul (1969), in an often-cited study, achieved more positive results; he found that relaxation produced a significantly greater reduction in heart rate, muscle tension, and respiratory rate than did self-relaxation controls, although there were no significant results regarding skin conductance. In a departure from the typical use of normal subjects, Mathews and Gelder (1969) report two studies involving psychiatric patients. In the first study, 10 patients served as subjects, five receiving relaxation training and five receiving sessions which did not include relaxation. No significant differences between

groups were found on forearm blood flow, forearm EMG, or skin conductance. A second similar study also revealed no significant differences between groups on heart rate, respiration rate, and EMG activity, although significant differences did occur in the reduction of skin conductance.

Other studies have supported the effectiveness of relaxation training in the reduction of physiological arousal, but have failed to establish its superiority over control procedures. For example, Lehrer (1972) in a desensitization analogue study, reported significant reductions in heart rate, skin potential levels, skeletal activity, EMG, and frequency of skin potential responses, as a result of relaxation training. However, this group differed significantly from a "no instructions" control group only on heart rate. Similarly, Israel and Beiman (1977) found significant reductions in heart rate and integrated muscle tension recorded from the frontalis muscle as a result of relaxation, yet found no significant differences on these measures in comparison to a self-relaxation control. Also, in a related study, Janda and Cash (1976) found significant reductions in forehead EMG and heart rate although they failed to include a control group in their design.

It is apparent, then, that considerable confusion still remains concerning the physiological effects of relaxation training. Perhaps this is best highlighted by a summary of the previously cited studies concerning one physiological measure: heart rate. Grossberg (cited by Mathews

& Gelder, 1969), Mathews and Gelder (1969), Benjamin, Marks and Huson (1972), and Israel and Beiman (1972) all concur that relaxation training produces no significant reductions in heart rate in comparison to controls. Contrasting this are the results of Paul (1969) and Lehrer (1972) who did find significant reduction in heart rate in comparison to controls. Further confusion is added by Israel and Beiman (1977) who report significant pre-post reductions in heart rate without accompanying differences from control groups. Such differences as these are most likely accounted for by variation in the relaxation procedures utilized. Training procedures may differ on such variables as length of total training, length of tension-release cycles, the role of suggestion, and the use of "live" versus tape-recorded relaxation instructions. It seems unlikely that training procedures which vary widely on these and other variables will produce similar outcomes.

Also relevant to the discussion of the physiological correlates of relaxation is the relationship between objective and subjective relaxation. It should be noted that it does not follow from a failure to produce physiological, objective relaxation, that one has also failed to produce a subjective state of relaxation in the client. That is, the cognitive and physiological realms are not in perfect correspondence. For example, Janda and Cash (1976) failed to find any significant correlations between self-reports and physiological measures of the degree of relaxation.

Paul and Trimble (1970), in a comparison of live and recorded relaxation instructions, found the two modes to be equally effective in terms of self-report but found live instructions superior to taped in physiological outcome. Similarly, Paul (1969) found relaxation and hypnosis to be comparable in terms of self-report, although physiologically, relaxation was superior. Thus, the inconclusive outcomes of physiological studies of relaxation should not be taken to indicate that the subjects did not experience a subjective decrease in arousal.

Returning to the question posed earlier concerning the mechanism through which relaxation training affects improvement in medical and psychological disorders, the studies just reviewed point to the conclusion that, although the physiological effects of relaxation may be important, other factors which do not rely on positing a specific physiological effect of training must also be considered. One such factor, as indicated above, is the cognitive effect of training in progressive relaxation.

Cognitive Aspects of Relaxation Training

Relaxation training, like other forms of behavioral or psychological therapy, is often used to effect a specific form of behavior change in the client. One approach, then, to uncovering cognitive aspects of relaxation training is to first discuss cognitive aspects of behavior change in general and then apply it to the specific case. Although

there are many theories of behavior change, one which adequately accounts for the cognitive aspects of change is Bandura's (1977) self-efficacy theory.

Bandura points out that there have been two divergent trends in the field of behavior change. On the one hand, behavior has been viewed as acquired and regulated by cognitive processes; on the other hand, the most effective behavior change procedures have been based on performance, not cognition. Bandura attempts to reconcile these contradictory trends by positing a behavior change mechanism in which cognitive events are created and altered by the perception of one's own behavior, i.e., by one's performance. Bandura presents the viewpoint that

> changes achieved by different [psychotherapeutic] methods derive from a common cognitive mechanism. The apparent divergence of theory and practice can be reconciled by postulating that cognitive processes mediate change, but that cognitive events are induced and altered most readily by experience of mastery arising from effective performance (p. 191).

In this way the effectiveness of the performance-based therapies can be viewed as the result of effecting appropriate performance, which leads to cognitions of mastery or self-efficacy, which in turn results in behavior change. The creation or strengthening of these expectations of personal efficacy, then, plays a central role as the mechanism through which behavior change occurs.

Care should be taken to distinguish the concept of self-efficacy from two related concepts: response-outcome expectancies and internal locus of control (Bandura, 1977).

Concerning the former, a response-outcome expectancy is the expectation that a given response will lead to a specific outcome. Self-efficacy, however, refers to "the conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). That is, one may have the correct expectation that a specific behavior will result in the desired outcome, but that is distinct from the conviction that one can successfully execute that behavior. Similarly, concerning internal locus of control, an individual with an accurate internal locus of control may realize that if a behavior is to occur he/she is the one responsible for its occurrence, but again, this is distinct from being certain that one can perform the behavior.

Bandura goes on to suggest four sources of information concerning one's self-efficacy and their accompanying modes of induction.

(1) Performance accomplishments. This is a particularly influential source of efficacy information in that it is based on personal mastery experiences. These successful performances raise mastery expectations which, although they may arise from specific behavioral performances, are readily generalizable to a variety of situations. Modes of induction include participant modeling, performance desensitization, and self-instructed performance.

(2) Vicarious experiences. In contrast to the personal experience of mastery mentioned above, self-efficacy expectations can also be derived from observing others'

successful performance, the implication being that "if others can do it, so can I." This is a less dependable source of information than the first since it relies on social comparison rather than personal accomplishment; accordingly expectations derived from vicarious experience alone are likely to be weaker than those derived from performance accomplishments. Induction may occur via live or symbolic modeling.

(3) Verbal persuasion. This is a widely used method due to its ease of application and ready availability. Individuals may be persuaded that they can perform successfully even if they have failed to do so in the past. This source of information is also likely to produce comparatively weak expectations, since the expectations may have no experiential base. Modes of induction include suggestion, interpretive treatments, and self-instruction.

(4) Emotional arousal. Emotional arousal generated by stressful situations can contain information concerning efficacy in that, due to the detrimental effects of high arousal on performance, one is more likely to expect success when not aroused. Therefore, if one experiences high levels of emotional arousal in the face of stressful events, one is likely to conclude that he/she is lacking in efficacious behaviors and will not succeed. On the other hand, if one experiences low levels of arousal one is likely to conclude that he/she possesses the appropriate efficacious behaviors and will succeed. This latter

conclusion will result in self-efficacy expectations. Modes of induction include relaxation training, biofeedback, and symbolic desensitization.

However, regardless of source, the degree to which information concerning self-efficacy actually increases efficacy expectations depends on the manner in which it is cognitively processed (Bandura, 1977). For example, consider the impact of efficacy information derived from successful performance; it can either be interpreted and accepted as such, and thus increase efficacy expectations, or it can be attenuated in any of several ways. For instance, a discrimination process may occur in which one believes that one's successful performance was situation specific; a different situation may have resulted in an inadequate performance. A second possibility is that one may attribute the cause of one's successful behavior to an external source, such as the therapist, and conclude that it was not one's own actions, but the therapist's, which produced the successful behavior.

These considerations suggest the relevance of a related area of study from social-psychological research. In an article discussing the applicability of social-psychological principles to the field of behavior change, Kopel and Arkowitz (1975) discuss research findings concerning attribution. Attribution theory centers around the manner in which people interpret the behavior of others, particularly focusing on perceived causality in

interpersonal perception. This same kind of analysis, however, can be applied to the individual attempting to explain his/her own behavior. The authors point out that

> in general, the research in this area has demonstrated that perceived causality (causal attribution) may play an important role in the interpretation of our behavior. Thus, perceiving a change in one's own behavior as primarily caused by oneself (self-attribution) appears to be associated with different subsequent behavioral effects compared to instances where the behavior change is explained by the influence of extrinsic controlling factors (external attribution) (p. 179).

For example, Storms and Nisbett (1970) conducted a study in which insomnia was conceptualized as the result of labeling bedtime autonomic arousal as anxiety or sleeplessness. If subjects were instead led to attribute this arousal to a pill ingested prior to bedtime, they reported a decreased latency in sleep onset, presumably because they did not interpret their arousal as anxiety. In a related study of insomnia, Davison, Tsujimoto, and Glaros (1973) gave subjects identical doses of chloral hydrate along with various self-management treatments. One group (self-attribution) was led to believe that the drug dosage was insufficient to account for any changes in sleep onset latency. The other group (external attribution) was led to believe they had received a strong, optimal dosage of the drug. In the post-treatment period in which no drug was administered, the self-attribution group maintained therapeutic gains to a greater extent than the external attribution group. Cognitive factors, then, in the form of attributions as

well as efficacy expectations apparently play an important role in behavior and behavior change.

Bandura's line of reasoning concerning the importance of efficacy expectations in behavior change in general can now be applied to relaxation training in particular. It seems apparent from the studies cited earlier that relaxation training has some kind of physiological effect, although it is not clear what the specific autonomic changes may be or if they are any greater than those created by control procedures. However, it may be the case that the specificity or comparative size of the effect is not as important as the cognitive processes which accompany it. The effective performance (some form of diminuation of physiological arousal) results in positive information concerning self-efficacy; that is, one learns to expect that in anxiety-laden situations one will have the coping skill necessary to overcome or allay the anxiety. This may then lead to behavior change, such as approaching previously avoided stimuli, reducing anxiety responses which are due to fears of becoming anxious, or may even simply serve as reinforcement for the continuation of relaxation training. This process clearly fits into Bandura's model concerning self-efficacy; a performance-based therapy leads to cognitions of self-efficacy which in turn leads to behavior change. With regard to Bandura's sources of efficacy information, relaxation training could be included in the most influential group, performance accomplishments, since it

is based on personal mastery experiences. In addition, as Bandura points out, it would also provide information in the form of emotional arousal in the sense that one is less likely to expect effective performance when highly aroused, and relaxation training provides a readily available tool for overcoming that arousal.

Self-administered Treatment

This application of self-efficacy theory would suggest that the effectiveness of relaxation training, both as a treatment in itself and in its applications to other disorders, could be increased by raising the client's expectations of self-efficacy. One method of raising these expectations would be to design the training program in such a way as to place the responsibility for the behavior change procedures on the client, rather than the therapist. In this way, the usual efficacy expectations which occur as a result of successful performance would be augmented by the realization that "I did it myself"; that the client, not the therapist, is the one responsible for the efficacious behavior. In attribution terms, designing the training program in such a way as to maximize the client's opportunity to attribute his/her ability to relax to his/her own efforts, rather than the therapist's, will result in increased training effectiveness. Bandura (1977) acknowledged the role of self-instruction in creating efficacy expectations by including it as a mode of induction for two

of his four sources of efficacy information: performance accomplishments and verbal persuasion.

Much of Jacobson's work also seems to point to forms of relaxation training which place the responsibility for effective learning on the client (see especially Jacobson, 1957, 1964). Jacobson persistently refers to relaxation training as an educative process, one which will "require the doctor to don the mantle of the educator" (1964, p. 2). This emphasis on relaxation training as "nervous re-education" places much of the responsibility for change on the client since

> no teacher can assume responsibility for what his pupil will do in carrying out a skill according to his individual learning powers. Sometimes I say to my patient, "You will be on your own. I can show you how to drive a car, but the responsibility when you drive will be on your shoulders! If you ask me for reassurance that you will learn to relax, my reply is that your request is out of place. You would not demand that the dean of any school guarantee that you will become a good pupil. There, as here, the responsibility should and must be yours" (Jacobson, 1964, p. 50).

This orientation led to several developments in Jacobson's work, including books or manuals intended for at least some degree of self-instruction (1957, 1964) as well as a new form of instruction in relaxation termed "self-operations control" through which "the individual learns to run his organism according to what he believes are its best interests. Thus he becomes his own engineer . . ." (1964, pp. 28-29).

Other researchers have developed relaxation programs which are more truly self-administered; the role of the

therapist is greatly de-emphasized or perhaps even omitted. These self-management approaches have clients train themselves in relaxation rather than be trained by the therapist. Unfortunately, empirical investigations of such self-administered programs are rare, being limited mainly to studies of live versus tape-recorded instructions (Paul & Trimble, 1970; Riddick & Meyer, 1973). However, more comprehensive studies have been made of a related procedure which includes self-administered relaxation as one component: self-administered systematic desensitization. Several of these studies will be briefly reviewed.

Self-administered systematic desensitization has been successfully applied to both client and subject populations. Concerning the former, one of the early attempts at self-administration was made by Migler and Wolpe (1967) in the treatment of a phobic client via a specially modified tape recorder. The client conducted the treatment sessions at home, successfully completing his hierarchy in seven sessions. (It should be noted that he had received several sessions of preliminary recorded relaxation training.) Other case studies involving self-administered desensitization include treatment of a female shark phobic (Krop & Krause, 1976) and an 18-year old male with interpersonal and sexual anxieties (Arkowitz, 1974). Evans and Kellam (1973) conducted an experimental study using therapy clients as subjects and found tape-recorded desensitization to be as effective as standard therapist-administered

desensitization on clients' self-report and a psychiatrist's rating. Also Baker and Cohen (1973), in a study of clients volunteering for treatment in response to a newspaper ad, found that although there were no significant physiological changes, self-treated and therapist-treated clients both improved significantly on self-report measures and did not differ significantly from each other. Similarly, Marshall, Presse, and Andrews (1976) found self-administered desensitization to be effective in terms of self-report, but not in terms of a behavior rating scale. It should also be noted, however, that Branham and Katahn (1974) failed to achieve success with phobic clients described as "not ideal candidates for desensitization therapy."

Concerning normal subject populations rather than client populations, similar results have been achieved. Kahn and Baker (1968) and two studies by Phillips, Johnson, and Geyer (1972) report no differences between self-administration and therapist-administration on the basis of self-report. Cotler (1970), though lacking a therapist-administered group, found that a self-administered group improved significantly more than controls on both behavioral and self-report measures.

It should be kept in mind, however, that the relevance of these studies to the effectiveness of self-administered relaxation training as a treatment in itself must be tempered by research indicating that relaxation is not necessarily an essential component of desensitization

(see Yates, 1975). Reliable conclusions regarding self-administered relaxation can only be drawn from research designed specifically for that purpose. The present study is an attempt to fill this need by providing a comparison of self- and experimenter-administered relaxation training. Specifically, it is being postulated that as a result of heightened efficacy expectations, subjects who self-administer the relaxation procedures will be more successful in their ability to produce the relaxed state than subjects in the experimenter-administered condition. Both self- and other-report measures will be used as indicators of the degree of relaxation.

METHOD

Subjects

Forty-three college students from introductory psychology classes served as subjects. Subjects participated on a voluntary basis and received points toward their course grade for their participation. Subjects were randomly assigned to groups and experimenters.

Experimenters

All relaxation training and evaluation was conducted by six undergraduate experimenters; three male and three female. Experimenters received instruction and practice in administering the treatment procedures and two performance measures of relaxation (Body Movements Checklist and Relaxation Rating Checklist).

Measures

The Body Movements Checklist (BMC) was employed to assess the subjects' initial activity level immediately preceding relaxation training. This checklist was designed specifically for use in this study and allows an observer to record the presence or absence of movement in each of four general sections of the body: head and neck, arms,

trunk, and legs. Interrater reliability of .99 was obtained for this measure. A copy of the BMC is included in Appendix A.

Three different types of measures were used to assess the subject's degree of relaxation following the relaxation training period. A copy of each instrument is included in the appendices.

(1) Objective self-report. The State-Trait Anxiety Inventory (Speilberger, Gorsuch & Lushene, 1970) was used as an objective self-report of the subject's degree of relaxation. The inventory separates anxiety into two distinct concepts: first, "state anxiety," defined as

> a transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity (p. 3),

and secondly, "trait anxiety," conceptualized as

> relatively stable individual differences in anxiety proneness, that is, to differences between people in the tendency to respond to situations perceived as threatening with elevations in [state anxiety] intensity (p. 3).

Since the present study is concerned with short term anxiety reduction, only the state anxiety scale (SAS) was used. The scale consists of 20 items regarding the subject's current emotional experience, such as, "I feel calm," or "I am jittery." Subjects are asked to rate the degree to which these statements describe their present feelings on a four point scale ranging from "not at all" to "very much so." The authors report that the scale has a

high degree of internal consistency (ranging from .83 to .92) and low test-retest reliability, as would be expected considering the transitory nature of the concept being measured. In addition, the validity of the SAS has been established through demonstrations of its ability to reflect differences between various stressful and nonstressful conditions (see Speilberger, Gorsuch & Lushene, 1970).

(2) Subjective Self-Report (SSR). Goldfried and Davison (1976) describe a simple technique in which the subject is asked to rate his/her degree of relaxation on a scale of 1-100, where 1 represents a state of absolute calm and 100 represents a state of extreme anxiety. This measure was included as item 21 of the SAS.

(3) Relaxation Rating Checklist (RXRC). The RXRC (Pretzer, Note 1) was developed to enable an observer to objectively rate a subject's degree of relaxation during relaxation training. The form consists of 10 items concerning the subject's behaviors and body postures (such as the position of the head) and allows the rater to simply check the response which most accurately describes the subject. Interrater reliability of .92 was obtained for the RXRC.

Procedure

The subject is greeted and asked to sign a form giving consent to participate in the experiment. Each subject is then taken individually to an experiment room and

is seated in a reclining chair facing a one-way mirror. The experimenter provides the following instructions:

> We are conducting an investigation of the ways in which people can achieve deep relaxation. Before we begin the relaxation session itself, I'd like you to take just a couple minutes to become accustomed to being in this room. Go ahead and push back the recliner to a position in which you are comfortable. OK, I'm going to leave the room now and will return shortly to continue the experiment. Please notice that during this experiment we will both be observed through this one-way mirror by another experimenter.

The experimenter leaves the room and the rater positioned behind the one-way mirror completes the BMC using four 15-second time sample observations; that is, for a period of two minutes there will be alternating 15-second time intervals, one for observing and one for recording observations. Following this, the experimenter is informed concerning which experimental group the subject is in, returns to the room, and the subject receives one of three treatment conditions.

(1) Experimenter-administered relaxation. The experimenter states that during the remainder of the session the subject will be learning and practicing a method of becoming relaxed. The first seven minutes are devoted to the presentation of the introduction and rationale of relaxation training followed by approximately 25 minutes of relaxation training. Both segments will be read from a script included in Appendices D and E. At two points during the relaxation session, once toward the middle and once toward the end, the rater completes the RXRC on the subject

(again using two 15-second time sample observations), after which the subject him/herself is asked to complete the SAS and SSR. At the conclusion of the session the subject is loaned a relaxation training cassette tape and home practice is emphasized. To increase the salience of the experimenter's role in the training and to further emphasize the importance of home practice, the subject is also informed that on the third or fourth day following the session he/she will receive a 5-10 minute telephone progress check from the experimenter.

(2) Self-administered relaxation. The experimenter informs the subjects individually that during the remainder of the session he/she will be teaching him/herself a method of becoming relaxed. Each subject is given a set of written instructions containing directions on how to proceed (see Appendix F). Briefly, the subject is directed to a closed container located in the experiment room containing the appropriate tapes, tape recorder, and forms. The subject then receives the same introduction and training as the experimenter-administered group, except that all directions and information are presented in written or recorded form. The subjects in this group are also provided a home practice tape, differing from the tape used by the first group in that it includes instructions for subjects to rate their degree of relaxation (as in the SSR) at the end of each session and record it on a graphing form provided with the tape (see Appendix G). Subjects are also

informed that these anonymous graphs will be collected at the close of the following week's session. The purpose of this manipulation is to increase the salience of the subject's personal control and accomplishment and to further emphasize the importance of home practice; subjects in this group will not receive a telephone contact from the experimenter.

(3) Control group. The experimenter introduces and explains a placebo relaxation procedure in which the subject is asked to concentrate on pleasant thoughts and images and to use thought-stopping to block out all others (see Appendix H). This training period lasts 25 minutes and twice during training the rater completes the RXRC on the subject (as with the other two groups), after which the subject is asked to complete the SAS and SSR. The subject is then asked to practice this procedure for 25 minutes each day at home and to keep a record of the degree of relaxation obtained (as in the SSR): he/she is also informed that these anonymous records will be collected the following week. No tapes, forms, or telephone contacts are provided.

Each subject is instructed to return one week from the initial appointment. At this time each group of subjects will receive the same adaptation period, relaxation period, and measures as before.

HYPOTHESES

The following predictions were made.

(1) The self-administered group will have a greater pre-post increase in ability to relax than the experimenter-administered group. Specifically, the self-administered group will have a greater pre-post change in the predicted direction on the RXRC, SAS, and SSR than the experimenter-administered group.

(2) The two experimental groups will each present a greater pre-post increase in ability to relax than the control group. Specifically, the two experimental groups will each have a greater pre-post change in the predicted direction on the RXRC, SAS, and SSR than the control group.

(3) The initial activity level during the adaptation period will predict the degree of relaxation obtained during the relaxation period for all three groups. Specifically, the scores on the BMC will correlate with the scores on the RXRC, SAS, and SSR in such a way as to indicate a negative correlation between initial activity level and success of relaxation. That is, higher levels of initial activity (as indicated by the BMC) will be correlated with less successful relaxation and lower levels of

initial activity will be correlated with more successful relaxation.

RESULTS AND DISCUSSION

A total of 43 subjects completed the experiment, 15 each in the experimenter- and self-administered groups, and 13 in the cognitive group. One subject failed to return for the second session, resulting in an attrition rate of 2%.

The statistical analyses were based on data from six measures: the average of the two administrations of the RXRC taken toward the middle of each session ($RXRC_{12}$), the average of the two administrations of the RXRC taken toward the end of each session ($RXRC_{34}$), the average of all four administrations of the RXRC ($RXRC_{1234}$), and the single administrations of the SSR, SAS and BMC taken each session. Change scores for each subject were computed by subtracting the score obtained in the second session from the score obtained in the first session on all measures except the BMC. These change scores were used as indices of the degree of success in achieving relaxation. The relative size of the change scores for each of the three groups was compared through one-way analyses of variance (Table 1). No main effect for group emerged on any of the five measures.

Table 1

Main Effects for Groups on All Measures

	df_W	df_{bet}	MS_s	MS_{bet}	F
$RXRC_{12}$	39	2	18.00	36.25	2.01
$RXRC_{34}$	39	2	8.09	.22	.03
$RXRC_{1234}$	40	2	4.71	10.04	2.13
SSR	40	2	224.95	281.04	1.25
SAS	40	2	33.11	60.83	1.84

Individual comparisons between groups were also performed for each measure (Tables 2-6). Although no significant differences in mean change scores were found in any of these comparisons, three trends were identified. On the $RXRC_{12}$ and $RXRC_{1234}$, the difference between the cognitive and self-administered groups approached significance ($\underline{t}(25) = 1.80$, $\underline{p} < .10$; $t(26) = 2.04$, $\underline{p} < .10$), but not in the predicted direction. On the SAS, the difference between the cognitive and experimenter-administered groups also approached significance ($\underline{t}(26) = 1.70$, $\underline{p} = .10$) in favor of the experimenter-administered group, as predicted.

As a whole, these results indicate that neither of the hypotheses concerning differential effectiveness of the three treatment conditions were supported (Hypotheses 1 and 2). No significant differences were found between groups

Table 2

Two-tailed *t*-test for Mean Change Scores on $RXRC_{12}$

	$\lvert\bar{X}-\bar{Y}\rvert$	df	*t*
cog vs. self	3.27	25	1.80*
cog vs. exp	2.20	25	1.14
self vs. exp	1.07	28	1.02

*$p < .10$.

Table 3

Two-tailed *t*-test for Mean Change Scores on $RXRC_{34}$

	$\lvert\bar{X}-\bar{Y}\rvert$	df	*t*
cog vs. self	.23	25	.18
cog vs. exp	.03	25	.02
self vs. exp	.20	28	.24

Table 4

Two-tailed *t*-test for Mean Change Scores on $RXRC_{1234}$

	$\lvert\bar{X}-\bar{Y}\rvert$	df	*t*
cog vs. self	1.70	26	2.04*
cog vs. exp	.98	26	1.10
self vs. exp	.72	28	1.00

*$p < .10$.

Table 5

Two-tailed *t*-test for Mean Change Scores on SSR

	$\lvert\bar{X}-\bar{Y}\rvert$	df	*t*
cog vs. self	6.54	26	1.06
cog vs. exp	8.71	26	1.35
self vs. exp	2.17	28	.53

Table 6

Two-tailed *t*-test for Mean Change Scores on SAS

	$\lvert\bar{X}-\bar{Y}\rvert$	df	*t*
cog vs. self	.94	26	.46
cog vs. exp	3.94	26	1.70*
self vs. exp	3.00	28	1.43

*p = .10.

on any of the measures of relaxation skills. Experimenter- and self-administered treatments were equally effective, and neither was more effective than the control procedure involving none of the essential elements of progressive relaxation training. These findings are consistent with studies of relaxation training utilizing physiological measures as the dependent variable. As indicated earlier, such studies have been unable to differentiate reliably between relaxation training and control conditions using a variety of physiological variables (Benjamin, Marks & Huson, 1972; Lehrer, 1972; Israel & Beiman, 1977).

These results, however, appear to be inconsistent with expectations based on Bandura's cognitively oriented theory of behavior change. As noted previously, self-efficacy theory states that a common element in all successful behavior change procedures is the client's conviction that he/she can successfully accomplish the necessary changes in his/her behavior. If this self-efficacy expectation is the essential element in behavior change, it was reasoned that increasing this expectation would also increase the effectiveness of the change procedures. The method selected for producing this increased efficacy expectation was to allow one group to self-administer the relaxation procedures.

The responses to item 22 of the Self-Report Measure (session 2) were analyzed to provide a check on the success of this manipulation. Each subject was asked to identify

the essential component(s) in his/her learning to relax: either the environment, the experimenter, or him/herself. Identifying one's own effort as the essential component was interpreted as evidence of self-efficacy expectations. Accordingly, the self-administered group was expected to demonstrate more self-attribution of success than the other two groups. The results of the chi-square analysis of the responses to this item, however, indicate that the two dimensions (groups and essential component) are independent of one another (see Table 7). The self-administered group appears to have experienced no more expectations of self-efficacy than any other ($\underline{x}^2(2) = 1.84$, $\underline{p} > .05$). In fact, the majority of subjects in each group made efficacy to themselves.

Table 7

Chi-square Analysis of the Independence of Group and Attribution

	To Self	Not to Self
Self	10	5
Cog	9	4
Exp	13	2

$\underline{X}^2 = 1.84$.

The intended test of the hypotheses required differential levels of efficacy expectations. The analysis just presented, however, indicates that this differentiation

was not achieved. Since all groups experienced equivalent efficacy expectations, it would appear that the intended test of the hypotheses was not accomplished. As a result, conclusions concerning Bandura's theory cannot be drawn from the results of this study. The basic question of this study, concerning the effect of manipulating efficacy expectations through self-administering the relaxation procedures remains unanswered. Identifying potential sources of this failure to produce heightened efficacy expectations may suggest strategies for improving the experimental procedures. Two potential sources will be discussed.

First, the nature of relaxation training itself may have served to undermine the experimental manipulation. To a greater extent than in therapy procedures based solely on verbal exchange, clients receiving relaxation training are responsible for their own treatment. Regardless of the method selected for administering the procedures, there remains a potentially significant self-change component. When practicing at home, apart from the therapist's direct influence, clients must decide when, where, or if treatment is to take place and actively guide themselves through the procedures. In this respect, most forms of relaxation induction (except chemical means) have the potential for being experienced as basically a self-induced change. Accordingly, most forms of relaxation induction have the potential for producing self-efficacy expectations. Conceivably, then, the equivalent levels of self-attribution

expressed by the three groups may simply reflect the self-change component common to all three relaxation procedures.

The problems surrounding this inherent self-change component might be attenuated by further increasing the perceived importance or salience of the experimenter and the subject in the experimenter- and self-administered treatments, respectively. This could be attempted in two ways. First, specific instructions could be provided which emphasized either the importance of the experimenter's or subject's role in the training procedures. In the experimenter-administered group, subjects could be informed of the training, experience, and expertise of the experimenter and the importance of the experimenter's role in treatment. The experimenter might emphasize the necessity for appropriate delivery of the relaxation instructions and the passive obedience of the subject. In the self-administered group, contrasting instructions could be provided, introducing the experimenter as a relatively untrained paraprofessional whose role in treatment would be limited. The experimenter might emphasize the importance of self-change in the efficacy of the procedures. Second, additional contact with the experimenter might be required of the experimenter-administered group to "offset the negative effects of solitary home practice" and further emphasize the experimenter's role. Subjects in the self-administered group might be required to return and complete a brief questionnaire not relevant to the relaxation

procedures, to control for additional time spent with the experimenter. However, while these two procedures might effectively produce differential levels of self-efficacy expectations, such manipulations would remove the experimental relaxation procedures even further from their typical clinical counterpart. Thus, the generalizability of results to an actual treatment situation would be limited.

In addition to difficulties associated with the nature of relaxation training, a second potential source of failure to produce differential efficacy expectations concerns the brevity of the one-week period allotted for relaxation training. Since successful behavioral performance has been suggested as a particularly influential source of efficacy expectations (Bandura, 1977), further analyses of the data from the five relaxation measures were performed to determine if any significant increase in relaxation skill had occurred between sessions 1 and 2 for any of the groups. Significant positive change would indicate that the necessary successful performance had taken place.

Considering each group separately, the mean score on each of the five relaxation measures in session 1 was compared to the mean score in session 2, using a two-tailed t-test for correlated means. Tables 8-10 summarize the results of these analyses. The cognitive group was successful in achieving significant increases in relaxation skills as measured by the $RXRC_{1234}$ ($t(12) = 2.73$, $p < .05$);

Table 8

t-test of Mean Scores in Sessions 1 and 2: Cognitive Group

	$RXRC_{12}$	$RXRC_{34}$	$RXRC_{1234}$	SSR	SAS
$\lvert\bar{X}-\bar{Y}\rvert$	3.50	.49	1.96	2.96	.92
df	11	11	12	12	12
t	1.85*	.42	2.73**	.50	.58

*p < .10. **p < .05.

Table 9

t-test of Mean Scores in Sessions 1 and 2: Self-administered Group

	$RXRC_{12}$	$RXRC_{34}$	$RXRC_{1234}$	SSR	SAS
$\lvert\bar{X}-\bar{Y}\rvert$	.23	.30	.27	9.50	1.87
df	14	14	14	14	14
t	.38	.45	.57	3.64*	1.44

*p < .01.

Table 10

t-test of Mean Scores in Sessions 1 and 2: Experimenter-administered Group

	$RXRC_{12}$	$RXRC_{34}$	$RXRC_{1234}$	SSR	SAS
$\lvert\bar{X}-\bar{Y}\rvert$	1.30	.67	.98	11.67	4.87
df	14	14	14	14	14
t	1.51	1.49	1.80*	3.68***	2.94**

*p < .10. **p < .05. ***p < .01.

in addition, a trend toward increased relaxation was obtained in the $RXRC_{12}$ ($t(11) = 1.85$, $p < .10$). However, no significant results or trends were obtained on either of the self-report measures. On the other hand, the self-administered group demonstrated significant change on one of the self-report measures (SSR: $t(14) = 3.64$, $p < .01$), but not on any of the measures derived from the RXRC. The strongest improvement was made by the experimenter-administered group, in which significant improvement in relaxation skills was obtained on both self-report measures ($t(14) = 3.68$, $p < .01$; $t(14) = 2.94$, $p < .05$ for the SSR and SAS, respectively) and a trend was obtained on the $RXRC_{1234}$ ($t(14) = 1.80$, $p < .10$).

As these analyses indicate, it is possible that the one-week training period was insufficient to allow the initial successful performance to occur. In fact, although subjects may have experienced relaxation during their

initial relaxation session, the absence of further improvement as the week progressed may have been disappointing and interpreted as failure. Clinical experience suggests that clients often find their first relaxation experience extremely successful, with immediately ensuing sessions experienced as less successful, or even unsuccessful, in comparison. This interpretation is made more likely in light of the implicit demands of a pre-post measurement which strongly suggest that change is expected, particularly positive change. It may also be suggested that the relative inexperience of the experimenters (undergraduate psychology and non-psychology majors) might have served to inhibit the potential success of the procedures. It might prove beneficial, therefore, to provide a more intensive training experience for those administering the relaxation treatments.

One other factor affecting the outcome of this study will be considered: the appropriateness of the measures used to assess the acquisition of relaxation skills. Other studies of self-administered treatments have regarded relaxation training as merely a component of some broader treatment program. The success of these treatment programs has not been determined solely in terms of the client's acquisition of relaxation skills, but in terms of some application of those skills to the client's presenting problem, i.e., approaching a phobic object. Therefore, a study of relaxation training as a self-contained

treatment might also benefit from an assessment of the subject's relaxation skills in terms of an application of those skills. For example, the subject may be presented with a stressful situation either in vivo, or more simply, in imagination. In the latter case, the relevant dependent variable might be the length of time spent imagining the stressful situation before the image is voluntarily terminated. It might be expected that subjects with greater relaxation skills would be able to maintain the image longer than those whose relaxation skills are less well-developed. Dependent variables of this sort would also have the advantage of being more directly relevant to clinical populations, who typically do not enter treatment merely to acquire relaxation skills, but to learn how to apply those skills to their life situation.

Although the results of this study do not support the predictions made earlier, they still bear some relevance to clinical practice. The results suggest that a simple placebo accompanied by a plausible rationale may be as effective as either self- or experimenter-administered progressive relaxation training. At the same time, the placebo treatment is much less time-consuming and complex. Therefore it is worth considering that the most efficient route to teaching relaxation may be to dispense with the more complex procedures and opt for the simplest techniques available. This approach would provide adequately for the

client's needs at minimal cost to both client and therapist.

The results described to this point are presented graphically in Figures 1, 2, and 3. It can be seen that during the first session the cognitive group scored highest on all measures (indicating least relaxation), followed in each case by the experimenter- and then self-administered groups. These results support predictions made earlier concerning the expected order of effectiveness of the three treatments: the self-administered treatment was most effective, the cognitive treatment was least effective, and the experimenter-administered treatment fell in-between. However, in the second session no consistent ordering of groups was obtained. This suggests that any additional beneficial effects derived from self-administering the procedures may be short-lived; other factors associated with continued practice soon interfere. The identification of these other factors is purely speculative, but they may include: (a) differing levels of motivation generated by the three treatment approaches, (b) individual differences in personal attributes of the subjects, i.e., locus of control, and (3) an interaction of these or other variables. Conclusions based on this data must be viewed cautiously, however, since none of the reported differences achieved statistical significance.

It may also be noted that each of the figures reveal a consistent increase in relaxation skills for all three

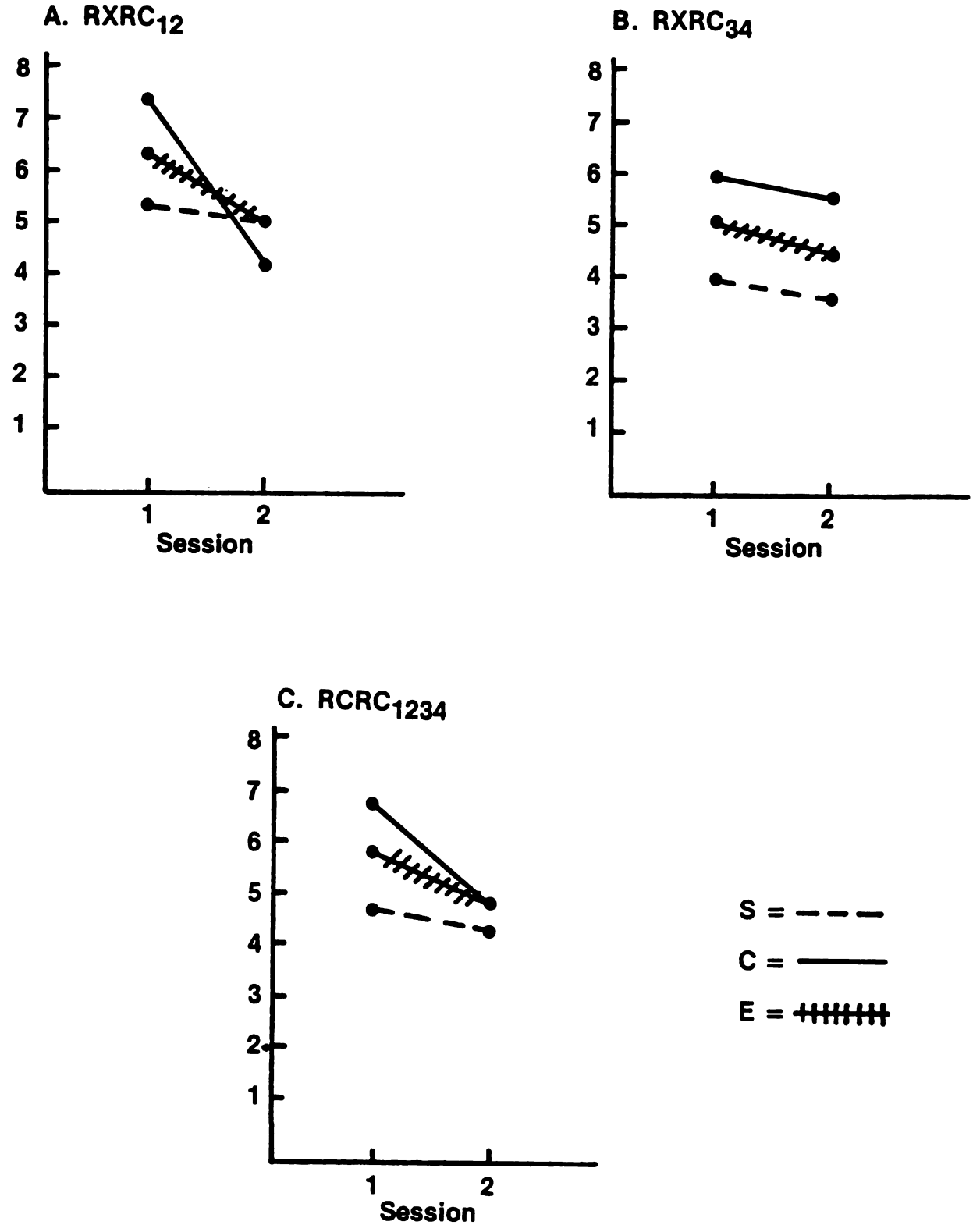


Figure 1. Mean scores for sessions 1 and 2 on the $RXRC_{12}$, $RXRC_{34}$, and $RXRC_{1234}$.

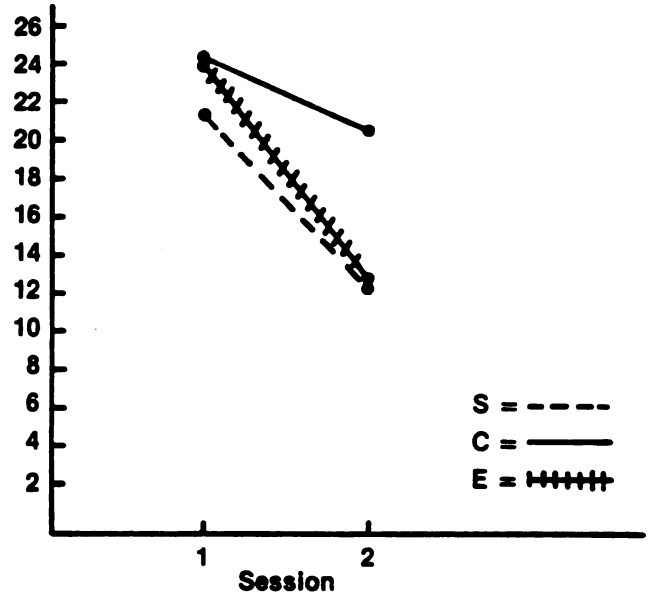


Figure 2. Mean scores for sessions 1 and 2 on the SSR.

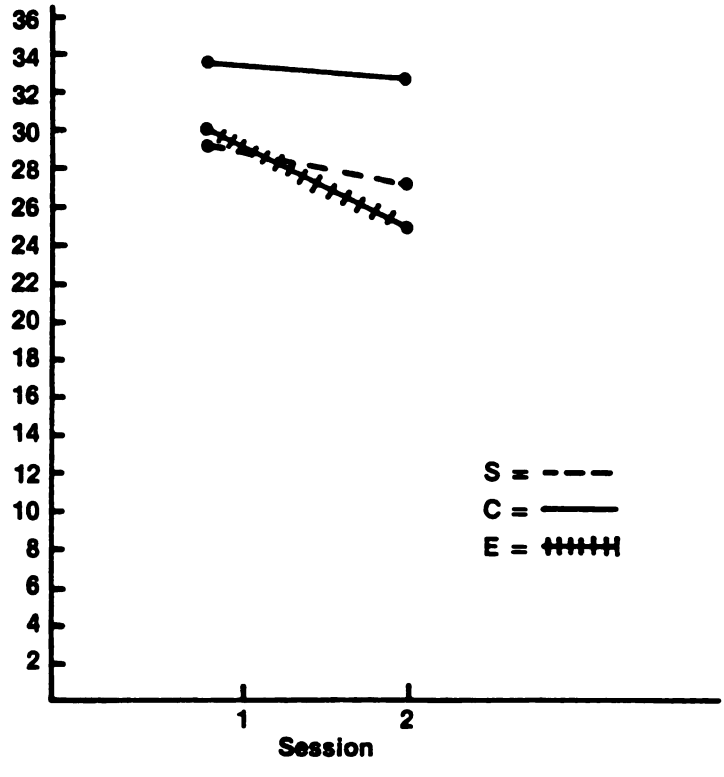


Figure 3. Mean scores for sessions 1 and 2 on the SAS.

treatment conditions. Although these increases generally failed to achieve statistical significance, their consistency seems to indicate a common element responsible for the behavior change in all conditions. Two potential common elements may be suggested: (1) the basic self-change nature of the relaxation procedures, with its accompanying increase in efficacy expectations, and (2) the demand characteristics inherent in any experimental procedure which is directly or indirectly indicated to be relaxation inducing. However, regardless of the nature of the element responsible for the change, the statistical insignificance of the increase in relaxation skills suggests that this element(s) alone may be insufficient to produce any notable results.

The final hypothesis of the study, concerning the relationship between initial level of physical movement and later depth of relaxation, was also unsupported. A negative relationship between these variables had been predicted, i.e., with greater initial levels of physical movement, relaxation would be less successful. However, the data suggest just the opposite: greater initial levels of movement were associated with greater success in relaxation. The data were collapsed across groups and correlations between the BMC and the five relaxation measures were computed separately for sessions 1 and 2. These results are summarized in Table 11. One correlation was significant ($\underline{r}(41) = -.32$, $\underline{p} < .05$) and two

Table 11

Correlations of BMC with Each of Five Relaxation Measures for Sessions 1 and 2

	$RXRC_{12}$	$RXRC_{34}$	$RXRC_{1234}$	SSR	SAS
Session 1	.15	-.32**	-.06	-.13	.01
Session 2	-.30*	-.19	-.28*	.06	.08

*$p < .10$. **$p < .05$.

correlations approached significance ($r(42) = -.30$, $p < .10$; $r(42) = -.28$, $p < .10$) although none of these results were in the predicted positive direction. In fact, the majority of the correlations (60%) were in the negative direction. Conclusions based on these results must be viewed as tentative at best, however, being based on statistical trends rather than significant relationships. In addition, statistical regression alone may be sufficient to explain the findings.

In conclusion, the central issue of this study concerning the effect of manipulating efficacy expectations through self-administering the relaxation procedures, remains unresolved. One week of relaxation training produced no significant differences between treatment groups or consistent pre-post differences across sessions. On the basis of these results alone, it might be concluded that brief self-administered relaxation training is not a useful procedure. However, it must be taken into

consideration that (a) no relaxation procedure proved effective during the one-week training period, and (b) the manipulation designed to increase efficacy expectations in the self-administered groups was unsuccessful. Therefore, the basic questions concerning self-administered relaxation training remain unanswered: (1) Can self-administering the procedures increase efficacy expectations? (2) Do increased efficacy expectations result in increased treatment effectiveness? (3) Is the inherent self-change nature of relaxation training sufficient to prevent additional experimentally produced efficacy expectations from having any effect on performance? Such questions are significant and relate to the issue of finding the most effective means of delivering relaxation training and other treatment procedures to those who may benefit from them. As such, they are empirical issues and require further research in order to be resolved.

APPENDICES

APPENDIX A

BODY MOVEMENTS CHECKLIST

APPENDIX A

BODY MOVEMENTS CHECKLIST

Body Movements Checklist Scoring Criteria

General criteria. Any movement which occurs during the 15 second interval should be recorded with the following exceptions:

(1) Movements due to breathing, coughing, sneezing, etc.

(2) Movements of one body part which occur solely as the passive accompaniment of movement of another body part, i.e., if the subject bends forward at the waist, the arms will move forward also solely as a result of being attached to the trunk; only the trunk movement should be recorded.

Specific criteria.

(1) Head and neck: any movement of the subject's head and/or neck.

(2) Right and left arms: any movement of the subject's arms, hands, or fingers.

(3) Trunk: the subject's shoulders, chest, back, stomach, or hips break either of two planes; a vertical (vertical if the subject was standing or

sitting upright) plane passing through the spine and breastbone, separating the right from left sides of the trunk, and a vertical plane, perpendicular to the first, which separates the front and back sides of the trunk.

(4) Right and left legs: any movement of the subject's legs or feet.

Body Movements Checklist

Subject #_____ Experimenters_____

Day_____ _____

Time_____

Code: P = present; score 1
A = absent; score 0

	HEAD	ARMS	TRUNK	LEGS	SCORE
Period 1	P__A__	P__A__	P__A__	P__A__	_____
Period 2	P__A__	P__A__	P__A__	P__A__	_____
Period 3	P__A__	P__A__	P__A__	P__A__	_____
Period 4	P__A__	P__A__	P__A__	P__A__	_____
				TOTAL	_____

APPENDIX B

SELF-REPORT MEASURE

APPENDIX B

SELF-REPORT MEASURE

Self-Report Measure
(Session 1)

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1.	I feel calm	1	2	3	4
2.	I feel secure	1	2	3	4
3.	I am tense	1	2	3	4
4.	I am regretful	1	2	3	4
5.	I feel at ease	1	2	3	4
6.	I feel upset	1	2	3	4
7.	I am presently worrying over possible misfortunes	1	2	3	4
8.	I feel rested	1	2	3	4
9.	I feel anxious	1	2	3	4
10.	I feel comfortable	1	2	3	4

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
11.	I feel self-confident	1	2	3	4
12.	I feel nervous	1	2	3	4
13.	I am jittery	1	2	3	4
14.	I feel "high strung"	1	2	3	4
15.	I am relaxed	1	2	3	4
16.	I feel content	1	2	3	4
17.	I am worried	1	2	3	4
18.	I feel over-excited and "rattled"	1	2	3	4
19.	I feel joyful	1	2	3	4
20.	I feel pleasant	1	2	3	4

21. Please rate your present degree of relaxation on a scale of 1-100 where:

    1 = a state of absolute calm; as relaxed as you could be
    50 = neither relaxed or anxious
    100 = a state of absolute tension; as anxious as you could be

    Your present degree of relaxation = _____

Self-Report Measure
(Session 2; Form A)

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1.	I feel calm	1	2	3	4
2.	I feel secure	1	2	3	4
3.	I am tense	1	2	3	4
4.	I am regretful	1	2	3	4
5.	I feel at ease	1	2	3	4
6.	I feel upset	1	2	3	4
7.	I am presently worrying over possible misfortunes	1	2	3	4
8.	I feel rested	1	2	3	4
9.	I feel anxious	1	2	3	4
10.	I feel comfortable	1	2	3	4
11.	I feel self-confident	1	2	3	4
12.	I feel nervous	1	2	3	4
13.	I am jittery	1	2	3	4
14.	I feel "high strung"	1	2	3	4
15.	I am relaxed	1	2	3	4
16.	I feel content	1	2	3	4

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
17.	I am worried	1	2	3	4
18.	I feel over-excited and "rattled"	1	2	3	4
19.	I feel joyful	1	2	3	4
20.	I feel pleasant	1	2	3	4

21. Please rate your present degree of relaxation on a scale of 1-100 where:

    1 = a state of absolute calm; as relaxed as you could be
    50 = neither relaxed or anxious
    100 = a state of absolute tension; as anxious as you could be

    Your present degree of relaxation = _____

    We are interested in finding out what factors helped you obtain whatever degree of relaxation skills you have acquired from your relaxation training. Please answer the following two questions as accurately as possible.

22. I would attribute my degree of success in learning to relax to (please check as many as apply):

    a. ____My own effort
    b. ____Setting in which I relaxed at home
    c. ____Experimenter's skill
    d. ____Quiet experimental room, reclining chair

23. The thing that was most significant of all in my learning to relax was _____.

Self-Report Measure
(Session 2; Form B)

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1.	I feel calm	1	2	3	4
2.	I feel secure	1	2	3	4
3.	I am tense	1	2	3	4
4.	I am regretful	1	2	3	4
5.	I feel at ease	1	2	3	4
6.	I feel upset	1	2	3	4
7.	I am presently worrying over possible misfortunes	1	2	3	4
8.	I feel rested	1	2	3	4
9.	I feel anxious	1	2	3	4
10.	I feel comfortable	1	2	3	4
11.	I feel self-confident	1	2	3	4
12.	I feel nervous	1	2	3	4
13.	I am jittery	1	2	3	4
14.	I feel "high strung"	1	2	3	4
15.	I am relaxed	1	2	3	4
16.	I feel content	1	2	3	4

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
17.	I am worried	1	2	3	4
18.	I feel over-excited and "rattled"	1	2	3	4
19.	I feel joyful	1	2	3	4
20.	I feel pleasant	1	2	3	4

21. Please rate your present degree of relaxation on a scale of 1-100 where:

    1 = a state of absolute calm; as relaxed as you could be
    50 = neither relaxed or anxious
    100 = a state of absolute tension; as anxious as you could be

    Your present degree of relaxation = _____

    We are interested in finding out what factors helped you obtain whatever degree of relaxation skills you have acquired from your relaxation training. Please answer the following two questions as accurately as possible.

22. I would attribute my degree of success in learning to relax to (please check as many as apply):

    a. ____Experimenter's skill
    b. ____Quiet experimental room, reclining chair
    c. ____My own effort
    d. ____Setting in which I relaxed at home

23. The thing that was most significant of all in my learning to relax was _____.

APPENDIX C

RELAXATION RATING CHECKLIST

APPENDIX C

RELAXATION RATING CHECKLIST

Relaxation Rating Checklist (RXRC)
Second Revision

Movement during 15 second interval:

A. Of entire body, arm, leg, or head.
____1. None.
____2. One or two.
____3. Three or more.

B. Of hand, fingers, feet, or face.
____1. None.
____2. One or two.
____3. Three or more.

C. Eyeblinks:
____1. None.
____2. One or two eyelid twitches.
____3. Three or more eyelid twitches.
____4. Eyes blinking open once.
____5. Eyes blinking open more than once.
____6. Eyes remaining open.

Position at end of observation period:

D. Head:
____1. Leaning to one side.
____2. Upright.

E. Lips:
____1. Parted.
____2. Closed.

F. Hands:
____1. Both open with fingers curled.
____2. One or both closed into a loose fist.
____3. One or both open with fingers straight.
____4. One or both closed into a tight fist.
____5. One or both grasping arm of chair.

Unsupported body parts at end of observation period:

G. Head:
____1. Supported.
____2. Unsupported.

H. Shoulders:
____1. Supported.
____2. Unsupported.

I. Arms:
____1. Both supported.
____2. One unsupported.
____3. Two unsupported.

J. Legs:
____1. Both supported.
____2. One unsupported.
____3. Two unsupported.

APPENDIX D

INTRODUCTION TO EXPERIMENTER-ADMINISTERED RELAXATION

APPENDIX D

INTRODUCTION TO EXPERIMENTER-ADMINISTERED RELAXATION

Before we begin the relaxation training itself, I'd like to take a few minutes to describe what we'll be doing and offer an explanation of how the training works. Basically what the training involves is tensing and then relaxing various groups of muscles all throughout your body, paying close attention to the contrasting feelings of tension and relaxation. It may seem odd to you that we'll be tensing muscles when we really want to relax them, so I'll try to explain to you why this helps. It might seem that the best way to relax a muscle would be to simply focus attention on it and just let the muscle go; and, of course, to a certain extent this would work. However, to produce a much larger reduction in tension, it's been found that the best thing to do is to first produce tension and then suddenly release it, giving yourself sort of a running start into relaxation. It's kind of like a pendulum; if you want to make the pendulum swing far to the right into relaxation, a good way to do that is to first pull the

pendulum far to the left into tension and then suddenly release it so it swings way back into relaxation.

I also want to emphasize at this point that relaxation is a skill just like any other skill and in order to get good at it you'll have to practice it--just like you'd have to practice your tennis game in order to play well. The procedures I'll be showing you will have no effect unless you practice them. When you practice at home, if you don't have a recliner you should lie down on your bed or couch and dim the lights; try to practice when no one else is around.

I'd like to start by briefly mentioning the muscle groups we'll be tensing and relaxing when we start the relaxation training. Don't be concerned about memorizing the various muscle groups now, since I have a tape recording for you to take home and use the first few days until you learn them. In general, we'll be using 18 muscle groups, starting with the arms, moving up to the head, and then straight on down to the legs. Usually, the way to tense each of these muscles will be fairly obvious, but since some of them aren't so obvious I'll quickly demonstrate. The forearm muscles are tensed simply by making a tight fist; the biceps by bending up at the elbow and tensing. The triceps are a little trickier--you extend your arms, palms up, and tense them as though you were trying to turn your elbows inside out. After the arms, we'll move up to the face; the forehead muscles are tensed

by raising the eyebrows up high, the eye muscles by squinting your eyes tightly shut, the jaws by simply biting your teeth together, your throat and tongue by pressing your tongue hard against the roof of your mouth, and finally your lips by pursing them and pressing them tightly together.

Next are the neck and torso muscles. The neck is tensed by pressing your head against the back of the chair, and your shoulders by shrugging them up high and then moving them forward and back. The chest is tensed by taking in a deep breath and holding it, and the stomach by simply making the muscles hard. The lower back muscles are a little trickier--you tense these muscles by arching your lower back, making a hollow place between your back and the chair.

Finally we come to the lower body muscles. The thighs and buttocks are tensed by straightening your legs slightly and flexing the thigh and buttock muscles. And lastly, the calves are tensed by pointing your toes down away from your face and tensing, and the shins are tensed by pointing the toes up toward your face and tensing.

Alright, those are the muscle groups we'll be using. Do you have any questions so far? OK, before we begin there are a few things I'd like you to remember. During the training itself, I'll direct you as to what muscle group to tense and when to tense it. For example, I'll say, "Tense your right hand and forearm now." Then

I'll signal you when to relax; I'll say, "And now relax." When I give you this signal let all the tensions go at once; don't let it out slowly since this will spoil the running start into relaxation. Also, it's best if you don't move around much or talk during training, since this introduces unnecessary tension. And finally, I'll ask you to keep your eyes closed during the entire session to help you concentrate. Of course, if you begin to feel uncomfortable having your eyes closed, you can simply open your eyes, look around briefly, and then close them again. If you have contact lenses, I suggest you take them out. OK, if you're ready, we'll begin.

APPENDIX E

INSTRUCTIONS FOR EXPERIMENTER-administered RELAXATION TRAINING

APPENDIX E

INSTRUCTIONS FOR EXPERIMENTER-administered RELAXATION TRAINING

(Adapted from Wolpe and Lazarus, 1966)

18 muscle groups

7-10 seconds tension

25-35 seconds relaxation

Total time: 25-30 minutes

Note: Certain words are capitalized in order to help you keep your place during clinical sessions; it is not meant to imply vocal emphasis.

Settle back as comfortably as you can. Just take a minute and let yourself relax all over to the best of your ability. Now as you relax like that, clench your RIGHT FIST NOW; just clench your fist tighter and tighter, study the tension. Keep it clenched and notice the feelings in your right fist and forearm.

And now RELAX. Let the fingers of your right hand become loose and limp and observe the contrast in your feelings. Just try to let go more and more and allow the muscles to relax on their own.

Once again, clench your RIGHT FIST NOW. Hold it, notice the tension again, feel the muscles pull across your knuckles and on into your forearm. Study it.

Now RELAX. Your fingers straighten out and you notice the difference in your feelings once again; the muscles in your right hand and forearm growing loose and relaxed.

Now let's repeat that with your left fist. Clench your LEFT FIST NOW. Clench it tighter, feel the muscles pull, study the sensations, hold it.

And now RELAX, again enjoying the contrast. Simply let the good feelings of relaxation flow into your left forearm and hand. Just let the muscles go.

Again clench your LEFT FIST NOW. Hold it, study the feelings of tension in your left fist and on into your forearm.

And now RELAX. Feel the difference. Simply allow the relaxation to continue for awhile.

This time clench BOTH FIST NOW. Tighter and tighter, both fists tense, both forearms tense, study the sensations.

And now RELAX. Let your fingers straighten out and feel the relaxation. There's nothing for you to do, nothing for you to work at, just give it your easy attention and let the muscles relax more and more.

Next, bend your elbows and tense BOTH BICEPS NOW, tense them hard and study the sensations as your biceps ball up and become tense. Hold it, study it.

And now RELAX. Let your arms straighten out and feel the relaxation flowing through your biceps. Continue relaxing these muscles more and more. Just let the relaxation develop.

Again, bend your elbows and tense BOTH BICEPS NOW, tense them hard and study the sensations as your biceps ball up and become tense. Hold it, study it.

And now RELAX. Let your arms straighten out and feel the relaxation flowing through your biceps. Continue relaxing these muscles more and more. Just let the relaxation develop.

Next we'll move on to the triceps muscles. Tense your TRICEPS NOW. Straighten your arms like you were going to turn your elbows inside out, notice the tension along the back of your arms, study it.

And now RELAX. Let your arms drop and feel the relaxation developing in your triceps and flowing on down into your biceps, forearms, and hands. Muscles feeling loose and limp.

Again, tense your TRICEPS NOW. Straighten out your arms, feel the tension in the triceps muscles along the back of your arms. Hold it.

Now RELAX. Get your arms back into a comfortable position, and concentrate on pure relaxation in your arms

without any tension. Your arms begin to feel comfortably heavy as you allow them to relax further and further. Even when your arms seem fully relaxed, try to go that extra bit further; try to achieve deeper and deeper levels of relaxation. Your arms feeling warm, heavy, relaxed.

Next we'll move to the muscles of your forehead. Tense your FOREHEAD muscles NOW. Raise your eyebrows as high as you can; feel your forehead wrinkle up. Notice the tension and study it.

And now RELAX. Let your forehead muscles smooth out. Picture the entire forehead and scalp becoming smoother and smoother as the relaxation increases.

Again, tense your FOREHEAD muscles NOW. Raise your eyebrows up high, as high as you can, like you were trying to touch your scalp with them. Hold it.

And now RELAX. Allow the forehead and scalp to smooth out once again. Feel the warm relaxation flowing down your forehead as the muscles grow more and more deeply relaxed.

Now we'll move on to your eyes. Squint your EYES together NOW. Close them tightly, feel the tension in the muscles all around your eyes and in your upper cheeks, observe it.

Now RELAX. Keep your eyes closed gently and comfortably together and notice the good feeling as the muscles relax and unwind, growing loose and limp.

Next I'll ask you to clench your jaws. Clench your JAWS together NOW. Bite your teeth together tightly, study the tension throughout your jaws. Hold it.

Now RELAX. Let your jaws hang limp and allow your lips to part slightly. Appreciate the relaxation in your jaws.

Next press your TONGUE hard against the roof of your mouth NOW. Press it. Look for the tension. Look for it at the base of your tongue and perhaps even into your throat. Study it.

Now RELAX. Let your tongue return to a comfortable and relaxed position. Let it lie loose and limp in your mouth.

Now we'll move on to your lips. Press your LIPS together NOW. Press them together tighter and tighter so you can almost see your lips turning white around the edges.

And now RELAX. Notice the contrast between tension and relaxation. Feel the relaxation all over your face, all over your forehead and scalp, eyes, jaws, lips, tongue and throat. Notice how the relaxation grows deeper and deeper.

Next attend to your neck muscles. Press your head against the back of the chair NOW. Press it back as far as it will go and feel the tension. Roll it to the right and feel the tension shift; roll it to the left and feel it shift again.

And now RELAX. Let your head return to a comfortable position as the relaxation flows deep into your neck muscles. Just let it develop. It feels as though if a warm breeze were to blow through the room it would gently rock your head from side to side.

Next shrug your SHOULDERS up NOW. Shrug them high. Now move them forward like you were going to press them together. Now pull your shoulders back like you were going to touch your shoulder blades together. Study it.

And now RELAX.*** Drop your shoulders once more and let the relaxation spread deep into your shoulders and right into your upper back muscles. Relax your neck and throat, and let the relaxation flow into your jaws, tongue, lips, and forehead, as the pure relaxation takes over and grows deeper, deeper, ever deeper. Feel the comfortable heaviness that accompanies relaxation. Breath easily and freely in and out. Notice how the relaxation increases as you exhale.

Next are the muscles of the CHEST. Inhale deeply and hold your breath NOW. Feel the tension, notice it all across your chest and in your lungs. Study it.

Now RELAX. Let the walls of your chest let go and push the air out automatically. Continue relaxing and breathe freely and gently. Just feel the relaxation and enjoy it.

***Rater completes RXRC here.

Again, inhale deeply and hold your breath NOW. Feel the tension in your rib cage and all across your chest. Study the sensations carefully. Hold it.

And now RELAX. Feel the tensions dissolve and appreciate the relief. Just breath normally in and out as you continue relaxing your chest and lungs. Merely allow the relaxation to proceed on its own.

Now let's pay attention to your abdominal muscles, your stomach area. Tighten your STOMACH muscles NOW. Tighten them up, make your stomach hard. Feel the muscles pull across your abdomen. Study it.

Now RELAX. Feel the tension dissolve as the stomach muscles grow loose and limp. Continue breathing normally and easily and feel the gentle massaging action all over your chest and stomach.

Again, tense your STOMACH muscles NOW. Feel these muscles pull across your stomach. Notice the tense, tight feeling in your stomach. Hold it.

And now RELAX. Let the tension dissolve as the relaxation grows deeper and deeper. Each time you breath out, notice the rhythmic relaxation both in your lungs and in your stomach. Notice how your chest and stomach relax more and more deeply.

Next direct your attention to your lower back. Arch up your BACK NOW. Arch your back, make your lower back quite hollow and feel the tension in the muscles all up and down your spine. Hold it.

Now RELAX. Let yourself sink back down deep into the chair. Notice the loose warm feeling in the muscles along your spine as they relax further and further.

Again, arch your BACK up NOW. Feel the tension as the muscles all along your spine pull tight. Observe the sensations. Hold it.

And now RELAX. Once again let yourself sink back into the chair deeper and deeper as the relaxation continues. Relax your lower back and let the relaxation spread to your stomach, chest, shoulders, flow into your arms and on into your neck, jaws, tongue, lips, eyes, and forehead. These parts relaxing further and further, ever further.

Next flex the muscles of your BUTTOCKS and THIGHS NOW. Straighten your legs out and make these muscles hard. Feel these large muscles pull and become tense, study the tension.

And now RELAX. Notice the difference as the relaxation flows into your buttocks and on into your thighs. There's nothing for you to do but allow the relaxation to develop on its own.

Again, tense the BUTTOCKS and THIGHS NOW. Feel the muscles pull and become hard. Study the tension, observe it carefully, hold it.

And now RELAX. Feel the relaxation flowing into your buttocks and thighs, becoming more and more deeply relaxed.

Next, tense your CALVE muscles by pointing your feet and toes away from your face NOW. Tighten up these muscles. Feel the tension in your calves, study it. Hold it tight.

Now RELAX. Feel the calves become loose and heavy. Appreciate the good feeling of relaxation.

This time tense your SHIN muscles by pointing your feet and toes up toward your face NOW. Feel the muscles along your shin bone pull and become tense. Study the sensations of tension in these muscles. Hold it.

And now RELAX.*** Let the muscles along your shins become loose and relaxed. Keep relaxing for awhile. Let yourself relax further all over. Let the relaxation spread through your legs, up through your stomach, chest, and shoulders, on through your neck and facial muscles, and down your arms and hands. Feel how heavy and relaxed you have become.

Now I'm going to count backwards from 5 to 1. With each descending number you will begin to feel more and more deeply relaxed. (Note: Count backwards, timing your counting to coincide with the rhythm of the client's exhalations.)

To close the relaxation period, I'll ask you to start moving various muscles. When you get up you will feel refreshed, like you just had a brief nap; peaceful and very calm.

***Rater completes RXRC here.

Now begin wiggling your fingers, hands, and feet. Move your arms and legs. Move your head and now open your eyes.

APPENDIX F

INSTRUCTIONS FOR SELF-administered RELAXATION: SESSIONS I AND II

APPENDIX F

INSTRUCTIONS FOR SELF-administered

RELAXATION: SESSIONS I AND II

Instructions for Self-administered Relaxation: Session I

These instructions and all the other materials which you will be using this session are provided for you so that YOU CAN TEACH YOURSELF TO RELAX, to have control over feelings of tension or anxiety. Please follow the directions carefully and in order, and everything will go smoothly.

Step 1. Locate the box sitting on the table next to the wall. Remove the casette recorder and tape marked "Introduction and Rationale."

Step 2. Play the "Introduction and Rationale" tape and listen carefully.

Step 3. Locate a second tape in the box marked "Relaxation Instructions" and a form entitled "Self-Report Measure." Before you play the tape, please notice that the first 60 seconds of the tape are blank--this is to give you enough time to get seated in the recliner and push it back to a comfortable position. BE SURE TO TAKE THE FORM

ENTITLED "SELF-REPORT MEASURE" BACK TO YOUR CHAIR WITH YOU AND SET IT BESIDE THE CHAIR.

Please be sure to keep your eyes closed until the end of the 25 minute tape. The tape will end with the sentence "Please rate your degree of relaxation on a scale of 1 to 100 and mark it on your progress chart." For right now you can ignore that statement.

Step 4. Begin playing the tape and follow its instructions--simply do what it asks you to do.

Step 5. Pick up the "Self-Report Measure" form. Read the directions carefully and answer the questions.

Step 6. Locate a form in the box entitled "Relaxation Progress Chart" (it has a graph on it). Please take it home and after each home practice session chart how relaxed you are (the tape will remind you to do this). Also take home the tape entitled "Relaxation Instructions" to use when you practice.

The experimenter will return in a moment. Thank you.

Instructions for Self-administered Relaxation: Session II

During this session you will again have the opportunity to teach yourself to relax. Please follow the directions carefully and in order and everything will go smoothly.

Step 1. Locate the box sitting on the table next to the wall. Remove the cassette recorder and tape marked "Relaxation Instructions." Also locate and remove the form entitled "Self-Report Measure." Please notice that the first 60 seconds of the tape are blank--this is to give you enough time to get seated in the recliner and push it back to a comfortable position. BE SURE TO TAKE THE FORM ENTITLED "SELF-REPORT MEASURE" BACK TO YOUR CHAIR WITH YOU AND SET IT BESIDE THE CHAIR.

Please be sure to keep your eyes closed until the end of the 25 minute tape. The tape will end with the sentence "Please rate your degree of relaxation on a scale of 1 to 100 and mark it on your progress chart." For right now you can ignore that statement.

Step 2. Play the tape and follow its instructions--simply do what it asks you to do.

Step 3. Pick up the "Self-Report Measure" form. Read the directions carefully and answer the questions.

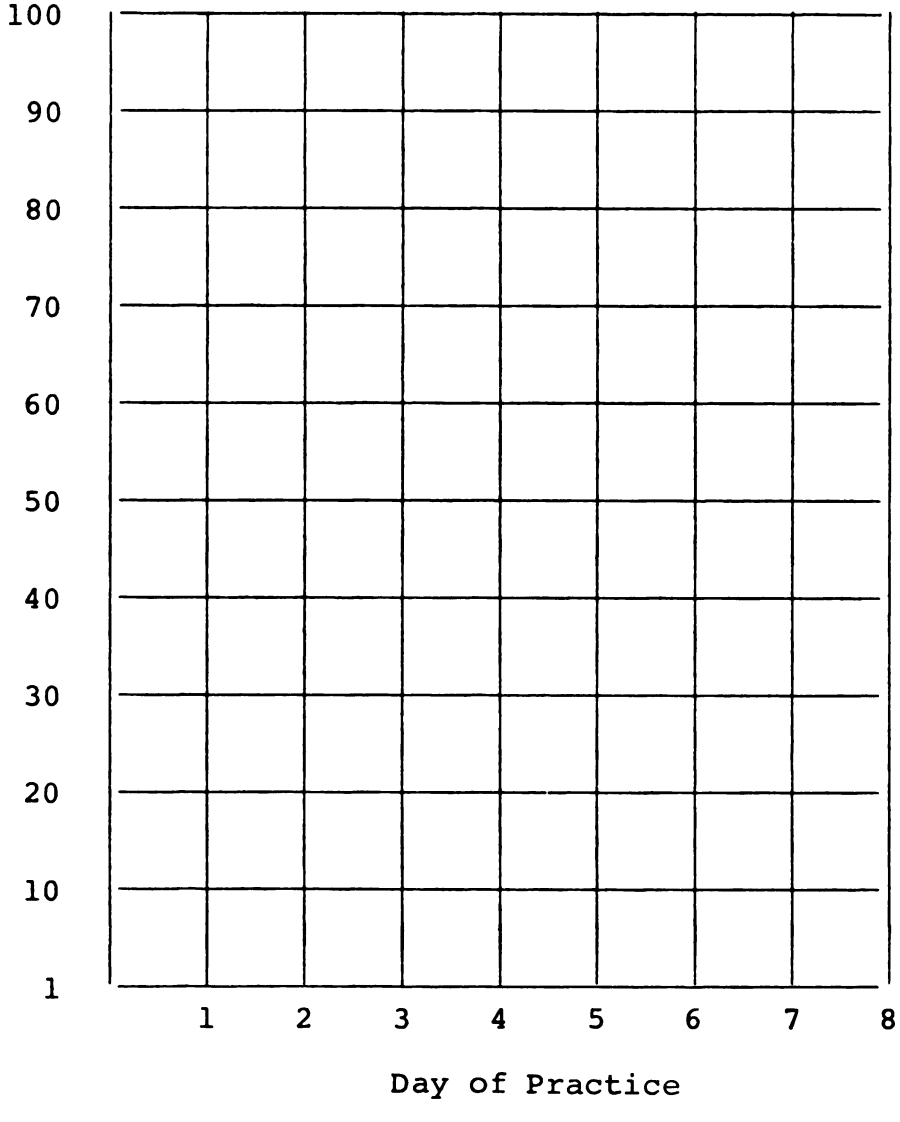
The experimenter will return in a moment. Thank you.

APPENDIX G

RELAXATION PROGRESS CHART

APPENDIX G

RELAXATION PROGRESS CHART



Directions:

You will have 6-8 opportunities to practice relaxation during the week, depending on whether or not you practice at home on the same days you come into the laboratory. For each day of practice please chart how relaxed you were at the end of your practice session using a scale of 1 to 100, where

1 = a state of absolute calm; as relaxed as you can be.
100 = a state of absolute tension; as tense as you can be.

Do not put your name on this graph. Please turn it in along with the "Relaxation Instructions" tape when you come in for your second session.

APPENDIX H

RATIONALE: COGNITIVE RELAXATION

APPENDIX H

RATIONALE: COGNITIVE RELAXATION

One of the ways to achieve and maintain relaxation is through controlling the content of thoughts; first to eliminate unpleasant thoughts and images and, second, to create pleasant thoughts and images. Let's begin by talking about the second component of controlling thought content; creating pleasant thoughts and images. It seems to make sense that if you're concentrating on enjoyable thoughts, it would be quite difficult at the same time to be thinking about the kind of unpleasant, anxiety provoking thoughts which interfere with relaxation and produce tension. Thus, pleasant thoughts are incompatible with unpleasant thoughts. For example, if you're thinking about a really enjoyable meal you've had recently with someone you really like, remembering preparing for the meal, what you had to eat, visualizing what your friend was wearing, how the food looked, or even re-experiencing how it tasted, it's difficult, if not impossible, to also be thinking about the last time you performed poorly on an exam which you really needed to do well on. Of course, these happy or pleasant thoughts and images vary for each individual; for some they may involve events which occurred in the distant

past, like some event from elementary school or a trip you took with your family. On the other hand, they might involve some event or person from the present; a really successful date, a good party, or some academic achievement about which you are pleased. Or finally, your pleasant image may involve some person or event which has not yet or never will happen, such as the kind of date you'd really like to have, what you'd do if you won a million dollars, or what life would be like if you were finally done with school and well-established in a good job.

Of course, as you may be thinking already, it's difficult to keep up a steady flow of pleasant thoughts and images; some unpleasant or anxiety provoking thought always seems to begin to interfere with and ruin the relaxation you've developed. So you must also be equipped with some kind of method of fighting off those intrusive thoughts which interfere with concentrating on pleasant thoughts. As with many things in psychology, there is a method for dealing with these unwanted thoughts which on the surface seems too simple, too obvious. Your initial reaction might be that it would never work, however there has been evidence to suggest that in actuality it does work. The technique which I am referring to has been used by a psychologist named Joseph Cautela and is called thought-stopping. This technique was originally developed for working with people with a specific kind of problem--those who had very troublesome thoughts which kept

recurring "against the person's will." For example, a person might have a recurring thought that he/she was going to faint. Dr. Cautela would teach the client that whenever this thought came to mind, whenever the client first thought he/she was going to faint, that the client should think the word "stop" inside his/her head; it would be like screaming the word "stop" except that the client would only be shouting it inside his/her head. And Dr. Cautela found that his clients were able to overcome troublesome thoughts by mentally shouting "stop" whenever they began to occur. We're going to use the same technique here; when you're concentrating on your pleasant thoughts, and an unpleasant or even neutral thought begins to creep in, as soon as you notice it, mentally shout the word "stop" and then go back to concentrating on pleasant thoughts again. At first it may not work so well; you might have to constantly be using your thought-stopping. But as you practice, and practice is of utmost importance, you will find it necessary to use it less and less. When you practice at home, if you don't have a recliner you should lie down on your bed or couch and dim the lights; try to practice when no one else is around.

What I'd like for you to do then is to take the next 20-25 minutes and concentrate on any pleasant or happy thoughts and images which you may choose. They can be past, present, or future, real or imaginary, just as long as they are pleasant. And if you have any unpleasant

thoughts, or even just neutral thoughts, which interfere with the pleasant thoughts, be sure to use your thought-stopping. Do you have any questions? If you're wearing contacts please take them out. OK, I'd like you to just shut your eyes to help you concentrate better. Go ahead and begin. I am going to leave the room and will return when the time is up.

APPENDIX I

EXPERIMENTER'S MANUAL

APPENDIX I

EXPERIMENTER'S MANUAL

The purpose of this manual is to explain exactly what you will be doing as an experimenter in this study. If you have any questions at all, please be sure to ask, since the smooth running of this experiment depends to a large degree on you and the other experimenters.

Overview. Perhaps a quick overview of the experiment, without going into any details, will help present the main idea of the study. In general, an experimenter will contact the subjects by telephone and set up an appointment time. When the subject arrives, he/she will first be given two minutes to simply get accustomed to the experiment room, while an experimenter observes through a one-way mirror and notes the subject's degree of physical activity. Then the subject receives one of three treatments: (1) experimenter-administered relaxation training, where you train the subject to relax via muscle tension and release, (2) self-administered relaxation training, where the subject trains him/herself in the same procedure, or (3) cognitive relaxation training, which utilizes an approach to relaxation emphasizing control of thought content. During the course

of this relaxation period, the experimenter behind the mirror observes and records the subject's degree of relaxation on two different occasions. Following the relaxation period, the subject completes a self-report measure rating his/her degree of relaxation. Each subject is then asked to practice at home and return at the same time the following week to more or less repeat the same procedures. So essentially we'll take one week to run subjects through their first session, a second week to run them through their second (return) session, and then repeat this process for a new group of subjects during the third and fourth weeks.

Purpose of the experiment. The research literature is quite unclear as to which, if any, of these three procedures is superior in producing relaxation. The purpose of this study, then, is to determine which is more effective and how this relates to a predisposition to movement and other factors.

Now to explain in a little more detail.

Obtaining subjects. Subjects will be introductory psychology students signing up for the experiment to earn course credit. You and the other experimenter working with you (one to interact with the subject and one to observe behind the mirror) will set up an appointment with him/her. Your phone conversation should include the following information: (1) your name and the name of the experiment, (2) the time of the appointment (this will have to be negotiated) and where to meet you, (3) a reminder

that this is an appointment for the same day and time for two consecutive weeks, (4) a reminder that the subject will be expected to take 20-25 minutes each day to practice, and (5) a thank you. For example, you might say:

> Hello, this is _____ calling about the relaxation training experiment you signed up for in your psychology class. I'd like to set up a time with you in which we could meet. How about 3 o'clock Friday afternoon? OK, good, I'll meet you in room 4 Olds Hall. I'd also like to remind you of a couple of things you've already read on the sign-up sheet. First, in order to receive credit for the experiment, I'll also need to meet with you at 3 o'clock the following Friday. (At this point you might have to change the appointment time.) Second, in order for you to get any benefit from the relaxation training, you'll be expected to take 20-25 minutes each day to practice at home--that's one reason why this experiment is worth as many credit hours as it is. One other thing; if you wear contact lenses please bring a container to put them in. Do you have any questions? OK, thanks a lot and I'll look forward to seeing you on Friday.

Adaptation period. One experimenter (called the first experimenter) will meet the subject and ask him/her to complete the consent form. The subject will then be escorted to the experiment room and seated in a reclining chair facing a one-way mirror. The other experimenter (called the second experimenter) has already seated him/herself in the observation room behind the mirror. The first experimenter then provides the following instructions:

> We are conducting an investigation of the ways in which people can achieve deep relaxation. Before we begin the relaxation session itself, I'd like you to just take a couple minutes to become accustomed to being in this room. Go ahead and push back the recliner to a position in which you are comfortable. OK, I'm going to leave the room now and will return shortly to continue the experiment. Please notice that

during this experiment we will both be observed through this one-way mirror by another experimenter.

The first experimenter then leaves the room. As soon as the door is shut, the second experimenter completes the Body Movements Checklist (BMC) on the subject to get a measure of the subject's general degree of activity (you will receive training with this later on). This measure is completed by taking eight alternating 15 second intervals; 15 seconds to observe movements, 15 seconds to record them, 15 seconds to observe, 15 seconds to record, etc., for the two minute period. The second experimenter will have a tape which will "beep" at 15 second intervals so he/she will not need to keep looking at a stopwatch.

Relaxation training. The first experimenter then re-enters the room (you will need a watch) and the subject receives one of three treatments.

(1) Experimenter-administered relaxation. The first experimenter informs the subject that the rest of the session will be spent learning and practicing a method of becoming relaxed. The experimenter presents the introduction and rationale to relaxation training (see attached sheets: "Introduction to Experimenter-administered Relaxation"). It is not necessary to memorize this "speech" (or any of the other "speeches" in this study); you should be able to deliver it smoothly and naturally, but it is quite alright if you refer to your written copy. Following this, the relaxation procedure itself is

presented and should be read directly from the transcript (see attached sheets: "Instructions for Experimenter-administered Relaxation Training"). The second experimenter should follow along closely on his/her copy of the relaxation instructions and when a set of 3 asterisks is reached should complete the Relaxation Rating Checklist (RXRC) on the subject for one minute using 15 second intervals, as with the BMC (you will receive training in this later on). You will find two sets of asterisks; one on page 4 and one on page 7.

When the first experimenter is done reading the relaxation instructions, he/she gives the subject a self-report measure to fill out on which the subject indicates his/her degree of relaxation. When the subject has finished, the first experimenter then says:

> OK, that's about all for today. I have a relaxation training tape I'm going to loan you for this week, containing the same instructions I just read to you. It is very important for you to practice relaxing once each day in order for the procedure to have a chance to work--if you don't practice each day it may not have any effect. In three or four days I'll call you on the telephone to see how things are going for you. So unless you have any questions, I'll see you again next (day) at (time) and will sign your experiment card then.

(2) Self-administered relaxation. The first experimenter states:

> During the rest of this session you will have the opportunity to teach yourself and practice a method of becoming relaxed. I have a sheet of instructions which will direct you to a tape recorder and tapes located here in the room, and will tell you exactly how to proceed. (Hand the instructions to the subject--see attached sheets: "Instructions for

> Self-administered Relaxation: Session I"). I am going to leave the room again and will check through the one-way mirror so I'll know when you're finished. Then I'll come back in and we'll finish up. If you have any questions just try to figure them out as best you can.

The first experimenter then leaves the room and the subject carries out the instructions. The second experimenter should again follow along carefully with the tape and complete the RXRC at the points marked with an asterisk in the relaxation training transcript (just like with the experimenter-administered group). When the relaxation tape is over the subject completes the self-report measure. The experimenter then re-enters the room and says:

> OK, that's about all for today. As the instruction sheet said, be sure to take the tape and progress chart home with you. It is very important for you to practice relaxing once each day in order for the procedure to have a chance to work--if you don't practice each day it may not have any effect. So unless you have any questions, I'll see you again next (day) at (time) and will sign your experiment card then. Remember to bring the tape and progress chart back next week.

(3) Cognitive relaxation. The first experimenter states that he/she will be explaining to the subject a method of becoming relaxed. The first experimenter then presents the introduction and rationale of the cognitive relaxation procedure (see attached sheets: "Rationale: Cognitive Relaxation"). The experimenter then leaves the room and the second experimenter begins timing when the door is shut. After 13 minutes have elapsed, the second experimenter completes the RXRC on the subject as in the other groups; after a total of 22½ minutes have elapsed, the second experimenter again completes the RXRC. When

the 25 minute period has elapsed, the first experimenter re-enters the room and gives the subject the self-report relaxation measure. The experimenter should then say:

> OK, that's about all for today. I would like for you to practice this procedure each day for about 25 minutes. This daily relaxation practice is very important in order for the procedure to have a chance to work--if you don't practice each day it may not have any effect. After each practice session record how relaxed you became on a scale of 1-100; do not put your name on this record and bring it with you next week. So unless you have any questions, I'll see you again next (day) at (time) and will sign your experiment card then.

The second session. The second session will proceed in a manner very similar to the first, except that certain portions may be omitted or replaced. The "speech" introducing the adaptation period should be presented as follows.

> During this session we will be doing much the same thing as we did last week. As before, I'd like to begin by having you just take a couple minutes to become accustomed to being in this room. Go ahead and push back the recliner to a position in which you are comfortable. OK, I'm going to leave the room now and will return shortly to continue the experiment. Please notice that during this experiment we will both be observed through this one-way mirror by another experimenter.

The first experimenter leaves the room and the second experimenter makes the ratings as before. When the experimenter returns, the subject receives the same type of relaxation as he received the first session.

(1) Experimenter-administered relaxation. The experimenter informs the subject that:

> This week we'll be doing the same relaxation procedure we did last week; the one you've been practicing. Unless you have any questions, I'd like to go ahead and begin. OK, if you're wearing contact lenses please take

> them out. If you're ready, then close your eyes and we'll begin.

The experimenter then reads the relaxation instructions while the second experimenter completes the RXRC as before. Following the relaxation period, the subject completes the self-report measure.

(2) Self-administered relaxation. The experimenter states:

> This week we'll be doing much the same thing as we did last week. Here is an instruction sheet telling you exactly what to do. If you have contact lenses, please be sure to remove them before relaxing. Unless you have any questions I'll go ahead and leave the room and return when you are done.

The subject then follows the instructions (see attached sheet: "Instructions for Self-administered Relaxation: Session II"), and the second experimenter completes the RXRC as before. The first experimenter then returns after the subject completes the self-report measure.

(3) Cognitive relaxation. The experimenter informs the subject that:

> This week we'll be doing the same relaxation procedure as we did last week; the one you've been practicing. Unless you have any questions, I'd like to go ahead and begin. OK, if you're wearing contact lenses please take them out. If you're ready, then close your eyes and begin. I'll return in 25 minutes.

The experimenter then leaves the room, and the second experimenter completes the RXRC as before. The first experimenter then returns and the subject completes the self-report measure.

At this point, materials such as tapes, graphs, etc., should be collected from the subject. The experimenter then signs the subject's experiment card and thanks him/her for participating.

REFERENCE NOTE

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[1]J. Pretzer, The Relaxation Rating Checklist. Unpublished measure, 1978.

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