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RELATIVE EFFECTIVENESS OF MEDITATION AND AUTOGENIC TRAINING
FOR THE SELF-REGULATION OF ANXIETY

By

John Vaughn Gilmore, Jr.

A DISSERTATION

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ABSTRACT

RELATIVE EFFECTIVENESS OF MEDITATION AND AUTOGENIC TRAINING FOR THE SELF-REGULATION OF ANXIETY

By

John Vaughn Gilmore, Jr.

The purpose of this study was to compare the relative effectiveness of meditation and autogenic training in reducing the symptoms of anxiety.

The subjects were 60 volunteers from the greater Los Angeles, California area. Criteria for participation in the study included pretest trait anxiety scores on the State-Trait Anxiety Inventory higher than the 60th percentile, the absence of psychotic symptomatology as determined by the Minnesota Multiphasic Personality Inventory-168, the willingness to be randomly assigned to one of two treatment conditions or one no-treatment control group, the desire to practice an assigned relaxation intervention over an eight-week period, the agreement to attend follow-up groups once each week during this period, and the willingness to participate in psychological testing both before and after the treatment phase.

Subjects who qualified for participation were randomly assigned to one of three groups: a meditation training group, an autogenic training group, and a no-treatment waiting list control group.

Prior research had indicated that both treatments were effective in the reduction of anxiety. However, it was unclear whether one treatment would be more effective than the other. This question was determined to be important since both treatments involve reducing anxiety, although in somewhat different ways. Meditation involved relaxation by suspending the ordinary flow of normal mental activity, whereas autogenic training involved relaxation by actively generating physiologically relaxing thoughts. It was hypothesized that both treatment groups would show lowered posttest anxiety scores. However, meditation was hypothesized to be more effective than autogenic training because it involved the reduction of mental thoughts and images, whereas autogenic training required the active generation of mental activity even though the activity was relaxation-oriented in content.

The State-Trait Anxiety Inventory and the Minnesota Multiphasic Personality Inventory-168 were the instruments used in this study. There were eight anxiety-related dependent measures utilized from these two instruments.

Data were analyzed by analysis of covariance procedures on all the dependent variables. Results largely failed to confirm the research hypotheses. On six of the eight variables, there were no significant differences among the two treatment groups and the no-treatment control group. There was also no significant difference between the treatment groups on frequency of practice data, nor were there any significant differences on the dependent measures

and frequency of practice for those regularly attending the follow-up groups as compared to those attending less frequently.

Nonetheless, both clinically standardized meditation and autogenic training proved to be significantly more effective than the no-treatment control group in lowering posttest state anxiety scores from the State-Trait Anxiety Inventory.

Meditation was significantly different from autogenic training as measured by the Hypomania Scale from the MMPI-168. Subjects in the meditation group had higher posttest hypomanic scores than subjects in the autogenic group. Since the meditation technique did not require subjects to "work at" relaxing by following a strict set of instructions as in autogenic training, it is possible that those in the meditation group assessed themselves to be more relaxed and to have more energy after eight weeks of practice.

In brief, the findings suggest that meditation, while effective in reducing anxiety, may not be significantly more effective than other treatment interventions designed to reduce anxiety. Suggestions for future research are described.

DEDICATION

To my parents

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A number of persons deserve special recognition and expression of my gratitude for the contributions they have made toward the completion of this dissertation.

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

Statement of the Problem

The purpose of this study was to determine which of two different interventions, clinically standardized meditation or autogenic training, would be more effective in the self-regulation of generalized anxiety.

Anxiety is an emotion, usually unpleasant, which is a universal phenomenon in human experience. Freud believed that understanding anxiety was essential to the development of a comprehensive theory of human behavior. According to him, the ego was thought to be threatened or overwhelmed by quantities of unmastered excitation which had accumulated when sexual instincts were not allowed to express themselves directly and were, instead, repressed (Freud, 1924/1963). Learning theorists have generally tended to view anxiety as a learned drive and/or a conditioned fear (Dollard & Miller, 1950) or an emotional habit (Wolpe, 1979). The humanistic-existential theorists have viewed anxiety as endemic to the human condition and the result of the constant threat of nonbeing (death) and the continuing necessity of having to make critical life decisions without knowing the future (Bugental, 1965).

Anxiety can be defined as a foreboding dread or threat to an individual. This threat can be caused by internal real or imagined dangers (either conscious or unconscious) or by environmental threats of a social, physical, or psychological nature (Lesse, 1970). It can be differentiated from fear in that the object of fear is usually known, whereas the exact cause of anxiety may not always be known by a person. Anxiety is often characterized by being "free-floating" because the emotion is often experienced by a person in many different situations, whereas the emotion of fear is usually situation specific.

The symptoms of anxiety can be multitudinous. Physiological symptoms can include constriction in the chest, tightness in the throat, difficulty in breathing, epigastric discomfort, heart palpitations, dizziness, dryness in the mouth, sweating, nausea, weakness in the legs, tremor, hyperventilation and general heightened activity of the autonomic nervous system (Lader & Marks, 1971). Psychological symptoms include feelings of impending danger (with no recognizable threat, or with threat that is disproportionate to the emotion it evokes), panic, inattention, irritability, illusion of walking on shifting ground, hypochondriacal fears, fatigue, and feelings of depersonalization and unreality (Lader & Marks, 1971).

Recent research (Davidson & Schwartz, 1976) has suggested that anxiety manifestations can be divided into two separate modes which may occur in different persons or even

in the same person at different times. These modes are cognitive anxiety and somatic anxiety. Cognitive anxiety refers to unwanted verbal cognitions (e.g., as in the insomniac who is physically relaxed but whose thoughts are racing) and unwanted visual-spatial cognitions (e.g., fantasies). Somatic anxiety refers to diffuse bodily tension and autonomic stress without accompanying cognitive symptoms.

In an effort to match the most appropriate treatment intervention to a person experiencing anxiety, it has been suggested that various relaxation procedures differ in their effectiveness depending upon the mode in which tension and anxiety are being experienced. For example, while an intervention such as progressive relaxation (Jacobson, 1978) or physical exercise might be effective for ameliorating somatic tension, it might not reduce cognitive anxiety (Schwartz, Davidson, & Goleman, 1978). On the other hand, techniques which involve the refocusing and retraining of attention may directly interrupt the unwanted, ceaseless cognitive activity which is an essential part of cognitive anxiety. Examples of such techniques include meditation and autogenic training.

Definitions

Meditation

Meditation represents a common technique which has persisted for centuries. Although it was originally developed in the East as a technique for fostering insight, intuition, purification, concentration, and altered states

of consciousness, Western research has conceived of it primarily as a self-regulation strategy. All meditative techniques represent systematic and continued focusing of attention on a single target percept, such as a mantra or sound, or the persistence in holding a specific attentional set toward the contents of consciousness as they spontaneously arise in awareness (Goleman & Schwartz, 1976). There is a conscious attempt to focus attention in a non-analytical way and not to dwell on discursive, ruminating thought (Shapiro & Lehrer, 1980). Thus, meditation represents the self-regulation of attention, not any kind of self-regulation of belief. The focus is on the mental processes, not the mental contents. The two most popular forms of meditation introduced in the West have been Zen Meditation and Transcendental Meditation (Yogi, 1963).

A variety of claims have been made for the effectiveness of meditation (Shapiro & Giber, 1978). Psychologists and psychiatrists have claimed that meditation reduces tension and psychosomatic conditions, releases blocked physical energies, decreases self-recriminating attitudes, and elevates and stabilizes affect (Carrington, 1978b; Carrington & Ephron, 1975a, 1975b, 1975c). Meditators have reported increased clarity of thinking, self-esteem, enthusiasm in daily activity, and increased ability to interact harmoniously with their environment (Glueck & Stroebel, 1975). Meditation has even been recommended as a nonpharmacologic alternative to drug abuse for self-inducing an altered state of consciousness (Benson & Wallace, 1972).

Orthodox Western psychology has typically taken a dim view of meditation activities, as exemplified by Franz Alexander's description of meditation as being "a sort of artificial schizophrenia with complex withdrawal of libidinal interest from the outside world" (Alexander, 1931, p. 130). Other psychologists have affirmed that the turning of consciousness inward and the preoccupation with self-absorption has no therapeutic goal beyond the mastery of the body and may even be harmful for some people (Lazarus, 1976; French, Schmid, & Ingalls, 1975). Nevertheless, the American Psychiatric Association has issued a position statement calling for research on meditation:

The American Psychiatric Association considers that the time has come for psychiatrists and behavioral scientists to examine and carefully evaluate the possible therapeutic effects of meditative techniques that have long existed in both Eastern and Western cultures. . . . The possible value of meditation as a useful procedure in enhancing a sense of tranquility and sometimes alleviating stress and anxiety in those who practice it should also be considered. . . . Meditation may facilitate the psychotherapeutic process, diminish the need for psychotropic medication, and assist restorative processes, although there is no evidence yet that meditation is a satisfactory substitute for traditional psychiatric treatment modalities. . . . The association strongly recommends that research be undertaken in the form of well-controlled studies to evaluate the possible specific usefulness, indications, contraindications, and dangers of meditative techniques. (Morgan, Shafii, Shapiro, & Dean, 1977, p. 720).

Autogenic Training

Autogenic Training, like meditation, is a technique which helps a person learn to replace high-arousal

sympathetic nervous system activity with low-arousal parasympathetic responses (Stoyva, 1976). The technique has been applied to various kinds of anxiety disorders and stress-related psychosomatic difficulties such as respiratory problems and cardiovascular and vasomotor disturbances (Schultz & Luthe, 1959). A complete description of the method of autogenic training can be found in the treatment section of this dissertation, in Appendix D, and in Volume I of Luthe's six-volume series on autogenic therapy (Luthe, 1969-1975).

Autogenic training had its beginnings from research done on hypnosis by the German brain physiologist Oskar Vogt between 1890 and 1900. Johannes H. Schultz later built upon this pioneering work by having patients induce a psychophysiological state similar to hypnosis merely by thinking of heaviness and warmth in the arms and legs. In 1932 Schultz published his first edition of autogenic training, and later his work was continued by his pupil, Wolfgang Luthe.

Based on the tendency of an idea to realize itself (Gorton, 1959), autogenic training involves (a) the reduction of stimuli (e.g., quiet room, reduced illumination, eyes closed), (b) the mental repetition of psychophysiologically adaptive formulas, and (c) self-induced passivity and passive concentration (Luthe, 1972). For the technique to be successful, the client must have a casual attitude and avoid any kind of will power, maintain mental contact with parts of the body indicated by prescribed exercises, and

keep up a steady flow of the autogenic formula in one's mind (Luthe, 1960).

Purpose and Objectives

The specific objectives of the present research are:

1. To determine the effectiveness of meditation and autogenic training in reducing anxiety.
2. To determine if meditation is more effective than autogenic training in reducing anxiety.
3. To determine if regularity of practice of either meditation or autogenic training influences the effectiveness of reducing anxiety.
4. To improve upon the design of existing research on meditation.

Review of the Literature--Meditation

The burgeoning empirical literature concerning meditative techniques is a reflection of the growing popularity of Transcendental Meditation (TM) and its relevance to the problems of anxiety and stress management (Foss, 1977). However, the vast majority of the research has serious methodological flaws and reflects a frustration in devising a satisfactory experimental design to test the effectiveness of meditation (West, 1979a).

A major drawback has been the failure to obtain initially equivalent treatment and control groups by random assignment. For example, the most common research design compares meditators with nonmeditators; these studies are often highly favorable to meditation. However, in this kind

of design there is no way to assess the predispositional influence of the motivation which meditators have for self-improvement, which is likely to be considerably more than that of nonmeditators. That is, motivated subjects may be ripe for growth and may display reductions in pathology regardless of what they do (Smith, 1975).

Another confounding variable has been the placebo effects stemming from the raised expectations from learning meditation; this is particularly characteristic of research on TM in which the TM program creates very high expectations through its series of introductory lectures and the mystical initiation ceremony. The combination of positive expectancies and high motivational level can account for many of the changes on various dependent variables reported in the literature (Parker, Gilbert, & Thoreson, 1978). Another flaw in the research studies is the reliance on self-report measures, often in combination with the absence of control groups altogether. This kind of research represents nothing more than solicited testimonials and the failure to control for nonspecific treatment effects (Zuroff & Schwartz, 1978). There have also been problems associated with significant drop-out rates.

Regarding research on TM, Zuroff and Schwartz (1980) conclude:

One may conclude from . . . the few . . . well-controlled studies that transcendental meditation is far less effective and satisfying than its proponents claim. After the initial

surge of enthusiasm and sense of well-being pass, the modal initiate ceases to practice with any regularity and no longer feels great satisfaction with the technique. (p. 1231)

Other design problems common in the literature include small sample sizes, lack of competing treatments for comparison, lack of adequate practice time allowed to learn meditation, and failure to monitor regularity of practice of the technique with the subjects.

With these caveats in mind, this review of the literature will involve an analysis of the existing empirical data on meditation grouped by the type of design utilized. The review will proceed from the least adequate designs to the most rigorous. It should be noted that the percentage of studies showing favorable results to meditation decreases as the designs become more rigorous.

Non-control Group Designs

Of the 17 studies of this type, not surprisingly, 16 of these studies claim results favorable to the practice of meditation. Scott (1977) trained a group of subjects in TM over a period of two months, and posttest results indicated that meditators showed significant improvement on eight of the 12 scales on a measure of self-actualization (the Personal Orientation Inventory). Shapiro (1977) found a significant increase in self-actualization and a significant decrease in aggression, depression, neuroticism, and trait anxiety in subjects who practiced TM over a 17-week period. McIntyre, Silverman, and Trotter (1974) reported a significant reduction in stuttering in six chronic stutterers who

had learned TM. Maupin (1965) found that, following three weeks of Zen Buddhist meditation, subjects demonstrated greater capacity for regression in the service of the ego as measured by the Rorschach test. In a survey of 1862 meditators, Benson and Wallace (1972) found that the number of drug abusers decreased progressively over time until at 22 months most meditators had stopped all use of drugs.

Instead of control groups, four studies involved comparisons of subjects with age-weighted, sex-specific norms. Penner, Zingle, Dyck, and Truch (1977) found that subjects practicing TM at an intensive retreat setting differed significantly from norm groups by having reduced anxiety, less social alienation, and fewer emotional disturbances. In another study, subjects practicing TM were found to be less nervous, aggressive, depressed, irritable, neurotic, dependent, inhibited, or domineering than the norm group on the Freiburger Personality Inventory (Fehr, Nerstheimer, & Torber, 1977). Williams, Francis, and Durham (1976) noted that regular meditators had significantly lower psychoticism and neuroticism scores on the Eysenck Psychoticism, Extraversion, and Neuroticism Inventory as compared to the norm group after six months of meditation. Finally, Orme-Johnson and Duck (1977) found regular meditating college students to be more time-competent, inner-directed, self-actualizing, and spontaneous, and to have a greater self-regard and capacity for intimate contact than college students in general.

Typical of research conducted without control groups are comparisons of regular versus irregular meditators or

experienced versus novice meditators. Ross (1977) reported that neuroticism declined more significantly among regular meditators as compared to irregular meditators after four months of practice of TM. Tjoa (1977a) reported that regular meditators increased more significantly in intelligence and decreased more in neuroticism as compared with irregular meditators over a 16-month period of time. MacCallum (1977) found that individuals experienced in TM scored significantly higher on three scales of creative thinking than did novice meditators. Finally, experienced meditators were reported to be significantly less anxious and more self-actualized on seven of Shostrom's 12 scales in his Personal Orientation Inventory as compared to novice meditators (Hjelle, 1974).

In the absence of providing control groups, researchers in four studies compared meditation techniques with competing relaxation interventions. Schwartz et al. (1978) reported that a group of subjects regularly engaged in physical exercise tended to have less somatic anxiety but more cognitive anxiety than meditators. In a comparison between runners and meditators, Farge, Hartung, and Borland (1979) found meditators to be significantly more assertive and enthusiastic and less guilt-prone than runners. Glueck and Stroebel (1975) found only TM to be successful among psychiatric inpatients in generating physiological relaxation and to be associated with significantly higher levels of recovery when compared to biofeedback and autogenic

training. The only study in this group of non-control group designs with results unfavorable to meditation showed that varying degrees of experience with TM did not yield a greater reduction in physiological arousal when compared to progressive relaxation and a pseudomeditation exercise (Cauthen & Prymak, 1977).

Non-matching Control Group Designs

By far the most popular design in the research literature is the so-called "meditator versus nonmeditator" study in which control groups are included, but no effort is made to establish equivalence with the experimental groups. While this design gives the illusion of precision, it is obviously a far cry from enabling researchers to establish causality of the effectiveness of meditation. Of the 33 studies of this type identified by the author, the findings of 25 contain data supportive of meditation treatment.

Nine studies of this kind concern autonomic physiological measurements. West (1979b) found that there were progressive and significant decreases in skin conductance in meditators; other investigators noted that meditators tended to habituate their galvanic skin response and heart rate more rapidly to external stressors compared to controls, resulting in greater overall autonomic stability (Goleman & Schwartz, 1976; Orme-Johnson, 1973). Jevning, Wilson, and Smith (1978) reported a marked decline of plasma cortisol levels reflecting the inhibition of stress-associated adrenocortical activity in experienced meditators compared to unmatched controls. Walrath and Hamilton (1975) also found

that TM subjects showed marked reduction on heart and respiration rates and skin conductance compared to controls, although this reduction did not differ significantly from that of subjects practicing autohypnosis. On the other hand, in four studies no significant differences were found on various autonomic measures (e.g., carbon dioxide production, oxygen consumption, heart rate, skin resistance) between meditators and unmatched controls (Fenwick et al., 1977; Morse, Martin, Furst, & Dubin, 1977; Rogers & Livingston, 1977; Treichel, Clinch, & Cran, 1973).

Many investigators have reported significant declines in trait anxiety and general measures of neuroticism in regular meditators (Davidson, Goleman, & Schwartz, 1976; Fehr, 1977; Nidich, Seeman, & Seibert, 1977; Orme-Johnson, Arthur, Franklin, & O'Connell, 1977; Tjoa, 1977b; Van Den Berg & Mulder, 1977). Nystul and Garde (1979) found that meditators had fewer characteristics associated with psychosis.

Results of other studies have indicated that meditators score significantly better than nonmeditators on measures of self-actualization (Davies, 1977; Dick & Ragland, 1977; Nidich, Seeman, & Dreskin, 1973; Seeman, Nidich, & Banta, 1972), although in one study this outcome was not demonstrated (Drennen & Chermol, 1978).

On measures of sensory-motor tasks the data have been conflicting; some investigators have reported that meditators perform significantly better than nonmeditators

(Blasdell, 1977; Rimol, 1977), while other investigators have reported that there is no significant difference between groups on performing such skills (Williams & Herbert, 1976; Williams & Vickerman, 1976).

According to the results of several studies, meditators have shown improvement in a variety of areas, including job performance, satisfaction, and stability, as well as improved interpersonal relationships (Frew, 1974), decreased drug use and warmer interpersonal relationships (Schilling, 1977), higher levels of moral maturity (Nidich, 1977), quicker acquisition of information and superior recall (Abrams, 1977), quicker reaction time (Holt, Caruso, & Riley, 1978), and improved academic achievement (Collier, 1977; Heaton & Orme-Johnson, 1977). Domino (1977), however, reported no significant improvement on five measures of creativity.

Matched Control Group Designs

Another common type of research design in meditation studies involves the attempt to match experimental and control groups. Unfortunately, these studies are still quite inadequate because without random assignment of subjects it is not possible to match for motivation and expectation. In the studies to be reviewed below, an attempt has been made to match subjects on variables such as age, sex, level of education, intelligence, or socio-economic status. Results favorable to meditation are reported in 15 of the 18 studies.

In four studies it was found that meditators had significantly greater improvement on measures of general

psychological health, such as creativity and intellectual performance, when compared with matched controls (Shecter, 1977). Meditators were also reported to have more positive self-images and positive conceptions about human nature (Hanley & Spates, 1978; Nystul & Garde, 1977) and more enthusiasm for social involvement and tolerance of others (Marcus, 1978).

Results of studies on anxiety and neuroticism have suggested that meditators show significant decreases in anxiety levels (Berkowitz, 1977; Ferguson & Gowan, 1976; Kory & Hufnagel, 1977; Shecter, 1978; Thomas & Abbas, 1978). However, results of one study indicated that meditators did not demonstrate less stress response to stressful films than did matched nonmeditators (Kanas & Horowitz, 1977).

On tests of reaction time, three studies showed that meditators had significantly faster reaction time than matched nonmeditators (Appelle & Oswald, 1974; Orme-Johnson, Kolb, & Hebert, 1977; Shaw & Kolb, 1977).

On dependent variables of learning ability and achievement, one researcher reported that meditators had fewer errors and displayed superior learning ability on a maze-learning task (Miskiman, 1977b) whereas another study revealed no significant difference in academic achievement between meditators and matched nonmeditators (Carsello & Creaser, 1978).

Two surveys of meditators and matched controls revealed that the longer a person reported having practiced

meditation, the more likely he or she was to have decreased or stopped using marijuana and alcohol (Shafii, Lavelly, & Jaffe, 1974, 1975).

Finally, it was concluded in one study that TM was not a unique metabolic state, but merely a resting biochemical state because matched resting controls displayed similar decreases of concentrations of norepinephrine, epinephrine, and lactate (Michaels, Huber, & McCann, 1976).

Within-Subjects Designs

These kinds of designs are worth mentioning because they are typical of the physiological research on meditation. In the early 1970s three seminal articles appeared in prestigious journals presenting physiological evidence to the effect that meditation should be considered a unique, wakeful, hypometabolic state of consciousness.

First, Wallace (1970) reported that the practice of transcendental meditation caused decreases in oxygen consumption and heart rate, and increases in skin resistance and in the regularity and amplitude of electroencephalograph alpha waves. The next year Wallace, Benson, and Wilson (1971) reported that the practice of TM resulted in significant decreases in oxygen consumption, carbon dioxide elimination, respiratory rate, and blood lactate concentrations as well as increases in skin resistance and electroencephalograph alpha. The following year Wallace and Benson (1972) published a replication of these results and suggested that TM amounted to the opposite of the fight or flight response and bore little resemblance to sleep or

hypnosis. Wallace, Benson, Wilson, and Garrett (1971) also presented evidence that blood lactate decreased during TM, thus buttressing Pitts' research (1969) that lactate concentrations in the blood might be causally related to anxiety symptoms. Other researchers began to report similar physiological findings (Beary & Benson, 1974; Benson, Steinert, Greenwood, Klemchuk, & Peterson, 1975). All of these studies sparked great interest in the physiological effects of meditation.

More recently, however, results of some research studies have disputed these claims, such as the contention of Pagano, Rose, Stivers, and Warrenburg (1976) that an analysis of electroencephalograph records showed that meditators were merely spending time in various sleep stages. Conflicting results have also appeared concerning reductions in blood pressure. Benson, Rosner, Marzetta, and Klemchuk (1974) reported significant decreases, while Pollack, Case, Weber, and Laragh (1977) reported no significant decreases in hypertensive patients.

Random Assignment Control Group Designs

These studies represent the most rigorous designs in which initial group differences, including the critical factors of motivation and expectancy, are assumed to be equal between experimental and control groups. Many have also included the evaluation of competing treatments. Of the 18 studies reviewed, 12 show results favorable to meditation.

Anxiety has continued to be the dependent variable that receives the greatest attention from these researchers. Dillbeck (1977) found TM to be significantly more effective in reducing anxiety when compared with progressive relaxation. Allen (1977) compared zen meditation with progressive relaxation, biofeedback, and resting controls, and reported that meditation was the most effective in reducing stress. Zuroff and Schwartz (1978) compared TM with progressive relaxation and no-treatment controls and found that only the meditation group reported steady linear decreases in anxiety. Kubose (1976) compared a zen breathing exercise with resting and no-treatment controls and reported that the meditation group was more relaxed than the controls. Otis (1974) reported that meditators ranked higher in restfulness of sleep, happiness, energy level, reduction of fatigue, and creativity when compared with no-treatment controls.

However, the results have not been universally favorable to meditation. Smith (1976), in research conducted with Michigan State University students, found TM to be no more effective than resting controls. His study is unique and commendable in that he made a meticulous effort to match for expectancy effects. Thus, he concluded that the crucial therapeutic component to TM is not the TM technique itself, but either the practice of passively sitting with eyes closed or the expectation that meditation will be effective. Boswell and Murray (1979) found that meditation did not significantly reduce anxiety (as measured on physiological measures and self-report tests) in comparison to progressive

relaxation, anti-meditation, and no-treatment control groups. Parker et al. (1978) reported that anxiety level, heart rate, and galvanic skin response decreased equally for three experimental conditions: progress relaxation, meditation, and quiet resting controls; they, like Smith (1976), suggested that the key relaxation component may be resting quietly, since they also carefully controlled for expectancy and motivation effects.

On physiological measures the data have also been somewhat inconsistent. Lehrer, Schoicket, Carrington, and Woolfolk (1980) found that meditators, when compared with subjects practicing progressive relaxation and a waiting list control group, tended to habituate more rapidly to a loud tone as reflected by greater heart rate deceleration, more electroencephalograph alpha, and fewer symptoms of cognitive anxiety. In another study, meditating (TM) athletes improved significantly more than no-treatment controls in many different athletic performance tests (e.g., speed, agility, coordination), reaction time, and physiological measures such as blood pressure and respiratory efficiency (Reddy, Bai, & Rao, 1977). However, Puente and Beiman (1980) found both a behavior therapy treatment and a self-relaxation intervention to be more effective in reducing cardiovascular stress than TM.

Results of three well-designed studies consistently showed increased field independence in meditators in comparison with control groups (Linden, 1973; Pelletier, 1974, 1977).

In other well-designed studies using randomized group designs to investigate cognitive functioning, it was found that TM (in contrast to resting controls) enhanced subjects' ability to organize thought into conceptual categories (Miskiman, 1977a). However, Yuille and Sereda (1980) reported no significant improvement on various cognitive measures (e.g., reading and memory skills) as a result of meditation (TM) practice in contrast to subjects practicing yoga or serving as resting controls.

Finally, in two different studies, one showed that the practice of TM enhanced the capacity for adaptive regression (Curtin, 1973) and another revealed that in the treatment of sleep onset insomnia both a zen meditation technique and progressive relaxation were equally effective (Woolfolk, Carrington, McNulty, & Lehrer, 1976).

Synthesis and Overview

Thus, previous research seems to indicate that meditation is a technique worthy of scientific investigation and, in fact, may be for some people a viable therapeutic treatment modality. As an intervention for stress-related complaints, meditation may be effective in reducing anxiety. Meditation may also be effective in fostering positive mental health and self-actualization. It also may prove to be an alternative preventive and/or rehabilitative strategy in decreasing the use of addictive substances. In terms of physiological findings, some research has reported reduced heart rate, decreased oxygen consumption, slower rate of respiration, decreased skin conductance, and increased regu-

larity and amplitude of electroencephalograph alpha activity; consequently, some investigators have suggested that meditation brings about a general diminishing of energy metabolism and a trophotropic response (Shapiro, 1980; West, 1979b; Woolfolk, 1975).

However, it has yet to be demonstrated that the improvements with meditative practice are significantly different from those improvements observed in other relaxation interventions (West, 1979a). Thus, while there is some research to show that meditation reduces anxiety, "What has not been proven is that meditation has a clear advantage over other relaxation techniques in doing this" (Carrington, 1977, p. 52). Meditation has rarely been shown to be more effective than progressive relaxation (Cauthen & Prymak, 1977; Parker et al., 1978; Thomas & Abbas, 1978; Woolfolk et al., 1976), general mental relaxation (Drennen & Chermol, 1978; Puente & Beiman, 1980; Zuroff & Schwartz, 1980), hypnotic interventions (Morse et al., 1977; Walrath & Hamilton, 1975), or merely sitting and generating antimeditative positive thoughts (Boswell & Murray, 1979; Smith, 1976). Therefore, Shapiro concludes:

Thus it appears that the original belief that meditation would be able to be discriminated as a unique physiological state has not been confirmed--either on an autonomic or metabolic level, or in terms of EEG pattern. Although it does seem clear that meditation can bring about a generalized reduction in multiple physiological systems, thereby creating a state of relaxation in the individual . . . it is not yet clear from the available data that this state is differentiated from relaxation effects of other techniques, whether

they be hypnosis . . . or deep muscle relaxation. . . . The constellation of changes is, in most studies, significantly different between meditation and placebo control groups, but not between self-regulation treatment groups. (Shapiro, 1980, p. 154)

In a recent review article on meditation in the American Psychologist, Holmes (1984) adds the following words about the purported physiological changes of meditation:

The practice of meditation has a long history, it is now well established in Western society, and its alleged effects have a good deal of face validity and are widely accepted. In view of those factors, it is important that we recognize that within the existing research there is no evidence that meditation is more effective for reducing somatic arousal than is simple resting. (Holmes, 1984, p. 9)

Review of the Literature--Autogenic Training

Since autogenic training was developed by those in the medical profession, much of the original research evaluating this intervention was similarly conducted by medical researchers. Schultz and Luthe (1959) and Luthe (1969-1975) collated much of this early research.

Unfortunately, as is so often typical of research in the medical profession, the kinds of designs utilized in this early work were mostly either (a) single subject designs that lacked multiple baseline control conditions (viz., anecdotal reports), or (b) non-control group designs in which there were no controls for a number of contaminating variables and no comparison with other competing relaxation interventions. In either instance, this early research amounted to nothing more than case histories and solicited testimonials for autogenic training.

Examples of this research include the following three studies. Kahn, Baker, and Weiss (1968) reported that 11 of 13 subjects self-reported improvement in insomnia difficulties as a result of practicing autogenic training. Sargent, Green, and Walters (1973) used autogenic training and biofeedback equipment with 19 subjects with migraine and tension headaches; they reported that 12 of the subjects were rated as improved by psychologists and internists serving as independent raters of the clinical conditions. Roszell and Chaney reported that 11 subjects suffering from drug abuse problems rated themselves as 52% improved after completing autogenic training sessions.

Research conducted in the past 10 years has mostly been characterized by more strict experimental controls. In two studies multiple baseline single case experimental designs were utilized. Yeager (1982) used a repeated measures design to evaluate the effectiveness of autogenic training and autogenic training assisted by biofeedback in the treatment of six subjects with high blood pressure. The author concluded that autogenic training alone was the more effective intervention and reported that posttest blood pressure readings were lower than pretest scores. Stambaugh and House (1977) compared biofeedback, self-relaxation, hypnosis, and autogenic training in a multiple baseline design over eight months; they concluded that only hypnosis produced remission of migraine headaches.

The most common types of designs used in research on autogenic training have been true experimental designs with the random assignment of subjects to competing treatment groups. A number of these studies will be reviewed below. As will be described, the results of these studies are conflicting since approximately one-third of the studies reported that autogenic training was ineffective as a treatment modality.

Since these studies all involve proper experimental designs, the studies reviewed will be grouped by whether or not the findings supported the treatment effectiveness of autogenic training. Studies showing favorable results are discussed first.

Random Assignment Designs--Positive Findings

In ten studies it was found that autogenic training was effective in the amelioration of a number of different disorders.

Anxiety has been a dependent variable of interest in some of these studies. Olshan (1975) compared autogenic training plus biofeedback, self-relaxation practice at home, and no-treatment control groups in reducing anxiety. It was concluded that autogenic training was more effective than either of the other two groups in reducing anxiety through muscle relaxation. Vasilos (1977) compared autogenic training with five other competing treatment interventions and reported that only autogenic training and a self-relaxation group yielded lowered anxiety scores on posttest. Cobb (1980) compared an autogenic training group with a no-treatment

control group for treating anxiety and found that the autogenic group had significantly lower anxiety scores on post-test and that these treatment gains were sustained over a three month period. Graub (1975) had the same design and results as did Cobb (1980) except that the treatment gains in the autogenic group tended to disappear after four months.

Some studies have focused on the effectiveness of autogenic training in teaching subjects to voluntarily raise finger temperature. Helping subjects attain this skill is believed important in the treatment of Raynaud's Disease and other circulatory difficulties. Larsen (1978) compared autogenic training to biofeedback, biofeedback plus social reinforcement, and a control group on finger vasodilation; the autogenic group was able to raise skin temperature significantly more than the other groups. Tebecis et al. (1977) compared autogenic training to a no-treatment control group and reported that subjects in the treatment group significantly increased finger temperature; they also reported a significant change in electroencephalograph readings in the autogenic group: subjects had more slow wave delta and theta activity and less fast wave alpha and beta activity.

Researchers have evaluated the effectiveness of autogenic training in reducing migraine and tension headaches. Thompson (1977) compared autogenic training to autogenic training plus biofeedback for the amelioration of migraine

headache severity. York (1975) used two different sequences of autogenic training instructions to treat migraine headache sufferers; two-thirds of the subjects reported some alleviation in their headaches.

Reinberg (1979) compared autogenic training plus biofeedback, biofeedback alone, and a control group for their effectiveness in treating heroin addicts. It was reported that the autogenic group was more effective than the other two interventions because the autogenic subjects had less severe withdrawal symptoms and were less likely to relapse.

Toscano and Cowings (1982) used autogenic training to treat the symptoms of motion sickness and compared its effectiveness to two control groups: a sham cognitive training task group and a no-treatment control group. Subjects in the autogenic group showed a significantly greater ability to suppress motion sickness symptoms than either of the control groups.

Random Assignment Designs--Negative Findings

In six studies employing true experimental designs, autogenic training was found not to be significantly effective as a treatment modality.

In studies using anxiety as the dependent measure, one study yielded non-significant results when autogenic training was the independent variable. Madden (1976) compared autogenic training, progressive relaxation, attention-placebo control, and a no-treatment control group and

found no significant differences among the four groups in lowering anxiety.

One study investigating finger vasodilation showed no treatment effects for autogenic training. Mohr (1976) found progressive relaxation and a self-relaxation group to be more effective than autogenic training for increasing finger temperature.

Three researchers investigating treatments for migraine and tension headaches found autogenic training not to be effective. Jessup (1979) reported that autogenic training was no more effective than two different control groups in reducing the symptoms of migraine headaches. Sloan (1978) found that neither autogenic training, biofeedback, nor two control groups were effective in reducing migraine headaches. Detrick (1978) reported that both biofeedback and progressive relaxation were more effective than autogenic training in reducing tension headaches.

Finally, Jessup and Neufeld (1977) evaluated a group of psychiatric patients on a variety of physiological measures with three interventions: autogenic training, biofeedback, and self-relaxation. None of the three treatments produced significant results on the dependent measures.

Random Assignment Designs--Mixed Findings

In six studies it was concluded that although autogenic training may be effective as a treatment modality, it is not necessarily any more effective than other competing interventions.

Two studies on anxiety variables demonstrated that autogenic training was as effective as, but no more effective than, competing relaxation interventions. Vasilos and Hughes (1979) reported that levels of self-reported anxiety decreased significantly for both autogenic training and relaxation training treatment groups. Lazar (1981) reported that autogenic training was no more effective than progressive relaxation in reducing anxiety symptoms.

Three studies showed that autogenic training was as effective as, but no more effective than, the following competing treatments for the raising of finger temperature: direct instruction and self-relaxation training (Vasilos, 1977), biofeedback (Breitbart, 1979), and progressive relaxation (Keefe, Surwit, & Pilon, 1980).

Finally, Nicassio and Bootzin, 1974) reported that autogenic training and progressive relaxation were equally effective in the treatment of insomnia.

Synthesis and Overview

The conclusion that must be drawn from these conflicting results is that autogenic training may be an effective treatment modality in some cases, that it may be no more effective than other treatments for some individuals, or that it may not be effective at all. One of the difficulties in drawing clear conclusions about autogenic training is that it is frequently combined with other methods of treatment such as biofeedback. In such instances, the literature customarily refers to autogenic training as "autogenic feed-

back training." It then becomes impossible to verify the clinical effectiveness of autogenic training by itself because it is supplemented by the use of biofeedback equipment. Thus, the already inconclusive research literature is clouded even more by this additional factor.

CHAPTER II

METHOD

Population and Sample

The subjects for this study were adult volunteers from the greater Los Angeles area. In particular, subjects were recruited through the cooperation of two area organizations which agreed to help sponsor this research: New Visions Fellowship of Los Angeles and the Church of Truth of Pasadena, California. On separate occasions, the leaders of these organizations were approached by the researcher and asked if they would be interested in having a stress management research project conducted at their respective facilities. It was made explicit that such cooperation would require that subjects be randomly assigned to one of two treatment interventions or a no-treatment control group, that subjects would be asked to take psychological tests at both the beginning and conclusion of an eight-week treatment period, and that attendance at follow-up groups would be expected once per week. The researcher and his associate recruited these subjects with the assistance of these organizations. Following two weeks of publicity, a Sunday morning public announcement was made by the two researchers and names were gathered.

Because of difficulty in recruiting a large enough sample of subjects at one time to participate in the study, two distinct groups of subjects had to be rotated through the pretest-eight-week training-posttest design. Subjects at the New Visions Fellowship were initially recruited on May 8, 1983 at their normal Sunday morning meeting, and they participated in the research project for the next eight weeks. By mid-July, 1983, all subjects had completed the project. Subjects at the Church of Truth in Pasadena were recruited on January 8, 1984, and by early March 1984, all subjects had completed the project.

Volunteers were pre-screened for two important reasons. First, the researcher wished to exclude from the study any individuals reporting excessively high levels of psychopathology. Excessive psychopathology was arbitrarily defined as a T-score greater than 70 on either the Schizophrenia or the Paranoia Scale of the MMPI-168. Only four individuals were excluded from participation in the study on this basis; instead, they were given the names of local mental health programs that might be helpful to them. These individuals were excluded based on the belief that a limited stress management intervention was not likely to result in significant benefit for them. There is also some evidence to suggest that relaxation training is contraindicated, or at least needs to be used with caution, when working with borderline psychotic persons (Pelletier, 1979; French, Schmid, & Ingalls, 1975; Lazarus, 1976; Walsh & Roche, 1979; Shibata, 1968).

Second, only individuals with high anxiety scores could be included in the study because significant improvement in anxiety scores could only logically be demonstrated when an operationally defined critically high anxiety level existed at the time of pretest. For the purposes of this study, such a critical anxiety level was arbitrarily defined to be a percentile score of 60 or higher on the Trait Form of the State-Trait Anxiety Inventory. The Trait Form, as opposed to the State Form, was selected as the screening instrument because it measured more stable, enduring patterns of anxiety. Obviously, therefore, not everyone who volunteered for the study could be used, since a number of people did not meet this criterion. Table 2.1 indicates the number of persons pretested and the number of persons excluded because of normal or low scores on the State-Trait Anxiety Inventory. Approximately 25% of those pretested had normal or low scores on the Trait Form of the STAI. The fact that 75% of all those individuals tested had elevated anxiety scores may be a reflection of the stressful and transient life style typical of people living in Southern California. Although these data could not be used in the present study, these individuals still received the same relaxation training as everyone else.

Of the Los Angeles subjects who dropped out, six were from the meditation group, eight were from the autogenic group, and two were from the waiting list control group. Of the Pasadena subjects who dropped out, two subjects dropped out of each group. It perhaps also bears mentioning that

one of the drop-outs in Los Angeles was caused by an actual mortality; cancer was discovered in one man during the treatment phase and he died a short time thereafter.

Table 2.1 Subject Pool by Setting

	Setting		
	Los Angeles	Pasadena	Total
Total Volunteers	55	59	114
Excluded due to Psychopathology	2	2	4
Excluded due to Low STAI Trait Scores	14	14	28
Subject Mortality	16	6	22
Final Sample Size	23	37	60

The following demographic summary of the final subject characteristics will aid the reader in determining the extent to which present results can be generalized to other populations. Among the 60 subjects, 70% (42) were female and 30% (18) were male. Seven individuals were black, seven were Hispanic, and the remainder were Caucasian. The mean age for all subjects was 45 years, with a range of 17 to 83 years.

Instrumentation

In this study, two dependent measures were used to evaluate the effectiveness of the treatments on reducing

self-reported levels of anxiety. The measures used were scores on the State-Trait Anxiety Inventory and six scales on the Minnesota Multiphasic Personality Inventory-168. Samples of these instruments may be found in Appendices A and B. Descriptions of each dependent measure are summarized in the following paragraphs.

State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory (STAI), developed by Spielberger, Gorsuch, and Lushene (1968), was used as an index of the generalized experience of anxiety (Appendix A). The STAI has been widely used in identifying persons with high levels of neurotic anxiety. It was originally developed to assess anxiety in high school and college students and in working adult populations.

The STAI was first published in 1970 (Spielberger et al., 1968) and was designed as a research instrument for investigating anxiety phenomena in normal (non-psychiatrically disturbed) adults. Since that time, more than 2000 studies using the STAI have appeared in the research literature, including studies in medicine, dentistry, education, and various fields of psychology. A major revision of the scale was begun in 1979 and thirty percent of the original items were replaced, resulting in improved psychometric properties. This revised STAI and the revised normative data were used in the present study.

The State-Trait Anxiety Inventory is comprised of separate self-report scales for measuring two distinct anxiety concepts: state anxiety and trait anxiety.

The State Anxiety Scale is designed to measure how subjects experience anxiety at a particular moment in time and at a particular level of intensity. State anxiety describes transitory emotional conditions and may vary in intensity and fluctuate over time as a function of the amount of stress that impinges upon a person.

The State Form consists of 20 statements that ask people to describe how they feel "right now" by rating the frequency of their feelings of anxiety on the following 4-point scale: (1) Not at all; (2) Somewhat; (3) Moderately so; (4) Very much so.

The concept of trait anxiety describes relatively stable individual differences in anxiety-proneness or acquired behavioral differences as anxiety personality traits. The Trait Form of the STAI consists primarily of items associated with cognitive and emotional anxiety experiences rather than somatic arousal symptoms of anxiety. This factor made its use especially appropriate for the present study since both meditation and autogenic training have been theorized to be especially appropriate for individuals experiencing primarily cognitive anxiety. Although the Trait Form is generally perceived as an anxiety inventory, in reciprocal scoring it can just as easily be conceptualized as a "well-being" index that reflects an individual's experience of syntonic mood, adequacy, and self-confidence.

The Trait Form consists of 20 statements that ask people to describe how they "generally feel" on a 4-point Likert scale. The examinee is instructed to: "indicate how you generally feel" by rating the frequency of one's feelings of anxiety on the following 4-point scale: (1) Almost never; (2) Sometimes; (3) Often; (4) Almost always.

On both the state and trait forms of the test the potential influence of an acquiescence response set is reduced by having approximately half of the items worded so that a rating of 4 indicates the presence of high anxiety; the remaining items are worded so that a high rating indicates the absence of anxiety. The scoring weights for the anxiety-present items are the same as the blackened numbers on the test form; the scoring weights for the anxiety-absent items are reversed, i.e., responses marked 1, 2, 3, or 4 are scored 4, 3, 2, or 1. Weighted scores are summed to yield a total score; scores can vary from a minimum score of 20 to a maximum score of 80.

The norms for working adults for the STAI-revised are based on a large sample of employees of the Federal Aviation Administration. Although most were white collar workers, the sample was quite heterogeneous with regard to educational level and age.

The normative data were divided into three subgroups according to age: ages 19-39, 40-49, and 50-69. Working adults of both sexes above the age of 50 tended to be lower in anxiety than their younger colleagues. Normalized T

scores (mean = 50; SD = 10) for male and female working adults in the three age groups were used to obtain the percentile rankings in this study. Only individuals with pretest percentile rankings at 60 or above were judged to have clinically significant trait anxiety, and these persons were therefore considered appropriate for the research.

Test-retest reliabilities on the trait scale are satisfactorily high, ranging from .73 to .86. This is to be expected since the measurement of personality traits ought to be relatively stable over time. However, for the state scale, for which temporal stability would not be expected, the test-retest reliabilities are quite low, from .16 to .54. At the same time, Kuder-Richardson reliabilities are quite high for both the state and trait forms, ranging from .83 to .92, thus reflecting strong evidence of internal consistency (Spielberger et al., 1968).

In terms of concurrent validity, the STAI Trait Scale correlates highly with the Taylor (1953) Manifest Anxiety Scale (TMAS) and the IPAT Anxiety Scale (Cattell & Scheier, 1963). The correlations range between .73 to .85, thereby suggesting that all three inventories can essentially be considered similar measures of trait anxiety.

Additional information regarding the reliability and validity of the STAI can be found in the STAI Manual (Spielberger et al., 1968).

Minnesota Multiphasic Personality Inventory-168

The Minnesota Multiphasic Personality Inventory (MMPI), developed by Hathaway and McKinley (1943), is a

widely used assessment and research instrument. Buros (1972) lists more research studies using the MMPI than any other mental measurement technique in his yearbook, and yet its use in research on meditation is conspicuous by its absence. It was originally developed as a clinical instrument to measure the characteristic traits of disabling psychological disorders.

The MMPI consists of 566 items which are answered either true or false. Statements cover areas from physical health to neurological disorders and political and social attitudes. Groups of items have been formed into various psychiatric scales which have been worked out empirically on groups of patients diagnosed as depressive, hysteric, paranoid, schizophrenic, and so on. The scores on these item groups are also known for control groups, thus allowing for test results to be compared with those of both normal people and different types of patients.

The test results are plotted as a profile. Raw scores are converted to scaled scores (T scores) according to the following formula: $T = 50 + [10 (X_i - M)]/SD$, where X_i is the raw score, and M and SD are the mean and standard deviation of the raw scores on the particular scale for the normative group. The scaled scores have a mean of 50 and a standard deviation of 10. Any score two standard deviations above the mean is considered to be critically and meaningfully elevated.

There are 14 standard scales and multiple supplementary research scales (the latter of which were not used in this study). Four of the scales are validity scales: ? (cannot say), L (Lie), F (validity), and K (correction). The clinical scales are: Scale 1 - Hypochondriasis (Hs); Scale 2 - Depression (D); Scale 3 - Hysteria (Hy); Scale 4 - Psychopathic deviancy (Pd); Scale 5 - Masculinity-femininity (Mf); Scale 6 - Paranoia (Pa); Scale 7 - Psychasthenia (Pt); Scale 8 - Schizophrenia (Sc); Scale 9 - Hypomania (Ma); and Scale 0 - Social Introversion (Si).

The primary scales of interest for the present research were scales 1, 2, 3, 7, and 9. Hypochondriasis (Scale 1) measures a person's anxiety over physical health and reveals whether or not these complaints are used to manipulate others. Depression (Scale 2) measures pessimism, sadness, dissatisfaction with life, and worry. Hysteria (Scale 3) measures denial and lack of insight into personal psychological difficulties; it also measures irritability, worry, and physical complaints related to emotional stress. Psychasthenia (Scale 7) measures chronic trait anxiety, obsessive-compulsive traits, fears, worry, indecisiveness, and general agitation. Hypomania (Scale 9) measures overactivity, emotional excitement, flight of ideas, enthusiasm, and overoptimism.

Many configurational uses of the basic MMPI scales have been advanced over the years for the purpose of evaluating overt anxiety. One of the common ways has been to use the sum of scores on the neurotic triad (Dahlstrom &

Welsh, 1960), consisting of the first three clinical scales: hypochondriasis, depression, and hysteria. Modlin (1947) referred to this sum as an anxiety score (AS), Gough (1946) called it the neurotic triad (Nt), and Ruesch and Bowman (1945) referred to it as a neurotic score (NS). The neurotic triad score was also used as one of the dependent measures of anxiety in the present study.

Dahlstrom and Welsh (1960) report split-half reliabilities for the above scales with these ranges: Hypochondriasis, from .78 to .96; Depression, from .58 to .84; Hysteria, from .29 to .75, Psychasthenia, from .81 to .91, and Hypomania, from .55 to .64.

Because the full-length MMPI can take well in excess of 45 minutes to complete, a short-form alternative--the MMPI-168--was used in the present study (Overall & Gomez-Mont, 1974). In this version, subjects complete only the first 168 items in the standard Form R test booklet, which cuts the test-taking time approximately 40%. Standard scoring stencils were used to calculate the raw scores of these first 168 items; these raw scores were then transformed into estimates of the full-length conventional validity and clinical scores by the use of regression equations. The equivalent full-length MMPI raw score conversions are reproduced in Appendix B.

The short form provides essentially the same clinical information as the standard form. Overall, Higgins, and Schweinitz (1976) found that there was no loss in discriminant

validity with regard to differential psychiatric diagnosis on 194 inpatients between the standard administration and the short form.

Research on the MMPI-168 has indicated that it correlates highly with the full-length MMPI. Overall and Gomez-Mont (1974) report correlations between the full-length MMPI and the short version to be quite high (Table 2.2).

Table 2.2 Correlations between the MMPI-168 Short Form and the Full-Length MMPI

Scale	r
Lie (L)	.93
Validity (F)	.90
Correction (K)	.88
Hypochondriasis (Hs)	.96
Depression (D)	.94
Hysteria (Hy)	.92
Psychopathic deviate (Pd)	.84
Masculine-feminine (Mf)	.89
Paranoia (Pa)	.85
Psychasthenia (Pt)	.90
Schizophrenia (Sc)	.86
Mania (Ma)	.79
Social introversion (Si)	.84

The average correlation between the two tests is $r = .88$. Thus, it appears that use of the MMPI-168 short form is an acceptable alternative to the full-length form.

Treatments

Clinically Standardized Meditation

The specific meditation treatment used in this study was Clinically Standardized Meditation (CSM). Since research

on one of the most popular forms of meditation, TM, has been difficult because of the shroud of secrecy surrounding it, Patricia Carrington (1978a) of the Department of Psychology at Princeton University developed CSM by adapting the essential aspects of TM to a form acceptable to Westerners. CSM is similar to TM in its ease of learning, but it is not based on a Hindu cosmology, does not require a Hindu religious ceremony for initiation, and does not assign mantras by a secret process (in actuality the mantras in TM are assigned by age, but the public is not told this). Instead, in CSM subjects can select their own mantra or they can make up their own (for the sake of simplicity, one standard mantra, "Shalom," was selected for all participants in the study).

One of the major goals of meditation is to turn the attention inward so that the meditator becomes keenly aware of the endless random chaos of thoughts in the waking state. The mental life is viewed as being crowded with too many strivings at one time and characterized by a continuous flow of largely uncontrollable thoughts and fantasies. These mental processes are assumed to exert a powerful but unappreciated influence on perception, cognition, and behavior (Walsh & Vaughan, 1980). It is believed that this lack of awareness of ceaseless mental restlessness may result in a person becoming habituated to the process of internal dialogue and fantasy.

Just as the effectiveness of the Rorschach test is built upon the assumptions of the power of the inkblots to break up habituated perceptual sets, so meditation is assumed to be effective by interrupting the automatic mental habit-forming processes in which behaviors, perceptions, and concepts become unconscious as they become well-learned (Boals, 1978; Furst, 1971; Deikman, 1966). In meditation these attentional habit patterns are retrained by suspending the ordinary flow of thought and disengaging the attention from normal mental activity. In this way, a person's alertness to internal sensory data, which is normally masked by automatized cognition, can be intensified (Bloomfield, Cain, Jaffe, & Kory, 1975; Linden, 1973).

The attention is attached to the process of becoming aware that something arises in the mind, stays for a while and then fades or changes, and that something else then arises. That is what the attention is attached to: the process, not the content. (Fromm, 1981, p. 43)

As the person becomes effective in passively watching thoughts rather than reacting to them, "The speed, power, loudness, and continuity of these thoughts and fantasies (begin) to slow and diminish, leaving subtle sensations of greater peace and quiet" (Walsh, 1977, p. 158).

The blocking of ongoing mental activity is accomplished by manipulating attentional processes facilitated by the use of a centering device. This centering device becomes the central pivotal point about which consciousness can move and acts as a kind of home base for attention (May, 1977). Examples of such centering devices are a word or

thought form (mantra), breathing, or an external object. An alternating process is thus established between the convergence of focused attention and the divergence of free-flowing thought (Avila & Nummela, 1977; Shapiro, 1980). The centering device gives conscious awareness a new structure in which the person can assume a detached impartiality and choiceless awareness toward the attachments and identifications with emotional states or thoughts (Wilber, 1979).

In Clinically Standardized Meditation the particular type of centering device used is a word (mantra). In Carrington's instructional tapes and manuals she gives the subjects the freedom to choose from a variety of suggested mantras. However, to simplify the learning procedure for subjects in this study, one mantra was suggested for everyone to use; this word was the Judeo-Christian word for peace: "Shalom." The word was chosen because it was euphonious and almost universally accepted as a peaceful meaning word with which the vast majority of subjects would have positive associations. One man, however, had very negative associations with the word and declined to participate in the study as a result.

The complete training tape transcript for the meditation training group is located in Appendix C.

Autogenic Training

Autogenic Training, like meditation, is a technique which helps a person learn to replace high-arousal sympathetic nervous system activity with low-arousal parasympathetic responses (Stoyva, 1976). The technique has been

applied to various kinds of anxiety disorders and stress-related psychosomatic difficulties (Luthe, 1962).

In autogenic training the subject sits comfortably in a chair, closes his eyes, and begins to conceptualize the formula: "I am at peace." The passive repetition of this phrase serves a purpose similar to that of the mantra in meditation, except that the goal is for the phrase to "become introjected and fused into a meaningful subjective experience. This is the prototype of the entire training process: an 'external' conceptualization develops into a living inner experience" (Gorton, 1959, p. 34).

Once this mood has been established, the subject is instructed to engage in six standard physiologically oriented verbal exercises which focus on heaviness and warmth in the body. The first two exercises involve the arms and legs as the person repeats: "My right (or left) arm (or leg) is heavy and warm." This passive concentration does not last for more than 30-60 seconds in the beginning, although it later can be extended for 3-5 minutes. The subject should expect that the experience of heaviness will generalize without conscious effort to the other arm (leg). This procedure is practiced one or two times a day for three or four weeks. Then the third exercise is begun, involving passive concentration on cardiac activity: "My heart beat is calm and regular." The fourth exercise involves respiration: "My breathing is calm and regular." The fifth

exercise is: "My abdomen is warm." Finally, to complete the basic program, there is the exercise: "My forehead is cool."

A complete transcript of the autogenic training tape is located in Appendix D.

Contrast between Treatments

Clinically Standardized Meditation and autogenic training are similar techniques in many ways. Both involve the interruption of normal mental functioning in that attention is deliberately refocused through the use of covert cognitive phrases. Since both techniques involve the focus of attention, they are both to be distinguished from other relaxation techniques, such as progressive relaxation, which allow thoughts to wander freely. Both encourage the person to become aware of the sensations of physiological relaxation representing heightened parasympathetic nervous system activity. Both involve a passive attitude representing a lack of striving toward relaxation; the person is instructed to let relaxation occur rather than trying to make it happen. Both techniques require regular practice in order to retrain the person to relax.

On the other hand, there is a critical difference between the treatments. Autogenic training involves the active self-generation of covert thoughts and images, whereas meditation involves reducing any kind of pre-programmed covert thoughts or existing normal mental activity. Even though in autogenic training the individual is carefully instructed to maintain a passive attitude,

the technique nevertheless involves the active generation of internal cognitive activity. Meditation, by contrast, is distinguished by the intent to gradually quiet all thoughts by disengaging from all ongoing mental activity. Although in meditation there is the repetition of a mantra, the focus of this activity is on the process of merely focusing on the mantra in order to enable the person to passively observe random thoughts as they come and go. By contrast, in autogenic training the focus of the repetitive activity is on the content of the repetitive phrases. In other words, autogenic training focuses attention more on the content of thinking (e.g., "My left arm is heavy.") whereas meditation focuses attention more on the process of mental functioning.

In this study it was hypothesized that focusing on the content of the repetitive covert statements and images generated in autogenic training could actually interfere with the process of relaxation (Shapiro & Zifferblatt, 1976). Therefore, although both techniques were hypothesized to reduce anxiety to some extent, meditation was hypothesized to be more effective than autogenic training because of its greater focus on reducing all ongoing mental activity.

Procedures

At both locations, subjects were recruited by the researcher and his assistant at Sunday morning meetings of each group. At the conclusion of the meeting, volunteers were asked to remain for the initial screening and pretesting

on the State-Trait Anxiety Inventory and the MMPI-168. The State-Trait Anxiety Inventory was given first, followed by the MMPI-168. At the time of posttesting, the MMPI-168 was given first to a random sample of half of the final sample of subjects to see if the order of test administration had any effect on the dependent measures.

In an effort to save time contacting subjects via phone, subsequent individualized training session appointments were made at the conclusion of the group pretesting. However, a few individuals still had to be contacted by phone to arrange for the training.

The pretests were scored by the researcher at the conclusion of the pretesting session. Individuals who did not meet the pretest trait anxiety criterion of the 60th percentile level were also given individualized relaxation training. These persons were randomly assigned to one of the two treatment groups; however, their data were not included in the study. These individuals were not informed that data collected from their participation would not be used in the research and they were encouraged to actively contribute to the group discussions each week. If the presence of these individuals had a confounding effect on the treatment effect of the other subjects, it can only be assumed that such confounding effects were randomly distributed between the two treatment groups.

Those persons whose pretest anxiety scores placed them at or above the 60th percentile on the STAI trait form were randomly assigned to one of the treatment groups or to

the no-treatment waiting list control group. Individuals who were assigned to the waiting list group were given personalized instruction by the researcher after posttesting eight weeks later. Assignment to groups was done randomly by drawing one-inch square cards from a hat; the cards had been marked either "A" (autogenic training), "C" (Clinically Standardized Meditation), or "W" (waiting list control group). This procedure assured that no experimenter bias entered into the group assignment procedure.

Subjects were assigned individual training times during weekday evenings following the pretesting. Three rooms in each of the two locations were made available to the experimenters for subjects to use. Subjects were scheduled for training at 5:30, 7:00, and 8:30 PM. Therefore, a maximum of nine subjects could be trained in any one evening.

Upon arrival, the subjects were individually informed of the group to which they had been assigned. Subjects who had been randomly assigned to the waiting list control group were notified by telephone that there would be no need to come for training at the present time.

Subjects were first given a consent-to-participate form to read and sign. A copy for their personal keeping was also given to them in case they wished to re-read the purpose of the study and/or contact either of the experimenters. A copy of the consent-to-participate form is located in Appendix E.

Subjects were then given a cassette tape recorder and a cassette tape containing the assigned relaxation training method to which they had been randomly assigned. All of the relaxation training was administered individually. This helped to insure quality instruction and enhanced the commitment of the subjects (as compared to conducting the training in a group setting). The method of having subjects be trained through the use of a standardized training tape insured that every subject received the training in precisely the same format, thus minimizing the influence of teacher effects. A professional voice instructor was engaged by the researcher to read the contents of the training instructions onto a master cassette from which duplicates were made. The same person recorded both taped treatment interventions to insure standardization of voice inflection.

Subjects were given no indication regarding the particular content of their assigned relaxation intervention, nor were they given any information about the other treatment technique. Therefore, at no time in the study did subjects attempt to request one relaxation technique over the other. Additionally, from all the feedback given to the experimenters, there was minimal contamination between subjects in different groups who might have known one another and compared ideas and information.

Subjects were escorted to one of the training rooms and given a standardized brief explanation of the procedures

to be followed. This brief orientation was followed by each experimenter so that no bias would enter into the training.

The content of the orientation was as follows. Individuals were told to sit quietly and listen to the training tape. The tape would contain instructions in a helpful "relaxation exercise" and would allow for pre-timed periods of silence on the tape for the subjects to practice relaxing. At the conclusion of the 55-minute tape, they were to return the tape recorder and cassette to the experimenter, who would then provide them with a word-for-word transcript of the tape for continued study. This transcript also contained a form for recording frequency of practice information which was to be reported to the experimenters at the weekly follow-up sessions. Presenting this transcript to subjects allowed them to listen to the training tape without being concerned about remembering the contents of the tape or attempting to take notes.

Subjects were told prior to leaving the training session that attendance at the weekly follow-up groups was required. These follow-up groups were held at noon on Sundays following the normal weekly meeting of the group.

The follow-up groups were begun on the first Sunday following the weekly individualized training. At this time subjects were given the opportunity to ask questions of the researcher. They were also given the opportunity to share openly with group members just what kind of experience they were having with their particular relaxation exercise. This helped foster a group comradery and helped to stabilize the

commitment to the research project. Finally, they were asked to report on the number of times they had practiced the relaxation intervention so that the researchers could track these data on a regular basis. Subjects who did not attend one or more of the follow-up sessions were telephoned during the following week by the researchers to gather the frequency of practice data. These data are reported in Chapter III.

Follow-up sessions for each of the two locations were held simultaneously each week at noon on Sundays. The two researchers alternated leadership of the meditation and autogenic training groups every week so that systematic teacher bias was reduced. No follow-up groups were held for the waiting list control group.

During the initial data collection procedure in Los Angeles the researchers attempted to assign subjects not only to treatment conditions, but also to teachers, the latter of whom would track their progress over the eight-week treatment phase. However, because of the small sample size the groups at this location tended to be small and follow-up sessions were often held individually. When groups were begun in Pasadena, they tended to be larger. The subjects participating found the two principal follow-up groups (AT and CSM) to be quite enjoyable and did not want to be divided into two additional subgroups and assigned to one of the two experimenters throughout the eight-week period. Therefore, the original intent of controlling for

the possible treatment-by-teacher interaction effects by subdividing each follow-up group into two additional groups led by each researcher was fulfilled instead by having the two researchers alternate their group leadership from week to week. As a check on possible teacher biases, the frequency of practice scores for the subjects during the week following the group meetings were analyzed to see if subjects tended to respond more enthusiastically to one researcher or the other. These data are presented in the analysis of results section.

At the end of the eight-week treatment period all subjects, including the control group subjects, were given the MMPI-168 and the State-Trait Anxiety Inventory a second time. At this time, individuals who had been assigned to the waiting list control group were informed of the opportunity to receive the same relaxation training to which others had already been introduced. Additionally, a final follow-up group session with both treatment groups combined was scheduled so that subjects could be given a thorough debriefing about the nature of the entire research project and be given an opportunity to ask questions of both experimenters. Subjects were also given the opportunity to have the results of their own MMPI-168 and State-Trait Anxiety Inventory tests interpreted for them by the principal researcher.

All of the tests given, both at the beginning and at the conclusion of the study, were personally hand-scored by

the principal investigator. Accuracy of test evaluation was thus assured.

Design

This study took the form of a pretest-posttest control group design with two treatment interventions (Campbell & Stanley, 1963). To assure an initial equivalence among all three groups, subjects were randomly assigned to the groups.

The overall design of the study is shown in Figure 2.1. The number of subjects (n) in each group was 20. A total of 60 subjects was used in the design. This design contains controls for internal validity, including the effects of history, maturation, testing, instrumentation, regression, selection, mortality, and any interaction among these effects.

Statement of Hypotheses

This study provided tests of the following null hypotheses. In each test, the probability of a Type I error was fixed at .05.

I. Effects of Treatment Interventions

Hypothesis 1:

Null hypothesis: There will be no difference in adjusted posttest means on various measures of anxiety for individuals who participate in clinically standardized meditation training, autogenic training, or a no-treatment control group.

DEPENDENT MEASURES

		PRETEST		POSTTEST	
		M ₁	M ₂	M ₁	M ₂
CSM	S ₁				
	S ₂				
	⋮				
	S ₂₀				
AT	S ₂₁				
	S ₂₂				
	⋮				
	S ₄₀				
CONT	S ₄₁				
	S ₄₂				
	⋮				
	S ₆₀				

Legend: S = Subject M₁: STAI
 CSM= Clinically Standardized Meditation M₂: MMPI-168
 CONT = Waiting List Control Group
 AT = Autogenic Training

Figure 2.1 Research Design

Corollary 1a: There will be no difference in adjusted posttest means on various measures of anxiety for individuals who participate in either (a) clinically standardized meditation training or (b) autogenic training and those who participate in a no-treatment control group.

$$H_0: u_{\text{csm}} = u_{\text{control}}$$

$$u_{\text{at}} = u_{\text{control}}$$

$$H_1: u_{\text{csm}} < u_{\text{control}}$$

$$u_{\text{at}} < u_{\text{control}}$$

Corollary 1b: There will be no difference in adjusted posttest means on various measures of anxiety for individuals who participate in clinically standardized meditation and those who participate in autogenic training.

$$H_0: u_{\text{csm}} = u_{\text{at}}$$

$$H_1: u_{\text{csm}} < u_{\text{at}}$$

II. Effects of Frequency of Practice

Hypothesis 2:

Null hypothesis: There will be no relationship between frequency of practice of clinically standardized meditation or autogenic training and adjusted posttest scores.

$$H_0: u_{\text{level 1}} = u_{\text{level 2}} = u_{\text{level 3}}$$

$$H_1: u_{\text{level 1}} > u_{\text{level 2}} > u_{\text{level 3}}$$

Hypothesis 3:

Null hypothesis: Those who practice clinically standardized meditation and autogenic training will not differ in their frequency of practice.

$$H_0: u_{\text{csm}} = u_{\text{at}}$$

$$H_1: u_{\text{csm}} > u_{\text{at}}$$

III. Effects of Follow-up Group Attendance

Hypothesis 4:

Null hypothesis: Those who attend five or more of the follow-up group sessions will not differ

from those who attend four or fewer group sessions on adjusted posttest means on various measures of anxiety.

$H_0: u_5 \text{ or more} = u_4 \text{ or less}$

$H_1: u_5 \text{ or more} < u_4 \text{ or less}$

Hypothesis 5:

Null hypothesis: Those who attend five or more of the follow-up group sessions will not differ in their frequency of practice rates from those who attend four or fewer group sessions.

$H_0: u_5 \text{ or more} = u_4 \text{ or less}$

$H_1: u_5 \text{ or more} > u_4 \text{ or less}$

IV. Effects of Experimenter Bias

Hypothesis 6:

Null hypothesis: Frequency of practice during the week after a follow-up contact will not vary across the two experimenters.

$H_0: u_{\text{Jack}} = u_{\text{Dave}}$

$H_1: u_{\text{Jack}} \neq u_{\text{Dave}}$

Data Analysis

Analysis of covariance tests were conducted using pretest scores as covariates. This procedure tested for differences in the posttest scores resulting from the treatment interventions, with the covariates statistically controlling for pretreatment variance between subjects on each of the dependent measures. Since ANCOVA procedures do not provide tests for directionality with more than two treatments, directional hypotheses of interest to the research were further analyzed, when appropriate, by Tukey's Post Hoc

comparisons. T-tests were also performed to evaluate the differences between the means on frequency of practice data.

The results of the analyses are presented in Chapter III.

CHAPTER III

ANALYSIS OF RESULTS

This chapter will deal with the statistical tests of each hypothesis. The hypotheses addressing the relationship between the two relaxation interventions and scores on the dependent variables are of primary importance and will be reported first. The hypotheses concerning the frequency of practice, follow-up group participation, and experimenter effects are of secondary importance and will be reported next. Following the presentation of the results of hypothesis testing, the chapter will conclude with a summary of ancillary findings.

Although the groups differed somewhat in their means at pretesting, analysis of covariance tests effectively controlled for the influence of these differences on posttest measures. Tests of significant differences among the groups at posttreatment were therefore based on adjusted group means.

Hypothesis Testing

Effects of Treatment Intervention

Hypothesis 1: There will be no difference in adjusted posttest means on various measures of anxiety for individuals who participate in clinically standardized meditation training, autogenic training, or a no-treatment control group.

Corollary 1a: There will be no difference in adjusted posttest means on various measures of anxiety for individuals who participate in either (a) clinically standardized meditation or (b) autogenic training and those who participate in a no-treatment control group.

Corollary 1b: There will be no difference in adjusted posttest means on various measures of anxiety for individuals who participate in clinically standardized meditation and those who participate in autogenic training.

Tables 3.1 through 3.16 summarize the results of tests of Hypothesis 1 for each of the eight dependent variables: (STAI State Form, STAI Trait Form, MMPI-168 Hypochondriasis Scale, MMPI-168 Depression Scale, MMPI-168 Hysteria Scale, MMPI-168 Psychasthenia Scale, MMPI-168 Hypomania Scale, and MMPI-168 Neurotic Triad). The ANCOVA tables describe the mean squares, F-values, degrees of freedom, and probabilities associated with the F-values for each of the dependent variables. A second table accompanying each ANCOVA table presents the direction of changes in the pre- and posttest means for each variable.

It may be observed that when the probability of a Type I error was fixed at .05, no significant differences in adjusted posttest means were found for six of the eight variables. However, the results shown in Table 3.1 indicate that a significant treatment effect occurred on the state anxiety variable as measured by the STAI: $F(2,56) = 5.07$. An examination of Table 3.2 reveals that while all three

groups had lower posttest than pretest state anxiety scores, adjusted posttest means for the two treatment groups were lower than those for the control group.

Table 3.1 Results of Analysis of Covariance (ANCOVA) Tests with the State Form of the State-Trait Anxiety Inventory as the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	421.31	2	5.07	.01
Covariate	314.78	1	3.78	.06
Error	83.17	56		

Table 3.2 Changes on the State Form of the State-Trait Anxiety Inventory for the Three Groups

	Pretest		Posttest		Adj. Mean	Change
	Mean	S.D.	Mean	S.D.		
CSM	39.95	12.92	30.1	9.11	30.47	-9.48
AT	40.15	9.77	28.9	7.64	29.23	-10.92
CONT	44.90	9.72	38.6	10.97	37.90	-7.00

Lengend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

Table 3.3 Results of Analysis of Covariance (ANCOVA) Tests with the Trait Form of the State-Trait Anxiety Inventory as the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	117.28	2	2.08	.13
Covariate	394.84	1	6.99	.01
Error	56.46	56		

Table 3.4 Changes on the Trait Form of the State-Trait Anxiety Inventory for the Three Groups

	Pretest		Posttest		Adj. Mean Change	
	Mean	S.D.	Mean	S.D.		
CSM	42.30	6.09	33.40	6.89	34.79	-7.51
AT	48.45	9.20	36.60	7.94	36.05	-12.40
CONT	49.40	9.30	40.50	8.75	39.66	-9.74

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

Table 3.5 Results of Analysis of Covariance (ANCOVA) Tests with the Hypochondriasis Scale (Hs) of the MMPI-168 as the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	18.24	2	1.33	.27
Covariate	449.35	1	32.88	.00
Error	13.66	56		

Table 3.6 Changes on the Hypochondriasis Scale (Hs) of the MMPI-168 for the Three Groups

	Pretest		Posttest			
	Mean	S.D.	Mean	S.D.	Adj. Mean	Change
CSM	15.15	4.42	12.90	3.89	12.81	-2.34
AT	14.45	4.24	14.35	4.61	14.69	+0.24
CONT	15.40	4.90	13.70	5.24	13.45	-1.95

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

Table 3.7 Results of Analysis of Covariance (ANCOVA) Tests with the Depression Scale (D) of the MMPI-168 as the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	29.97	2	2.02	.14
Covariate	594.19	1	39.98	.00
Error	14.86	56		

Table 3.8 Changes on the Depression Scale (D) of the MMPI-168 for the Three Groups

	Pretest		Posttest		Adj. Mean	Change
	Mean	S.D.	Mean	S.D.		
CSM	21.30	5.34	18.60	3.95	19.18	-2.12
AT	22.25	5.19	20.85	4.60	20.87	-1.38
CONT	23.30	5.77	22.20	6.19	21.60	-1.70

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

Table 3.9 Results of Analysis of Covariance (ANCOVA) Tests with the Hysteria Scale (Hy) of the MMPI-168 as the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	12.31	2	.87	.41
Covariate	284.73	1	20.59	.00
Error	13.83	56		

Table 3.10 Changes on the Hysteria Scale (Hy) of the MMPI-168 for the Three Groups

	Pretest		Posttest		Adj. Mean	Change
	Mean	S.D.	Mean	S.D.		
CSM	25.60	4.27	23.85	3.82	23.30	-2.30
AT	24.25	5.66	23.25	4.10	23.32	-0.93
CONT	23.35	4.52	21.45	4.94	21.93	-1.42

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

Table 3.11 Results of Analysis of Covariance (ANCOVA) Tests with the Psychasthenia Scale (Pt) of the MMPI-168 as the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	75.44	2	2.27	.11
Covariate	348.47	1	10.47	.00
Error	33.28	56		

Table 3.12 Changes on the Psychasthenia Scale (Pt) of the MMPI-168 for the Three Groups

	Pretest		Posttest		Adj. Mean	Change
	Mean	S.D.	Mean	S.D.		
CSM	26.45	6.61	23.60	4.88	23.49	-2.96
AT	23.25	12.27	26.50	6.53	27.28	+4.03
CONT	28.45	6.39	26.85	7.07	26.18	-2.27

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

Table 3.13 Results of Analysis of Covariance (ANCOVA) Tests with the Hypomania Scale (Ma) of the MMPI-168 as the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	33.60	2	4.16	.02
Covariate	550.78	1	68.25	.00
Error	8.07	56		

Table 3.14 Changes on the Hypomania Scale (Ma) of the MMPI-168 for the Three Groups

	Pretest		Posttest		Adj. Mean	Change
	Mean	S.D.	Mean	S.D.		
CSM	20.35	3.56	21.5	3.90	22.19	+1.84
AT	21.35	4.32	19.65	3.80	19.62	-1.73
CONT	22.20	5.64	21.8	4.81	21.19	-1.01

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

Table 3.15 Results of Analysis of Covariance (ANCOVA)
Tests with the Neurotic Triad of the MMPI-168 as
the Dependent Variable

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group	69.01	2	.82	.45
Covariate	2598.28	1	30.91	.00
Error	84.07	56		

Table 3.16 Changes on the Neurotic Triad of the MMPI-168
for the Three Groups

	Pretest		Posttest		Adj. Mean	Change
	Mean	S.D.	Mean	S.D.		
CSM	62.05	11.35	55.35	10.00	55.15	-6.90
AT	60.95	12.31	58.45	9.42	58.86	-2.09
CONT	62.05	12.59	57.35	13.99	57.15	-4.90

Legend: CSM = Clinically Standardized Meditation
AT = Autogenic Training
CONT = Control

Tukey's post hoc tests were therefore performed to determine if these differential changes were statistically significant. The results are presented in table 3.17.

Table 3.17 Summary of Tukey Test Comparisons of Adjusted Posttest Group Mean Differences on the State Form of the State-Trait Anxiety Inventory

Group		CSM	AT	CONT
	Mean	30.47	29.23	37.90
CSM	30.47	---	1.24	7.43*
AT	29.23		---	8.67*
CONT	37.90			---

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

* $p < .05$

Honestly Significant Difference = 6.93

Data summarized in Table 3.17 indicate that both autogenic training and clinically standardized meditation were significantly more effective than the no-treatment control group in lowering posttest state anxiety scores as measured by the State Form of the State-Trait Anxiety Inventory. However, in terms of Corollary 1b, it is important to note that the observed difference in adjusted posttest means for meditation and autogenic training was not statistically significant.

Data summarized in Table 3.13 indicate that there was also a significant treatment effect among the three groups on the Hypomania Scale of the MMPI-168: $F(2,56) = 4.16$. However, these results were in the opposite direction from that which was hypothesized. An examination of Table 3.14 indicates that subjects in the meditation group had slightly higher adjusted posttest scores on the Hypomania Scale, whereas those in the autogenic training group had slightly lower adjusted posttest scores. Table 3.18 summarizes the Tukey Post Hoc comparisons for these posttest means.

Table 3.18 Summary of Tukey Test Comparisons of Adjusted Posttest Group Mean Differences on the Hypomania Scale (Ma) of the MMPI-168

Group		CSM	AT	CONT
	Mean	22.19	19.62	21.19
CSM	22.19	---	2.57*	1.00
AT	19.62		---	1.57
CONT	21.19			---

Legend: CSM = Clinically Standardized Meditation
 AT = Autogenic Training
 CONT = Control

* $p < .05$

Honestly Significant Difference = 2.16

The difference in adjusted means for meditation and autogenic training was significant ($\alpha = .05$); the differences between the other means were not significant.

In brief, corollary 1a stated in null form can be rejected for only two of the eight dependent measures: the State Form of the State-Trait Anxiety Inventory and the Hypomania Scale of the MMPI-168. Furthermore, the null form of corollary 1b must be accepted across seven of the eight dependent variables. The exception occurred on the Hypomania Scale of the MMPI-168 and was in the opposite direction from that which was predicted.

Effects of Frequency of Practice

Hypothesis 2: There will be no relationship between frequency of practice of clinically standardized meditation and autogenic training and adjusted posttest scores.

For the purposes of investigating this hypothesis, subjects were classified into three subgroups according to how often they reported practicing their relaxation intervention during the eight-week treatment period. Subjects whose average frequency of practice ranged between 0 and 5 times a week formed the "low practice" group (n = 10). Subjects whose average frequency of practice ranged between 5.1 and 6.9 times a week formed the "moderate practice" group (n = 16). Finally, subjects whose average frequency of practice ranged between 7 and 15 times a week formed the "high practice" group (n = 14).

Table 3.19 provides a summary of the pretest-posttest changes on the eight dependent variables as a function of frequency of practice. This table also describes the results of ANCOVA Tests of differences in adjusted posttest means.

Table 3.19 Results of Analysis of Covariance (ANCOVA)
 Tests Showing Changes on the State-Trait
 Anxiety Inventory and Selected MMPI-168
 as a Function of Frequency of Practice

D.V.	Posttest Adj. Mean			Change from Pretest			F	p
	L.P.	M.P.	H.P.	L.P.	M.P.	H.P.		
STAI State	25.9	30.4	31.0	-15.6	-11.8	-5.6	1.42	.25
STAI Trait	30.7	36.7	36.1	-20.4	-8.3	-5.6	2.27	.12
MMPI - 1	13.3	14.5	12.8	-0.6	-1.1	-1.8	.82	.45
MMPI - 2	19.7	19.9	19.5	-3.2	-1.5	-1.9	.05	.95
MMPI - 3	21.9	24.8	23.3	-3.1	-0.1	-1.6	2.38	.11
MMPI - 7	24.8	26.1	24.0	-1.8	+1.1	+0.6	.49	.62
MMPI - 9	20.1	19.9	21.8	-2.3	-0.5	+1.6	1.49	.24
MMPI - NT	54.9	59.3	55.6	-6.8	-2.7	-5.2	1.06	.36

Legend: L.P. = Low practice
 M.P. = Moderate practice
 H.P. = High practice

The pretest-posttest changes were mostly in the predicted direction (i.e., adjusted posttest means were lower than pretest means). However, those who practiced their intervention more frequently did not consistently improve more than those who practiced less frequently. On the contrary, an examination of Table 3.19 shows that for seven of the eight dependent variables those who practiced their interventions least frequently had the greatest improvements over the eight-week treatment period. However, the results of ANCOVA Tests indicated that none of the differences in

adjusted posttest means were statistically significant ($\alpha = .05$). Therefore, Hypothesis 2 stated in null form cannot be rejected for any of the dependent measures.

Hypothesis 3: Those who practice clinically standardized meditation and those who practice autogenic training will not differ in their frequency of practice.

Autogenic training involves more structured exercises than meditation and necessarily involves more attentiveness to and concentration on the specifics of the technique. Meditation, by contrast, is a simpler intervention and allows for considerably more flexibility on the part of the participant. For this reason, it was hypothesized that subjects practicing meditation might have a tendency to practice the technique more frequently.

Table 3.20 presents the results of a t-test done on the total rate of practice for each of the 20 subjects in each treatment condition. From this table it can be observed that subjects in the clinically standardized meditation group practiced the intervention an average of 59.35 times over the eight-week period, or an average of 7.42 times per week. Subjects in the autogenic training group practiced the intervention an average of 48.75 times over the eight-week period, or an average of 6.09 times per week. Although these results are in the direction of the hypothesis, the t-value did not reach significance with alpha set at the .05 level. Therefore, this hypothesis cannot be rejected.

Table 3.20 T-Test of Mean Differences on Eight-Week Frequency of Practice Totals for Subjects Assigned to Practice Clinically Standardized Meditation and Autogenic Training

Group	n	Mean	S.D.	d.f.	t-Value	p
CSM	20	59.35	21.92	38	1.50	.14
AT	20	48.75	22.85			

Effects of Follow-up Group Attendance

Follow-up groups were introduced into the study in order to help insure compliance with the treatment interventions over the eight-week period. However, at the same time the groups became a potential source of confounding by virtue of the fact that a new variable was introduced into the treatment process, namely group process. Therefore, it was important to determine if the groups themselves became a possible source of confounding interacting with the dependent measures and the frequency of practice data.

Hypothesis 4: Those who attend five or more of the follow-up group sessions will not differ from those who attend four or fewer group sessions on adjusted posttest means on various measures of anxiety.

The rationale for this hypothesis was that subjects attending more of the follow-up groups might receive a greater benefit from the treatment intervention by virtue of a more complete learning experience enhanced by contact with other group members and face-to-face contact with the

group leaders. This enhanced learning would, in turn, be reflected in significant changes on the posttest dependent measures.

Table 3.21 presents data summarizing the relationship between frequency of group attendance and pretest-posttest changes on each of the dependent measures. Subjects were classified as low group attenders if they attended between one and four of the follow-up groups ($n = 23$) and high group attenders if they attended between five and eight of the follow-up groups ($n = 17$).

Table 3.21 Results of Analysis of Covariance (ANCOVA) Tests Showing Changes on the State-Trait Anxiety Inventory and the MMPI-168 as a Function of Group Attendance

D.V.	Posttest Adj. Means		Change from Pretest		F	p
	L.A.	H.A.	L.A.	H.A.		
STAI State	29.9	29.0	-9.5	-11.0	.12	.73
STAI Trait	35.6	34.2	-10.1	-10.7	.32	.58
MMPI - 1	13.3	14.0	-1.1	-1.4	.32	.58
MMPI - 2	20.0	19.3	-1.5	-2.9	.37	.55
MMPI - 3	23.3	23.8	-1.0	-2.0	.21	.65
MMPI - 7	24.4	26.0	-1.0	+1.9	.77	.39
MMPI - 9	20.3	21.0	-1.5	+1.5	.32	.57
MMPI - NT	56.6	57.3	-3.5	-6.1	.05	.83

Legend: L.A. = Low group attenders
H.A. = High group attenders

On six of the eight dependent measures the high group attenders showed more improvement than the low group attenders. However, none of the F-values for ANCOVA Tests of differences on adjusted means was significant with alpha set at the .05 level. This finding suggests that if the follow-up groups introduced a contaminating factor that interacted with the treatment interventions, the effects of that contamination were not strong enough to yield statistically significant changes on the dependent measures under the conditions of this study. Therefore, the null form of Hypothesis 4 must be accepted.

Hypothesis 5: Those who attend five or more of the follow-up group sessions will not differ in their frequency of practice rates from those who attend four or fewer group sessions.

Table 3.22 lists the follow-up data for each of the 40 subjects assigned to one of the two treatment interventions. It was felt that subjects who attended more of the follow-up groups would practice their assigned relaxation intervention on a more regular basis. Whether or not this hypothesized regular practice would be a cause of high group attendance (reflecting strong motivation) or the result of high group attendance (reflecting strong group process) could not be ascertained. Nevertheless, these analyses provide some clue as to the potential confounding effects of the follow-up group sessions.

Table 3.22 Frequency of Practice Self-report Listed by Follow-up Session Number

Ss	1	2	3	4	5	6	7	8
CSM								
1	G5	G13	G15	P12	P13	P14	P14	P14
2	G8	G7	G7	G5	G6	P7	P5	P5
3	G8	G7	G7	G7	P7	P11	G7	G6
4	G10	G11	G9	G13	G11	G11	G9	P9
5	G1	G10	P11	G5	P7	G7	G7	G7
6	G4	G9	G7	P5	P6	G9	G9	P7
7	G7	G7	G7	G7	G7	G10	P10	G8
8	G8	G9	G9	G10	P9	P9	P9	P0
9	G4	G7	P7	P7	P6	P6	P8	P8
10	G4	G7	P12	P12	P12	G10	P10	G10
11	G5	G5	G5	G4	G5	P9	P7	G9
12	G9	P7	G6	G7	P7	P7	G7	G7
13	G4	G8	P4	G5	P5	G7	G5	P4
14	G5	G5	G1	G4	G5	P5	G8	G6
15	P1	G1	P6	G6	P7	P7	P7	P7
16	P6	G9	G9	P8	P8	G8	G9	G8
17	P3	G0	P2	P0	P4	P2	P2	P1
18	P4	P4	P7	P7	P3	P3	P3	P3
19	P14	P14	P14	P9	P7	P7	P7	P7
20	P10	P12	P14	P14	P14	P14	P14	P14
AT								
21	P2	G2	G2	G7	G3	G5	G1	P3
22	G2	G2	G5	P6	P7	P5	G6	G5
23	G3	G7	G1	G0	G2	G2	P3	P3
24	P6	P13	P5	P7	P6	P5	P5	P5
25	G9	G6	G8	G7	P7	G8	G9	P6
26	P8	P8	P7	P9	P7	P8	P7	P7
27	G3	G14	G3	G6	G8	G7	G7	P7
28	P5	P5	P5	P5	G5	P7	P7	P6
29	G4	G4	P5	P5	P5	P6	P14	P6
30	G5	P5	P5	P5	P5	P6	P14	P6
31	G3	G5	G4	G5	P6	P5	G4	P4
32	G9	G10	G8	G7	P10	P7	P12	P12
33	P4	P4	P6	P6	P5	P5	P5	P5
34	G5	G5	G5	P3	P3	P3	P3	P3
35	P6	P6	P6	P6	P0	P7	P7	P7
36	P15	P1	G16	P20	G20	P14	P14	P14
37	G3	G4	G4	P7	P7	P7	P7	P7
38	P3	P3	P3	P3	G4	G0	G4	G4
39	P5	P7	P7	P7	P7	P7	P7	P7
40	P5	P8	P4	P6	G4	G4	P3	G7

Legend: P = PHONE FOLLOW-UP
G = GROUP FOLLOW-UP

Table 3.23 Mean Differences between Frequency of Practice Rates for Low Group Attenders and High Group Attenders

	n	Total Freq.	Mean	Average/Week
Low Attenders	23	1308	56.87	7.11
High Attenders	17	854	50.24	6.28

As reported in Table 3.23, 23 of the subjects were classified as low group attenders (one to four groups attended), and 17 of the subjects were classified as high group attenders (five to eight groups attended). The means for the two groups are distributed in the opposite direction from that predicted in the hypothesis. High attenders tended to have a lower frequency of practice than did low group attenders. However, the F-value resulting from an ANOVA Test of this difference is less than 1 (see Table 3.24). Thus, there was no significant difference between high and low group attenders in their frequency of practice. Therefore, the null form of Hypothesis 5 must be accepted.

Effects of Experimenter Bias

Throughout the planning and implementation of this study a constant source of concern was whether the principal investigator and his associate would favor one treatment intervention over the other and thus bias the posttest measurements on the dependent variables. Original plans to assign subjects to each researcher for the duration of the

Table 3.24 Results of Analysis of Variance Tests of Differences in Frequency of Practice as a Function of Level of Group Attendance

Source of Variation	Mean Square	Degrees of Freedom	F-Value	p
Group Attendance	.05	1	.08	.78
Error	.62	38		

eight-week treatment period had to be abandoned for reasons described in Chapter II. However, to minimize the effects of experimenter bias, the researchers alternated their group and phone follow-up contacts each week so that subjects would have the same level of exposure to each experimenter. Nevertheless, it is possible that differences in the ways the two experimenters conducted follow-up sessions elicited differences in practice rates following these sessions.

Hypothesis 6: Frequency of practice during the week after a follow-up contact will not vary across the two experimenters.

Data summarizing the test of this hypothesis are presented in Table 3.25. These data indicate that subjects practiced their treatment interventions at very nearly the same rates following exposure to either the principal investigator or the associate investigator. Therefore, the null form of Hypothesis 6 was accepted.

Table 3.25 T-Test Comparison of Frequency of Practice During the Week Following Interaction with the Principal Investigator and with the Associate Investigator

Investigator	n	Mean	S.D.	d.f.	t	p
Principal Investigator	127	7.02	3.85	241	.44	.66
Associate Investigator	116	6.82	3.04			

Ancillary Analyses

Three analyses of interest grew out of the study as it progressed toward completion. The first of these is concerned with differences between the groups in Los Angeles and Pasadena. As described in Chapter II, two distinct groups of subjects had to be rotated through the study because the initial sample size was insufficient. However, the initial group (Los Angeles) tended to receive more individual follow-up as opposed to the Pasadena group, and there was some concern that this former group might show greater improvement on the posttest dependent measures. Table 3.26 summarizes data on the possible effects of changes on the State-Trait Anxiety Inventory as a function of differences in group membership. The F values for both variables were less than 1. Therefore, these data suggest that group membership in either the Los Angeles or the Pasadena group did not have a significant influence on the two dependent measures.

Table 3.26 Results of Analysis of Covariance Tests Comparing Changes on the State-Trait Anxiety Inventory between the Los Angeles and Pasadena Subjects

D.V.	Adj. Posttest Means		F-Value	p
	Pasadena	Los Angeles		
STAI State	31.9	33.5	.36	.55
STAI Trait	36.1	38.0	.87	.36

There was some concern that the order of test-taking might influence scores on the dependent measures. Therefore, half of the subjects were randomly assigned to take the STAI first and the other half took the MMPI-168 first. The results of the corresponding data analyses are presented in Table 3.27.

Table 3.27 Results of Analysis of Covariance (ANCOVA) Tests Showing Changes on the State-Trait Anxiety Inventory as a Function of Order of Test Administration

D.V.	Adj. Posttest Means		F	p
	MMPI-1st	STAI-1st		
STAI State	32.7	32.4	.02	.89
STAI Trait	34.5	39.2	6.16	.02

Adjusted group means on the STAI Trait Form indicate that those who took the MMPI-168 first on posttesting had scores which dropped from 47.6 at pretest to 34.5 at posttest,

a change of 13.1 points. Those who took the STAI first on posttesting had scores which dropped from 45.8 at pretest to 39.2 at posttest, a change of 6.6 points. The results of the corresponding ANCOVA Test indicates that the difference in adjusted posttest means was statistically significant ($\alpha = .05$). Thus, there was a significant effect of order of test administration for one of the two dependent measures. Evidently, subjects whose mental set was conditioned by the questions on the MMPI-168 tended to respond to the trait form of the STAI in a less extreme fashion than did those who took the STAI first. It is possible that the length of the MMPI-168, as well as the intimate and probing nature of the questions, could have made the more brief and somewhat less threatening questions on the STAI seem less anxiety-provoking by comparison.

Finally, an internal check on the correlations between the MMPI-168 and the full-length MMPI was done on a random sample of seven subjects. Table 3.28 presents the data comparing the published correlations (Overall & Gomez-Mont, 1974) and the correlations obtained from the seven subjects in this study.

The average correlation for the above selected scales as reported by Overall and Gomez-Mont (1974) is .90; the average correlation for the above scales obtained from a random sample of seven subjects in the present study is .80. Although the latter correlation is somewhat lower than the

Table 3.28 Correlations between the MMPI-168 and the Full-Length MMPI

Scale	Overall and Gomez-Mont	Current Study
1	.96	.83
2	.94	.99
3	.92	.81
7	.90	.64
9	.79	.71

published correlations, it still represents an adequate level of reliability with the full-length MMPI.

Summary

The results may be summarized as follows.

1. The results of analysis of covariance tests comparing the two interventions and the control group indicated that adjusted posttest means for the three groups did not differ significantly for six of the eight dependent measures. However, on the State Form of the STAI, subjects assigned to the treatment groups showed significantly lower state anxiety following the eight-week treatment phase than those assigned to the control group.

2. Adjusted mean posttest scores on the Hypomania Scale from the MMPI-168 were significantly higher for subjects practicing clinically standardized meditation than for individuals practicing autogenic training.

3. Across both treatment interventions, differences in level of practice did not result in differences in adjusted posttest scores.

4. Those in the meditation group did not have a higher rate of practice over the eight-week treatment period than those who practiced autogenic training.

5. Adjusted posttest scores of those who attended five or more of the eight follow-up meetings did not differ significantly from those who attended less than five meetings.

6. Subjects who attended five or more of the follow-up meetings did not practice their intervention technique more often than those who attended less than five meetings.

7. Frequency of practice did not vary as a function of which investigator conducted the preceding follow-up session.

8. The results of ancillary analyses indicated treatment effects did not differ for participants who were from Los Angeles as compared to participants from Pasadena. However, order of test administration did have a significant effect. Subjects who took the MMPI-168 posttest first had a significantly greater reduction in state anxiety scores than those who took the State-Trait Anxiety Inventory first.

CHAPTER IV

DISCUSSION

Summary

The purpose of this study was to compare the relative effectiveness of clinically standardized meditation and autogenic training in reducing the symptoms of anxiety.

The organization of the study was developed in four phases. The first phase consisted of identifying a sample of 60 volunteers who were assessed to be anxious according to elevated scores (60th percentile or higher) on the Trait Form of the State-Trait Anxiety Inventory. These volunteers were recruited in the southern California communities of Los Angeles and Pasadena with the help of two organizations: New Visions Fellowship and the Church of Truth. Individuals were given the State-Trait Anxiety Inventory as a pre-screening instrument. Then, they were told that they would be participating in a stress management project over an eight-week period of time and would receive training in learning how to control their stress levels.

The second phase consisted of randomly assigning qualifying subjects to three groups: a meditation group, an autogenic training group, and a no-treatment waiting list control group. Subjects assigned to one of the two treatment groups were given appointments during which time individualized training via audio-cassette tape was conducted.

The third phase consisted of an eight-week follow-up period during which time groups representing each treatment intervention met once each week. The purpose of these groups was to give subjects the opportunity to ask questions of the researcher(s), to share openly with other group members the kinds of experiences they were having with their assigned relaxation intervention, and to report on the number of times they had practiced the relaxation technique during the past week. Individuals who did not come to the follow-up group meetings were contacted by phone during the next week by the researchers.

The fourth phase consisted of repeating the testing procedures after eight weeks to see if significant changes had occurred on the dependent variables.

Two major psychometric instruments were used in the study: the State-Trait Anxiety Inventory and the Minnesota Multiphasic Personality Inventory-168.

Data were analyzed according to analysis of covariance procedures using pretest scores as a covariate to control for initial pretest differences. Tukey's Post Hoc Comparisons were used when appropriate.

The research hypotheses were only partially supported. Both interventions yielded a significant decrease in the level of "state" anxiety as measured by the State-Trait Anxiety Inventory, but did not significantly decrease "trait" anxiety as was predicted. There were also no differences between the treatment and control groups on six other dependent variables. In addition, the data did not

support the hypothesis that clinically standardized meditation would be significantly more effective than autogenic training in lowering posttest anxiety scores.

Limitations

Four areas of limitation appear to be relevant to this research. These areas include the sample, the instrumentation, the design, and the methodology. The limitations of each area are explored in this section.

Sample

An obvious limitation in the sample is the fact that it consisted of volunteers. A true random sample was not possible because individuals were asked to alter their lives for an eight-week period to regularly practice structured relaxation interventions. Only those individuals willing to do so could participate in the study. Since the fact of volitional involvement constitutes a systematic bias in the present research, this represents a possible threat to the external validity (generalizability) of the study. Nevertheless, results may still be generalized to populations having similar characteristics to those of the sample on the basis of the Cornfield-Tukey Bridge Argument (1956). Using this argument, generalization from finite samples to larger hypothetical populations can be made on the basis that these larger populations have characteristics similar to those of the sample.

In the present research, it can be assumed that the population from which the sample was drawn (anxious adults

who were open-minded and motivated to cooperate with an intervention to help bring about lowered anxiety) is representative of a larger similar population to which the results of this study may be generalized. However, because the sample was drawn primarily from members who attended existing humanistically-oriented organizations, generalization of the results of the study must be further limited to those individuals likely to attach themselves to such kinds of groups. This fact, of course, raises the possibility of an interaction between the selection of the particular subjects of the research and the treatment intervention, namely that meditation and autogenic training may be more effective with a group of people whose existing mindset predisposes them to be favorably inclined to humanistic self-help oriented techniques.

The study would have been strengthened considerably if a sample could have been drawn from private industry. This was attempted on numerous occasions by the researcher. Each time, however, his request was denied because such groups would not allow random assignment and the investigation of only two treatment interventions. Ultimately, the attempt to work through private business was abandoned since no progress was being made.

Instrumentation

The instruments used to evaluate pretest and post-test generalized anxiety were the State-Trait Anxiety Inventory and the Minnesota Multiphasic Personality

Inventory-168. Both instruments are well-known and have well-established reliability and validity correlates which are summarized in Chapter II.

Due to the extreme length of the complete MMPI, however, a short form of the test was chosen in order to expedite testing. Use of this short form necessarily increased the level of error variance, although this increase was relatively small as evidenced by the high correlations between the MMPI-168 and the full-length MMPI. Moreover, even though not directly relevant to this study, it has been demonstrated that there is no significant loss in discriminant validity with regard to differential psychiatric diagnosis with the use of the MMPI-168 (Overall, Higgins, & Schweinitz, 1976).

An important factor to consider, however, is the fact that the MMPI is designed to measure long-term stable personality traits as opposed to more transitory personality states which might be more amenable to interventions such as those used in this study. The same is true of the Trait Form of the STAI.

Another limitation stems from the tendency of subjects to respond to posttest instruments in a less extreme fashion than on pretests. Campbell and Stanley (1963) refer to this phenomenon as regression toward the mean. Since subjects for the present study were selected on the basis of initial extreme scores (60th percentile or higher on the Trait Form of the State-Trait Anxiety Inventory), there would be an a priori expectation that posttest scores

will regress toward the mean. Although this phenomenon is controlled for in the study's true experimental design (pretest-posttest-control group design), it nevertheless is important in interpreting the findings since the reduction in posttest scores may have been due to regression effects as well as genuine effects of the treatment interventions.

A related limitation in testing relates to the effect of the testing procedure itself. Several subjects in the study remarked to the experimenter that they tended to mark the answers in a less extreme fashion on posttesting because they were already familiar with the questions. Again, this potential source of confounding is presumably controlled for in the true experimental design, but its possible influence nonetheless needs to be mentioned.

A final problem in instrumentation relates to the self-report procedures used to gather data on frequency of practice during the eight-week treatment intervention. Any kind of self-report mechanism is subject to the possibility that participants are providing socially desirable responses ("faking good"). Despite the continuing repetition by the researchers each week that subjects should report accurately the number of times they practiced their assigned technique, there was no mechanism for monitoring the accuracy of these reports. However, since the primary hypotheses did not relate to frequency of practice per se, such a problem would not have confounded the primary results of the study.

Design

This study was constructed to reflect a true experimental design (random assignment) with a pretest-posttest-control group format. Therefore, many of the potential sources of internal invalidity (viz., history, maturation, testing, instrumentation, regression, selection, and interactions among these factors) are controlled for in the design.

However, there is a potential problem related to subject mortality. More subjects dropped out who were assigned to the treatment interventions than those who were assigned to the waiting list no-treatment control group. Since the control group people were not asked to participate in any treatment format, their lives were less disrupted and thus they were less likely to request withdrawal from the study. Thus, it is conceivable that the final sample selection consisted of individuals in the control group who might have been somewhat less motivated at posttest and individuals in the treatment groups who might have been biased in the direction of being more conscientious and motivated. The data on subject mortality are reviewed in the Sample subsection in Chapter II.

Methodology

A significant methodological drawback relates to the fact that subjects were not monitored for practicing their assigned relaxation intervention correctly. This drawback is especially relevant to the group practicing autogenic training, since subjects were being asked to practice a much

more structured relaxation exercise than were those in the meditation group. The researchers had to rely on self-report only to monitor the correct practice of the interventions. Hence, there was no control, again, for the social desirability factor in monitoring proper compliance and follow-through with the instructions.

One of the major purposes of scheduling follow-up groups was to enhance the monitoring of subject compliance with treatment instructions. Although the groups did enhance this monitoring, it must be recognized that scheduling groups necessarily introduced another contaminating variable, namely a group effect. Depending on the constituency of a particular group on a given Sunday, the dynamics or enthusiasm for the group process could differ markedly from week to week. As the study progressed, it was thought that this factor might bias the results on the dependent variables.

Furthermore, subjects assigned to the two treatment groups became acclimated to the two researchers over the eight-week period because of the regular contact with them during follow-up group sessions. It is possible that after eight weeks of growing comradery participants in these two groups felt significantly less anxiety when taking posttests than participants in the control group, simply because they felt more comfortable with the experimenters and with the environmental context. This alone could account for the treatment effect observed on the State Form of the State-Trait

Anxiety Inventory, since the control group members had no regular contact with the experimenters.

Additionally, the use of the researchers as group leaders introduced a possible contaminating factor in the study, since it was possible that one group leader might have been more motivating than the other or that one might have favored one technique over the other and thus biased the outcome variables. This factor was controlled for to some extent by alternating group leadership from week to week between the groups so that each group was regularly exposed to each experimenter. As a further check on these factors, statistical analyses were performed to test for the possible effects of the above factors of group attendance and group leadership.

Discussion of Results

The central aim of this study was to ascertain if clinically standardized meditation would be significantly more effective than autogenic training in lowering anxiety from pretest levels. The data from the study did not support this prediction. On six of the eight dependent variables there were no significant differences between treatment interventions or between the treatments and the control groups ($\alpha = .05$). There are three general explanations for these results.

First, it is possible that the treatment interventions were not effective in the amelioration of anxiety. The present study was carefully designed, involved motivated

subjects, and lasted for a period of eight weeks. Yet, the results largely failed to confirm that either of the two relaxation interventions was significantly more effective than a no-treatment control group in reducing anxiety. Therefore, the present findings confirm the conflicting results of the previous research studies reviewed in Chapter I, many of which suggest that meditation as well as autogenic training may not bring about measurable reductions in anxiety. It may be that with each of these interventions there is a placebo effect in which a person merely feels better practicing the procedure but that no measurable psychological or physiological change actually occurs.

Second, it is possible that subjects in the study did not follow the treatment instructions accurately or that they did not practice either intervention nearly as often as they reported. Unfortunately, it was not possible to determine whether the subjects were practicing the interventions correctly and regularly.

Third, it is possible that changes in anxiety did, in fact, occur but the instruments used to measure anxiety were not sufficiently sensitive to measure these changes. As noted earlier in Chapter II, even though the MMPI-168 has been carefully constructed and cross-validated to measure some important personality characteristics, most of its subscales tend to measure long-term stable personality traits as opposed to more transient personality states. Over an eight-week treatment period, the MMPI-168 profile on a particular subject may not change significantly. If

relaxation interventions such as meditation or autogenic training tend to affect more transient feelings of anxiety, these subscales may not have provided appropriate measures of those changes that occurred. In terms of this argument, it is important to note that significant differences in adjusted posttest means did occur on the State Form of the STAI. This fact lends some support to the hypothesis that relaxation interventions, such as meditation and autogenic training, may be effective only as coping skills in the temporary alleviation of anxiety states.

Unfortunately, the design of this study did not provide a definitive test of any of these three explanations. Thus, each may be viewed as plausible.

A second finding that lends itself to alternative explanations relates to Scale 9 of the MMPI-168: the Hypomania Scale. Those practicing meditation had significantly higher adjusted posttest scores on the Hypomania Scale than those practicing autogenic training. One possible interpretation of this finding is that those in the meditation group assessed themselves as having more energy after meditating for eight weeks. On the other hand, those practicing autogenic training may have assessed themselves as having less energy after the treatment period.

It has been suggested that one of the benefits of meditation is that a person will experience more emotional energy (Bloomfield et al., 1975). The theory behind such an explanation has been that the attempt to slow down the

process of thinking, if only temporarily, results in a net conservation of mental energy which then becomes available for expression in new ways at the person's discretion. If subjects in the meditation group felt they had greater discretionary emotional energy, this might account for the increased scores on the posttest MMPI-168 Scale 9. In this sense, meditation is to be contrasted with autogenic training, in that practice of the latter technique requires more attentive and conscientious work to follow a set group of instructions. This need to "work at" relaxing is actually a contradiction and could account for some loss of emotional energy at the time of posttest.

A third finding that calls for some explanation was the fact that individuals in the control group had lower posttest scores than pretest scores on all of the dependent measures. Four possible explanations can be advanced to account for this unexpected finding.

First, persons randomly assigned to the control group were equally motivated to volunteer for the research study, presumably because they were motivated to attempt a new way to improve their quality of life. In light of the fact that they were asked to wait for eight weeks before participating in the present research, it is possible that their motivation to better their lives directed them to seek out alternative means of alleviating stress and anxiety.

Second, persons assigned to the control group were still participants in the present study in an indirect sense and thus were aware of the fact that within eight weeks they

would be able to receive the same relaxation training which others were currently receiving. It is possible that this created a sense of expectation and improved well-being which allowed them to anticipate being the beneficiaries of helpful psychological interventions through this research study.

Third, the mere fact that control group subjects were identified as participating in a research study may have helped them to feel better about themselves because of the special attention being demonstrated by the researchers on an entire group of people of which the control group was a part. Thus, the "Hawthorne Effect" may have been a factor in the present study, although the true experimental design presumably controlled for this source of confounding.

Fourth, the effects of repeated testing could account for marking of items in a less extreme fashion during posttesting. As described in an earlier section, the members of all these groups, including the control group, were selected because they had elevated pretest trait anxiety scores. Thus, lower posttest scores may have resulted from a regression to the mean.

The finding that frequency of practice rates did not significantly correlate with posttest change scores was also surprising. One of the tenets of instructors in relaxation interventions has been that a person must regularly practice in order to begin to gain some level of internal control over autonomic states. Such control does not happen without regular practice. However, in the present study some

individuals who practiced their intervention regularly and frequently (viz., twice a day) experienced very little in the way of measurable reduction in anxiety despite their self-report that they were "getting a lot out of" their practice. At the same time, there were some individuals who practiced much less frequently and who, on the surface at least, seemed much less committed to the study, but whose posttest anxiety scores dropped dramatically.

One could suggest that other circumstances in these individuals' lives (e.g., "history" and "maturation") could account for these perplexing changes. It could also be that the instrumentation, as suggested above, was not sensitive enough to measure the psychological changes which may have been occurring.

Implications

There are a number of implications that arise from the above findings.

First, there is still a need for greater precision in measuring personality states in general and anxiety states in particular. The use of physiological measures (electromyograph, electroencephalograph, galvanic skin response, etc.) has been researched extensively, and such measures are commonly employed with the use of biofeedback. These measures are certainly more empirical than the purely psychometric instruments used in the present research. However, all too often these measures are not used in combination with psychological testing, and for that reason certain

psychological states accompanying physiological findings cannot be ascertained. The kind of approach that would integrate physiological measures with psychological assessment would seem to be another step in pursuing research on the treatment of anxiety-related disorders.

Additionally, there is still no agreement among psychologists regarding ways to qualify as well as to quantify internally anxious states. More work is still needed to provide a sound theoretical background for treatment of anxiety. The work of Davidson and Schwartz (1976) is an example of this kind of theoretical work; however, it is still unclear whether the division of anxiety into cognitive and somatic components will be supported by future research. Until this issue is resolved, there will continue to be problems associated with subject selection criteria in research on anxiety.

Suggestions for Future Research

Prior research on meditation has suffered from numerous methodological flaws which have been summarized in Chapter I. In the present study, attempts were made to correct for a number of these drawbacks. Nevertheless, there are a number of recommendations that can be made for future research.

1. The selection of dependent measures is especially important. Researchers who attempt to measure changes in anxiety states must consider that perhaps only anxiety states (as opposed to anxiety traits) are going to be

amenable to change, at least within a brief treatment period. Fundamental personality traits are probably going to be difficult to change by any kind of psychological intervention, and it is likely to be even more difficult to measure the small changes when they do occur. Psychological tests with greater sensitivity to these small changes still need to be constructed.

2. Subjects who are assigned a treatment intervention will need to be monitored in order to assess proper compliance with the treatment instructions. The effect of a particular treatment intervention cannot accurately be assessed if subjects are not using the techniques properly. One possible solution to this problem would be to give each subject a brief written test during the treatment phase to see if the person at least understands the fundamentals of the intervention.

3. In order to control for the possible contaminating effects of interaction with the experimenter, it will be necessary for waiting list control group subjects to have the same amount of face-to-face contact with the experimenter as do the subjects in the treatment groups. This can be arranged by having some independent reason unrelated to the treatment interventions for meeting with the experimenter.

4. Subjects will have to be selected with the kind of anxiety symptoms readily amenable to treatment by meditation or autogenic training. Screening devices will have to be used which are sufficiently precise in identifying

individuals with the kind of anxiety most amenable for treatment by the kinds of relaxation interventions being investigated. Researchers will have to be careful to avoid selecting subjects who may be experiencing a generalized sense of malaise, the source of which may not be anxiety. In such instances, anti-anxiety interventions may not be appropriate for them.

It is possible that the theoretical division of anxiety into cognitive and somatic components as suggested by Davidson and Schwartz (1976) may be an artificial distinction, since an anxiety state is usually experienced nonspecifically. If so, other kinds of selection criteria would have to be used in order to identify persons for whom mild relaxation interventions might prove helpful. For example, it might be necessary to focus more directly on identifying the symptoms of anxiety as opposed to the etiology of the anxiety experience.

5. It is especially desirable if subjects can be sampled across a number of different occupational, socioeconomic, geographical, and/or ethnic categories. This will greatly enhance the external validity of the research. This is difficult to do, of course, and the present researcher had considerable difficulty in procuring the cooperation of others needed to satisfy this goal. In the present study, generalization is not possible beyond the rather limited population sampled.

6. Future research should focus on identifying and measuring the fine distinctions between the various kinds of relaxation interventions. As described in Chapter I, much of the existing research literature is characterized by the commingling of interventions (e.g., utilizing autogenic training assisted by biofeedback equipment). This makes it impossible to partial out the effectiveness of one type of intervention as compared to another. There are fine distinctions among relaxation techniques, and the present research represents one attempt to clarify these kinds of distinctions. However, more work is needed.

The present study may be seen as one of many attempts to help clarify some of the research as well as the clinical issues regarding the problem of anxiety. Hopefully, it will serve as an impetus for further research to focus on those factors which will facilitate the development of effective treatment interventions for this disorder.

APPENDICES

APPENDIX A
STATE-TRAIT ANXIETY INVENTORY

SELF-EVALUATION QUESTIONNAIRE

Developed by Charles D. Spielberger in collaboration with
R.L. Gorsuch, R. Lushene and P.R. Vagg

STATE FORM Y-1

(state form)

NAME _____ SEX: M F AGE _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken the appropriate space on your answer sheet 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
SOMEWWHAT
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 feel strained | 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 satisfied | 1 | 2 | 3 | 4 |
| 9. I feel frightened | 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 indecisive | 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 confused | 1 | 2 | 3 | 4 |
| 19. I feel steady | 1 | 2 | 3 | 4 |
| 20. I feel pleasant | 1 | 2 | 3 | 4 |

STAI FORM Y-2

(trait form)

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken the appropriate space on the answer sheet to indicate how you *generally* feel. 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 how you *generally* feel.

ALMOST NEVER
SOMETIMES
OFTEN
ALMOST ALWAYS

- | | | | | |
|---|---|---|---|---|
| 21. I feel pleasant | 1 | 2 | 3 | 4 |
| 22. I feel nervous and restless | 1 | 2 | 3 | 4 |
| 23. I feel satisfied with myself | 1 | 2 | 3 | 4 |
| 24. I wish I could be as happy as others seem to be | 1 | 2 | 3 | 4 |
| 25. I feel like a failure | 1 | 2 | 3 | 4 |
| 26. I feel rested | 1 | 2 | 3 | 4 |
| 27. I am "calm, cool, and collected" | 1 | 2 | 3 | 4 |
| 28. I feel that difficulties are piling up so that I cannot overcome them | 1 | 2 | 3 | 4 |
| 29. I worry too much over something that really doesn't matter | 1 | 2 | 3 | 4 |
| 30. I am happy | 1 | 2 | 3 | 4 |
| 31. I have disturbing thoughts | 1 | 2 | 3 | 4 |
| 32. I lack self-confidence | 1 | 2 | 3 | 4 |
| 33. I feel secure | 1 | 2 | 3 | 4 |
| 34. I make decisions easily | 1 | 2 | 3 | 4 |
| 35. I feel inadequate | 1 | 2 | 3 | 4 |
| 36. I am content | 1 | 2 | 3 | 4 |
| 37. Some unimportant thought runs through my mind and bothers me | 1 | 2 | 3 | 4 |
| 38. I take disappointments so keenly that I can't put them out of my mind | 1 | 2 | 3 | 4 |
| 39. I am a steady person | 1 | 2 | 3 | 4 |
| 40. I get in a state of tension or turmoil as I think over my recent concerns and interests | 1 | 2 | 3 | 4 |

APPENDIX B
MINNESOTA MULTIPHASIC PERSONALITY INVENTORY
FORM R-168--SELECTED SCALES

Scale 1

Hypochondriasis Scale (Hs)

<u>item #</u>	<u>stem</u>	<u>response</u>
2	I have a good appetite.	false
3	I wake up fresh and rested most mornings.	false
7	My hands and feet are usually warm enough.	false
9	I am about as able to work as I ever was.	false
18	I am very seldom troubled by constipation.	false
23	I am troubled by attacks of nausea and crying that I cannot control.	true
29	I am bothered by acid stomach several times a week.	true
43	My sleep is fitful and disturbed.	true
51	I am in just as good physical health as most of my friends.	false
55	I am almost never bothered by pains over the heart or in my chest.	false
62	Parts of my body often have feelings like burning, tingling, crawling, or like "going to sleep."	true
63	I have had no difficulty in starting or holding my bowel movement.	false
68	I hardly ever feel pain in the back of the neck.	false
72	I am troubled by discomfort in the pit of my stomach every few days or oftener.	true
103	I have little or no trouble with my muscles twitching or jumping.	false
108	There seems to be a fullness in my head or nose most of the time.	true

<u>item #</u>	<u>stem</u>	<u>response</u>
114	Often I feel as if there were a tight band about my head.	true
125	I have a great deal of stomach trouble.	true
130	I have never vomited blood or coughed up blood.	false
153	During the past few years I have been well most of the time.	false
155	I am neither gaining nor losing weight.	false
161	The top of my head sometimes feels tender.	true
163	I do not tire quickly.	false

Scale 2

Depression Scale (D)

<u>item #</u>	<u>stem</u>	<u>response</u>
2	I have a good appetite.	false
5	I am easily awakened by noise.	true
8	My daily life is full of things that keep me interested.	false
9	I am about as able to work as I ever was.	false
18	I am very seldom troubled by constipation.	false
30	At times I feel like swearing.	false
32	I find it hard to keep my mind on a task or job.	true
36	I seldom worry about my health.	false
39	At times I feel like smashing things.	false
41	I have had periods of days, weeks, or months when I couldn't take care of things because I couldn't "get going."	true
43	My sleep is fitful and disturbed.	true
46	My judgment is better than it ever was.	false
51	I am in just as good physical health as most of my friends.	false
52	I prefer to pass by school friends, or people I know but have not seen for a long time, unless they speak to me first.	true
57	I am a good mixer.	false
58	Everything is turning out just like the prophets of the Bible said it would.	false
64	I sometimes keep on at a thing until others lose their patience with me.	false

<u>item #</u>	<u>stem</u>	<u>response</u>
67	I wish I could be as happy as others seem to be.	true
80	I sometimes tease animals.	false
86	I am certainly lacking in self-confidence.	true
88	I usually feel that life is worthwhile.	false
89	It takes a lot of argument to convince most people of the truth.	false
95	I go to church almost every week.	false
98	I believe in the second coming of Christ.	false
104	I don't seem to care what happens to me.	true
107	I am happy most of the time.	false
122	I seem to be about as capable and smart as most others around me.	false
130	I have never vomited blood or coughed up blood.	true
131	I do not worry about catching diseases.	false
138	Criticism or scolding hurts me terribly.	true
142	I certainly feel useless at times.	true
145	At times I feel like picking a fist fight with someone.	false
152	Most nights I go to sleep without thoughts or ideas bothering me.	false
153	During the past few years I have been well most of the time.	false
154	I have never had a fit or convulsion.	false
155	I am neither gaining nor losing weight.	false

<u>item #</u>	<u>stem</u>	<u>response</u>
158	I cry easily.	true
159	I cannot understand what I read as well as I used to.	true
160	I have never felt better in my life than I do now.	false

Scale 3

Hysteria Scale (Hy)

<u>item #</u>	<u>stem</u>	<u>response</u>
2	I have a good appetite.	false
3	I wake up fresh and rested most mornings.	false
6	I like to read newspaper articles on crime.	false
7	My hands and feet are usually warm enough.	false
8	My daily life is full of things that keep me interested.	false
9	I am about as able to work as I ever was.	false
10	There seems to be a lump in my throat much of the time.	true
12	I enjoy detective or mystery stories.	false
23	I am troubled by attacks of nausea and vomiting.	true
26	I feel that it is certainly best to keep my mouth shut when I'm in trouble.	false
30	At times I feel like swearing.	false
32	I find it hard to keep my mind on a task or job.	true
43	My sleep is fitful and disturbed.	true
44	Much of the time my head seems to hurt all over.	true
47	Once a week or oftener I feel suddenly hot all over, without apparent cause.	true
51	I am in just as good physical health as most of my friends.	false
55	I am almost never bothered by pains over the heart or in my chest.	false

<u>item #</u>	<u>stem</u>	<u>response</u>
71	I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.	false
76	Most of the time I feel blue.	true
89	It takes a lot of argument to convince most people of the truth.	false
93	I think most people would lie to get ahead.	false
103	I have little or no trouble with my muscles twitching or jumping.	false
107	I am happy most of the time.	false
109	Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.	false
114	Often I feel as if there were a tight band about my head.	true
124	Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.	false
128	The sight of blood neither frightens me nor makes me sick.	false
129	Often I can't understand why I have been so cross and grouchy.	false
136	I commonly wonder what hidden reason another person may have for doing something nice for me.	false
137	I believe that my home life is as pleasant as that of most people I know.	false
141	My conduct is largely controlled by the customs of those about me.	false
147	I have often lost out on things because I couldn't make up my mind soon enough.	false
153	During the past few years I have been well most of the time.	false

<u>item #</u>	<u>stem</u>	<u>response</u>
160	I have never felt better in my life than I do now.	false
162	I resent having anyone take me in so cleverly that I have had to admit that it was one on me.	false
163	I do not tire quickly.	false

Scale 7

Psychasthenia Scale (Pt)

<u>item #</u>	<u>stem</u>	<u>response</u>
3	I wake up fresh and rested most mornings.	false
8	My daily life is full of things that keep me interested.	false
10	There seems to be a lump in my throat much of the time.	true
15	Once in a while I think of things too bad to talk about.	true
22	At times I have fits of laughing and crying that I cannot control.	true
32	I find it hard to keep my mind on a task or job.	true
36	I seldom worry about my health.	false
41	I have had periods of days, weeks, or months when I couldn't take care of things because I couldn't "get going."	true
67	I wish I could be as happy as others seem to be.	true
86	I am certainly lacking in self-confidence.	true
94	I do many things which I regret afterwards (I regret things more or more often than others seem to).	true
102	My hardest battles are with myself.	true
106	Much of the time I feel as if I have done something wrong or evil.	true
122	I seem to be about as capable and smart as most others around me.	false
142	I certainly feel useless at times.	true
152	Most nights I go to sleep without thoughts or ideas bothering me.	false

<u>item #</u>	<u>stem</u>	<u>response</u>
159	I cannot understand what I read as well as I used to.	true
164	I like to study and read about things that I am working at.	false

Scale 9

Hypomania Scale (Ma)

<u>item #</u>	<u>stem</u>	<u>response</u>
11	A person should try to understand his dreams and be guided by or take warning from them.	true
13	I work under a great deal of tension.	true
21	At times I have very much wanted to leave home.	true
22	At times I have fits of laughing or crying that I cannot control.	true
59	I have often had to take orders from someone who did not know as much as I did.	true
64	I sometimes keep on at a thing until others lose their patience with me.	true
73	I am an important person.	true
97	At times I have a strong urge to do something harmful or shocking.	true
100	I have met problems so full of possibilities that I have been unable to make up my mind about them.	true
101	I believe women ought to have as much sexual freedom as men.	false
105	Sometimes when I am not feeling well I am cross.	false
109	Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.	true
111	I have never done anything dangerous for the thrill of it.	false
119	My speech is the same as always (not faster or slower, or slurring; no hoarseness).	false
120	My table manners are not quite as good at home as when I am out in company.	false

<u>item #</u>	<u>stem</u>	<u>response</u>
127	I know who is responsible for most of my troubles.	true
134	At times my thoughts have raced ahead faster than I could speak them.	true
143	When I was a child, I belonged to a crowd or gang that tried to stick together through thick and thin.	true
148	It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.	false
156	I have had periods in which I carried on activities without knowing later what I had been doing.	true
157	I feel that I have been punished without cause.	true
166	I am afraid when I look down from a high place.	false
167	It wouldn't make me nervous if any members of my family got into trouble with the law.	true

Raw Scale Score Conversion for MMPI-168--Selected Scales

168 Score	Equivalent MMPI Raw Scale Scores				
	1	2	3	7	9
1	2.0	5.8	8.2	3.2	3.2
2	3.4	7.1	9.6	5.6	5.0
3	4.8	8.3	10.9	7.9	6.7
4	6.2	9.6	12.3	10.3	8.5
5	7.6	10.8	13.7	12.7	10.3
6	9.0	12.1	15.0	15.1	12.1
7	10.3	13.4	16.4	17.5	13.9
8	11.7	14.6	17.8	19.9	15.6
9	13.1	15.9	19.1	22.3	17.4
10	14.5	17.2	20.5	24.7	19.2
11	15.9	18.4	21.9	27.1	21.0
12	17.3	19.7	23.2	29.5	22.8
13	18.7	20.9	24.6	31.8	24.5
14	20.1	22.2	26.0	34.2	26.3
15	21.5	23.5	27.4	36.6	28.1
16	22.9	24.7	28.7	39.0	29.9
17	24.2	26.0	30.1	41.4	31.7
18	25.6	27.2	31.5	43.8	33.4
19	27.0	28.5	32.8	46.2	35.2
20	28.4	29.8	34.2		37.0
21	29.8	31.0	35.6		38.8
22	31.2	32.3	37.0		40.6
23	32.6	33.5	38.3		42.3
24		34.8	39.7		
25		36.1	41.1		
26		37.3	42.4		
27		38.6	43.8		
28		39.8	45.2		
29		41.1	46.5		
30		42.4	47.9		
31		43.6	49.3		
32		44.9	50.6		
33		46.1	52.0		
34			53.4		
35			54.8		
36			56.1		
37					
38					
39					
40					

Source: Overall, Higgins, and Schweinitz, 1976

APPENDIX C
CLINICALLY STANDARDIZED MEDITATION
TAPE TRANSCRIPT

RELAXATION EXERCISE C

On this tape you will be introduced to a very valuable relaxation exercise which has proven extremely beneficial to individuals suffering from various kinds of mild mental and physical disorders. It would be most helpful for you, now, to sit comfortably and relax while listening to this tape. Do not be concerned about trying to remember every word; a printed word-for-word transcript of the tape will be given to you before you leave so that you can practice this technique most effectively on your own.

You are going to be learning how to relax your mind and body. This skill can be very helpful in providing you with a natural tranquilizer which can help you to be more resistant to the stress and tension of everyday living. Relaxation is not something you need to teach your body to do. You have been created in such a way that the relaxation response is a natural, built-in mechanism that will refresh and recharge your system if only you will allow it to operate. For many people, however, this is a mechanism which has been suppressed and remains largely inactive. This tape, and this exercise it will direct you in, can facilitate your awareness of the conditions necessary to bring about relaxation. Remember, though: relaxation is not something you can cause to happen. It is not something you need to work at. Relaxation is something you allow to happen to you. You only need to create the right conditions for relaxation to occur, and then your body and mind will relax quite naturally and normally.

Research has indicated that there are four conditions which are necessary for relaxation to occur. They are: 1) a comfortable and relaxed physical posture which allows you to remain in the same position comfortably for 10-15 minutes; 2) a quiet and calm place where there are a minimum of external distractions and activities; 3) a passive mental attitude in which you willingly decide NOT to focus on distracting random thoughts or feelings which drift into your awareness; and 4) a mental device on which you DO focus your attention, thereby allowing yourself to center your mind on something specific rather than focusing continually on random distracting thoughts. This tape will direct you in ways which will allow these four conditions to be met.

I am going to teach you a method to periodically and systematically help you get back to a quiet center of yourself . . . to an inner stillness . . . something we often neglect in the hectic pace of today's world. Most people have experienced moments of inner quiet: perhaps lying in the hot sun on a beach, or standing in a forest or in an old quiet church. The method I will teach you on this tape will allow you to create this inner quiet on a regular basis and in a systematic way.

In doing this exercise, it is essential that you maintain an attitude of passive concentration. Passive concentration does not mean "spacing out" or going to sleep. It just means that you resist the temptation to analyze how well you're relaxing. Perhaps the phrase "casual attitude" communicates the proper frame of mind you should have;

rather than trying hard to make yourself relax, merely observe whatever mental or physical processes occur and just allow whatever is going to happen to happen. Don't attempt to direct the relaxation process through willpower or otherwise demand that you relax. Merely let the sensations of being deeply relaxed come to you and take over you. It is a very easy process. The only thing to learn, really, is how NOT to make an effort. Usually, you are accustomed to trying hard to do things right. In this kind of exercise, however, there is no trying, no forcing; you just let it happen.

Before starting, there are a few important points I want to make concerning how your mind works. Your mind has a natural tendency to cling strongly to random and transitory thoughts, ideas, or feelings. Your mind races as it attaches itself to an automatic endless succession of frantic, forceful, demanding and often unrelated thoughts. Over a period of time this pattern of mental activity can reach such a high level that it causes your body to be in a constant state of hyperactivity and hyperalertness. The result is chronic, generalized anxiety. Your mind becomes like an unbridled horse which goes in any direction except the one you want it to. You become constantly aroused mentally and physically when there is no realistic need for it. Small problems tend to become crises because that is what you're prepared for. You have less ability to tolerate frustration. Physiological functions become so heightened that your body can actually begin to break down.

One important way to break this pattern is to practice focusing on one deliberate thought and then letting go of it voluntarily. In this particular relaxation exercise, you learn to focus on the first syllable of a mental expression and then let go of its second syllable. There is no special significance to the expression itself; indeed, you will later be able to choose almost whatever mental expression you feel comfortable with. But there is a crucial importance to the manner in which you focus your attention on the word. You must be certain that stronger emphasis is placed on the first syllable with less emphasis on the second syllable. By doing this you begin to train your mind that when it focuses on some thought, it can also, quite voluntarily, decide to let that thought pass away, thus leaving a state of mind which is more quiet than before.

The purpose is to interrupt and block your current ongoing mental activity by focusing your attention on something. . .in this case, a mental expression. This provides a kind of mental crutch which helps you assume a more detached impartiality toward your random thoughts and emotional states. You become able to disengage yourself from ordinary mental activity and can begin to regulate your mind more effectively. Greater peace and quiet can result when the speed, power, and loudness of your thoughts are diminished.

Now, let's get started. You will need to choose a quiet place where you won't be disturbed and which is free of distractions. Make sure that you won't be interrupted by

another person; if your telephone tends to ring frequently, you may find it helpful to unplug the phone from the wall during your relaxation sessions. It is also helpful to turn the lights low, loosen any tight clothing, and remove your glasses if you wear them. Remove gum or anything else you may have in your mouth. Taking your shoes off is often helpful for many people. In general, make yourself as comfortable as possible in your chair. Lying down is not recommended since the tendency to fall asleep is so great. If necessary, turn off the tape recorder at this point before proceeding in order to arrange these conditions.

One of the best ways to learn how to do this particular relaxation exercise is by example. Therefore, I am going to repeat a sound which I have selected. This is one which I would also like you to use in the beginning. The expression I've selected is the well-known Hebrew word for peace: Shalom. S-H-A-L-O-M. The meaning of the word is not especially important. The fact that the word sounds pleasant and is acceptable to most people IS important. Later on, if you wish to change to another mental expression, you may do so after consulting with your trainer. For now, though, I would like you to use the one I've selected. Listen, now, as I say it out loud so that you will have an idea how to say the sound easily and effortlessly.

Sha-lom. Sha-lom. Sha-lom. Sha-lom.

Notice that I emphasize the first syllable and then allow the second syllable to be pronounced almost silently. As I explained, this is very important. You want to help

retrain your mental attention to develop the capacity to voluntarily focus on one thought as well as to voluntarily stop focusing on another thought.

Now that you understand the rationale for this relaxation technique, I would like you to close your eyes and begin repeating to yourself the sound I used. Remember that you should emphasize the first syllable and de-emphasize the second syllable, thus teaching your mind to begin learning how to let go of something it has focused its attention on. As you continue to repeat the word slowly, make its sound quieter. Think of the expression being like a train which is pulling out of a station, gradually disappearing into the distance so that you can hardly see it after a while. In the same fashion, allow the word to become quieter and quieter until you barely whisper it and barely think it to yourself. Just let it fade away so that even as you continue to emphasize the first syllable, even that becomes barely noticeable to you. Remember, you are trying to learn to let go of this expression, so don't try to hold onto it. And don't try to force it to establish a rhythm or be linked up with your rate of breathing. Doing these things would defeat the purpose of what you're doing.

You may leave the tape recorder running because I will allow a period of silence lasting between 2-3 minutes, so there is no need to time yourself.

Now, close your eyes and make yourself as comfortable as possible in your chair. Rest quietly for about 30 seconds before starting. I will tell you when to begin.

Now begin: Sha-lom. Sha-lom. Sha-lom. Continue now on your own until I bring you back. (2-3 minutes of silence)

Now, keeping your eyes closed, just gradually stop saying the word. Let it recede very slowly. Wait for about one minute, leaving your eyes closed. (1 minute) Now, very slowly, open your eyes. Do this very gradually so that there will not be a sudden and abrupt transition to the normal waking state.

Did you find it easy? This is how one practices this relaxation technique. All you do is sit quietly and allow yourself to focus your attention on a particular mental device . . . in this case, a two syllable word . . . placing more emphasis on the first syllable than the second and thus helping your mind to learn how to voluntarily let go of some chosen thought.

Now I would like you to practice the exercise for a longer period of time . . . approximately 10 minutes. During this time, I will keep track of the time and I will tell you when the time is up. Just keep the tape recorder running. When the time is up, I will ask that you continue to keep your eyes closed even though you should stop focusing your attention on the mental expression. This is very important because you need to allow yourself time to reawaken yourself gradually and not abruptly.

Now, make yourself comfortable in your chair and close your eyes. Rest silently for about 30 seconds.

Now, begin repeating the word again, very easily and effortlessly. Sha-lom. Sha-lom. Sha-lom. Say the phrase more and more silently. Continue on your own for 10 minutes. I will bring you back on the tape at the right time.

(10 minutes)

Now, while continuing to keep your eyes closed, begin to gradually stop thinking the sound. Take about two minutes, keeping your eyes closed and give your mind and body time to awaken from its rest. (2 minutes) Now, open your eyes slowly . . . very slowly and gradually. You may want to stretch your arms and legs or rub your hands across your face lightly.

You have just completed your first full session of this relaxation exercise. Perhaps your time was quite easy and effortless; or perhaps you experienced some problems and have some questions. It was probably a very new and different experience for you.

You probably noticed that your mind tended to wander during the exercise. In fact, your mind may tend to become filled with thoughts and feelings which have seemingly nothing to do with your relaxation exercise. This is quite common and there is no need to be disturbed by this. This is an important part of the process, and having thoughts does NOT mean that you weren't relaxing properly. In fact, having thoughts may actually be accomplishing something very useful. Thoughts which occur during such an exercise often will prove to be less anxiety provoking later because they occurred when you were relaxing your mind, and it is

impossible to be relaxed and anxious at the same time. Therefore, don't attempt to force thoughts out of your mind. If you fight against them, you will only strengthen them and this will make your relaxation much more difficult. When you do find yourself thinking random thoughts, treat the thoughts as though they were clouds drifting across the sky. You don't try to push the clouds away, and you don't try to hold onto them either. You just watch them come and go. In the same way when you find your mind drifting off to various thoughts, just gently come back, when it feels comfortable, to repeating to yourself the word I've given you. The mental expression is designed to be a home base for your attention and it is normal and natural to experience an alternation between this focused attention and free flowing thought.

It is very possible that you felt sleepy during this exercise. If you didn't, I can practically guarantee that during some future relaxation session you will feel sleepy. This is entirely normal, and it is important that you not fight your sleepiness.

At that moment your body is indicating to you that you are in need of complete physiological rest, and you should allow yourself to fall asleep; no amount of relaxation exercise is going to fulfill that need. So don't fight to stay awake; you would only be working against your body's natural tendency toward self-regulation, and that is precisely the response you are trying to generate.

Allow yourself to take a short nap and feel free to lie down, if you wish. After you have awakened, you can begin again with the relaxation exercise.

Another question you may have concerns unusual physical or mental symptoms. It is not uncommon to experience momentary physical discomforts during such a relaxation exercise. There are many different forms to these discomforts . . . which can be called tension release side effects. For example, you may sense a tingling in your body, have some unusual heaviness in your arms and legs, have some involuntary twitches, feel some stiffness or slight numbness, have some mild pain or anxiety, have a mild headache, experience some strong visual phenomena such as bright colors or patterns, or have some feelings of floating or dizziness. These are transitory feelings which will go away as you continue to practice. They occur because as soon as your mind relaxes, your body begins to relax as well since your mind and body are linked together in a causal relationship; that is, whatever affects your mind also affects your body, and whatever affects your body also affects your mind. Therefore, when your body is given permission by your mind to relax, it then has the opportunity to discharge some of the years of residual tension which have accumulated over a long period of time. Sometimes this is referred to as the "get worse, get better" syndrome. It is like a radiator letting off built-up pressure in order to re-stabilize the pressure at a lower level. This same explanation also accounts for why you may experience some very strong emo-

tions or have vivid thoughts during such an exercise. That is, when your body becomes physically active as it is discharging stress, your mind will similarly become more active because of its connection with your body; this mental activity is expressed in the form of thoughts and feelings which arise in your mind. They indicate that your body is undergoing some beneficial physiological changes from the release of stress. Over a long period of time, these effects can become cumulative so that your previous chronically anxious state can change into a more enduring relaxed trait.

If these reactions should, by chance, be extremely strong, then you should reduce the length of time spent in the exercise or, if necessary, you should stop practicing the exercise immediately and wait for a few hours before trying again. Generally, these discomforts don't last very long and will pass away after a couple of weeks or so. By all means, do not force yourself to continue with any verbal exercise if you become, for whatever reason, too agitated. Feel free to call your trainer or speak to him during a follow-up session.

How many times each day should you practice? Ideally, twice a day would be most desirable. Two sessions at different times during the day are preferred over one longer session because learning is spread out over time and thus will occur quicker. You may find it helpful to practice these exercises at the same time each day so that you develop a routine. Many people find that right before breakfast and

dinner are two convenient times. The specific time of day can be quite flexible according to your own preference; however, you should not practice the exercise after a large meal, after drinking any form of caffeine, or immediately before going to bed. You should also not take any form of alcohol or recreational, non-prescription, mind-altering drugs for 24 hours if at all possible before attempting this exercise. These will dull your alertness and prevent your mind from being clear. Refraining from smoking a cigarette for 30 minutes beforehand is also desirable.

In terms of the amount of time you should practice, you should not plan on doing this relaxation exercise for more than 15 minutes at any one time. The best arrangement is to place a wristwatch or clock within easy viewing so that you can open your eyes momentarily during your quiet time to check to see how much time has passed. However, don't use any kind of an alarm because that would be too disruptive during a period of relaxation. Continuing the exercise longer than this should not be undertaken although don't be distressed if you lose track of the time and happen to go longer.

It is not possible to overemphasize the importance of not attempting to work hard at relaxing. In fact, that is a contradiction in terms. If you force yourself to relax, you will succeed only in making yourself more tense. Although it is natural to want to make an effort to learn how to relax effectively, you must maintain an attitude of passive noninterference; the only exception to this is that you

gently focus your attention on the mental expression. But even as you do this you will have to learn to concentrate passively, not actively in the usual sense of the word, and you will have to resist the temptation to be strongly goal-directed and full of effort . . . which will only make yourself more anxious and thus interfere with the process of relaxation. A casual attitude and complete indifference to the result is absolutely essential. Try to be in control as LITTLE as possible.

It is also especially important to allow yourself about three minutes after your time has elapsed to gradually readjust to a normal waking consciousness. If you get up abruptly from a state of relaxation, you will feel uneasy, as if there is a sense of incompleteness or lack of fulfillment. Therefore, after your 15 minutes has elapsed, take about two minutes to remain seated with your eyes closed without continuing to focus on your mental expression. And then slowly open your eyes for about one minute to gradually readjust to the visual stimuli of your environment. This gradual "coming out" procedure is very important.

Listening and performing the exercises on this tape once or twice is not going to make you an expert at relaxation. Tension and the effects of stress have been building in your body for several years, and you cannot expect that tension will go away immediately. Indeed, you should not be surprised if you don't feel any different for the first two weeks or so. Successful relaxation training takes repeated

practice over several weeks and you will have to measure your progress in weeks, not days. This is why we have committed ourselves to follow-up with you each week to answer any questions you may have as well as to make sure that you understand this exercise and are practicing it correctly. We are looking forward to working with you, and we trust that learning to relax your mind and body will prove to be a valuable experience for you.

This is the end of the tape. Please turn the tape recorder off and return the machine and tape to the trainer. If you have any questions, a few of these will be answered by him at this time. Over the next 8 weeks, you will have regular opportunity during follow-up sessions to have all of your questions answered.

APPENDIX D
AUTOGENIC TRAINING
TAPE TRANSCRIPT

RELAXATION EXERCISE A

On this tape you will be introduced to a very valuable relaxation exercise which has proven extremely beneficial to individuals suffering from various kinds of mild mental and physical disorders. It would be most helpful for you, now, to sit comfortably and relax while listening to this tape. Do not be concerned about trying to remember every word; a printed word-for-word transcript of the tape will be given to you before you leave so that you can practice this technique most effectively on your own.

You are going to be learning how to relax your mind and body. This skill can be very helpful in providing you with a natural tranquilizer which can help you to be more resistant to the stress and tension of everyday living. Relaxation is not something you need to teach your body to do. You have been created in such a way that the relaxation response is a natural, built-in mechanism that will refresh and recharge your system if only you will allow it to operate. For many people, however, this is a mechanism which has been suppressed and remains largely inactive. This tape, and the exercises it will direct you in, can facilitate your awareness of the conditions necessary to bring about relaxation. Remember, though: relaxation is not something you can cause to happen. It is not something you need to work at. Relaxation is something you allow to happen to you. You only need to create the right conditions for relaxation to occur, and then your body and mind will relax quite naturally and normally.

Research has indicated that there are four conditions which are necessary for relaxation to occur. They are: 1) a comfortable and relaxed physical posture which allows you to remain in the same position comfortably for 10-15 minutes; 2) a quiet and calm place where there are a minimum of external distractions and activities; 3) a passive mental attitude in which you willingly decide NOT to focus on distracting random thoughts or feelings which drift into your awareness; and 4) a mental device on which you DO focus your attention, thereby allowing yourself to center your mind on something specific rather than focusing continually on random distracting thoughts. This tape will direct you in ways which will allow these four conditions to be met.

The specific structure of this exercise is provided by six mental exercises. These provide the basis for entering the state of relaxation. You will be asked to select a comfortable position . . . either lying down or sitting in an easy chair. Then you will begin repeating silently to yourself some short phrases designed to help you relax various parts of your body. As you practice the quiet and slow repetition of these phrases, you will teach your body and mind to respond quickly and effectively to your verbal commands.

These verbal commands fall into six categories designed to bring about specific physical sensations. The first one concerns the theme of heaviness. By focusing your attention on feeling heaviness in your arms and legs, you will learn to relax these muscles. I will have you focus

your awareness on your right arm, and repeat quietly in your mind to yourself: "My right arm is heavy." "My right arm is heavy." The second exercise will help you to feel warmth in your arms and legs; you will repeat quietly in your mind to yourself: "My right arm is warm." "My right arm is warm." This is important because there are certain kinds of muscles in your limbs which control the diameter of your blood vessels. By learning to relax these muscles, you expand the diameter of your blood vessels, thus enabling more warming blood to flow into your limbs. The third exercise will focus your attention on regulating your heart beat. You will say to yourself: "My heart beat is calm and regular." The fourth exercise will focus your attention on your rate of breathing. You will say to yourself: "My breathing is calm and regular." Regular and easy breathing is physiologically correlated with states of deep relaxation. The fifth exercise will relate to relaxing and warming the upper abdominal region of your body. You will be repeating quietly to yourself: "My abdomen is warm." A calming effect of central nervous system activities is known to occur with the experience of warmth in the abdomen. Finally, the sixth and last exercise will focus your attention on your forehead; you will learn to reduce the flow of blood to your head by repeating slowly and silently to yourself: "My forehead is cool." The maintaining of a contrast in body temperature, with the trunk and limbs being warm while the head remains cool, has been found to be effective in bringing about relaxation.

The reason for repeating such verbal phrases is that the mind and body actually function as a unit; mental functions and physiological processes do not occur independently of one another. Therefore, mental as well as physical healing must be approached simultaneously. The exercises are specifically designed to facilitate the integration of your mental and physical functions while bringing about a deep state of physiological and mental relaxation.

In doing these exercises, it is essential that you maintain an attitude of passive concentration. That is, it is critical to the success of these exercises that you learn to experience any physical, mental, or emotional responses without any expectations. Passive concentration does not mean "spacing out" or going to sleep. It just means that you resist the temptation to analyze how well you're relaxing. Perhaps the phrase "casual attitude" communicates the proper frame of mind you should have; rather than trying hard to make yourself relax, merely observe whatever mental or physical processes occur as you repeat the phrases and just allow whatever is going to happen to happen. Don't attempt to direct the relaxation process through willpower or otherwise demand that you relax. Merely let the sensations of being deeply relaxed come to you and take over you. Your only focus should be, as effortlessly as possible, to keep in your mind the verbal formulas which you will be learning as well as passively concentrating on a specific part of your body.

Now that you have the general idea of this relaxation technique, I will guide you step by step through the process. I will lead you through each of the six categories of exercises in order to acquaint you directly with each exercise theme. However, when you begin practicing on your own, you will spend roughly one week's time with each category. It is important that you be very patient and take time with each exercise . . . resisting the temptation to move too quickly onto the next exercise without learning each step along the way.

Now, you will need to choose a quiet place where you won't be disturbed and which is free of distractions. Make sure that you won't be interrupted by another person; if your telephone tends to ring frequently, you may find it helpful to unplug the phone from the wall during your relaxation sessions. It is also helpful to turn the lights low, loosen any tight clothing, and remove your glasses if you wear them. Remove gum or anything else you may have in your mouth. Taking your shoes off is often helpful for many people. If necessary, turn off the tape recorder at this point before proceeding in order to arrange these conditions.

Now select a comfortable position for yourself . . . either lying down or sitting in a chair . . . whatever position allows the muscles of the spine to relax best for you. If you sit in a chair, make sure that your head and back are comfortably supported. Your hands and fingers may be relaxed on the arms of the chair or resting comfortably on the inner side of the chair close to your body. If you

choose to lie down, support your head with a pillow and spread your legs about 8 inches apart. For maximum relaxation of the leg muscles, you may also want to put a blanket or pillow under your knees. Point your toes slightly outward and place your arms by your sides so that they don't touch your body. Uncross your legs, close your eyes, and take a deep breath, and let it out slowly. Take another deep breath, and let it out slowly. Now, repeat silently and slowly to yourself: "I am at peace." "I am at peace."

Now, focus your awareness on your right arm, and quietly in your mind repeat the statement: "My right arm is heavy." "My right arm is heavy." "My right arm is heavy." It is important that you don't expect anything to happen as you say this. Just merely repeat the phrase slowly and silently to yourself. Observe the tensions in your body without trying to make yourself relax. Repeat this phrase a few more times to yourself.

Now focus your attention on your left arm, and say quietly in your mind to yourself: "My left arm is heavy." "My left arm is heavy." "My left arm is heavy". Repeat this phrase a few more times to yourself, quietly in your own mind.

Now proceed to your right leg and say to yourself: "My right leg is heavy." "My right leg is heavy." "My right leg is heavy." As with the above exercises, repeat this phrase a few more times slowly and quietly in your own mind.

Now proceed to your left leg and say to yourself: "My left leg is heavy." "My left leg is heavy." "My left leg is heavy." Repeat this phrase a few more times quietly in your own mind.

Now I would like you to focus attention again on your right arm. This time repeat the phrase to yourself: "My right arm is warm." "My right arm is warm." "My right arm is warm." Repeat this sentence several times to yourself. Just merely focus your awareness and observe the warmth in your arm.

Now proceed to your left arm, and repeat silently to yourself: "My left arm is warm." "My left arm is warm." "My left arm is warm." Again, continue to repeat this phrase to yourself for a few moments.

Now proceed to your right leg, and repeat silently to yourself: "My right leg is warm." "My right leg is warm." "My right leg is warm." Take a few moments to continue this exercise.

Finally, proceed to your left leg, and repeat silently to yourself: "My left leg is warm." "My left leg is warm." "My left leg is warm."

Now, I am going to change the relaxation exercise somewhat. Allow yourself to get in touch with your heart beat. To help you become more aware of your heart beat, you may place your hand over your heart or, if you prefer, you may touch your index finger with your thumb. Now, repeat silently to yourself: "My heart beat is calm and regular."

"My heartbeat is calm and regular." "My heart beat is calm and regular." Experience the quiet calm and relaxation.

Now, focus your attention on your breath and rate of breathing. Slowly in your mind repeat the phrase: "My breathing is calm and regular." "My breathing is calm and regular." "My breathing is calm and regular."

Now, focus your attention on your abdomen. Repeat the phrase: "My abdomen is warm." "My abdomen is warm." "My abdomen is warm."

Finally, focus your attention on your forehead, and repeat the phrase to yourself: "My forehead is cool." "My forehead is cool." "My forehead is cool."

Take a few minutes to rest quietly experiencing the benefits of these exercises.

Now, prepare to bring yourself back to your regular state of awareness. Slowly and gently, stretch both your arms, take a deep breath, and open your eyes. This is a three-step procedure I will have you use each time you conclude the exercises.

Undoubtedly after going through this exercise for the first time you have a number of questions. Many of these questions will be dealt with during our weekly follow-up sessions. However, let me attempt to answer a few of these now.

You probably wondered how fast or slow you should actually repeat the verbal phrases. Allow about 10 seconds to repeat each phrase and then allow about 5-10 seconds of internal silence before repeating the phrase over again. Thus, in a period of a minute you would repeat the verbal

phrase about four times. For the final two categories of exercises, this time will be lengthened somewhat. This will be described for you in complete detail on the printed instructions.

How long should you practice at any one time? Again, this information will be given to you before you leave along with a complete transcript of this tape. It is best to begin these exercises by practicing for no longer than five minutes or ten minutes. Longer than this is discouraged at the beginning because most individuals are not able to sustain a period of passive concentration for longer than this. However, as you become more adept at entering into a relaxed state, you can extend your relaxation for 10 or 15 minutes if you desire, but this is not required. Moreover, with increasing skill on your part, you will find yourself able to induce a state of relaxation almost immediately during brief moments at any time during the day.

How many times each day should you practice? Ideally, twice a day would be most desirable. Two sessions at different times during the day are preferred over one longer session because learning is spread out over time and thus will occur quicker. You may find it helpful to practice these exercises at the same time each day so that you develop a routine. Many people find that right before breakfast and dinner are two convenient times. The specific time of day can be quite flexible according to your own preference; however, you should not practice the exercises after a large

meal, after drinking any form of caffeine, or immediately before going to bed. You should also not take any form of alcohol or recreational, non-prescription, mind-altering drugs for 24 hours if at all possible before attempting these exercises. These will dull your alertness and prevent your mind from being clear. Refraining from smoking a cigarette for 30 minutes before the exercises is also desirable.

You probably noticed that your mind tended to wander during the exercises. That is to be expected, particularly at first and there is no need to be disturbed by this. When you realize that your mind is wandering, just be aware that you have drifted away from your passive concentration on your verbal formula and gently refocus your mind on the specific phrases. Above all, don't become upset with yourself.

What if you become sleepy? If this happens, your body is indicating to you that at that particular moment you are in need of complete physiological rest, and you should allow yourself to fall asleep. Don't fight to stay awake; you would only be working against your body's natural tendency toward self-regulation, and that is precisely the response you are trying to generate. After you have awakened, you can begin again with the verbal phrases.

You may have felt that you had difficulty achieving the relaxing sensations. If so, you may add some visual imagery. For example, you might imagine that weights are attached to your arms and legs, gently pulling them down. Or you might want to think of your arms and legs as made of

heavy lead sinking into the ground. Think of heaviness along the entire arm from your shoulder down to the tips of your fingers. Or if you have trouble experiencing a feeling of warmth, you might imagine your right arm lying on a warm heating pad . . . or imagine yourself in a nice warm shower or bath with the warmth of the water all around you. Or you might imagine yourself lying in the sun with the sunlight falling warmly on your arms and legs.

Another question you may have concerns unusual physical or mental symptoms. For example, you may sense a tingling in your body, have some involuntary twitches or jerking, feel some stiffness, have some mild pain or anxiety, have a mild headache, experience some strong visual phenomena such as bright colors or patterns, or have some feelings of floating or dizziness. These are transitory feelings which will go away as you continue to practice these relaxation exercises. They occur because as soon as your mind relaxes, your body begins to relax as well since your mind and body are linked together in a causal relationship; that is, whatever affects your mind also affects your body, and whatever affects your body also affects your mind. Therefore, when your body is given permission by your mind to relax, it then has the opportunity to discharge some of the years of residual tension which have accumulated over a long period of time. Sometimes this is referred to as the "get worse, get better" syndrome. It is like a radiator letting off built-up pressure in order to re-stabilize the

pressure at a lower level. This same explanation also accounts for why you may experience some very strong emotions or have vivid thoughts during such an exercise. That is, when your body becomes physically active as it is discharging stress, your mind will similarly become more active because of its connections with your body; this mental activity is expressed in the form of thoughts and feelings which arise in your mind. They indicate that your body is undergoing some beneficial physiological changes from the release of stress. Over a long period of time, these effects can become cumulative so that your previous chronically anxious state can change into a more enduring relaxed trait.

If these reactions should, by chance, be extremely strong, then you should reduce the length of time spent in the exercises or, if necessary, you should stop practicing the exercises immediately and wait for a few hours before trying again. Generally these discomforts don't last very long and will pass away after a couple of weeks or so. By all means, do not continue to force yourself to continue with any verbal exercise if you become, for whatever reason, too agitated.

The actual program which you should follow for these six exercises will be divided up over the 8-week period. That is to say, for the first week or two you should practice only the theme of heaviness in your arms and legs. Do not attempt any of the other five exercises I discussed above. It is important to learn the initial exercises well

before proceeding onto new steps. For this reason, previous exercises are always briefly reviewed at the beginning of each new step.

Now I will briefly summarize the program you should follow for the next 8 weeks. Don't bother trying to remember the exact instructions because you will receive the details printed for you when you finish listening to the tape.

During the first two weeks, you will concentrate only on the theme of heaviness in your arms and legs. During the third and fourth weeks you will focus your attention on the experience of warmth in your arms and legs. For the fifth week you will focus your attention on the theme of your heartbeat being calm and regular. During the sixth week you will be rehearsing the verbal phrases associated with your breathing rate. In the seventh week you will concentrate on the experience of warmth in your abdomen. Finally, during the eighth week you will focus your attention on coolness in your forehead.

Again, to remind you, the specific guidelines for how long and how frequently you should repeat each phrase are clearly described for you in your take-home material.

WEEK ONE

Heaviness Theme

"I am at peace." (repeat twice in about 30 seconds)

"My right arm is heavy." (repeat 4 times in about 60 seconds)
(rest silently for one minute)

"My left arm is heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"Both arms are heavy." (repeat 4 times in about 60 seconds)

(rest silently for about two minutes, and then go through the 3-step "wake up" procedure (e.g., gently flex your arms, take a deep breath, and then open your eyes).

WEEK TWO

Heaviness Theme (cont.)

"I am at peace." (repeat twice in about 30 seconds)

"Both of my arms are heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My right leg is heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My left leg is heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"Both of my legs are heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My arms and legs are heavy." (repeat 4 times in about 60 seconds)

(rest silently for about two minutes, and then proceed through the 3-step "wake up" procedure.)

WEEK THREE

Warmth Theme

"I am at peace." (repeat twice in about 30 seconds)

"My arms and legs are heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My right arm is warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My left arm is warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"Both of my arms are warm." (repeat 4 times in about 60 seconds)

(rest silently for about two minutes, and then proceed through the 3-step wake up procedure.)

WEEK FOUR

Warmth Theme (cont.)

"I am at peace." (repeat twice in about 30 seconds)

"My arms and legs are heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My right arm is warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My left arm is warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My right leg is warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My left leg is warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"Both of my legs are warm." (repeat 4 times in about 60 seconds)

(rest silently for about two minutes, then go through the 3-step "wake up" procedure.)

WEEK FIVE

Heartbeat Theme

"I am at peace." (repeat twice in about 30 seconds)

"My arms and legs are heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My arms and legs are warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My heartbeat is calm and regular." (repeat 4 times in about TWO MINUTES; note the slightly longer time between repetitions.)

(rest silently for one minute)

"My heartbeat is calm and regular." (repeat 4 times in about two minutes)

(rest silently for about two minutes, and then proceed through your 3-step "wake up" procedure.)

WEEK SIX

Breathing Theme

"I am at peace." (repeat twice in about 30 seconds)

"My arms and legs are heavy." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My arms and legs are warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My heartbeat is calm and regular." (repeat 4 times in about two minutes)

(rest silently for one minute)

"My breathing is calm and regular." (repeat 4 times in about two minutes)

(rest silently for about two minutes, and then proceed through the 3-step "wake up" procedure.)

WEEK SEVEN

Abdomen Warmth

"I am at peace." (repeat twice in about 30 seconds)

"My arms and legs are heavy and warm." (repeat 4 times in about 60 seconds)

(rest silently for one minute)

"My heartbeat is calm and regular." (repeat 4 times in about two minutes)

(rest silently for one minute)

"My breathing is calm and regular." (repeat 4 times in about two minutes)

(rest silently for one minute)

"My abdomen is warm." (repeat 4 times in about two minutes)

(rest silently for about two minutes, and then proceed through the 3-step "wake up" procedure)

WEEK EIGHT

Forehead Theme

"I am at peace." (repeat twice in about 30 seconds)

"My arms and legs are heavy and warm." (repeat 4 times in 60 seconds)

(rest silently for one minute)

"My heartbeat is calm and regular." (repeat 4 times in two minutes)

(rest silently for one minute)

"My breathing is calm and regular." (repeat 4 times in two minutes)

(rest silently for one minute)

"My abdomen is warm." (repeat 4 times in two minutes)

(rest silently for one minute)

"My forehead is cool." (repeat 4 times in two minutes)

(rest silently for about two minutes, and then proceed through the 3-step "wake up" procedure)

It is not possible to overemphasize the importance of not attempting to work hard at relaxing. In fact, that is a contradiction in terms. If you force yourself to relax, you will succeed only in making yourself more tense. Although it is natural to want to make an effort to learn how to

relax effectively, you must maintain an attitude of passive noninterference; the only exception to this is that you gently focus your attention on the verbal phrases. But even as you do this you will have to learn to concentrate passively, not actively in the usual sense of the word, and you will have to resist the temptation to be strongly goal-directed and full of effort . . . which will only make you more anxious and thus interfere with the process of relaxation. A casual attitude and complete indifference to the result is absolutely essential.

Remember that whenever you end your exercises you should follow these important steps: 1) gently flex your arms, 2) take a deep breath, and then 3) open your eyes.

Listening and performing the exercises on this tape once or twice is not going to make you an expert at relaxation. Tension and the effects of stress have been building in your body for several years, and you cannot expect that tension will go away immediately. Indeed, you should not be surprised if you don't feel any different for the first two weeks or so. Successful relaxation training takes repeated practice over several weeks. This is why we have committed ourselves to follow-up with you each week to answer any questions you may have as well as to make sure that you understand this exercise and are practicing it correctly. We are looking forward to working with you, and we trust that learning to relax your mind and body will prove to be a valuable experience for you.

This is the end of the tape. Please turn the tape recorder off and return the machine and tape to the trainer. If you have any questions, a few of these will be answered by him at this time. Over the next 8 weeks, you will have regular opportunity during follow-up sessions to have all of your questions answered.

APPENDIX E

FULLY INFORMED CONSENT TO PARTICIPATE

STRESS MANAGEMENT PROJECT

I. PROJECT DESCRIPTION

A. Project Coordinators: David DeSaegher, B.A.
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Program Administrator
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B. Purpose and benefits: The purpose of this study is to evaluate the impact of two different relaxation techniques both of which have been evaluated by prior research to be effective in the reduction of generalized anxiety. However, it is not yet clear if one technique is more effective than the other. Therefore, volunteers will be assigned at random to one of three possible groups: two treatment groups and one no-treatment control group. Regardless of which treatment condition one is assigned to, the results from prior research indicate that many individuals will be able to learn how to experience the beneficial effects resulting from reduced anxiety. There is little possibility of any harmful effects to any participant since the treatment methods are very mild; however, some people may experience some momentary but moderately heightened physical and/or mental symptoms which are known to sometimes accompany reductions in chronically elevated autonomic nervous system levels (e.g., headache, stiffness, the temporary loss of the sense of time, greater sensitivity to one's emotions).

II. CONSENT TO PARTICIPATE

I, _____, hereby voluntarily agree to cooperate in the above named study; the plan and purpose of the study has been discussed with me and I have been given a copy of this consent to participate form. I understand that:

A. I am free to ask questions of either project coordinator at any time before, during, or after the conclusion of the project. These questions will be answered in as full and complete a fashion as possible.

B. I understand that I am free to terminate my consent to participation and may discontinue my involvement in the project at any time without prejudice to myself.

C. I understand that I will receive a full refund of the \$25.00 project fee at the conclusion of the project (or prior to that time if I elect to discontinue my involvement in the project before the 8-week treatment period has concluded).

D. I understand that I will be randomly assigned to one of three possible research groups: two treatment conditions and one control group. I agree to allow the project coordinators to assign me to one of these three groups. I understand that if my need for professional assistance is sufficiently urgent such that assignment to the control group is unacceptable with me, I will be encouraged not to participate in the project but rather to seek professional assistance elsewhere.

E. I understand that my identity and my relationship to any information either disclosed by me in completing any project questionnaire or derived from me during my participation in the project shall be kept confidential and will not be disclosed to others without my written consent except that such information will be used for statistical and research purposes in such a manner that no individual can be identified.

F. I understand that I will receive, if I request, a written report of any significant information gained from the study if I provide a self-addressed stamped envelope.

SIGNATURE: _____ DATE: _____

NAME: _____

SIGNATURE OF PROJECT COORDINATOR: _____

APPENDIX F
LETTER OF ANNOUNCEMENT

ANNOUNCING A
STRESS MANAGEMENT RESEARCH PROJECT

TAUGHT BY:

David DeSaegher, doctoral student, Fuller School of Psychology

Jack Gilmore, PhD candidate, Michigan State University

Stress is one of the major mental and physical health problems in our society. There are a variety of pressures associated with living in a fast paced urban setting and stress can accumulate to the point where it causes health problems for many people. Moreover, this tension can accumulate very slowly over a long period of time. The result is that there is often a failure to recognize and feel mental and/or physical stress until it becomes very severe. By that time, considerable pain can have been caused either physically, psychologically, and/or in relationships with others, without realizing that stress has been a major contributing factor. In fact, it is very common for persons to wrongly conclude that they feel just about as well as they ever have when they are actually very anxious.

The problem with stress lies not with the existence of stressful life events; stress, to one degree or another, is not only unavoidable but also necessary and helpful in many circumstances. But stress can become harmful if a person does not learn to recover from stressful life events once the need for a stressful reaction is past. It is this failure to recover from previous stressful feelings that is one of the root causes for growing harmful stress levels over a long period of time.

In these series of workshops you will learn how to engage in relaxing/meditative exercises which, if practiced regularly, may help to 1) decrease your stress and anxiety, 2) return your mental and physical stress to low levels following stressful events, 3) increase your sensitivity to your body and mind, 4) increase your sense of well-being, 5) give you greater control over your life, and 6) give you greater physical and mental energy. We will meet once a week on Sundays over an 8-week period for about 30 minutes to guide you in developing effective meditation techniques and stress management skills as well as to answer your questions which will arise as you practice these skills on your own. In addition, we will give you helpful printed information to keep.

FOR FURTHER INFORMATION, PLEASE CALL DAVE (793-9078) OR JACK (797-8553 AND LEAVE YOUR NAME AND PHONE NUMBER).

APPENDIX G
RELAXATION RECORD

RELAXATION RECORD

WEEK ONE: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

WEEK TWO: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

WEEK THREE: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

WEEK FOUR: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

WEEK FIVE: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

WEEK SIX: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

WEEK SEVEN: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

WEEK EIGHT: _____

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
AM _____
PM _____

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