SELF-DIRECTED RELAXATION AS A TREATMENT
FOR ESSENTIAL HYPERTENSION

DISSERTATION

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By

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Male (8) and female (22) Essential Hypertensives (130/85 mm Hg or above) were randomized into a nonspecific treatment or an experimental treatment utilizing eight relaxation strategies. Both groups had eight training sessions which consisted of baseline blood pressures (BP), 15 minute relaxation tapes, and post-relaxation BP's. Subjects were instructed to use their tapes three times between sessions. Five BP readings were taken at the one and two month follow-ups. It was hypothesized that the experimentals would have greater within and across session decreases in BP, and that the differences would be maintained during a no treatment follow-up. Eleven experimentals and 8 controls were on medication. Mean medication compliance percentages were 99.9 and 99.6 while mean relaxation compliance percentages were 95.2 and 115.2 for experimentals and controls respectively. Efficacy was checked at each training session on a seven-point scale and group means were 6.5 and 5.4 for experimentals verses controls. Within session decreases in BP were compared with t tests and no significant differences (p < .05) were present for the eight training sessions with systolic (SBP) or
diastolic (DBP). Across session changes were compared with ANCOVA and no significant differences ($p < .05$) were present for the eight training or two follow-up sessions for SBP or DBP. In summary, the experimentals showed within and across session decreases in BP consistent with prior research, but the effect was not significantly better than "sitting quietly". It was concluded that nonspecific treatments must be included in BP research on effectiveness of treatments. A final conclusion was that both groups did show clinically useful decreases in BP which were maintained at follow-up and the effectiveness of noninvasive treatments for Essential Hypertension was demonstrated.
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SELF-DIRECTED RELAXATION AS A TREATMENT
FOR ESSENTIAL HYPERTENSION

Over the past several years there has been increasing interest in finding new, noninvasive treatment strategies for stress related medical disorders. This trend appears to be related to a heightened awareness of health professionals and of the general public to the detrimental effects of stress. Concurrently, a decrease in contagious diseases and a dramatic increase in degenerative disorders such as coronary heart disease has been documented (Stoyva, 1976). Hypertension is a generic term for a pathological condition in which blood pressure is elevated in the absence of demonstrable disease of the heart or blood vessels (Moriyama, Krueger, & Stamler, 1971), and is one of the most common disorders affecting the cardiovascular system.

In the United States hypertension is a major cause of disability and death, and it afflicts an estimated 20 to 35 million people annually (National Center of Health Statistics, 1975). It has also been estimated that 15 to 20 percent of the adult population suffers from some form of hypertensive vascular disease (Frumkin, Nathan, Prout, & Cohen, 1978). Elevated blood pressure is ranked as the most significant risk factor in the development of atherosclerotic diseases, kidney
failure, myocardial infarct, stroke, and dissecting aneurysm (Galton, 1973; Frumkin et al., 1978). In 1966, a mortality count of 65,000 was recorded as attributed to hypertension (Moriyama et al., 1971), and it was estimated that over 2.6 billion dollars in 1967 was the cost to the nation related to the disorder (National Heart and Lung Institute Task Force on Arteriosclerosis, 1972).

Blood pressure occurs along a continuum and there is obviously no clear line to separate normal from elevated pressures. Any point chosen to divide elevated from normal must be somewhat arbitrary, and there is a lack of consensus on the level necessary before blood pressure is considered "high" (Pickering, 1968). Hypertension is typically diagnosed when the systolic/diastolic readings are 160/95 mm Hg or above. Persons having pressure of 140-159/90-94 mm Hg are usually called Borderline Hypertensives, and for mild hypertension the diastolic is in the range of 95-104 mm Hg (Engelman & Braunwald, 1977; Smith, 1977a).

Hypertension is easily diagnosed via indirect measurement with a sphygmomanometer, but etiology needs to be established prior to the formulation of a treatment plan. The disorder is typically divided into Essential or Primary Hypertension, which is of unknown origin, or Secondary Hypertension which results from an identifiable cause. The Secondary type can be caused by several disorders such as renal disease, malfunction of endocrine organs, coarctation of the aorta, pregnancy, or
by oral contraceptives (Pinkerton, Hughes, & Wenrich, 1982). While the causes of Secondary Hypertension can be treated through surgery or chemotherapy, these cases account for only a small percentage of persons diagnosed as Hypertensive (Agras & Jacob, 1979).

It has been estimated that approximately 80 to 90 percent of all persons who have hypertension are said to have Essential Hypertension (Beck & Hilden, 1975; Guyton, 1976). This means that at the time of the diagnosis, no specific physiological cause can be isolated. There are certain factors, however, which have been identified that may increase the risk of its occurrence. A family history of hypertension increases a child's chances by two to six times, especially if both parents have the disorder (Stamler, Stamler, & Pullman, 1967). In addition, obesity, smoking, and serum cholesterol have been documented as related to Essential Hypertension (Chiang, Perlman, & Epstein, 1969; Kannel, Braud, Skinner, Dawber, & McNamara, 1967; Levy, White, Stroud, & Hillman, 1945; Stamler, 1967; Stamler, 1968). Several researchers have demonstrated that the risk increases with age, and that in Blacks the prevalence of hypertension is nearly twice as high as it is in a White population of the same age (Moriyama et al., 1971; Stamler, Stamler, Riedlinger, Algera, & Roberts, 1976; Finnerty, Shaw, & Himmelsbach, 1973).

Not only is the cause of Essential Hypertension unknown, but the role of several of these factors in the etiology and
prognosis of the disease is unclear. Stress and the manner in which people react to stress, has been known to elevate blood pressure (Pickering, 1968; Wolf & Goodell, 1968). The changes in the cardiovascular system in response to sympathetic arousal include increased heart rate and cardiac output, constriction of the arterial system, and a subsequent elevation in blood pressure. The pressure can remain elevated due an upward resetting of the pressure regulatory mechanism if a person is under prolonged stress (Wallace & Benson, 1972) and this can then lead to permanent physiological damage (Guyton, 1976).

At this time there is no widely accepted treatment strategy for Essential Hypertension. Many studies have demonstrated the effectiveness of pharmacotherapy with hypertensives with diastolic pressures over 100 mm Hg, but most agree that Essential Hypertensives derived only slight benefits from medication (Veterans Administration Cooperative Study Group on Antihypertensive Agents, 1967, 1970, 1972; Smith, 1977b). Although very few people would argue with the benefits of having these patients normotensive, it does not seem worthwhile to subject them to the risks attendant on a lifetime of drug therapy. The two most commonly prescribed medications include vasodilators which inhibit sympathetic impulses or diuretics which reduce the reabsorption of salt and water (Guyton, 1976). The more common side effects of these drugs include: elevation of blood sugar, drowsiness,
lethargy, depression, increased secretion of gastric acid, orthostatic hypotension, vertigo, reduced cardiac reserve, and disruption of male sexual functioning (Herting & Hunter, 1967; Bulpitt & Dollery, 1973). Beyond the physical side effects of drug treatment for Essential Hypertension, there are several other factors related to the less than successful treatment of these patients with medication. Because their blood pressure elevations do not reach a critical level, these patients are often unmotivated to comply with the drug regime because of the cost, the amount of time spent on clinic visits, and the unpleasant side effects discussed previously (Finnerty, 1974; Wilber, 1967; Finnerty, Mattei, & Finnerty, 1973; V.A., 1972; Frumkin et al., 1978).

It is fairly evident in the information presented thus far, that hypertension is a significant health problem in this country. Unfortunately only about 50 percent of the cases are detected, and in only about half of these cases is treatment with medications at all beneficial. Furthermore, the overall mortality of these patients exceeds the age-adjusted mortality of the general population by at least 100 percent (Julius, 1977). Therefore, a place exists for the development of adjunctive or alternate treatment strategies for hypertension and substantial research for effective behavioral strategies has been conducted.

Most of the research has centered around relaxation strategies and biofeedback. The most frequently studied approaches
include progressive muscle relaxation, transcendental meditation, autogenic training, muscle tension biofeedback, blood pressure biofeedback, and combinations of these various techniques.

**Progressive Muscle Relaxation (PMR)**

PMR is a technique developed to achieve conscious discriminative control over skeletal muscles and to induce a very low level of generalized muscle tonus for the purpose of controlling anxiety states. It was proposed that anxiety and muscle relaxation produce opposite physiological effects, and could therefore not coexist. Jacobson, the founder of the technique, reported in 1939 that blood pressure reductions were attained during a PMR session. The 10 normotensive subjects reduced both systolic blood pressure (SBP) and diastolic blood pressure (DBP) approximately 8 mm Hg while hypertensive subjects obtained average reductions of 13 and 11.3 mm Hg. Although this study was not methodologically sound, it led the way for current research.

Brady, Luborsky, and Kron (1974) performed one of the first controlled studies of PMR on hypertension. Although significant reductions were reported, the treatment effects did not generalize after training was discontinued. Another study conducted by Redmond, Gaylor, McDonald, and Shapiro (1974) demonstrated that telling five hypertensive subjects to let their hearts beat slower and make their vessels less resistant to the flow of blood, provided similar results to
therapist induced PMR. These researchers did not examine between session BP changes. When comparing PMR, autogenic training, and "self-relaxation", Byasse (1976) reports significant decreases in BP for all three groups. Once again a follow-up showed that the reductions failed to persist.

Taylor, Farquhar, Nelson, and Agras (1977) controlled for expectancy effects in subjects undergoing medical treatment for hypertension by randomly assigning them to one of three groups: relaxation, nonspecific therapy, and medical treatment alone. Results showed significantly lower SBP and slightly lowered DBP for the relaxation group only, and it was still lower at a six month follow-up. Rici and Lawrence (1979) also controlled for nonspecific treatment effects when assessing group relaxation training. Reductions in DBP were reported for the relaxation group while no change was noted in control subjects.

Beiman, Graham, and Ciminero (1978a, 1978b) conducted some case studies utilizing self-directed PMR. The patient-recorded BP of all clients decreased to within the normotensive range, and the treatment effects were maintained at follow-up ranging from two to six months. The authors noted, however, that readings taken in the medical setting continued to be elevated but they attributed this to conditioning which was then treated with Systematic Desensitization.
Transcendental Meditation (TM)

Several researchers have studied the effects of TM or other meditational techniques on hypertension. Benson, Rosner, Marzetta, and Klemchuck (1974a, 1974b) postulated that the attained hypometabolic state seems to represent a relaxation response which is consistent with decreased sympathetic activity. In these studies, 14 and 22 Borderline Hypertensives practiced this technique regularly and statistically significant reductions in SBP and DBP were obtained. The researchers report controlling for medications, experimenter bias, and daily BP fluctuations.

Blackwell, Bloomfield, Gartside, et al., (1976) had mixed results where only four of seven hypertensives showed reduced pressures when recorded at the clinic, and only two subjects maintained the effect after six months. Pollack, Weber, Case, and Larogh (1977) concluded from their results that while TM may produce a feeling of well-being, it is unlikely that TM contributes directly to the lowering of BP.

Stone and DeLeo (1976) used a somewhat different meditation method in which after relaxing, the subject counts breath cycles in arithmetic progression. The treatment group exhibited a significant reduction in SBP and DBP for treatment and post-treatment when compared to controls. However, a more recent study failed to replicate these findings (Brauer, Horlick, Nelson et al., 1978).
A study which had been conducted somewhat earlier had also used a different style of meditation. Datey, Deshmukh, Dalvi et al., (1969) employed a yoga exercise called "Shavasan" which is a combination of muscular relaxation and mental focusing. For subjects not receiving medication the average reduction in mean arterial pressure was 27 mm Hg. In the second group, 13 of 22 subjects whose BP was adequately controlled by medication, were able to decrease medications an average of 68 percent.

Benson (1977) combined PMR and TM to obtain reductions in SBP and DBP in 22 unmedicated and 14 medicated hypertensive subjects. Dowdall (1977) combined PMR, yoga, and deep breathing to produce reductions averaging from levels of 158/85 to 142/76.

Blood Pressure Biofeedback (BP feedback)

The most commonly used device is a sphygmomanometer with a built-in microphone. This microphone picks up the Korotkoff sounds which can be heard when the cuff is inflated to a level between the SBP and DBP. To obtain frequent measures the cuff must be inflated about once per minute and this leaves much to be desired because of the concomitant problems. An alternative to this method has been developed by Shapiro and his colleagues and is known as the "constant cuff pressure procedure" (Shapiro, Tursky, Gershon, and Stern, 1969; Tursky, Shapiro, and Schwartz, 1973). The cuff is inflated to a predetermined pressure, and if this pressure is near or
slightly below a person's SBP, then SBP below the cuff pressure will be signaled by the presence of Korotkoff sounds while SBP above cuff level will be signaled by the absence of sounds. This allows for fairly continuous feedback, and recent advances by Elder et al. have refined this technique still further (Elder, Longacre, Welsh, and McAfee, 1977; Elder, Welsh, Longacre, and McAfee, 1978). They have added a tracking device that monitors blood pressure beat by beat and automatically adjusts the cuff pressure. Two cuffs, one on each arm, are alternately inflated every 100 seconds.

Pulse wave velocity is an even less obtrusive measure of BP than the cuff method. It is the pulse transit time (time required for the pulse to travel from the heart to a fixed peripheral point) divided by the arterial distance between points of transit. This indirect method is receiving considerable attention (Gribbin, Steptol, and Sleight, 1976; Walsh, Dale, and Anderson, 1977). Shannon, Goldman, and Lee (1978) compared these various techniques and found that the continuous beat by beat feedback was clearly superior to continuous or noncontinuous proportional feedback with normotensive subjects.

The first report of reduced BP during feedback sessions was by Benson, Shapiro, Turskey, and Schwartz (1971). With a moving criterion level and using a tone and a light for feedback, it was possible to shape successively larger decreases in SBP during sessions with Essential Hypertensives.
Results showed an average SBP decrease of 16.6 mm Hg with an individual range of 0.9 to 33.8 mm Hg.

Kristt and Engel (1975) used a Korotkoff sound disappearing technique where the cuff was inflated to SBP, and by decreasing the SBP the sound disappeared. Cuff pressure was then released until the sounds reappeared, and the procedure was repeated. Patients received three weeks of inhospital training followed by home practice with the same technique. Post-treatment decreases in SBP averaged 18.2 mm Hg and in DBP of 7.5 mm Hg. Using this technique Kristt and Engel (1975) demonstrated a specific effect on BP, but others have reported concomitant changes in other cardiovascular parameters (Fey and Lindholm, 1975).

Blanchard, Young, and Haynes (1975) provided feedback by plotting successive reading of SBP on a graph. Results with this noncontinuous form of feedback showed subjects to have an average decline of 17.4 mm Hg from an average baseline of 154.1 mm Hg.

After establishing an association between diastolic hypertension and brain dysfunction on the Category Test of the Halstead-Reitan (Goldman et al., 1974), two studies were conducted to see if performance would improve with SBP feedback (Goldman et al., 1975; Kleinman et al., 1977). Both studies reported significant reductions in SBP and in errors on the Category Test.
The feedback studies presented thus far did not provide controls for practice or expectation effects. This was addressed in a series of studies in which a control group received false feedback which was identical to the true feedback given to the treatment group (Knust et al., 1975; Richter-Heinrich et al., 1975; Richter-Heinrich et al., 1977a; Richter-Heinrich et al., 1977b). They reported that the treatment group showed decreased SBP after only four sessions, but the effect did not generalize to outside of the sessions.

Some studies have used DBP feedback with mixed results. Schwartz and Shapiro (1973) found no change after ten sessions, but positive results were obtained when diastolic feedback was combined with social reinforcement (Elder, Ruiz, Deabler et al., 1973). Elder and Eustis (1975) compared massed practice to spaced sessions and found greater within session reductions with massed practice.

Other Biofeedback Modalities and Relaxation Strategies

Bertilson, Bartz, and Zimmerman (1979) performed a single group study with eight college students with elevated BP using relaxation and finger temperature feedback. Reductions in systolic pressure of 10-15 mm Hg were obtained in as few as 14 sessions, but a five month follow-up indicated the need to maintain the training for a longer period of time.

Many studies have combined electromyographic feedback (EMG) with other forms of relaxation. Moeller and Love (1975) combined EMG, relaxation, and autogenic training which
resulted in decreases in both SBP and DBP. The study was replicated by Love, Montgomery, and Moeller (1975) using a control group and a follow-up. Similar results were noted for the treatment group only, with further decreases noted at an eight month follow-up.

Fray (1975) divided 30 hypertensive males into either EMG, autogenic, or no treatment control groups. At the end of the training both treatment groups had significant reductions in DBP compared to controls, but this treatment effect was maintained only for the subjects who received autogenic training. A series of cases utilizing autogenic training have been reported by Luthe (1963). The results show significant declines in BP but no controls were studied.

Patel (1973) began a series of studies which assessed biofeedback and relaxation. The first study found that medications could be reduced considerably in hypertensive patients. Patel (1975) added a comparison group to control for placebo effects. Subjects received three half-hour sessions per week for three months. The treatment group had a significant reduction in SBP and DBP, and they maintained this treatment effect at a one year follow-up. Patel and North (1975) added group sessions to the previous design and obtained comparable results. After six months the control group received relaxation training and they also showed decreased BP at that time. This design was once again replicated by Patel and Carruthers (1977).
Blood Pressure Feedback Plus Relaxation

Shoemaker and Tasto (1975) compared the effectiveness of PMR and noncontinuous feedback. Results indicated that the relaxation subjects showed significantly greater decline of blood pressure than the feedback or control groups for both between and within session readings. Fidel (1975) in a similar study found that both treatment groups decreased SBP equally, but that only in the feedback subjects was there a decrease in DBP.

Several recent studies have found no significant differences between relaxation and feedback (Russ, 1974; Blanchard and Epstein, 1978) and some even report no treatment effects over the course of training (Surwit, Shapiro, and Good, 1978; Frankel et al., 1978).

In an attempt to assess the effects of relaxation and feedback when combined, Sawyer (1977) found reductions ranging from 27.3 to 35.4 mm Hg. Unfortunately this design did not assess the contributions of each technique. Only two studies have assessed relaxation and feedback as separate groups but then added a combination group. Glasgow, Gaudner, and Engel (1982) found both techniques equally effective and that the combination was more successful than either technique alone. Bradley and Hughes (1979) used the same three groups but all subjects received treatment in the home setting. Significant reductions were attained for all three groups and the researchers concluded that home practice with the tech-
niques was the critical variable rather than the particular technique used. Walsh et al. (1977) compared PMR to feedback of pulse wave velocity. The feedback subjects had larger within session decreases in DBP, but both were effective across sessions in reducing SBP and DBP. Finally, Friedman and Taub (1977) compared feedback to hypnosis and included a combination group. The best results were obtained with the hypnosis only subjects and the authors concluded that feedback detracts from hypnosis as a treatment for hypertension.

**Methodological Problems in Hypertension Research**

**Subject Selection.** In many of the studies, subject selection criteria are not reported. For example, age ranges, the required BP level for inclusion, and the length of time a person had been diagnosed as Hypertensive are often not defined. Studies including subjects with long-standing Essential Hypertension may be confounded by various degrees of organ system damage resulting from the elevated BP.

**Medications.** A great deal of variability is evident in the degree of control exerted over medications in the research. Some studies attempt to decrease medications during the project, most at least hold medications stable during the research, but some studies allow unrestricted changes which are unmonitored. Ideally, there should be no medications, but with this patient population this is often impossible to attain. Therefore, medications should be stabilized a month prior to obtaining a baseline and at least remain at stable
dosages throughout the study and follow-up. Some means of assessing the subjects' compliance with their medication regime should be employed.

**Baseline and Measurement.** Blood pressure is very labile in many patients and baseline readings should include averaging several readings. Levels should also be rechecked under similar conditions each time. For example, readings should be taken at approximately the same time of day with the subject seated in the same manner. Bias can also be decreased by using portable sphygmomanometers that give digital readings. Many units are available that automatically deflate the cuff at a preset rate and then display the systolic and diastolic pressures digitally.

**Reporting Training Effects.** It is important to differentiate within session and across session results. Many of the studies report only one or the other of these. Within session measures are typically taken while a person is using a technique or as soon as the training session is completed. To assess when the results during sessions have generalized, blood pressure must be assessed across sessions. Both measures are important because having only across session data may prohibit the acquisition of information on the short-term effects of a given technique.

**Home Practice and Compliance.** Although many subjects are requested to practice their respective techniques at home, often times the details of home practice are not reported. It
is also vital that compliance rates be reported in all research using home practice.

**Control Groups.** Many of the studies, especially BP biofeedback, have not included control conditions. A multitude of placebo effects and experimental biases can influence the data with hypertensives, so control groups with identical types, lengths, and numbers of sessions must be included. The influence of confounding variables can be decreased only with rigid adherence to the principle of treating the control and experimental groups as identically as possible.

**General Findings**

The studies reviewed tend to support the idea that changes in blood pressure can be learned through behavioral techniques. Although most studies employing blood pressure feedback have achieved statistically significant results, not all have demonstrated clinically significant results.

Generally, the evidence indicates that maintenance and generalization of BP control may require home practice as a crucial factor, and this is more difficult to provide with biofeedback training than with various relaxation strategies. Another issue raised is the cost-effectiveness of BP feedback due to expensive equipment required and the necessity of one-to-one therapist contact. The direct comparisons of the effectiveness of BP biofeedback to relaxation are mixed, but relaxation typically appears to be at least as clinically effective as biofeedback.
Relaxation/meditation techniques are assumed to be more effective because they elicit an integrated physiological pattern of decreased sympathetic arousal, whereas BP biofeedback tends to produce more specific changes in blood pressure (Schwartz, 1976; Benson, 1975; Stoyva and Budzynski, 1974). The relaxation/meditational approaches also emphasize training in the subjects' natural environment. This factor may affect treatment outcome. Sherman and Gaardner (1977) found a significant correlation indicating that the more involved clients were in treatment, the greater was its effectiveness. Patient involvement included the number of training sessions, the intensity of home practice and recording, awareness of stress, and the number of techniques used.

It has even been postulated that the crucial variable in the hypertensive research is just that subjects are required to intersperse her/his ongoing activities once or twice daily with a 15 to 20 minute period of sitting quietly. Several studies have compared the short-term effects of TM with a control condition of just sitting around found that both conditions resulted in comparable physiological changes (Travis, Knodo, & Knott, 1976; Treichel, Clinch, & Cran, 1973; Walrath & Hamilton, 1975).

The present study will compare the long term effects on BP of a combination of relaxation techniques to an equal amount of "self-relaxation," or quiet sitting. The experimental subjects will successively practice deep breathing, progres-
sive muscle relaxation, deep muscle relaxation, autogenic training, visual imagery, the relaxation response, a daily review, and a technique for using relaxation in daily life. These eight techniques include strategies for muscular relaxation, mental anxiety reduction, and for dealing with environmental stressors. The treatment approach has been titled "Self-Directed" because subjects will practice these techniques, with the aid of cassette tapes, in their own natural environment. Minimal therapist supervision will be required beyond distributing materials and collecting BP readings and the forms assessing compliance.

The control subjects will receive an equal amount of therapist contact, will engage in daily practice for the same amount of time as the experimental subjects, and will complete the same materials assessing compliance. The variable differentiating the conditions will be that experimental subjects will have specific relaxation/meditational strategies to practice. It is hypothesized that experimental subjects will show greater within session reductions in BP, will have greater across session decreases when initial differences in BP are statistically controlled, and that these changes will be maintained during a no treatment follow-up.

Method

Subjects

The subjects were eight male and 22 female volunteers. All had been diagnosed as having Essential Hypertension and
had BP of 130/85 mm Hg or above. The mean age of the subjects was 53 years and ranged from 24 to 68. Of the 30 participants, 19 were on antihypertensive medication and the mean length of time since being diagnosed Essential Hypertensives was 7.5 years with a range from 0 to 32 years.

**Instruments**

A Sears Model No. 289.2150 sphygmomanometer was used to collect BP data. This portable unit gives a digital display of systolic and diastolic readings.

**Procedure**

All potential subjects participated in an individualized assessment period to assure that they met the inclusion criteria. During this hour long session the subjects received conceptualization training which included the following topics: defining stress, stress related medical problems, sympathetic nervous system arousal, and the physiological concomitants of relaxation. At 10 minute intervals a BP reading was obtained and at the conclusion of the session the average of the five readings had to equal or exceed 130/85 mm Hg. The remaining inclusion criteria were a diagnosis of Essential Hypertension and a stable medication regime if on antihypertensive medication.

Upon acceptance into the study, subjects were asked to sign the informed consent form (Appendix A), given medication compliance sheets, and informed that they would be contacted when the relaxation group was full and ready to
begin training. When 10 subjects had been accepted, they were paired as closely as possible by age, sex, BP, and length of time since given the diagnosis of Essential Hypertension. Then they were randomized into an experimental or control group.

Both groups met twice a week over a one month period. Each of the eight training sessions began by obtaining baseline BP readings for each subject as they turned in their medication compliance sheets and completed an efficacy rating scale. On the efficacy sheet the subjects rated from one to seven how successful they expected the treatment approach to be in lowering their BP. All subjects then listened to a 15 minute relaxation tape which was followed by a post-session BP measurement. Subjects were then instructed to listen to their tapes a total of three more times prior to the next session. Relaxation compliance was checked by having them record time of day, length of home practice session, and the location where practice had occurred.

For each of the eight training sessions the experimental subjects listened to new techniques which included: Deep Breathing, Progressive Muscle Relaxation, Deep Muscle Relaxation, Autogenic Training, Imagery, Relaxation Response, Daily Review, and Using Relaxation in Daily Life (Appendices B - I). The control subjects listened to a tape entitled "Relaxation Tape" (Appendix J) which offered no specific relaxation strategies.
At the conclusion of the eighth and final treatment session the tapes were collected, and dates were set for the one and two month follow-up sessions. During the follow-ups subjects returned data on medication compliance, answered questions evaluating spontaneous home practice, and five BP readings were obtained at 10 minute intervals.

Results

Of the 48 subjects evaluated, 32 met all three inclusion criteria. Thirty of these completed the study, while one quit prior to the first session, and one moved before the third session. All 16 of the subjects who were not accepted had BP readings lower than required, and 13 of them were taking medication.

The demographic data in Table 1 (Appendix K) suggests that the experimental and control groups were similar in age, education, sex of subjects, and number of minorities. The mean duration since receiving a diagnosis of Essential Hypertension was twice as long for the experimental group than control group, and 11 experimental subjects were on medication as compared to only 8 of the control subjects.

The mean medication compliance percentages were 99.9 and 99.6 for the experimental and control groups respectively. Mean home practice compliance percentages were 95.2 and 115.2 for the experimental and control groups with associated ranges of 53-112 and 84-150. Four of the experimental subjects and three of the control subjects missed one training session.
each. Mean efficacy rating scores for experimental and control subjects were 6.1 and 5.4 respectively with associated ranges of 4.8-7 and 4-7.

Within session changes in BP (difference scores baseline to post-relaxation BP) were compared with a series of t tests. No significant differences at $p < .05$ were present for any of the eight training sessions for either systolic or diastolic measurements (See Table 2, Appendix L).

Across session changes in BP were analyzed with ANCOVA to control for initial individual differences in BP. The covariates were the mean assessment BP readings. The variates were the baseline BP readings for each of the eight training sessions and the mean of the baseline readings taken at each of the two follow-up visits. Therefore 10 ANCOVA's were computed for comparing systolic pressures and 10 were computed for comparing diastolic pressures. No significant differences at $p < .05$ were present for any of the 20 comparisons (See Table 3, Appendix M). The only comparison approaching significance was for the diastolic readings during the first follow-up visit, $F(1, 28) = 3.338, p = .08$. However there was no substantial difference during the second follow-up session, $F(1, 28) = .201, p = .66$.

The mean assessment baseline BP for the experimental and control groups were 144/95 and 146/93 mm Hg respectively. See Figure 1 (Appendix N) for the adjusted group means for the eight training sessions and two follow-up sessions.
Discussion

Three hypotheses have been proposed and the results clearly suggest that two of them have not been supported. The first hypothesis that is not supported is that individuals learning the specific relaxation techniques will show greater within session BP reductions than subjects receiving an equal amount of time to relax but who receive no specific strategies to use. As seen in Table 2 (Appendix L), the experimental group shows consistent decreases in systolic and diastolic pressures during each of the eight training sessions. This finding is consistent with prior research showing immediate decreases in BP with various types of relaxation/meditation strategies. However when comparing the degree of improvement to a control group that just "sits quietly" for a similar amount of time, it is apparent that no statistically significant difference exists between the two conditions. Over all training sessions the experimental and control groups have lower systolic levels by 5.82 and 5.23 mm Hg, and diastolic levels by 3.97 and 3.4 mm Hg respectively.

The second hypothesis that is not supported is that when initial differences in BP are statistically controlled the experimental subjects will have greater across session decreases in BP. Across session comparisons are looking at baseline readings and represent generalization of the immediate effects seen in within session comparisons. As
seen in Figure 1 (Appendix N) the experimental subjects show consistent decreases in systolic and diastolic readings. From assessment to follow-up the group BP mean dropped from 144/95 to 135/84 mm Hg for the experimental subjects. This represents a 9 and 11 mm Hg decrease for systolic and diastolic respectively. However the control subjects also show substantial decreases in group mean BP from 146/93 to 133/85 mm Hg which represents a 13 and 8 mm Hg decrease for systolic and diastolic pressures.

The remaining hypothesis is that the across session differences between groups will be maintained during a no treatment follow-up period. Since there are no statistically significant differences between the experimental and control groups, then the hypothesis as stated cannot be supported. However the decrease in BP that occurs for both groups across the eight training sessions is maintained at the one and two month follow-up sessions.

Blood pressure research frequently uses case studies or waiting list control groups when evaluating effectiveness of various relaxation/meditation strategies. When these designs are utilized it is not uncommon for them to support decreases in BP related to the treatment being evaluated. Even in the present study the experimental group shows a clinically useful decrease in systolic and diastolic pressures. It is not improper to state that using these eight relaxation tapes can help lower BP and that these decreases are maintained
during a two month follow-up. However by adding a nonspecific treatment group it becomes apparent that the eight techniques are not superior to one tape which encourages subjects to just sit quietly and relax.

In future BP research it is recommended that nonspecific treatment groups always be included. Also the within session decreases need not be ignored, but it is the across session changes in baseline BP that more directly evaluate meaningful long term effects. A final research consideration concerns the lability of BP readings. Not only do pressures vary throughout the day, but they can be lowered by just sitting down for 15 minutes as seen in this study. Data will be more reliable if subjects take their own BP on a daily basis. Then weekly averages could be used as baselines rather than a single measurement at the beginning of each session.

In conclusion, noninvasive treatments for Essential Hypertension can have clinically useful effects in lowering BP. Further research may help identify specific treatment strategies that are more effective than "quiet sitting". Until then, it appears that getting hypertensive patients to comply with a relaxation regime may be the major obstacle to successfully helping them gain control over their symptoms.
Appendix A

Informed Consent Form

I, _______________________________ hereby give my consent to Don Hafer, M.A. to perform the following investigational procedure or treatment; Self-Directed Relaxation as a Treatment for Essential Hypertension. The hypothesis of this experiment is that self-directed relaxation on a daily basis in a patient's home environment will help maintain lowered blood pressure. The experiment consists of an initial assessment period, eight training sessions, at which relaxation is taught, and two follow-up sessions (one and two months post-training). Participants will be asked to attend at least ten of the eleven sessions over the three month period. They will also be asked to relax for thirty minutes each day in their home environment. The only circumstance under which a subject's participation may be terminated by the investigator without the subject's consent is when that subject fails to attend at least seven of the eight training sessions.

Past research has demonstrated that relaxation can lower blood pressure to within normal limits for some patients and no foreseeable risks or discomforts have been associated with relaxation training. Other possible treatments for Essential Hypertension include: antihypertensive medication, exercise, altered diets, biofeedback, and meditation. If participants in this study are already taking hypertensive medication they will be asked to consult their primary physician so that he/she is aware of the ongoing experiment. Whenever possible it is recommended that stable medication schedules be maintained so that changes in blood pressure during the experiment are not influenced by medication changes. This is left, however, to the discretion of the participant and their physician.

Subjects will need to furnish a portable cassette tape player for their own personal use. There is otherwise no fee for receiving the treatment as outlined. Participation is completely voluntary, refusal to participate will involve no penalty and the subject may discontinue participation at any time without penalty.

It is likely that the information and conclusions collected from this study will be published. All subjects will remain anonymous and only demographic data, such as age, sex, and educational levels, will be reported.

Date _______________________________ Subject _______________________________
Appendix B

Deep Breathing

Get into a comfortable position now . . . relaxing just as much as possible. This is your time . . . nowhere else you need to go. . . . This is your time for relaxation. . . . Become aware that there is no need for you to review any events of the past . . . or . . . any events of the future. . . . There is no need to solve any problems . . . so just for now, clear your mind of any thoughts . . . problems . . . or concerns. For the next 15 minutes . . . just let go of these worries . . . and treat any thoughts of them as minor distractions. . . . They will be there . . . when you return . . . but for now, concentrate on becoming relaxed . . . and enjoying the mental and physical feelings that come with relaxation. . . . You can now let yourself begin to relax . . . listening to my voice . . . and following my instructions.

Now, I would like you to become aware of your breathing. . . . Notice any movement of your chest or your abdomen. . . . As your breathing comes and goes . . . don't try to control your breathing . . . simply observe it. . . . At first, you may find this difficult, not to interfere with your breathing . . . but just observe it for now. . . . Do you notice your chest rising as you breathe? For the moment . . . relax the muscles of your chest and concentrate on your
abdomen. . . . Allow your abdomen to inflate as you take a breath in . . . and deflate as you exhale. . . . Notice that as you allow the muscles of your chest and abdomen to relax, your abdomen rises and falls with each breath. . . . Notice this rising and falling of your abdomen . . . as your lower lungs fill with air and empty. . . . Breathing in . . . and out . . . allowing only your abdomen to inflate . . . and deflate.

In a few moments I am going to ask you to increase the depth of your breathing gradually. . . . Let yourself breathe in just a little bit more air with each breath. . . . As much as possible . . . take in a bit more air . . . letting your abdomen rise a bit more than with the previous breath . . . letting your lower lungs fill a little bit more deeply with air. . . . Don't hurry your breathing . . . let each breath start itself . . . and gradually breathe more deeply than the previous breath . . . never pushing, never straining. . . . Just allow your breathing to become comfortably deeper . . . that's good. . . . Notice that your breathing rate becomes slower as you take in more air with each breath. . . . The pause between breaths becomes longer . . . good.

In a moment . . . I am going to ask you to let your breathing become even deeper in the following way. . . . Once your stomach has lifted as high as it will comfortably . . . indicating that your lower lungs have completely filled with air . . . you will let a little more air in . . . and
this time, fill the middle part of your lungs . . . and you will notice that the middle of your chest will expand upward . . . and downward . . . but the muscles of your neck . . . shoulders . . . and upper part of your chest will remain completely relaxed. . . . Your chest will not move at all. . . . Let your breathing become gradually deeper . . . first, filling the lower lungs . . . feeling the rise and fall of your abdomen . . . and the middle part of your lungs . . . with the expansion of your ribs . . . that's good . . . and, as you let this breath out . . . let it empty first from your chest . . . then your abdomen . . . and then pause . . . good.

This may feel a little unfamiliar at first . . . the coordination will gradually come as you let it. . . . Let your breathing grow gradually deeper . . . and deeper. . . . Your abdomen rises . . . then your chest. . . . Your chest deflects . . . then your abdomen . . . that's good.

Now . . . let your breathing become deeper still . . . your abdomen will fill . . . then your middle chest . . . and finally the upper part of your chest. . . . You should feel activity in the muscles of your shoulders . . . and neck. . . . Don't strain or struggle . . . just let your chest fill as full as it will . . . and, as you let the breath out . . . let it out slowly. . . . First let the upper part of your chest deflate . . . then the middle . . . then your stomach.

Now let your breathing become a little more deeper . . . filling first your abdomen . . . the middle chest . . . and
finally, your upper chest ... and ... as you slowly let that breath out ... make sure all of the muscles in your lips, jaws, mouth, and throat ... are completely relaxed. ... Then empty your upper chest ... middle chest ... and finally feeling your abdomen fall. ... Let your breathing continue in this way now. (30 second pause.)

Good. ... Allow your breathing to continue to be deep, very slow ... and with each breath in and each breath out. ... repeat the following phrase silently to yourself ... "Relax." ... Repeat this with each breath in ... and each breath out ... "Relax." ... Now, I am going to allow you to breathe on your own for a few minutes ... in ... and out ... as we have just learned, repeating the phrase, "Relax", as you exhale. (3 minute pause.)

Good. ... As you practice breathing deeply and slowly ... you will notice every part of your body slowing down ... everything in your body becomes relaxed ... and slow. ... You may want to practice breathing at a rate of one breath every five seconds. ... If you are near a clock with a second hand ... practice breathing first ... breathing in from your abdomen ... up through your middle chest ... and into your upper chest. ... Then, exhaling from your upper chest ... down your middle chest ... and finally letting your stomach fall completely ... within a five-second period. ... Practice this on your own ... where you can watch a clock. ... Gradually ... you
will be able to breath at a much slower rate than you are accustomed to.

Now, for a moment . . . I want you to repeat to yourself . . . "Because I know how to relax, I will be able to work . . . and play better." . . . Each time you breathe deeply and repeat these phrases . . . you will become relaxed and be able to function better at whatever task is before you.

In a moment . . . I am going to count from one to five, and, as I do, allow yourself to become alert . . . and aware of your surroundings. . . . One . . . feel yourself coming alert as though you have just taken a nap. . . . Two . . . notice that as you become more and more alert, you become more aware of the sounds around you. . . . Three . . . perhaps allow yourself to stretch . . . allowing the part of your body to come back to alertness. . . . Four . . . take one deep breath in . . . and breathe out . . . as you do, let your eyes open. . . . Five . . . feeling clear . . . alert . . . and yet relaxed and calm within. . . . Even though you may now have to return to work . . . or to some other task . . . you will feel relaxed . . . and refreshed.

Remember . . . periodically, during the day . . . take a deep breath . . . breathe in, beginning from the stomach . . . up through your chest . . . and back out, allowing your stomach to fall. . . . Repeat the word "Relax" . . . and you will better be able to go about the business of working . . . or whatever task is at hand.
Appendix C

**Progressive Relaxation**

Get into a comfortable position now, and begin to relax as much as possible. . . . This is your time . . . nowhere you need to be . . . nothing you need to do for the next 15 minutes . . . except allow yourself to become relaxed . . . and enjoy the sensations produced by that relaxation. . . . So, just for now, clear your mind of any worries or concerns . . . any problems you might be struggling with will be better dealt with if you are relaxed.

Let yourself begin to relax by taking a few deep breaths. . . . Begin by breathing the air in slowly and allowing your stomach to fill . . . then your middle chest . . . and finally, your upper chest. . . . Exhale first from your upper chest . . . middle chest . . . and stomach until you have exhaled as much as possible. . . . With each breath feel your body beginning to slow down . . . and the feeling of relaxation coming over you.

As you continue to breathe deeply and slowly, I will ask you to carefully and separately tense each large muscle group in your body . . . holding that tension for several seconds . . . and then relaxing the muscles you have tensed. . . . If muscles are tensed, they relax more deeply when they are released . . . and your feeling of relaxation is increased by
experiencing the contrast between extreme muscle tension and sudden release of that tension. . . . When I tell you to tighten one part of your body . . . tighten it as much as possible . . . but try to leave every other part of your body relaxed.

Let's begin by tensing every muscle in your body . . . tighten your eyes . . . jaws . . . arms . . . chest . . . back . . . stomach . . . and legs . . . every part of your body is becoming tight . . . Hold the tension . . . now let it all go and let your whole body relax . . . Feel the relaxation as you stop tensing. (10 second pause) . . . Now, as you relax . . . take a deep breath and hold it . . . Notice the tension in your chest . . . now, slowly let it go and breathe out . . . feel the relaxation . . . go with it . . . . Allow yourself to relax more deeply with each breath. (10 second pause.)

Now, we are going to tense and relax various body parts. . . . Let's begin with your forehead . . . keeping the rest of your body relaxed, wrinkle up your forehead as tight as you can . . . make a frown . . . feel the tension . . . now, relax and let go . . . Feel the tension leaving as you smooth out all of the wrinkles in your forehead. (10 second pause) . . . Now, your eyes . . . close your eyes as tightly as you can . . . very tight . . . hold the tension around your eyes as the rest of your body is relaxed . . . good . . . . Now, relax and let go . . . feel the calmness flowing into your eyes.
(10 second pause) ... Now, close your mouth ... purse your lips ... press your tongue against the top of your mouth ... jaws ... and cheeks. ... That's good ... Now, relax ... allow your mouth to drop open and your jaws to sag ... and your lips to part slightly. (10 second pause) ... Now, again take a deep breath ... hold it ... feel the tension ... now, gently let the air out. ...

As you do, think about your forehead ... eyes ... jaws ... and cheek muscles ... just to see that they are relaxed. .. Let all of the muscles of your face become smooth and soft ... lose and limp ... all of the muscles of your head are relaxed ... even your scalp.

You are learning to actively feel a muscle group when it is tense ... and passively feel fully relaxed muscles. ...

Now, let's concentrate on your neck muscles. ... Keeping the rest of your body relaxed ... slowly push your head onto the back of the chair. ... Feel the tension in the back of your neck ... hold it ... now release. ...

Allow the tension to flow away ... feel the relaxation. (10 second pause) ... Now, slowly bend your head forward until your chin touches your chest ... stretch those neck muscles and tense them. ... Okay, relax ... Feel the tension leaving your neck and your neck becoming loose and limp. (10 second pause) ... Now, the shoulder muscles ... shrug your shoulders ... bring them up as if you were trying to make them touch your ears ... bring them up as high as you
can. . . . Hold that tension in the shoulders. . . . Good . . now, release . . . drop your shoulders . . . let them fall. . . . Enjoy the sensation you feel. (10 Second Pause.)

Now, tense up your arms . . . stretch them out to your sides . . . tense them as tight as you can. . . . Relax . . . allow them to flop onto the arms of the chair. (10 second pause) . . . Let's make a fist now with your hands. . . . Tighten them . . . lift your fist off the chair a bit . . . hold the tension . . . now, release and relax . . . . Allow your fingers to spread slightly and lie on the arms of the chair. (10 second pause.)

Let's relax your chest now . . . take a deep breath . . . hold the air in and as you do, notice the tension in your ribs . . . now breath out and relax. . . . That's good. . . . Now, I want you to curve your back up . . . arch your back as high as you can . . . hold it . . . now, release and sink down deeply into the chair. . . . Notice how limp and relaxed your upper body is becoming. (10 second pause) . . . Now, we will relax your stomach. . . . Tighten up this area . . . make it as hard as you can . . . very tight . . . hold it . . . release and relax. . . . Feel the relaxation pouring into your stomach . . . allow it to expand . . . and relax. (10 second pause.)

Now, we will relax your hips and thighs . . . tighten both legs . . . keeping the rest of your body relaxed . . . tense both as tight as you possible can. . . . Good. . . .
Now, relax . . . allow the tension to flow out of your legs and be replaced by relaxation. . . . Relax more and more deeply. (10 second pause). . . . Now, flex your hips and thighs . . . press down and push back the heels of your feet as hard as you can . . . relax . . . feel your legs almost float away from the chair. (10 second pause). . . . Now, bend your toes backward . . . just bend them up toward your face. . . . Without moving your feet . . . try to touch the top of your knees with your toes . . . stretch the calf muscles. . . . Good. . . relax . . . and let go. (10 second pause) . . . Now, let's curl your toes down . . . try to touch the bottom of your feet with your toes . . . hold them there and feel the tension. . . . Now, relax . . . let go . . . and wiggle your toes gently as you uncurl them. (10 second pause.)

Now take a deep breath, as deep as you can . . . as you do, let's scan your body for any remaining tension. . . . Imagine the different body parts we have tensed and relaxed . . . as we go through them, check to see if any tension remains in that area. . . . If so, tense and relax again until you feel that body part becoming relaxed. . . . Okay. . . . Face and neck . . . shoulders and arms . . . chest and back . . . stomach . . . hips . . . legs and feet. . . .

Relaxation is becoming deeper and deeper. . . . For a few moments continue thinking about the different areas of your body, checking for tension and releasing it. . . . Pay
attention to the spots you need to relax more . . . and focus
on a tranquil, peaceful feeling that comes with relaxation as
you breathe deeply and fully. (1 minute pause.)

Good. . . . Now, I am going to count from one to five
and as I do, allow yourself to become more alert . . .
stretching your arms . . . yawning if you wish . . . becoming
more aware of your surroundings. . . . One . . . two . . .
three . . . four . . . five. . . . Relaxed yet alert.

If during the rest of the day or at any time, you feel
yourself becoming tense in any particular area of your body
. . . simply stop what you are doing . . . tense and relax
that body part . . . take a deep breath . . . and repeat
silently to yourself . . . "Relax . . . relax." . . . This
will allow you to feel peaceful and calm . . . and function
more effectively at whatever task is before you.
Appendix D

Deep Muscle Relaxation

Get into a comfortable position now and begin to relax. Begin by taking a few very deep breaths and clearing your mind of any problems or worries you may be concerned with. Allow yourself to become very passive; you need not try to do anything other than to allow relaxation to develop. Take a few very deep breaths, taking in as much air as possible. As you breathe out feel yourself floating down into the chair becoming more limp and motionless. The more you can let go, the better. Just let go completely. Relax think of nothing other than the calm, relaxing feeling that is beginning to develop.

Allow your eyelids to relax and begin to feel heavy. They will become so heavy they will want to close just let them drop and close anytime you feel like it. (10 second pause) That's good all tension is leaving your body and you feel very comfortable. You may begin to notice your body feeling heavy and warm or possibly tingling whatever feelings you notice, just go with them enjoy them and really experience all the sensations produced by relaxing.

We are going to go through the various parts of your body, releasing any tension that might be there. As
you relax that part of your body, you will feel all tension floating away . . . and that part of your body becoming comfortable and calm. . . . Again, you may feel warm and tingly . . . these are signs of relaxation. . . . Now, direct your attention to the top of your head . . . the skin there. . . Let the top of your head relax . . . wrinkle out your forehead . . . notice how it becomes loose and wrinkle-free. . . Think of your forehead . . . feel the skin that covers it . . . feel your eyes . . . the muscles around them. . . Feel your forehead and eyes relaxing . . . your eyelids feel heavy and quiet. . . Let all the muscles around your mouth drop gently and become loose. . . Feel your throat and neck . . . your throat and neck are becoming comfortable . . . quiet and relaxed.

Feel your shoulders and upper back . . . be aware of all the muscles around your shoulders . . . these muscles are becoming loose and comfortable. . . . Let your shoulders sink down onto the chair and become heavy and still. . . . Now, feel your upper arms becoming relaxed . . . feel your arms and hands . . . your arms, hands, and fingers are feeling very, very relaxed. . . . They may feel warm and heavy . . . as relaxation deepens.

Concentrate on your chest, now . . . feel the muscles under the skin around your chest. . . . As you breathe slowly and calmly . . . your relaxation spreading in your chest . . . as you exhale feel the calmness in your chest.
Now, think about the muscles in your back... up and down your spine... especially in your lower back... Let all of those muscles relax... feel the smoothness and calmness in your back... everything becoming loose.

Imagine sinking into the chair as if it were a feather bed... sinking down into the softness... Good... Now, feel your stomach... allow these muscles to relax... feel the tension leave your stomach and being replaced by peaceful, pleasant relaxation.

Let the calmness flow down into your legs... feel the tension flowing away... Your hips, thighs, calves, and ankles are becoming loose and relaxed.

Now, notice your feet and toes... be deeply aware of your feet and toes... relax them completely... That's good... allow all the tension to just flow out of your body through your toes.

Now, slowly check your body for any signs of tension... If you find that any tension remains in the muscle groups, try to let it go... let the tension flow out... and the relaxation flow in and replace it... Think about the ocean... and imagine that each wave that rolls in brings gentle relaxation... and as the wave rolls out, it pulls along with it any tension that remains in your body... Look around, any tension remaining... let it go. (20 second pause.)
Now, let's go through your body once more, relaxing further . . . until a very deep relaxation finds a place everywhere in your body. . . . Imagine warm water slowly trickling over your head . . . very warm water . . . flowing slowly down over your scalp and forehead. . . . As it flows over various parts of your body . . . the head and moisture will deeply relax the muscles and allow them to expand and become smooth. . . . The water is flowing over your eyelids . . . your cheeks . . . your jaws and mouth . . . and throat . . . your whole face feels warm and relaxed. . . . Now, it's gently flowing down your neck onto your shoulders . . . feel it sink to the muscles of your neck . . . relaxing each and every part of your neck and shoulders. . . . Allow the warm water to flow off your shoulders onto your arms, coming down and relaxing the very deepest muscles of your arms and hands. . . . As this flow comes down from your head and neck, it also enters your back and chest . . . it flows slowly through each and every muscle in your back and chest. . . . Let it go gently down into your stomach and massage your stomach . . . making it feel heavy and warm, and releasing all tension in your stomach. . . . Now, down through your legs and thighs into the knees and calves . . . and on down into your feet and toes. . . . As the warm water passes over your toes . . . it takes any remaining tension with it, out and away from your body.
You feel deeply and completely relaxed all over, from your head to your toes. Say to yourself as you imagine the water flowing over your head, down through your body. "I feel peaceful and calm... calm and peaceful. (5 second pause) Every part of me is becoming very relaxed. (5 second pause) I feel quiet... and tranquil."

Now, for a few moments, just enjoy the deep feeling of relaxation... a calmness... and a quiet feeling. Breathe slowly and deeply. As you breathe in and out... imagine the warm water or the ocean wave, or anything that might help you promote deep, deep relaxation in all of the muscles of your body... and become aware of how peaceful your whole body feels. (3 minute pause.)

Good. You should be feeling heaviness... warmth... and deep relaxation. Now, continuing to feel calm and peaceful... I would like for you to begin to become a little more alert... and aware of your surroundings. I will count from one to five, and as I do, stretch your arms and open your eyes. You will be fully alert, yet still feel relaxed and calm. One... two... three... four... five. Good.

If during the rest of the day, you feel yourself becoming tense or upset about anything... remember the relaxation you have just enjoyed. Before allowing your body to become tense, take a very deep breath and, as you exhale, say to yourself, "Relax... I feel quiet and calm."
Appendix D—Continued

Remember the peaceful, calm feelings you experienced here and let them come back to you. . . . This will allow you to more effectively deal with whatever problems or tasks are before you.
Appendix E

Autogenic

Get into a comfortable position now and begin to relax as completely as possible. . . . This is your time . . . nothing to do for the next 15 minutes except allow a deep, soothing relaxation to come over your body. . . . Nothing to worry about . . . no problems to solve just concentrate on feeling relaxed and calm.

Take a few very deep breaths . . . breathing first from your abdomen . . . filling your middle chest . . . then your upper chest. . . . Hold it for a few seconds . . . and breathe out . . . exhaling as much air as you possibly can . . . then pause for a few seconds before taking the next breath. . . . As you breathe slowly and deeply, feel your body slowing down . . . every part of your body is beginning to relax. . . . Unwind . . . and become comfortable.

You have learned how to relax various muscle groups in your body by releasing tension in a particular area. . . . Now, we are going to concentrate on the systems of the body which we think of as automatic . . . the systems which regulate breathing, heartbeat, blood circulation and temperature. . . . In learning to relax these systems as well as muscular activity, a deep, more profound relaxation will develop. . . . This is done by passively thinking of different groups of
words and allowing these phrases to have an effect on your body.

Now, focus your attention on your breathing. . . . Imagine your breathing is as automatic as the ocean waves . . . rolling in . . . and out . . . in and out. . . . Silently say to yourself, "Breathing . . . smooth and rhythmic (5 second pause) . . . my breathing is pleasant and effortless (5 second pause) . . . as automatic as the ocean waves rolling in . . . and out (5 second pause) . . . breathing smooth and rhythmic."

Good. . . . As you breathe, feel relaxation moving through your chest and shoulders . . . down into your arms . . . through your back . . . and down into your hips and legs. . . . With each breath, try to feel the growing heaviness and warmth in your arms and legs. . . . When you exhale, visualize the air flowing down from your legs and chest into your stomach . . . and your stomach becoming warm and relaxed. . . . Focus on your stomach and imagine it becoming warmer . . . peaceful and warm. . . . Silently say to yourself, "My stomach is warm and relaxed."

As you breath in, allow the air to move upwards from your lungs across your face. . . . Your face will feel cool as though a gentle cloud lightly touched it. . . . All of the muscles of your face feel relaxed and your mind is calm and clear. . . . All tensions and worries will flow away . . . and relaxation will flow over you with each breath you take.
Your arms and legs and stomach will feel warm and heavy and your face will feel cool and calm.

As you breathe in and out effortlessly, think about your heart . . . silently say to yourself, "My heartbeat is calm and regular. (5 second pause) . . . I feel very quiet and my heartbeat is calm and regular." (5 second pause.)

Now, let's focus your attention on your right hand and arm. . . . Say to yourself, "My right arm and hand feel heavy and warm. (5 second pause) . . . Warmth is flowing into my arm and down into my hand." . . . Just allow this feeling to happen passively . . . never force it. . . . You may use any thought you wish to imagine your hand becoming warm . . . like putting it into warm water . . . or . . . that the hot sun is beating down on it. . . . Continue repeating to yourself, "My right arm and hand are warm and heavy." (10 second pause)

. . . Now, turn your attention to your left arm and hand and silently repeat, "My left arm and hand are becoming warm and heavy . . . heavier and heavier. (5 second pause) . . . Warmth is flowing down my left arm and into my wrist and hand." . . . Passively think about warmth and heaviness.

. . . Now, focus on both of your arms and hands at the same time as you think to yourself, "Both my right and left arm are heavy and warm. (5 second pause) . . . My arms and hands feel warm and relaxed. (5 second pause) . . . Warmth is flowing into my arms gently down my wrist, hands, and fingers and they feel very pleasant." (5 second pause.)
For a few moments as you breathe slowly and deeply and enjoy the warm, heavy feelings that have developed, check around your body to see if there is any tension in any of your muscles. Is your jaw loose and open? Are your eyelids gently closed? All of the muscles of your face, neck, shoulders, and arms are completely relaxed. Your stomach is loose and limp. warm and calm.

Now, focus on your legs. the pleasant heaviness and warmth is flowing down into your legs. Let it happen as you say to yourself, "My legs are warm and heavy." My feet feel warm and heavy. My legs are heavy and warm and warmth is pleasantly flowing into my legs and down into my feet. flowing down all the way to the tip of my toes. My legs, feet, and toes are warm and relaxed." 

Now, focus on your arms and legs together and silently repeat. "My arms and legs are heavy and warm. My feet and hands are warm and heavy. Warm and pleasant feelings sink into every part of my arms, hands, legs, and feet." 

Take a very deep breath now and, as you breathe out, say to yourself, "I feel calm." These will be words to use only when you are deeply relaxed. Take another deep breath and say, "I am calm." As you practice feeling relaxed and saying, "I am calm," you will soon be able to
use this phrase in everyday life. . . . Whenever you feel up-tight, nervous, or the day is getting hectic, remember the feelings of deep relaxation you are feeling now and repeat the phrase, "I am calm." . . . Now, for a moment, enjoy the feelings of warmth and heaviness . . . as you breathe deeply and slowly . . . in and out . . . repeating the phrases, "I feel warm and heavy all over. . . . I am calm . . . my mind is calm . . . and my body is relaxed." (3 minute pause.)

Now take a deep breath, and as you let it out, become more aware of your surroundings. . . . Imagine yourself back where you were before becoming relaxed. . . . Yet, now you feel secure and refreshed. . . . I will count from one to five . . . and, as I do, become more alert. . . . Stretch your arms and body and continue to feel relaxed and calm. . . . One . . . two . . . three . . . four . . . five.

Now, you are ready to continue your daily activities, feeling alert and refreshed. . . . Remember, anytime you feel as if you were getting up-tight or upset about something, simply stop what you are doing, take a deep breath . . . and . . . as you slowly and gently breathe out, say silently to yourself, "I am calm." . . . This will help you remember the relaxation you have just experienced . . . and help you feel peaceful and calm. . . . This will allow you to control yourself and situations, rather than being controlled by them.
Appendix F

Imagery

Spend a little time now getting as comfortable as you possibly can. . . . Clear your mind of any problems or worries. . . . This is your time to relax and enjoy pleasant, calm feelings. . . . Close your eyes, now . . . and take a very deep breath . . . as you exhale, allow your body and mind to begin to unwind and relax. . . . Take another deep breath . . . as you breathe in slowly . . . hold it . . . and mentally count to five before releasing. . . . Good. . . . Slowly breathe out now . . . feel the muscles in your body begin to relax . . . you begin to release the tension in your muscles as you exhale . . . and sink down deeply into the chair. . . . You feel calm, peaceful, and warm . . . warmth is flowing throughout your body and along with the warmth comes a very comfortable, peaceful feeling. . . . Repeat silently . . . "I feel calm . . . and relaxed . . . relaxation is soothing my body."

So far, you have learned how to breathe deeply and slowly . . . how to reduce physical tension by relaxing various muscle groups in your body, and . . . how to regulate certain automatic responses such as heart rate and temperature. . . . Now, we are going to learn how to reduce mental anxiety and tension. . . . Anxiety usually involves both physical and mental components . . . but at times, one of these components
may be stronger than the other. . . . For instance, a person may be physically exhausted, yet unable to fall asleep because of upsetting thoughts. . . . or worry over a particular problem. . . . This is mental anxiety. . . . By using our imagination, we can reduce mental anxiety and, at the same time, enjoy a deep state of physical relaxation. . . . As you practice using your imagination, you will find yourself relaxing more and more fully.

Now, we are going to use our imagination to go on a fantasy trip. . . . In your mind you will see, hear, feel, smell, and experience various scenes. . . . Try to imagine the scenes as vividly as possible. . . . The more clearly you imagine the pleasant, relaxing scenes, the more completely you will be able to relax your mind and body. Focus on your breathing now. . . . allow your breathing to become smooth and rhythmic. . . . peaceful and calm. . . . smooth and rhythmic. . . . Picture yourself now on the side of a road out in the country. . . . It's a very warm day. . . . you can feel the warmth from the sun and a cool, gentle breeze on your face. . . . Look around you. . . . slowly begin to walk off the road down a small ditch. . . . Off to the left is a creek. . . . a little creek with the water gently flowing over stones and pebbles. . . . Just stop a moment and relax as you watch the water gently flowing along. (5 second pause.)

Look around you. . . . You can see trees on either side of the creek. . . . you can hear the wind as it blows gently
through the trees . . . leaves are rustling as the breeze flows through the trees. . . . Smell the nice fresh air in the woods and feel the breeze on your face.

Start to walk through the trees next to the little stream now. . . . The sunlight comes through the trees and sparkles on the stream. . . . Sparkles of sunlight dance on the water as it flows over and around stones and branches. . . . In this pleasant, serene environment . . . one cannot help but feel peaceful and tranquil. . . . The gentle sound of the flowing water soothes your entire body . . . and you feel completely relaxed. (5 second pause.)

As you walk further up the stream, you can see a small waterfall. . . . Sit down on one of the rocks near the waterfall. . . . Just let your body relax so that as you sit there on the rock, all of your senses are open. . . . Listen to the waterfall . . . roaring gently as it flows over the side and tumbles down below, and makes a gentle, misty foam to the bottom. . . . Feel the cool breeze that blows off the misty, foaming water. . . . Smell the freshness in the cool, clean air. . . . Reach out and put your hand into the cool water . . . and feel it gently flow through your fingers . . . massaging them and feeling so cool and moist. . . . Allow your body and your mind to experience every possible sensation imaginable . . . take a very deep breath and enjoy the feeling. (5 second pause.)
Good... Now, slowly get up off the rock and begin to walk down the stream... As you walk, feel the leaves under your feet and hear the sounds of nature around you... birds chirping... animals running about... It's all so peaceful and serene... As you walk, you notice a small boat beside the stream... How nice it would be to get in the boat and ride back downstream.

Get into the boat... and there you find some blankets... Now, lying on the soft blanket, gently push the boat off so that it flows with the gentle flow of the stream... The boat is rocking gently from the motion of the water... Feel the rocking, to and fro... and the warm sunlight and the cool breeze flowing over you... You feel relaxed... peaceful... and calm... the gentle rocking motion massages you with feelings of peace... All is well.

As you continue to drift, experience the sounds of nature... the soft breeze, the gentle roar of the water, the birds and animals on the shore... Smell the grass and flowers as the scents drift over you with the breeze... You are drifting deeper and deeper into a wonderful feeling of pleasantness and peace.

Now, for a few moments as you drift along, imagine yourself anywhere you would like to go to relax... A place where you have been or would like to go... where there are no problems and no worries... nothing to do but just relax... Perhaps the beach, walking along the sunny shore with
the crystal clear water and the waves gently roaring in and out. . . . Or, perhaps lying in a meadow filled with wildflowers gently swaying in the breeze. . . . with bird and animal sounds playing gentle background music. . . . Perhaps in the mountains. . . . or sailing on a lake. . . . or possibly curled up by a fire in a log cabin in the woods. . . . Whatever you find relaxing can be your relaxing image.

Picture it now. . . . Imagine yourself there. . . . Go there in your imagination and enjoy peaceful, calm feelings. (4 minute pause.)

Good. . . . Now imagine yourself back in the boat, drifting along with the stream. . . . The boat gently washes up to the shore. . . . Get out of the boat and walk back up towards the road on which you began your trip. . . . As you do this, you will remain in a very complete and total state of relaxation.

You can use the power of your imagination to create a feeling of relaxation whenever you want. Now, I am going to count from one to five. . . . and when I reach five, open your eyes and become fully alert, feeling refreshed and peaceful. . . . One . . . two . . . three . . . four . . . five. . . . Alert, yet very relaxed and calm feeling.

If during the rest of the day or at anytime you find yourself getting upset about something, remember the feelings you experienced. . . . using your imagination. . . . Stop what you are doing. . . . close your eyes for a moment. . . .
and go on a two-minute mini-vacation . . . imagining yourself anywhere in the world you would like to be. . . . Visualize this scene, then return to your normal activities. . . . This will allow you to refresh and rejuvenate your mind and body so that you can reduce stress and solve problems more effectively.
Appendix G

Combination - The Relaxation Response

Get into a comfortable position now, and begin to relax. . . . You have come a long way in developing relaxation skills. . . . The value of these skills will be seen in how well you are able to use them in your daily life. . . . This will depend on your continued practice until the conscious practice you have learned becomes automatic or reflexive. . . . In other words, the stress reaction will be replaced by a relaxation response.

Let's review what you have learned up to now . . . so as to put your experience into the most positive perspective, maximizing chances for long term relaxation and stress reduction. . . . You have learned how to breathe correctly from your abdomen, how to release physical tension by relaxing various muscle groups, how to control your automatic physical responses by creating feelings of warmth and heaviness, and how to reduce mental anxiety by imagining pleasant, relaxing scenes. . . . Now, we are going to combine these techniques and incorporate them in order to promote both physical and mental relaxation . . . and learn to use a relaxation response in place of a stress response to unpleasant life events.

The relaxation response involves first cuing in to your stress level. . . . your physical and mental reaction. . . . For example, are your muscles tight? . . . Is your breathing
shallow? Are you angry or frustrated? Then, you are to create a relaxation response to the cue, rather than a stress response. . . . This is done in conjunction with taking a deep breath. . . . As you inhale, cue in to your stress level. . . . As you exhale, create a relaxation response by silently repeating, "relax . . . alert mind . . . calm body." . . . Let's try it together. . . . Inhale . . . cue in to your stress . . . exhale, say "relax." . . . As you exhale, also let your jaw go loose, then your shoulders and feel the wave of heaviness and warmth flush all of the tension out of your body. . . . Again . . . inhale . . . cue in to stress . . . exhale . . . release tension, and relax. . . . Once more . . . inhale . . . cue . . . exhale . . . relax.

Now, I would like for you to close your eyes and imagine that you are going to take a trip into space aboard a very safe ship. . . . Imagine, now, climbing aboard the ship. . . . You are getting into a very comfortable seat. . . . Now that you are comfortable, imagine the different objects in the spaceship . . . the control panel . . . the various switches and lights. . . . Imagine yourself about to lift off now. . . . This means you must be alert and ready to respond immediately to instructions. . . . Notice that the stress cue is appropriate to the situation.

Release just enough tension to keep a clear head. . . . You are now taking off. . . . Feel the increasing gravity . . . feel the pressure against you. . . . Your body is
tense. . . . Grip the arms of the chair to brace against
the force of gravity. . . . Inhale. . . . Take a very deep
breath . . . hold it. . . . Your whole body is becoming
tenser and tenser, tighten your toes, feet, legs, fingers,
arms, shoulders, neck and face. . . . Hold on . . . tense
your body . . . tighter. . . . Now, exhale deeply . . . and
suddenly, as if you have just burst through the gravity field.
. . . You are weightless.

Your whole body loosens in successions of easy breaths.
. . . You are pleased that the take-off went well. . . .
Your jaws, tongue, shoulders go loose. . . . Let your neck
and shoulders drop . . . arms and fingers limp . . . stomach,
thighs, legs go loose, and warm. . . . Feel the muscles . . .
let go of all tension as you float now. . . . Your body is
weightless . . . you feel serene. . . . Say to yourself,
"alert mind, calm body" . . . Notice what you feel like when
your muscles let go . . . when you feel calm and serene . . .
with your eyes still closed.

Your body has now safely floated back to where you began.
. . . Feel comfortably heavy, safe, and calm. . . . Your
body is sinking deeper and deeper into the chair . . . it
feels pleasant, heavy, and calm . . . completely motionless.
. . . Think about lifting up one leg, but don't actually do
it. . . . Think about the muscles that you would have to
use if you were to raise your leg or arm. . . . Notice the
tensions that have crept into those muscles just from your thoughts.

Now, I am going to name each part of your body. . . . Feel heaviness and warmth in those parts. . . . Silently say to yourself, "My body is calm. . . . My forehead, eyes, and mouth feel loose . . . my jaw and tongue feel loose as I slowly open my mouth. . . . My neck and shoulders feel heavy and loose. . . . Heaviness and warmth move down my arms into my wrists and fingertips. . . . Heaviness and warmth surround my chest, my heart is warm . . . my stomach feels heavy and warm. . . . Heaviness and warmth move through my thighs and down into my legs . . . through my knees, calves, and to my ankles. . . . My feet feel heavy and warm. . . . My body is calm. . . . My breathing is slow and regular."

Say to yourself, "I breathe in at cue. . . . I breathe out and relax." . . . Practice experiencing the relaxation response on your own for a few minutes now . . . breathing in . . . cuing in to stress . . . breathing out . . . and relaxing. (5 minute pause.)

Good. . . . Now, continuing to feel quiet and relaxed, gradually become more aware of your surroundings. . . . I am going to count from one to five. . . . As I do, open your eyes, wiggle your fingers and toes . . . become alert, yet feeling relaxed and peaceful. . . . One . . . two . . . three . . . four . . . five.
If at any time during the day, you find yourself becoming upset or tense, take a deep breath and, as you inhale, silently say, "cue in to stress" ... as you exhale, silently repeat, "relax ... and let go." ... Using this relaxation response, you will then have energy to assess a situation and respond more appropriately by solving a problem effectively, rather than responding with stress.
Appendix H

Daily Review

Get into a comfortable position now and begin to relax. . . . By now, you know how to relax relatively quickly by using the various techniques we have learned so far . . . and by using the six-second relaxation response. . . . Remember, as you inhale deeply, cue yourself in to being aware of your stress response. . . . Are your muscles tight? . . . Where are they tight? . . . Is your breathing rapid and shallow? . . . Is your heart beating rapidly? . . . As you exhale slowly, let your face go loose . . . then let your jaw drop and your shoulders fall gently onto the back of the chair. . . . As you feel a wave of heaviness and warmth wash all of the tension out of your body . . . as you pause between breaths, your body and mind feel calm . . . warm and relaxed. . . . The stress and tension have been replaced by a feeling of inner peace and tranquility. (10 second pause.)

Good. . . . Sometimes in order to become more aware of our response to stress, our body arousal, and our mental reaction to specific daily events, it is helpful at the end of the day to review happenings of that day in order to become more aware of the events that were stressful. . . . How we reacted both physically and mentally and . . . if the reaction was appropriate or not.
For now, I would like for you to close your eyes...
take in a deep breath using the relaxation response as you
exhale.... Continue to breath slowly and deeply....
Clear your mind of anything you might be concerned with....
and begin to picture a blank screen.... totally blank....
Imagine a TV screen with nothing on it.

Now, passively observe the screen.... picture the
number 10 on the screen.... vividly see the number 10....
Now, picture the number 9.... As you concentrate on the
number 9, inhale deeply and cue in to your body tension....
exhale, and relax.... Feel warmth and heaviness flowing
into your body.... Now, see the number 8 on the screen....
as you do, the calmness in your body becomes deeper....
.... See the number 7.... silently repeat to yourself,
.... "My body is calm and quiet.".... Inhale, cue in to
your body response.... exhale.... and relax.... See
the number 6 now.... "My body deepens with profound
heaviness and warmth.".... See the number 5.... "My
body and mind feel calm and serene.".... See the number 4
.... inhale.... exhale, and relax all over.... See
the number 3.... "My body deepens and deepens with the
relaxation response sensation all over.".... See the number
2.... Inhale to cue in to your body.... exhale.... and
relax your body and your mind.... Now, see the number 1.
.... Calm sensations flow through every part of the body.
... "My body is calm ... my mind is calm." ... Inhale ... cue ... exhale ... relax.

Now, see the blankness on the screen again ... the screen dissolves into a calm flowing mist. ... Heaviness and warmth are supporting your body as your mind sees clearly like a headlight into the fog ... giving you control.

Use your mind like a screen now ... to play back the events of your day without intentionally involving your body. ... Observe these events like a reverse movie in slow motion ... permitting the relaxation response to come whenever your body signals tension. ... Take about five minutes in your private time now for this review of your day. ... Notice any time pressures ... tension ... and frustrations that occurred. ... Attend to which stresses were really appropriate for body arousal, and which were not. ... Try not to judge yourself or others as good or bad ... and, as you sense a cue of unwanted tension, do a six-second relaxation response ... and proceed with the review. ... Begin with the last event of the day ... and recreate the day in your mind on to the very first moment you woke up. (5 minute pause.)

Good. ... Did you notice events that were particularly troublesome or stressful? ... Now, I am going to count from one to five and, as I do, become more alert ... open your eyes ... wiggle your fingers and toes ... beginning to become more aware of your surroundings. ... One ... two
... three ... four ... five. ... More alert, yet still completely relaxed.

Practice this exercise each evening before going to sleep, using the relaxation response whenever you notice feeling tense or upset while reviewing any particular part of your daily events. ... You will become more aware of certain problem areas, and how you respond to them ... and how to better respond to them by first using the relaxation response before acting.
Appendix I

Using Relaxation in Daily Life

Get into a comfortable position now and begin to relax. . . . By now, you should be able to become completely relaxed in only a few moments. . . . Take a few moments now to relax as totally as possible, using the relaxation response and any combination of the various techniques you have learned so far. (15 second pause.)

You have probably already become aware of which techniques you respond to best, and have combined them in various ways to best suit your needs. . . . If you have practiced these techniques regularly, by now you should be aware of your stress response to various life events and be able to replace the stress response with the relaxation response. . . . The more one practices, the more automatic the relaxation response becomes.

If one is relaxed during a stressful situation, there is more physical and emotional energy to use in effectively dealing with the situation. . . . In other words, rather than allowing the situation to control you, you can at least control your response, both physically and emotionally . . . and, possibly, alter the situation more effectively.

For example, a fellow employee does something that you don't like, and you become angry at him . . . your stress
response is increased physical tension, increased anger, and a desire to lash out at this person. . . . If you act on this response and lash out at the person, there may be negative consequences for you in the form of a reprimand, being fired, or making an enemy out of a fellow employee.

If you don't act, but hold in the anger and tension, you may experience certain stress related symptoms . . . such as headaches, muscle pain, diarrhea, insomnia or fatigue plus being upset and mad. . . . Yet, on the other hand, if you notice your response and own up to it rather than making the other person responsible for your feeling by saying "He made me so mad." . . . you are then in a position to use the techniques you have learned to reduce your own stress. . . . Once you have reduced your own stress by using the relaxation response, you may be able to take appropriate action in dealing with the fellow employee . . . or, you may decide not to act at all since you no longer feel upset.

Remember, you created your own stress response to an event, not the other person. . . . Therefore, you can create your own positive response by reducing the stress and increasing the feeling of relaxation and calmness . . . both physically and mentally.

You have practiced reviewing your daily events, noticing what you respond to in a stressful manner. . . . Now, I would like for you to repeat the process, imagining certain problem areas which seem to repeat themselves in your daily activity.
Imagine yourself in these situations, recognizing your stress response, engaging in a six-second relaxation response to reduce your own stress, and then dealing with the problem as calmly and effectively as you possibly can.

You feel relaxed, comfortable, and confident. . . . You are in control of your own physical and emotional response. . . . You have now changed your stress response to one of relaxed confidence.

Begin by going through a relaxation technique which you feel comfortable with . . . including the relaxation response. . . . Then, imagine yourself in a situation reacting calmly and in complete control and having it turn out as you would wish it to. . . . Begin now. (5 minute pause.)

Good. . . . By imagining certain situations in a relaxed atmosphere and planning how you might effectively deal with them, you will more likely be able to respond in a relaxed, confident manner to whatever upsetting or unfortunate event might occur. . . . Remember, you can control your own responses to stress. As you practice more and more, the relaxation response will take the place of the stress response, and you will be able to respond on a continual basis in a more relaxed, comfortable manner.
Appendix J

Relaxation Tape

Get into a comfortable position now . . . relaxing just as much as possible. . . . This is your time . . . nowhere else you need to go . . . this is your time for relaxation. . . . Become aware that there is no need for you to review any events of the past . . . or . . . any events of the future. . . . There is no need to solve any problems. . . . So just for now, clear your mind of any thoughts . . . problems . . . or concerns. . . . For the next 15 minutes . . . just let go of these worries and treat any thoughts of them as minor distractions. . . . They will be there when you return . . . but for now, concentrate on becoming relaxed . . . and enjoy the mental and physical feeling that comes with relaxation. . . . Just close your eyes and think of nothing but relaxation for the next 15 minutes. (10 minute pause.)

Now, take a deep breath and, as you let it out, become more aware of your surroundings. . . . Imagine yourself back where you were before becoming relaxed . . . yet now you feel secure and refreshed. . . . I will count from one to five . . . and, as I do, become more alert . . . stretch your arms and body and continue to feel relaxed and calm. . . . One . . . two . . . three . . . four . . . five. . . . Now you
are ready to continue your daily activities, feeling alert and refreshed.

Remember, anytime you feel as if you are getting up-tight or upset about something, simply stop what you are doing, take a deep breath . . . and . . . as you slowly and gently breathe out say silently to yourself, "I am calm." . . . This will help you to remember the relaxation you have just experienced . . . and help you feel peaceful and calm . . . This will allow you to control yourself and situations, rather than being controlled by them.
Appendix K

Table 1

Demographic Data for Experimental (15) and Control (15) Subjects

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<th>Demographic Factor</th>
<th>Experimental Group</th>
<th>Control Group</th>
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<td>Age in Years</td>
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<td>Education in Years</td>
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<tr>
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Note. Numbers in parentheses indicate ranges.
Appendix L

Table 2
Mean Difference Scores, t Scores, and Levels of Significance (Sign.) During Eight Training Sessions

<table>
<thead>
<tr>
<th>Session</th>
<th>$\bar{x}$ Experimental</th>
<th>$\bar{x}$ Control</th>
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<th>Sign.</th>
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Note. No comparisons significant at $p < .05$. 
Appendix M

Table 3

F Scores and Levels of Significance (Sign.)
During Training Sessions (S) and
Follow-up Sessions (F).

<table>
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<tr>
<th>Session</th>
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<th>Sign.</th>
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Note. No comparisons significant at $p < .05$. 
Figure 1. Adjusted blood pressure for experimental and control groups during training sessions (S), and follow-ups (F).
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