PROGRESSIVE RELAXATION VERSUS MUSIC ON REDUCTION OF ANXIETY IN A PRISON SETTING

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MASTER OF ARTS
CLINICAL PSYCHOLOGY

BY
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ABSTRACT

Two relaxation techniques were tested as means of producing anxiety reduction in a prison population. The study took place at the Franklin County Unit of the North Carolina Department of Correction and involved 36 male inmates ranging in age from 21 to 33 years. Volunteer subjects were randomly assigned to a one-month, Progressive Relaxation, Music Relaxation or Control group. Subjects were compared on pre-and post-test measures of the State Trait Anxiety Inventory, anxiety continuum, skin temperature measurements, latency of sleep onset, infraction rate and medical referrals. Though there were some trends in the expected direction, all comparisons were found to be non-significant. It has been hypotehsized that traditional Progressive Relaxation instructions would require some basic changes to meet the needs dictated by the unique characteristics of the prison population.

Introduction

Psychologists and medical staff in a correctional setting receive numerous referrals from inmates who are unable to deal with the stressful environment dictated by incarceration. This is not unusual considering the many aspects of confinement that are anxiety provoking and the few outlets available for dealing with this stress. For example, most prisons are forced to house a large population of inmates in a relatively small space. Many individuals are often forced to sleep in rooms where beds are placed less than a foot apart. The noise level is often high and opportunities for privacy are rare or non-existent. There are unique aspects of the prison population that make the overcrowded conditions even more stress provoking. For example, sexual harrassment, peer group pressure, and fear of actual physical or sexual assault are always present.

There are also administrative aspects of the correctional system that can be anxiety producing for the inmate population. Decisions regarding custody promotions and parole are often made on factors, or combinations of factors that are not easily decernable to the inmate. The resulting ambiguous expectations often prove to be anxiety provoking.

In view of the potential anxiety producing factors found in the correctional setting it can be assumed that anxiety related problems are frequently present. This has been supported by Hokanson, Magargee, O'Hagan & Perry (1976). They found that the predominant emotion reported by the inmate is anxiety. They also reported that inmates are not utilizing many coping behaviors which provide physical tension reduction or emotional relief from interpersonal stress.

Of interest in the present study is the effect of a structured anxiety reduction program on such variables as anxiety, aggressive behavior, insomnia and the number of medical referrals for the prison population. A review of the literature on the subject revealed that there are few studies involving the use of relaxation techniques in the prison setting.

Measurement Problems

One problem with all studies involving a method of anxiety reduction involves determining a valid measure of treatment effectiveness. Since 1934, when Jacobson suggested that subjective report of anxiety is closely associated with corresponding psychological measures, there has been much controversy and inconsistent data supporting this finding. A major weakness of Jacobsons' study was

the lack of a control group from which experimental effects could be compared. Some later studies have shown that reductions in both subjective and physical measures of anxiety were present even in control groups that should have experienced minimal change. Also, there is often little, if any, correlation between subjective and psychological measures of anxiety level or relaxation. Though subjective report was found by Marks and Huson (1973) to be a consistent discriminator of neutral from phobic imagery, they found that there was little correlation between mean scores of heart rate, skin conductance and these subjective scores. One of the major difficulties in this area, leading to inconsistent findings, is the problem of individual variability as shown by response specificity. For example, Lader and Mathews (1978) found on several occasions that electromyographic recordings of anxiety would read "0" when autonomic activity was elevated and subjective reports indicated extreme anxiety. They have also recorded instances when electromyographic recordings increased following relaxation, although there was a marked decrease in the subjective rating of anxiety. It has also been found that different subjects have different patterns of autonomic response which are reproducible over time and are consistent over different stressors. Thus, one subject might respond to the stress by a large increase in heart

rate and only a small increase in skin conductance and another might respond with the opposite pattern. Rachman (1968) demonstrates that muscle tension is not necessarily incompatible with relaxation. In this study, high levels of electromyographic activity were recorded concurrently with reports of deep relaxation. A problem that arises when comparing muscle tension and its corresponding subjective measures is the fact that there is often a failure to generalize relation across parts of the body. For example, Coursey (1975) found that when subjects received electromyographic feedback from the frontalis muscle, there was a correlation with subjective anxiety only for the face, forehead, upper arms, hands, and other parts of the body.

There have also been a number of studies that have given some support to Jacobson's contention that there is a relationship between subjective and physiological measures of relaxation. Paul (1968) found that even brief relaxation training produced significant decreases in heart rate, muscle tension, respiratory rate and subjective rate, and that there was a low, but significant correlation between these measures. Coursey (1973) found evidence, by correlating subjects state and trait anxiety scores with their baseline electromyographic change scores that subjective definitions of relaxation and low muscle

tension were positively correlated. Also, in a study of image vividness and heart rate, Lang, Melamed and Hart (1970) found heart rate correlated significantly with subjective anxiety.

Along with the fact that there are inconsistent data in establishing a relationship between physiological and subjective measures of relaxation, there are also few consistent correlations among various physiological measures. Heart rate, pulse rate, respiration rate, diastolic and systolic blood pressure, muscle action potential, skin conductance, and skin temperatures have all been used at various times in order to establish some reliable physiological measure of relaxation. The lack of consistent data in this area may be, at least, partially explained by the substantial number of factors that may affect these measures. Levitt (1967) has suggested that diurnal fluctuations of bodily process, diet, medication, exercise, and use of common stimulants such as coffee and tobacco may all produce significant effects, yet these variables are often difficult or even impossible to completely control.

The lack of correlation among psychological measures of anxiety and the inconsistent findings in published studies, would imply that a practical yet consistently objective measure of relaxation is unattainable; however, skin temperature has emerged in recent literature as being

fairly consistent in its response to differing levels of autonomic arousal and having several practical advantages over more traditional methods.

Measurement of Skin Temperature

Skin temperature has been used for a number of years as a possible indicator of responses to nicotine stimulation and more recently as a measure of radiation, ventilation, metabolism, and various emotional states. A limitation of these earlier studies involving skin temperature has been in their lack of sensitive, accurate measurement devices. Most have employed one of the following devices: ordinary mercury thermometers; thermocouples or the mopiles applied to the surface of the skin surface. Most recent experimenters have employed the use of thermistors, which include a small element applied to a surface whose resistance varies with changes in temperature.

The body location from which various experimenters have chosen as measurement sites have also been a source of inconsistent data in the past. Plutchik (1956) has concluded, after reviewing a number of skin temperature studies, that different temperatures exist between different parts of the body and that different areas heat up or cool down at different rates. He does contend that there is some justification for using finger temperature as the most

accurate measure. He states that "a measure of the skin temperature of the fingers and toes serve as the most sensitive indicators of the changes of the blood flow of the superficial vessels in order that rate of heart production may equal the rate of heat loss, keeping the internal temperature constant."

Several investigators have attempted to demonstrate a relationship between skin temperature changes and other physiological measures usually associated with anxiety level. Despite the lack of consistent data and little correlation among these various measures, there are some findings that show some support of a relationship. Baker and Taylor (1954), by monitoring electrical skin resistance and pulse rate concurrently with skin temperature, found that, under all stress producing experimental conditions, skin temperature decreased, skin resistance decreased and pulse increased when compared with reactions recorded during a resting period. Low, but significant correlations were found between these measures.

Eschette (1976) found that increases in skin temperature were consistent across groups, using autogenic relaxation, biofeedback training, and a temperature trainer. She also found that temperature was inversely related to both EMG level and subjective units of tension. Again,

relationships were not high and consequently far from conclusive.

Boudewyns (1976) found that temperature did not correlate with physiological measures of skin conductance, EMG, and pulse rate where subjects progressed from a presumably relaxed situation. He did find that finger temperature was related to self-report in the relaxation phase but not for the stress phase. He concludes that subjects are not as accurate in discriminating slight changes in internal arousal levels while experiencing stress, as they are while relaxed. Also, of importance in this study was the finding that the shape of the distribution for initial finger temperature was bimodial. He attributed this to the time of year. It was found that data collected in the colder months formed two non-overlapping distributions while in the warmer months there were so few subjects with low temperature to determine if there were two separate distributions or simply one negatively skewed distribution (Boudewyns, 1976). This implies that, at any given time, an individual's skin temperature will likely be either high or low and rarely in the middle of the range. This has important implications with regard to the applicability of The Law of Initial Values (Wilder, 1962) to skin temperature. Boudewyns found that subjects

with a low initial finger temperature did have a greater response to stimulus change. Vasilos (1977) came to the same conclusion with a group of 60 male prisoners. He demonstrated that subjects with low baseline skin temperatures showed a significantly greater increase in temperature than did subjects with high baseline temperatures for the first experimental session. It is also noteworthy that subjects with low baseline temperatures showed a significant increase in baseline temperatures in session two. This would suggest that maximal results from relaxation training would require more than one training session.

McDonagh and McGinnis (1973) found support of The Law of Initial Values with relation to autogenic training and biofeedback. They used initial temperatures to assign 14 college students to either a low or high temperature group. Each group was then exposed to instructions to increase warmth in the hand, first without, and then with visual temperature feedback. Results indicated that subjects in the high baseline temperature group did not show significant temperature increases; whereas for both treatment conditions low baseline temperature subjects showed significantly greater increases. Hama, Kawanura, Mine and Matsuyama (1977) came to similar conclusions by assigning 200 college students to either low, medium, or high anxiety

groups based on scores from the Manifest Anxiety Scale of the MMPI. All groups were trained to increase and decrease skin temperature over a period of 12 days. At the end of this training period high anxiety subjects were significantly better able to control hand temperature. Contrary to what would be expected from the bimodial nature of initial scores in Boudewyns (1976) study, there were no significant differences in baseline temperature among high, medium, low anxiety subjects at the beginning of the training.

Skin temperature, though not entirely consistent in its relationship to presumed levels of anxiety, has proven in recent years to be at least as reliable, if not more so, than more traditional methods. With other factors equal, temperature measurement appears to have many practical advantages over other physiological measures. Modern temperature recording equipment is relatively inexpensive and easy to use. It allows for more subject mobility and is less subject to respective changes in skin conductance and pulse rate. For this reason sudden noises or distractions are less likely to distort readings of skin temperature. Recordings of skin temperature have also been shown to be influenced very little by atmospheric conditions if there are adequate precautions in avoiding drafts and changes in room temperature. After reviewing

a number of skin temperature studies, Plutchik (1956) concluded that normal clothing and normal room temperatures and humidities have little influence on the results of experiments.

For these reasons, skin temperature will be used as an objective measure of the effect of treatment in the present experiment. The room will be maintained at a constant temperature of 72°F. and air flow from air conditioning vents will be blocked by sheets of plywood to prevent a direct flow of air across the thermistors. Due to the evidence supporting the applicability of the Law of Initial Values to skin temperatures an Analysis of Variance will be conducted to assure that groups are equivalent with regard to initial skin temperature.

Measurement of Insomnia

A second focus of the present study is to determine the effect of a mastery of relaxation techniques on sleep disturbances found in the inmate population. A number of studies have been implemented suggesting a relationship between sleep disturbance and anxiety level; however, this has never been validated for the prison population. Of the experimental studies that have demonstrated successful treatment of insomnia by relaxation methods, most (Kahn, Baker & Weiss, 1968; Geer & Kathin, 1966; and Haynes, Fol-

lingstad & McGowan, 1973) have relied on self report measure with no controls for demand characteristics. The role of demand characteristics in this type of study was demonstrated by Steinmark and Borkover (1973) through the use of counter demand instructions with sleep disturbed college students. In their study, subjects in relaxation training single item desensitization, placebo, and no treatment groups were told that improvements in sleep disturbance would not occur until the fourth week of treatment. Significant improvements in latency of sleep onset were found during the third week of treatment for both the progressive relaxation and single item desensitization groups. The role of demand characteristics was clearly exhibited by a sharp increase in positive results for all treatment groups at the onset of the fourth week (Steinmark & Borkovic, 1973). The role of expectancy, however, has not always been found to be a significant factor. The effectiveness of relaxation instruction in producing positive change independent of subject expectancy was demonstrated by Bassett, Blanchard & Estes (1977). In a factorial design using six groups of ten inmates from the Shelly County Penal Farm, they demonstrated that expectancy for improvement was not related to decrements on state and trait anxiety measurements. Each of the 60 inmates in the study was randomly assigned to one of the six experimental

groups: high, medium, and low expectancy progressive relaxation groups and high, medium, and low expectancy groups. Expectancy of change due to training was determined by the use of a 10 centimeter continuum. The ends of the scale were anchored with the terms "none" and "a great deal." The three relaxation groups received a 45 minute cassette recording (Lazarus, 1970) of instructions in progressive relaxation. A 45 minute cassette recording of non-vocal, instrumental background music was used with the three music groups. The six groups each had three separate experimental sessions lasting approximately one hour for three successive weekdays. The major findings of their study suggested that differential expectancies can be achieved by manipulating relaxation instructions; however, expectancy sets fail to have a significant effect on any of the dependent measures. It is also noteworthy that participants who were told only to listen quietly to music did not show any reduction in anxiety levels. A significant reduction was found for all expectancy levels of the relaxation groups. The majority of experiments designed to assess the effects of progressive relaxation on insomnia, have demonstrated that self report is an effective measure of anxiety level when there are adequate controls for demand characteristics.

Haynes, Woodland, Moran and Alexander (1974) emphasize not only the importance of the use of a control group, but also the importance of relying on the self report of behavior as opposed to the self report of behavior changes. This would imply that an estimation of a subjects time required to fall asleep would be a more effective measurement than an estimation of an individuals change over time. Krause (1961), in directing his attention to the measurement of anxiety, concludes that the most a researcher can do in establishing the sensitivity of self report is to safeguard against the subjects' having any reason for being dishonest. The present study will incorporate the use of a control group, equivalent expectations as to the effectiveness of treatments and self report of behaviors in an attempt to assess the effectiveness of progressive relaxation in reducing sleep disturbances in the prison population.

Medical Referrals and Rule Infractions

In describing the relationship between anxiety and aggressive behavior in the prison population, Hokanson et al. (1976) notes that aggressive responses were found to be associated with a rapid arousal reduction following behavioral responses to stress. Bassett et al. (1977) have found similar evidence through clinical interviews to sug-

gest that in some inmates deficits in stress coping skills often result in a cumulative frustration which is episodically ventilated by way of irrational anti-social activities. This would imply that many of the rule infractions incurred by inmates are directly related to an inability to effectively cope with anxiety. Therefore, mastery of progressive relaxation techniques should have a positive effect on the number of aggressive behaviors incurred and a subsequent reduction in the number of related rule infractions.

A final focus of the present study deals with the relationship between reduction in anxiety and the number of medical referrals for the inmate population. Medical referrals in the correctional setting have traditionally created problems, especially in the prescription and distribution of medication. A hesitancy to prescribe medication, especially sedative drugs, has resulted from the fact that some inmates will malinger in order to obtain the psychological and physical effects that many of these medications produce. Hoarded medication is often illegally sold within the inmate population and has, on occasion, been responsible for accidental death and successful suicide attempts. The reluctance to prescribe these medications is certainly understandable; however, many individuals with legitimate complaints of anxiety may go untreated. In many cases,

problems are not severe enough to clearly warrant medication but, severe enough to cause difficulty in coping with the stressful prison environment. It can also be assumed that a certain percentage of these inmates resort to aggressive acting out behaviors in an attempt to receive some type of professional intervention.

Literature focused at the effect of progressive relaxation techniques on medical referrals for the inmate population is very limited. In a case study involving 200 inmates from the Rideau Correctional Center, Marquis and Gendreau (1975) found that by the sixth month of the program approximately 70 percent of those who mastered relaxation techniques reported to have alleviated their problems. Relaxation instructions were adapted from Wolpe and Lazarus (1966) and the number of sessions varied from inmate to inmate for the six month period. A comparison of the number of medical referrals at the end of the six month period, revealed that, for the inmates who reported improvements there was a significant reduction in the number of referrals. Though these findings appear significant there are a number of methodological weaknesses in the study that preclude any conclusions as to the reason for this decline. Because no control group was used in the study there is no basis for concluding that improvements were due to a reduction in anxiety. Self report of improve-

ment could have resulted from demand characteristics or cognitive dissonance resulting from the time and effort invested in the experiment. There are no indications from experimental information to justify attributing a decrease in medical referrals to a lowering of anxiety. It may well be that most inmates show a reduction in medical referrals over time, or that a similar decrease would have resulted from exposure to any therapeutic procedure. For the present study the use of a control group and subjective and physiological measures of anxiety should more closely approach a casual relationship in the event that a reduction in medical referrals does occur.

There are many aspects of progressive relaxation techniques that would predict excellent suitability for the prison population. For example, a large number of inmates can have access to recorded relaxation tapes requiring very little staff time and expense. These techniques have also been shown to be well suited to group settings. This is an important factor considering the limited number of psychological and medical staff in relation to the tremendous potential case load in the prison setting. Once inmates learn the fundamentals of the technique, in a group setting, participation on an individual basis can be continued through the use of instructional tapes.

Ideally, mastery of relaxation techniques should enable inmates to more effectively deal with the day-to-day pressures found in the prison setting without the problems associated with the prescription of medication. Due to the lack of research in this area, the effect of mastery of these techniques on overall prison adjustment is not known. It is not proposed that relaxation is intended to be a panacea for all of the problems created by incarceration; however, progress should be evident in dealing with many of the problems associated with or resulting from heightened anxiety.

Statement of Problem

The present study is an attempt to assess the effect of learning a progressive relaxation technique on the anxiety level of a sample of inmates from the North Carolina Department of Correction. This will be accomplished by comparing groups of inmates who are instructed in progressive relaxation techniques, a music relaxation group and a control group for both subjective and physiological measures. Both treatment groups will be given the same instructions and expectancy as to the outcome of treatment. After a four week period of 45 minute bi-weekly sessions, groups will be compared on pre-and post-tests of the State Trait Anxiety Inventory, a 0-100 anxiety continuum and skin

temperature measurements. Groups will also be compared on latency of sleep onset, number of rule infractions and medical referrals. A significant improvement found between any of these variables would appear to justify the small amount of time and expense needed to develop programs on a larger scale.

Method

Subjects. Subjects were recruited by sign-up sheets posted at the Franklin County Prison Unit of the North Carolina Department of Correction. This was a request for inmates who were interested in participating in a group that would teach individuals to relax, to fall asleep more easily and to more effectively cope with the stressful prison environment. Thirty six male inmates participated in the study. They ranged in age from 21 to 33 and were serving sentences ranging from four years to life in prison. Of the 36 volunteers who participated in the study, there were seven blacks and 29 whites. This was in contrast to an overall black-white percentage of nearly 65 percent for this prison unit. The 36 inmates were randomly assigned to each of the three experimental groups such that there were 12 subjects in each group.

Apparatus. Sign-up sheets were placed on dormitory bulletin boards and in the cafeteria of the prison unit.

Each of these sheets contained a short paragraph explaining the possible benefits of relaxation training.

A consent form was signed by each inmate prior to the first session. (See Appendix A). This emphasized the voluntary nature of group participation and the importance of punctual attendance at each session.

A memorandum acknowledging participation in the study was placed in each inmate's jacket upon completion of the treatment period.

The State Trait Anxiety Inventory (Speilberger, Gorsuch and Lushene, 1970) was completed by all subjects at least three days prior to the first treatment session. The trait component (Form X-2) was an attempt to establish some pre-existing measure of trait anxiety; whereas, the state component (Form X-1) was an attempt to establish a measure of the level of situational related anxiety. An additional measure of state anxiety was taken at this time by the use of a 100-point rating scale where 0 denotes complete relaxation and 100, extreme anxiety. Post-test scores were taken from each of these measures three days following the final treatment session.

Immediately following pretests for the STAI and the 100-point rating scale, the temperature recording device was attached to the subjects dominant index finger. The subject was then asked to sit quietly for a period of ten minutes while skin temperature reached a consistent level.

Instructions were then given for each subject to relax, to the best of his ability, for a ten minute period.

The temperature was recorded for the beginning and end of the ten minute self-relaxation period to establish some objective measure of the subject's ability to relax on his own. This was accomplished by subtracting the initial temperature recording from the recording taken at the end of the ten-minute period. The higher the change score the greater the ability to achieve self-relaxation. This procedure was repeated within three days following the final treatment period in order to access the effect of treatment. This was accomplished by comparing the temperature change at the end of the second ten minute period with that of the end of the ten minute baseline period.

Estimations of the latency of sleep onset were taken directly after the ten minute self-relaxation periods. This was accomplished by comparing the temperature change at the end of the second ten minute period with that of the end of the ten minute baseline period.

Estimations of the latency of sleep onset were taken directly after the ten minute self-relaxation periods. This was accomplished by asking each inmate to estimate the average time required to fall asleep for the week preceding the first experimental session and the week preceding the final session.

The number of medical referrals was taken from each inmate's medical records, for the four-week period prior to treatment and the four week period immediately following treatment. A medical referral was considered any contact with medical or mental health staff that was recorded in the inmates records.

Infractions were recorded for the same periods as medical referrals. An infraction was recorded as a result of any minor or major write-up that was classified for administrative purposes as an infraction. This included a variety of inappropriate behaviors such as disobeying prison officials, assault and possession of contraband. An inmate who is accused of committing one of these infractions is tried by a disciplinary committee of prison officials. A record of every guilty conviction is placed in the inmate's permanent file.

The experiment took place at the Franklin County Prison Unit in the North Central Area of the North Carolina Department of Correction. This unit is a medium custody facility housing approximately 150 inmates. Conditions are extremely overcrowded, when compared with most prison units in the state, and consequently has had in the past a proportionately large number of anxiety related problems. The relaxation training took place in a classroom of the Education Building at the Franklin County Unit. This location

is relatively isolated from the rest of the prison population. Subjects were seated in wooden straight back chairs spaced far enough apart to allow mobility of limbs.

A standard cassette recorder was used for all experimental groups. The thirty minute relaxation instructions were those of Lazarus, (1970) recorded in the experimenter's voice. This is a progressive relaxation technique that utilizes the alternate tensing and relaxing of the various muscle groups of the body. Lazarus employs two tension relaxation cycles for each muscle group, each of which is composed of about five to ten seconds of tension followed by approximately 10-15 seconds of suggestions to let go.

The music group recording consisted of a 30-minute selection of instrumental music. Songs were selected, on the recording, such that there was a progressive slowing of the musical beat over the 30 minute period. For example, the tape consisted of seven selections, the first of which had a fast tempo. Successive selections were ranked such that the tempo of each was slower than the preceding song.

Skin temperature was monitored by a Systec Temperature Trainer, Model T-3p Sr. #78-07-1606. It is a precision, medium range thermometer with the capabilities of measuring absolute temperature from 60^{o}F to 104^{o}F, plus a differential temperature range of 45^{o}F if either thermometer exceeds the absolute. For the present experiment the function switch

was set at a meter scale range of 25. Thermistors were attached to the subjects dominant index finger by a 2-inch strip of scotch hair tape.

Procedure. The 36 subjects were randomly assigned to one of the three experimental groups. Each treatment group met twice a week for a four week period. The progressive relaxation group met at 4:00 on Tuesday, and at 6:00 on Thursday of the first week. The music relaxation group met at the same times on Monday and Wednesday for the same week. Day of week and time of day were then reversed for a two week period and then reversed again for the final week. This was an attempt to assure that experimental effects due to time of day and day of week were equally distributed across groups.

Three days prior to the first treatment session, subjects were administered pre-tests as described in the Apparatus section. During the first 15 minute period of the first session, members of each group were told that they had been selected from the list of volunteers to participate in one of two effective methods of achieving relaxation. Subjects were informed that they would have the opportunity to participate in the alternate method in the event that the alternate method proves to be more effective. It was also emphasized that any attempt to use

aspects of the alternate method, before the four week period was over, would likely interfere with progress.

All subjects were given the same instructions and expectancy as to the outcome of treatment. To counteract for the usual instruction in rationale for the Progressive Relaxation groups, subjects in the music group were told that pronounced states of relaxation have been achieved by individuals when they have focused their attention on a series of slower and slower music selections. Both groups were told that they should be able to produce a far greater state of relaxation, by the end of the fourth week period, than they have ever been able to achieve on their own.

Subjects in the experimental group met two days a week, during which time they were instructed by the experimenter to follow the instructions from the recording. After each 30 minute session of instruction in relaxation, subjects were asked to continue relaxing for a 15 minute period. The same procedure was followed with the control groups. All instructions were given by the same experimenter. After the four week treatment period, post-test measures were taken as described in the Appartus section.

Results. Of the 36 subjects who began the study, five dropped out due to transfers, parole, conflicting schedules and loss of interest. All statistical comparisons were

based on those 31 male subjects from which both pre-and post-test data could be gathered. Subjects ranged in age from 21 to 33 years with an overall mean of 26.5 years for the entire sample. IQ scores ranged from 83 to 124 with an overall mean IQ of 103.4. Pre-treatment data was compared, using a series of one-way Analysis of Variances, to assure that there were no pre-existing differences, among groups. The dependent measures were IQ, skin temperature, Speilberger state-trait anxiety score, the anxiety continuum score, latency of sleep onset, medical referrals and infractions. Results indicate that groups were equivalent with regard to all variables. The Anova Summary, means and standard deviations are given in Appendix B Tables A through I. Since pre-existing group equivalency was established post-test data was compared among groups using a series of one way Analysis of Variances.

Post-test measures of skin temperature were not found to differ significantly among groups. The initial post-test skin temperature did not approach significance, $F(2,28)=1.72$ n.s. The Anova Summary and means are presented in Appendix C, Table M. Trait Anxiety, as measured by the Spielberger Trait Inventory failed to reach significance, $F(2,28)=.219$, n.s. The Anova Summary and means are presented in Appendix C, Table O. Subjective estimates of the latency of sleep onset, for the post-treatment period,

were also non-significant across groups, $F(2,28)=.343$, n.s. The Anova Summary and means are presented in Appendix C, Table P.

Behavioral measures, taken from each inmate's records, failed to reveal significant differences among groups for the post-treatment period. No significant differences were found as a function of the type of treatment on the number of medical referrals, $F(2,28)=1.426$, n.s. The Anova Summary and means are presented in Appendix C, Table Q. The number of infractions incurred during the same period also failed to differ significantly among groups, $F(2,28)=1.514$, n.s. The Anova Summary and means are presented in Appendix C, Table R.

Though no significant differences were found among groups with regard to the dependent measures of interest, there were trends in the expected direction for several measures. There was an 8.3 drop in state anxiety for the progressive relaxation group as compared to drops of 1.5 and 2.3 for the music and control groups respectively. There was also a 1.7 mean difference between pre-and post-test resting skin temperature for the Progressive Relaxation group as opposed to respective gains of only .6 and .4 for the music and control groups. Similar trends were found for mean scores of trait anxiety, anxiety continuum and latency of sleep onset; however, all differences were found

to be nonsignificant. Refer to Table I for a summary of this data.

In summary, results reveal that short-term relaxation training has no significant effect on the inmate population with regard to a number of anxiety related measures. There were trends towards significant improvement for several anxiety related measures which indicates that a longer, more intensive treatment period or a larger sample size might have produced significant differences.

Discussion. The lack of significant findings in the results of the present study casts some doubt on relaxation training as a therapeutic approach to the reduction of anxiety in the correctional setting. Though there are a number of studies that support the usefulness of this approach in the non-inmate population, there has been virtually no research conducted on its applicability to the prison setting. One of the only experimental attempts was made by Bassett et al. (1977) using 60 male inmates from the Shelby County Penal Farm. Results revealed significant findings; however, the only means of evaluating these results were by subjective measures of state and trait anxiety. Significant differences were found between progressive relaxation and control groups for both state and trait measures in only three, one-hour sessions. The present study failed to replicate these findings for a two

TABLE 1

GROUP MEANS FOR ANXIETY RELATED VARIABLES

VARIABLE		P. R.	M. R.	CONTROL
RESTING SKIN TEMP.:	PRE-TEST	91.30	91.15	92.38
	POST-TEST	92.85	91.80	92.86
FINAL SKIN TEMP.:	PRE-TEST	91.50	91.44	93.39
	POST-TEST	88.14	91.93	93.64
TEMP. CHANGE:	PRE-TEST	-.20	-.29	-1.02
	POST-TEST	3.93	-.13	-.59
STATE ANXIETY:	PRE-TEST	44.00	43.92	42.83
	POST-TEST	38.60	42.42	40.11
TRAIT ANXIETY:	PRE-TEST	41.00	43.67	42.50
	POST-TEST	38.20	42.83	39.33
ANXIETY CONTINUUM:	PRE-TEST	40.83	50.00	41.00
	POST-TEST	38.00	41.00	42.78
LATENCY OF SLEEP:	PRE-TEST	63.67	44.17	133.92
	POST-TEST	29.50	41.17	37.89
MEDICAL REFERRALS:	PRE-TEST	2.92	1.50	1.67
	POST-TEST	2.08	1.50	2.42
INFRACTIONS:	PRE-TEST	.17	.83	.08
	POST-TEST	.08	.25	.08

month treatment period consisting of eight, 45-minute sessions. One explanation that can be hypothesized as contributing to this discrepancy is derived from the observation that interest was relatively high, in the present study, during the initial training sessions, but showed a continuous decline during the last four or five sessions. This was further supported by a significant increase in absenteeism for the same period. The study conducted by Bassett et al. (1977) apparently reflects the fact that the short treatment period did not allow for a loss of motivation and interest. The findings might not have been significant if the treatment period had been extended by several weeks.

The study conducted by Bassett et al. (1977) represents the only published experimental attempt to assess the effectiveness of relaxation training on anxiety related measures in the prison setting. Marquis et al. (1975) attempted to demonstrate its effectiveness in reducing medical referrals which were assumed to be directly related to an individuals anxiety level. These findings were derived from a large sample of inmates but the study did not control for other possible explanations. The present study casts some doubt on the results of that study, or indicate that positive findings were not necessarily due to any real reduction in anxiety. The failure of the pre-

sent study to reveal significant differences for physiological, subjective and behavior measures would tend to indicate that there were likely a variety of factors that could have had an impact on the results.

There are a number of theories that can be proposed in an attempt to explain the failure of the present study in producing significant findings. Any or all of the following assumptions may have been contributing factors: 1) dependent measures may not be related in any recognizable way, 2) characteristics of the inmate population may tend to elicit minimal response to relaxation training, 3) there may have been important methodological weaknesses in the study.

The majority of studies involving relaxation training have demonstrated that the first assumption is probably not the primary factor. With the exception of skin temperature, each dependent measure used has been shown to be related to differing anxiety levels in a fairly consistent manner. The majority of studies using skin temperature, as a measure of anxiety, have used biofeedback principles where subjects are instructed to produce changes as a result of some type of visual feedback. Eschette (1976) was one of the few experimenters who has given support to skin temperature as a direct measure of relaxation. She found that increases in skin temperature were consistent across

groups using autogenic relaxation, biofeedback training and a temperature trainer. The present study failed to replicate her findings using progressive relaxation at least for the prison population.

A second hypothesis attempting to explain the failure of the present study in producing significant change arises from the assumption that there may be unique characteristics of the prison population that result in a response to relaxation training that differs from that of the general population. Prison populations are typically composed of a large number of individuals characterized by antisocial personality characteristics. Of interest here is the fact that inmates falling under this diagnosis have traditionally been viewed as nonemotional individuals who function at a lower level of anxiety than is found in the normal population. Results of the present experiment are consistent with findings by Hokanson et al. (1976) and Spielberger, et al. (1970) in failing to support this traditional view of a low anxiety level for antisocial individuals. For example, in samples of over 200 male inmates, Spielberger found that respective state-trait anxiety scores of 44.04 and 45.96 were significantly higher than respective socres of 37.68 and 36.35 for the college population. Similar means of 44.5 and 41.8 for state and trait anxiety were found for inmates in

the present study. If anxiety levels are truly higher for the inmate population, the Law of Initial Values would have predicted that the potential for producing significant anxiety reductions would have been greater in the prison population than in the non-inmate population.

Another unique characteristic of the inmate population, that may have affected the results of the study, is the way these individuals respond to demand characteristics. This effect has been shown, on many occasions, in the college population to be in the direction of the subjects perception of the experiments desired outcome; however, this may not hold true for the inmate population. A resentment towards authority figures is a common characteristic found in the prison population. Since prison staff are viewed as authority figures, a conscious effort to present inaccurate data may have been a passive-aggressive way of fighting the system. This assumption is supported by the fact that subjects in all treatment groups revealed a lack of motivation and interest in attending the training sessions. The majority of subjects readily admitted that they signed up for the group out of boredom or curiosity rather than out of a need for any type of treatment or self-improvement. Overall attendance for the groups approached 90%; however, this was the result of much persuasion

and reminding, by the experimenter, that recognition for participation was contingent on perfect attendance at the sessions.

A final explanation for the lack of significant findings in the present study is based on the assumption that there are some major methodological weaknesses in the study. One possible weakness involves the method of selecting participants for the study. Subjects were recruited by signup sheets placed throughout the prison unit. It is predicted that motivation for participation would have been much greater if subjects had been recruited or screened from referrals issued by individuals complaining of anxiety related problems. Of the 36 inmates who participated in the study, only two had issued such referrals in the past or were seen as having any type of mental health problems by the unit staff. A second possible weakness in the method of the study results from the repetitive nature of the relaxation instructions used. Inmates appear to become easily bored by routine tasks or activities. It is predicted that interest and motivation would have been maintained at a higher level if instructions had been varied for each session. This is supported by a resurge of interest during the fourth week of treatment resulting from the addition of suggestions of warmth and heaviness.

There were also limitations with regard to the facilities available for the present study. Since instructions were given in a group setting, it was not feasible to provide each individual with an environment which was optimally conducive to achieving relaxation. The only seating facilities available for the group were unupholstered, straight-back chairs. Also, the noise level in the room was impossible to completely control as there was no location within the confines of the unit that was completely isolated from the noise of the remainder of the population. It is possible that subjects may have responded better to relaxation training without the use of taped group instruction. Individual instruction would conceivably have provided for better individual feedback and the opportunity for self-pacing. Though there is a host of research to support that group presentation of relaxation instruction is as effective as individual presentation with highly motivated college students, this may not hold true for the inmate population.

In summary, progressive relaxation was found not to be effective for anxiety reduction in the prison setting. It has been theorized that the lack of motivation and anti-social personality characteristics that are found in a large portion of the population may have precluded the effectiveness of short-term group instruction in relaxation

techniques. Also, less than optimal conditions may have resulted from the length and type of treatment or from the physical facilities available for carrying out the study. There are indications that optimal conditions for obtaining positive results should include extensive one-to-one treatment with individuals who are willing to admit to anxiety related problems and who have the motivation to work through them.

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RELAXATION TRAINING

This is to certify that, _____,
actively participated in a four-week volunteer relaxation program at the _____ Prison Unit. His perfect attendence and active participation in 8 relaxation sessions has demonstrated this individuals' ability to follow instructions and adapt well to a structured program. As a result of completion of this program, this individual should have gained some effective coping skills that will aid in his future adjustment to the prison environment.

LEARN TO RELAX

In the near future a group will be formed, on this unit, with the purpose of teaching individuals to cope with the pressures of day-to-day living. The techniques that will be taught during these bi-weekly group meetings have been shown to be effective in teaching individuals to relax, to fall asleep more easily and to more effectively cope with stressful situations. Interested inmates will be screened to determine eligibility for participation. Please sign below if interested:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

RELAXATION TRAINING

CONSENT FORM

I,_____, agree to participate in a four-week relaxation program held at this unit. As a participant in this group, I will be expected to meet, each week, for two, 45 minute periods, during which time I will be instructed in one of two methods of achieving relaxation. At the end of this four week period, I will have the opportunity to participate in the alternate relaxation method, in the event that the alternate method proves to be the most effective. I understand that I will receive a memorandum in my permanent files, if I attend all sessions and actively participate in the group. I further understand that participation in these groups will in no way effect consideration for custody change or parole.

DATA SHEET

NAME: _____ PRISON UNIT: _____

AGE: _____ IQ: _____ LENGTH OF SENTENCE: _____

Progressive Relaxation

TYPE OF GROUP INSTRUCTION:

PROGRESSIVE RELAXATION _____
MUSIC RELAXATION _____

PHYSIOLOGICAL MEASURE OF ANXIETY:

SKIN TEMPERATURE (PRE-TREATMENT)

BEGINNING OF SELF RELAXATION PERIOD _____
END OF SELF-RELAXATION PERIOD _____
CHANGE SCORE _____

SKIN TEMPERATURE (POST-TREATMENT)

BEGINNING OF SELF RELAXATION PERIOD _____
END OF SELF RELAXATION PERIOD _____
CHANGE SCORE _____

SUBJECTIVE MEASURES OF ANXIETY:

SPIELBERGER TRAIT (PRE-TREATMENT) _____
(POST-TREATMENT) _____

SPIELBERGER STATE (PRE-TREATMENT) _____
(POST-TREATMENT) _____

100 PT. ANXIETY CONTINIUM (PRE-TREATMENT) _____
(POST-TREATMENT) _____

LATENCY OF SLEEP ONSET:

BASELINE MEAN _____
FOURTH WEEK OF TREATMENT MEAN _____

MEDICAL REFERRALS:

BASELINE PERIOD _____
TREATMENT PERIOD _____

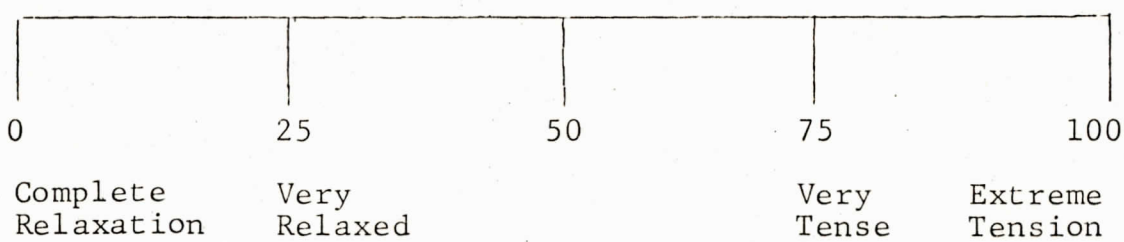
INFRACTIONS:

BASELINE PERIOD _____
TREATMENT PERIOD _____

INSTRUCTIONS FOR SELF-RATING

The following is a scale to help me understand how much tension you are feeling at the present time. You will notice that the complete absence of tensions is indicated by "0" on this scale. Though you likely have never experienced complete relaxation, you may remember approaching this level while lying on a river bank on a warm summer day or waking after a good nights sleep. On the other end of the scale, you will notice that extreme anxiety is represented by "100". You may have approached this level, for example, when you were waiting for the judge to pronounce your sentence. Scores between 0 and 100 indicate the various levels of anxiety that you may be experiencing between these extremes. For example, a score of 25 would indicate a relaxed feeling but with a slight level of anxiety, yet not quite extreme. Scores in the 50 area indicate a midpoint between tension and relaxation.

I would like for you to estimate where you would fall on this scale, at the present time, and place that number on the blank space labeled, "present level". MAKE SURE YOU HAVE SIGNED YOUR NAME.



NAME: _____

PRESENT LEVEL: _____

TIME REQUIRED TO FALL ASLEEP

Please complete the following to help me determine how long it usually takes you to fall asleep at night. I am only concerned with the period from the time you go to bed, till you actually fall asleep. For example, if you went to bed, last night, at 10:00, and did not fall asleep until 1:00, you would record 3 hours for that night. Now I would like for you to estimate the time required for each night last week. I understand that these will be only rough approximations; however, I would like for you to be as accurate as possible. Begin, on line one, with last night and continue until you have gone back for a period of seven (7) days. MAKE SURE YOU HAVE SIGNED YOUR NAME.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

NAME: _____

SELF-EVALUATION QUESTIONNAIRE Progressive Relaxation

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME _____ DATE _____

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

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
I feel calm	①	②	③	④
I feel secure	①	②	③	④
I am tense	①	②	③	④
I am regretful	①	②	③	④
I feel at ease	①	②	③	④
I feel upset	①	②	③	④
I am presently worrying over possible misfortunes	①	②	③	④
I feel rested	①	②	③	④
I feel anxious	①	②	③	④
I feel comfortable	①	②	③	④
I feel self-confident	①	②	③	④
I feel nervous	①	②	③	④
I am jittery	①	②	③	④
I feel "high strung"	①	②	③	④
I am relaxed	①	②	③	④
I feel content	①	②	③	④
I am worried	①	②	③	④
I feel over-excited and "rattled"	①	②	③	④
I feel joyful	①	②	③	④
I feel pleasant	①	②	③	④

SELF-EVALUATION QUESTIONNAIRE
FORM X-2

NAME_____ DATE_____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate number to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

21. I feel pleasant..... 1 2 3 4

22. I tire quickly..... 1 2 3 4

23. I feel like crying..... 1 2 3 4

24. I wish I could be as happy as others seem to be..... 1 2 3 4

25. I am losing out on things because I can't make up my mind soon enough..... 1 2 3 4

26. I feel rested..... 1 2 3 4

27. I am "calm, cool, and collected"..... 1 2 3 4

28. I feel that difficulties are piling up so that I cannot overcome them..... 1 2 3 4

29. I worry too much over something that really doesn't matter..... 1 2 3 4

30. I am happy..... 1 2 3 4

31. I am inclined to take things hard..... 1 2 3 4

32. I lack self-confidence..... 1 2 3 4

33. I feel secure..... 1 2 3 4

34. I try to avoid facing a crisis or difficulty..... 1 2 3 4

35. I feel blue..... 1 2 3 4

36. I am content..... 1 2 3 4

SELF-EVALUATION QUESTIONNAIRE, con't.

37. Some unimportant thought runs through my mind and bothers me..... 1 2 3 4

38. I take disappointments so keenly that I can't put them out of my mind..... 1 2 3 4

39. I am a steady person..... 1 2 3 4

40. I get in a state of tension or turmoil as I think over my recent concerns and interests..... 1 2 3 4

TABLE A

ANOVA SUMMARY AND MEANS INITIAL
PRE-TEST SKIN TEMPERATURE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	10.06	2	5.03	.27	NS
WITHIN GROUP (ERROR)	520.71	28	18.60		
TOTAL	530.77	30	17.69		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	91.30	5.45	12
MUSIC RELAXATION	91.15	3.14	12
CONTROL	92.38	3.23	12

TABLE B

ANOVA SUMMARY AND MEANS FINAL
PRE-TEST SKIN TEMPERATURE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	24.65	2	12.32	.62	NS
WITHIN GROUP (ERROR)	560.63	28	20.02		
TOTAL	585.28	30	19.51		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	91.50	6.13	12
MUSIC RELAXATION	91.44	3.03	12
CONTROL	93.39	2.44	12

TABLE C

ANOVA SUMMARY AND MEANS CHANGE IN
PRE-TEST SKIN TEMPERATURE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	9.8	2	4.9	.3	NS
WITHIN GROUP (ERROR)	406.13	28	14.5		
TOTAL	416.	30	13.9		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	-.20	.81	12
MUSIC RELAXATION	.2	1.59	12
CONTROL	-1.02	1.25	12

TABLE D

ANOVA SUMMARY AND MEANS PRE-TEST
SPEILBERGER STATE SCORE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	99.64	2	49.82	.35	NS
WITHIN GROUP (ERROR)	4028.03	28	143.85		
TOTAL	4127.67	30	137.59		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	44.00	11.51	12
MUSIC RELAXATION	43.92	14.59	12
CONTROL	42.83	8.94	12

TABLE E

ANOVA SUMMARY AND MEANS PRE-TEST
SPEILBERGER TRAIT SCORE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	119.68	2	59.84	.45	NS
WITHIN GROUP (ERROR)	3769.15	28	134.61		
TOTAL	388.84	30	129.63		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	41.00	10.37	12
MUSIC RELAXATION	43.67	14.00	12
CONTROL	42.50	10.15	12

TABLE F

ANOVA SUMMARY AND MEANS PRE-TEST
ANXIETY CONTINUUM SCORE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	449.69	2	224.85	.80	NS
WITHIN GROUP (ERROR)	7886.47	28	281.66		
TOTAL	8336.16	30	277.87		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	40.83	17.17	12
MUSIC RELAXATION	50.00	18.59	12
CONTROL	41.00	15.53	12

TABLE G

ANOVA SUMMARY AND MEANS PRE-TEST
LATENCY OF SLEEP ONSET

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	4847.37	2	2423.69	.89	NS
WITHIN GROUP (ERROR)	76002.44	28	2714.37		
TOTAL	80849.81	30	26914.99		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	73.67	74.75	12
MUSIC RELAXATION	44.17	30.28	12
CONTROL	133.92	251.62	12

TABLE H

ANOVA SUMMARY AND MEANS PRE-TEST
NUMBER OF MEDICAL REFERRALS

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	18.15	2	9.08	1.69	NS
WITHIN GROUP (ERROR)	150.56	28	5.38		
TOTAL	168.71	30	5.62		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	2.92	2.84	12
MUSIC RELAXATION	1.50	1.73	12
CONTROL	1.67	1.97	12

TABLE I

ANOVA SUMMARY AND MEANS PRE-TEST
NUMBER OF INFRACTIONS

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	4.53	2	2.27	1.08	NS
WITHIN GROUP (ERROR)	58.57	28	2.09		
TOTAL	63.10	30	2.10		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	.17	.39	12
MUSIC RELAXATION	.83	2.29	12
CONTROL	.08	.29	12

TABLE J

ANOVA SUMMARY AND MEANS INITIAL
POST-TEST SKIN TEMPERATURE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	8.15	2	4.08	1.72	NS
WITHIN GROUP (ERROR)	66.31	28	2.37		
TOTAL	74.46	30	2.48		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	92.85	1.27	10
MUSIC RELAXATION	91.80	1.78	12
CONTROL	92.86	1.46	9

TABLE K

ANOVA SUMMARY AND MEANS FINAL POST-TEST
SKIN TEMPERATURE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	153.87	2	76.93	.77	NS
WITHIN GROUP (ERROR)	2814.67	28	100.52		
TOTAL	2968.54	30	98.95		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	88.14	17.54	10
MUSIC RELAXATION	91.93	1.70	12
CONTROL	93.64	1.39	9

TABLE L

ANOVA SUMMARY AND MEANS CHANGE IN POST-TEST SKIN TEMPERATURE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	180.10	2	90.05	.87	NS
WITHIN GROUP (ERROR)	2907.10	28	103.83		
TOTAL	3087.19	30	102.90		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	3.93	16.32	10
MUSIC RELAXATION	-.13	.99	12
CONTROL	-.59	.74	9

TABLE M

ANOVA SUMMARY AND MEANS POST-TEST
SPEILBERGER STATE SCORE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	81.54	2	40.77	.28	NS
WITHIN GROUP (ERROR)	4020.20	28	143.58		
TOTAL	4101.74	30	136.73		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	38.60	13.31	10
MUSIC RELAXATION	42.42	12.52	12
CONTROL	40.11	9.36	9

TABLE N

ANOVA SUMMARY AND MEANS POST-TEST
SPEILBERGER TRAIT SCORE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	129.50	2	64.75	.31	NS
WITHIN GROUP (ERROR)	5911.24	28	211.12		
TOTAL	6040.75	30	201.36		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	38.20	19.54	10
MUSIC RELAXATION	42.83	12.96	12
CONTROL	39.33	8.86	9

TABLE O

ANOVA SUMMARY AND MEANS POST-TEST
ANXIETY CONTINUUM SCORE

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	112.12	2	56.06	.22	NS
WITHIN GROUP (ERROR)	7167.52	28	255.98		
TOTAL	7279.64	30	242.66		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	38.00	11.35	10
MUSIC RELAXATION	41.00	19.89	12
CONTROL	42.78	14.39	9

TABLE P

ANOVA SUMMARY AND MEANS POST-TEST
LATENCY OF SLEEP ONSET

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	768.62	2	384.31	.34	NS
WITHIN GROUP (ERROR)	31387.00	28	1120.96		
TOTAL	32155.63	30	1071.85		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	29.50	18.84	10
MUSIC RELAXATION	41.17	42.27	12
CONTROL	37.89	32.67	9

TABLE Q

ANOVA SUMMARY AND MEANS POST-TEST NUMBER OF MEDICAL REFERRALS

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	8.83	2	4.41	1.43	NS
WITHIN GROUP (ERROR)	86.66	28	3.10		
TOTAL	95.48	30	3.18		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	2.08	1.51	10
MUSIC RELAXATION	1.50	1.38	12
CONTROL	2.42	2.15	9

TABLE R

ANOVA SUMMARY AND MEANS POST-TEST
NUMBER OF INFRACTIONS

SOURCE OF VARIATION	SS	DF	MS	F	Sig. of F.
TREATMENT	.46	2	.23	1.51	NS
WITHIN GROUP (ERROR)	4.25	28	.15		
TOTAL	4.71	30	.16		

GROUP	MEAN	SD	N
PROGRESSIVE RELAXATION	.08	.29	10
MUSIC RELAXATION	.25	.62	12
CONTROL	.08	.29	9