A COMPARISON OF THE EFFECTS OF DEEP MUSCLE RELAXATION
AND THE TRANQUILIZING AGENT CHLORDIAZEPoxide
ON HOSPITALIZED ALCOHOLICS

THESIS

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By

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The purpose of this research study was to compare the treatment effects of relaxation therapy and the tranquilizing agent Chlordiazepoxide (Librium). The subjects were 37 hospitalized alcoholics who had been identified as anxious. Elevations of scales two and seven of the MMPI was used as a criterion of anxiety. Thirteen subjects were given Librium, 12 were given a placebo, 12 were given nine sessions of relaxation therapy.

Although the results did not indicate significant differences among the three groups, the relaxation group showed the least amount of anxiety at post-testing. It was concluded that relaxation therapy was equal to drug therapy in effectiveness and thus more desirable due to the lack of undesirable side effects. Suggestions for further research were given.
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Introduction

Each year thousands of alcoholics who are admitted to receiving wards of psychiatric hospitals report that they feel anxious, tense, lonely, irritable, frustrated, hopeless, inferior and depressed. Fox (1967) states that features common to most alcoholics include a low frustration tolerance and an inability to endure anxiety and tension. There appears to be a considerable body of opinion that alcoholics have high levels of anxiety and depression, which they attempt to relieve by drinking alcohol. The psychological effect of alcohol is often described as taking away the individual's defenses or reducing his anxieties. Dollard and Miller (1950) state that this idea is supported by concepts in the reinforcement theory of learning.

A variety of experimental results show that alcohol produces a reduction in fear or a reduction in anxiety resulting from fear. Masserman and Yum (1946) trained hungry cats to perform a complex series of manipulations to secure food. After this, they gave the cats electric shocks at the goal until they consistently refused to manipulate the apparatus. Then they found that getting the cats drunk with mild doses of alcohol would cause them to resume manipulating the apparatus to get food. In interpreting the results they describe the persistent refusal
to manipulate the apparatus as a "neurosis" and say that the alcohol "disintegrated" the neurotic patterns and permitted the simple goal-oriented responses to take place.

Conger (1949) designed an experiment to test the assumption that behavior observed by Masserman is essentially a simple approach-avoidance conflict and that the effect of alcohol is to reduce the fear and anxiety motivating avoidance. First, he tested hungry rats in a simple approach-avoidance situation. He then trained them to approach the lighted end of an alley to secure food and then threw them into an approach-avoidance conflict by giving them electric shocks at the goal. Five minutes after a control injection of water, the rats would not approach the food-shock end of the alley; five minutes after an injection of alcohol, they ran up to get the food.

If, as these experiments seem to indicate, alcohol produces a reduction in the strength of fear and anxiety, it would be expected that this reduction would reinforce the response of drinking when frightened or anxious. This deduction is confirmed by the results of Masserman and Yum (1946). Before being frightened at the goal, normal cats regularly preferred plain milk to milk containing 5% alcohol. After the cats had been frightened, forced to take mild doses of alcohol and had their fear and conflict relieved by its intoxicating effects, they developed a preference for the 5% solution of alcohol. Finally, during a
series of trials in the apparatus without punishments, all signs of fear were extinguished and the preference for alcohol disappeared. This suggests that the reduction in fear and anxiety produced by the alcohol's anesthetic properties served to reinforce the response of drinking the alcohol solution when frightened.

Kraft (1971) has developed an approach to the theory and treatment of alcoholism which states that social anxiety is the central feature of this disorder: "Alcoholism is the outward expression of underlying social anxiety which the patient counteracts by the use of alcohol" (p. 798). Miller, Hersen, Eisler, and Hilsman (1974) also studied the relationship between social stress and alcohol consumption. The subjects were 10 alcoholics and 10 social drinkers. Drinking was measured via 10 minutes of operant responding whereby lever presses earned alcohol reinforcement on an FR-50 schedule. During stress conditions, subjects were exposed to simulated interpersonal encounters requiring assertive behavior. The no stress condition consisted of non-threatening discussions of pleasurable spare time activities. Alcoholics significantly increased their operant responding to obtain alcohol following stress conditions, while social drinkers did not.

Whitelock, Overall, and Patrick (1971) took the responses of 136 alcoholic patients to an alcoholic abuse questionnaire designed to measure the severity of abuse
of alcohol. They compared these results to profile patterns derived from the Minnesota Multiphasic Personality Inventory (MMPI). Their results indicated that the most severe self-report of alcohol abuse was associated with the anxious depressive neurotic person. This indicates that many laymen use alcohol to achieve for themselves a reduction in fear, anxiety, and depression. Since drinking produces a temporary but almost immediate reduction in conflict, the individual is immediately reinforced for drinking and may merely learn to drink when faced with a painful situation.

That anxiety and depression are prime factors involved in many alcoholics' personality has been supported by numerous psychometric evaluations. Weingold, Lachin, Bell, and Coxe (1968) administered the Zung Depression Scale, a 20-item self-report depression scale, to 73 consecutively admitted alcoholics to confirm the assertion that depression is a characteristic feature of alcoholism. An analysis of the data indicated that 70% of all the alcoholic patients exhibited mild to deep depression. Butterworth (1971) administered the Zung Depression Scale to 900 alcoholics who were admitted to an inpatient detoxication unit at East Louisiana State Hospital. He found that 75% were clinically depressed. Kissin and Cross (1968) used the Zung Depression Scale and the Cattell IPAT Anxiety Scale to measure the anxiety and depression of 25 consecutive admissions to an inpatient alcoholic treatment unit. They found that 24 of
the 25 patients manifested a degree of depression greater than the mean of Zung's normal control group. This is significant at the .001 level. They also found that 20 of the 25 patients exceeded the mean of Cattell's norm group. This is significant at the .002 level. Using the MMPI in studying the differences between the alcoholic and the narcotic addict, Overall (1973) found that alcholicst tended to have anxious depressed profile patterns, whereas those of narcotic addicts tended to have profiles characterized by sociopathic character disorders.

Ditman (1967) states that drugs are frequently used in the treatment of the alcoholic for purposes of helping him to control the anxiety and depression. Hayman (1967) reports that most alcoholics are treated by the general practitioner who is inclined to look on the treatment of alcoholism as he does the established model of current medical practice. "The patient gives a history and development of the illness, the physician conducts the examination, establishes a diagnosis and proceeds to carry out the appropriate therapy; whether it be medication, physical therapy, or surgery (p. 261)." He states that it is not unusual for the alcoholic to have used 10 or 15 drugs without success for his alcoholism. Frequently drugs are used which subject the alcoholic to the additional risk of addiction to drugs, not to mention numerous other dangers surrounding drug side effects. In separate articles on the use of drugs for alcoholism treatment,
Ditman (1967), Fox (1967), Hayman (1967), and Victor (1972) all agreed that little reliance could be put on any drug except during the acute withdrawal stage, when some of the tranquilizing agents can be of great use in aborting the onset of delirium tremens.

Despite this fact, drugs are widely prescribed by physicians for the treatment of alcoholism. Ditman (1967) surveyed the psychiatrists of southern California on their use of drugs and found that alcoholism was the second most frequent condition for which drugs were used. Drugs were used more frequently for schizophrenia and associated depression. Jones and Helrich (1972) made a national survey of private physicians on their treatment of alcoholism. Most believed that the chief cause of alcoholism was personality or emotional factors. However, over 90% of the physicians used medication in their treatment of alcoholism.

An alternate approach for dealing with anxiety is a non-medicinal method called deep muscle relaxation training (DMR). DMR is a procedure taught to patients which enables them to relax their entire body by practicing the relaxation of various muscle groups as units. The technique utilizes Jacobson's (1929) technique for muscle relaxation. Jacobson's early investigations led him to conclude that tension involved the effort manifested in the shortening of muscle fibers and that this tension was occurring when a person reported "anxiety" and that such anxiety could be removed
by eliminating the tension. Both Whatmore (1967) and Grim (1972) proposed a fatigue interpretation to anxiety disorders. They suggested that minute covert muscle responses are seen as a form of energy expenditure within the nervous system which reacts to the environment and self. The implication here is that a neurotic disorder results from an overexpenditure of energy. Relaxation of muscle fibers was seen as the direct physiological opposite of tension and was therefore a logical treatment for the overly tense or anxious person. Jacobson discovered that by systematically tensing and releasing various muscle groups and by learning to attend to and discriminate the resulting sensations of tension and relaxation, a person could learn to almost completely eliminate muscle contraction and experience a feeling of deep relaxation.

The autonomic effects that accompany deep relaxation are diametrically opposed to those characteristic of anxiety. Jacobson (1939, 1940) showed that pulse rate and blood pressure were diminished by DMR. A series of studies in the early 1960's demonstrated that skin conductance decreases and respiration becomes slower and more regular during relaxation (Clark, 1962; Wolpe, 1964). More recently, Paul (1969) found that a group of subjects given DMR exhibited greater decrease in subjective tension, heart rate, respiration rate, and muscle tension compared to a group who were simply told to relax themselves.
Another similar technique which utilizes DMR will be mentioned. This technique was developed by Joseph Wolpe (1958, 1969) in the counterconditioning of fear and anxiety responses. Its name is systematic desensitization. Wolpe's early studies with cats demonstrated that a conditioned fear reaction could be eliminated by evoking an incompatible response while gradually presenting the feared stimulus. The incompatible response will inhibit the fear or anxiety response as long as the former is of greater intensity than the latter. In his search for an easily inducible incompatible response for humans, Wolpe used the technique of relaxation training. Wolpe's procedures were similar to Jacobson's in terms of tensing and releasing muscle groups in order to achieve deep relaxation. Wolpe would first train the subject in DMR and then verbally give suggestions to the patient of a ranked hierarchy of the feared or anxiety provoking stimulus. With this procedure treatment emphasis was placed on the circumstances surrounding the occurrence of anxiety rather than the anxiety response itself. Anxiety is quite often a learned response to a certain stimulus, and the anxiety is most efficiently eliminated by developing an incompatible response (relaxation) and pairing it with the situation which elicits anxiety.

DMR has been employed in cases where tension has resulted in actual tissue damage or consequent physical or mental illness. Haugen, Dixon, and Dickel (1960) in reporting
on their experience with relaxation therapy state that they rather routinely treated anxiety, depression, phobias, obsessions, compulsions, psychosomatic disorders, and in some instances, paranoia. They observed that once patients learned to relax completely, and then stay relaxed during their daily affairs, these disorders disappeared spontaneously. Bernstein and Borkevec (1973) reported the case of a professional man in his fifties who came to them because of chronic tension which had resulted in a serious stomach ulcer. He was taking tranquilizers several times a day in addition to ulcer medication. He was successfully treated over a five week period to where he was able to terminate the use of tranquilizers and still be able to deal with the tension producing aspects of his life.

An attempt to apply relaxation-like procedures to psychotic children has been reported by Graziano and Kean (1968). They found that operant reinforcement of social behavior in four autistic children had decreased the intensity and duration of tantrums but had had little effect on frequency. High excitement and tension in response to minor irritation seemed to occur prior to these outbursts. Consequently, brief highly structured relaxation training was initiated. This procedure simply involved having the children lie down while the therapists gently massaged their arms, legs, and neck at the same time instructing them to breathe easily and relax. Rewards were given for relaxed behavior during these
sessions. The therapists reported that over the 105 brief sessions the children learned to become quiet and relaxed during the sessions and that outbursts outside the session decreased to zero. However, this study did not determine whether these sessions were effective because of the increased opportunity to reward desirable behavior or because of the relaxation training itself.

Brady, Luborsky, and Kron (1974) treated four male patients with essential hypertension. Three of the four subjects showed a significant reduction in blood pressure when the relaxation therapy was instituted. Jacobson (1938) reported the successful treatment of spastic esophagus and mucous colitis using DMR. While employing DMR as an incompatible response in systematic desensitization, Slade (1972) reported the successful treatment of auditory hallucinations in a psychotic patient. He found that a steady buildup in tension preceded the patient's experience of hearing voices. His attempt to treat the stress-causing situations resulted in a total elimination of the auditory hallucinations.

Tasto and Chesney (1974) treated seven female students suffering from primary dysmenorrhea (pain during menstruation) by a combination of muscle relaxation and imagery associated with menstrual pain reduction. Significant differences between pretreatment and posttreatment measures indicated that relaxation therapy was an effective means of treating primary dysmenorrhea in college age students. In another study,
Tasto and Hinkle (1973) trained six undergraduates suffering from tension headaches in muscle relaxation techniques to be used whenever a headache occurred. After 2.5 months of treatment, four subjects reported no headaches and two reported one headache each during a one-week period. These results are significant when compared with a mean of 5.5 headaches per week reported before treatment.

DMR also has been reported to be effective for the treatment of neurotic disorders which involve a great deal of anxiety. The most obviously appropriate targets for relaxation training are persons who exhibit uncomfortable high level free floating tension responses that interfere with the performance of other behavior. Bernstein and Borkovec (1973) reported on the successful use of relaxation training in the early stages of therapy in order to facilitate the patients' ability to discuss emotionally-charged interview topics. Kahn, Baker, and Weiss (1968) have reported the use of relaxation training to treat college students reporting chronic insomnia. Half-hour group training sessions were given twice each week for two weeks. Post training interviews indicated that 11 of the 13 subjects had improved. Among 10 subjects who had previously indicated the amount of time before falling asleep, all reported shorter times after training. At a 10 week follow-up interview, seven subjects reported less difficulty than prior to training, one had relapsed, and five were consistently falling asleep within 10 minutes.
Gershman and Clouser (1974) reported on a study using desensitization and relaxation procedures by an automated approach to treat insomnia. A major purpose of their study was to compare the effectiveness of desensitization and muscular relaxation in a group setting using an automated approach. The experimental sample was composed of 20 volunteer insomniacs of both sexes. Results indicated that both the desensitization and the DMR group exhibited significant improvement over two control groups which showed no changes over a four-week study. Clinically, it appeared feasible to make use of both desensitization and DMR by a group automated approach.

Carter and Synolds (1974) suggested that brain injured children who have poor handwriting are trying too hard to write and using too much energy in the process. An audio-taped relaxation program was devised and presented to 32 boys who ranged from 8 to 11 years of age. They were all in special classes for minimally brain injured children. Thirty-two boys matched for age were controls. Relaxation training was administered to the experimental group 3 days per week for 4 weeks. Results indicate that the program was effective in enhancing the quality of handwriting and that there was transfer effect to non-experimental situations. The changes that were brought about proved to be stable over time. There was also very high interjudge reliability of handwriting quality.
Boudreau and Jeffrey (1973) treated stuttering in eight 16 to 22-year-old males in 10 sessions of systematic desensitization. Pretherapy and posttherapy assessments were obtained on four tasks: reading and speaking alone and reading and speaking accompanied by one person. A significant decline in percentage of words stuttered was obtained on all measures. No marked change was evidenced in four control subjects. A follow-up indicated stability of results.

More directly related to this study is the research utilizing DMR in the treatment of anxiety in alcoholics. Reed, Lewen, and Williams (1972) reported a study in which DMR was used to reduce the excessive anxiety in patients and thus make them more amenable to treatment. The target objectives were to reduce the number of patients who dropped out of treatment, increase the number of patients who were able to sleep and rest at night, and improve the overall adjustment of the patient as measured by two personal adjustment inventories. The excessive anxiety was thought to be the major contributing factor in causing patients to leave the center. Anxiety seemed to be particularly high during the patients' first week at the treatment center. The results indicated that significantly more alcoholic patients who received DMR stayed the optimal length of time in treatment (25-28 days). Only 38.9% of patients not receiving DMR were hospitalized for the recommended length of time. This contrasted strikingly with the groups receiving DMR where 75%
stayed at the center 25 to 28 days. Chi-square analysis using the three categories of 25-28 days, over 28 days, and under 25 days revealed a significant difference between patients receiving DMR and those not receiving DMR. The patients receiving DMR also had a significantly higher incidence of "quiet nights" than the patients not receiving DMR. The group receiving DMR also showed four significant scale changes in an improved direction; whereas, the patients not receiving DMR received only two significant changes in a favorable direction.

Hartman (1973) reported on a similar study in which completion of an alcoholic program was used as a criterion of success. His subjects were participants in an alcoholic treatment program of 10 weeks duration. Any use of alcoholic beverages during that period of time resulted in immediate discharge. All program participants were unscreened and admitted in groups of seven every 5 weeks. Beginning with the 21st group admitted to the program and continuing through the 29th group, alternate groups were administered training in DMR utilizing taped instructions. Training sessions were conducted in two half-hour periods each week for the length of the program. Alternate groups were provided two corresponding 30-minute group discussion periods. After 1 year, out of the first 20 participating groups, 80 out of 140 (57%) completed the program. Of those groups not receiving relaxation training but receiving the same amount of additional time
in extra group meetings, 14 out of 25 (56%) completed the program. Out of the groups receiving the relaxation training, 34 out of 42 (81%) completed the program.

Blake (1967) compared two groups. One group received both DMR and faradic aversion therapy; whereas, the other group received only faradic aversion therapy. The experimental (aversion-relaxation) group contained 37 subjects, while the control (aversion) group contained 25 subjects. At 12 month follow-up, the indications were that the relaxation-aversion approach to treatment showed some slight advantage over aversion therapy alone. The difference was not statistically significant.

Lanyon (1972) reported on a similar study using 21 alcoholic patient volunteers in a state hospital who were given a mean of 11 hours of one of three treatments: interpersonal aversion (subjects watched their own audio-video recorded drinking "confessions" while being systematically derogated by two therapists) followed by systematic desensitization to drinking related anxieties; interpersonal aversion followed by a control procedure consisting of friendly interaction; or group discussion only. A 6 to 9 month follow-up interview showed that five of the seven traceable subjects given the interpersonal aversion-systematic desensitization treatment had been abstinent, compared with only one of seven treated by either the second or third procedures. This significant difference was supported by changes on the Alcadd Test.
Hedberg and Campbell (1974) designed a program of treatment to compare the therapeutic efficiency of four therapeutic approaches to the treatment of alcoholism. Forty-nine alcoholics were administered either behavioral family counseling, systematic desensitization, covert sensitization, or faradic aversion treatment programs. Each patient's therapy regime adhered to a standardized sequence of treatment over a one-year period. Results indicated the behavioral family counseling and the systematic desensitization approaches were both highly effective in modifying excessive alcohol consumption; whereas, the faradic aversion was least effective.

Kraft and Wijesinghe (1970) performed a study which was aimed at evaluating psychometrically the changes which occurred in nine patients treated with systematic desensitization to social anxieties. All were so dependent upon alcohol that they were prevented from working. The period of dependence varied from 6 months to 17 years. On the Taylor Manifest Anxiety Scale the pre-treatment anxiety level for the group was significantly above the mean. Although there was a significant reduction in the anxiety level after treatment, the post-treatment value was still above the mean for the Taylor's norm group. On the Maudsley Personality Inventory there was no significant change in extraversion, but the neuroticism scores showed significant reduction after treatment. The pre-treatment MMPI had scales two, four,
seven, and eight all elevated above a T score of 70. After treatment all scales were reduced and were within the normal range. In another article, Kraft (1969) gives detailed case histories of eight of these patients. All eight patients no longer need to drink to excess and yet can continue to drink socially. The eight patients have been followed up for periods ranging from 1 year to 3 years, 4 months, and their recovery has been maintained. Kraft (1967) gives another case history in which an alcoholic was successfully treated by systematic desensitization in 23 sessions.

The present study is being done on a unit which utilizes a behavioral approach in treating the alcoholic patient. Drugs are used as a last alternative in dealing with the anxious patient. Their therapeutic curriculum includes individual therapy, Alcoholics Anonymous, group therapy, aversion therapy, assertion therapy, and deep muscle relaxation. The purpose of this study is to evaluate the therapeutic effectiveness of their DMR program in dealing with the anxious patient and comparing these results to a similar group of anxious patients treated with the minor tranquilizer Chlordiazepoxide (Librium).

The literature indicates that this drug is an effective agent in dealing with anxiety, tension, and agitation. Titchen and Schultz (1960) treated a series of 42 hospital patients admitted for acute and chronic alcoholism. Anxiety and tension as well as excessive motor excitement were
effectively reduced in a majority of the patients. Kelly, Brown, and Shaffer (1969) reported a study using a double blind procedure in which 15 patients with anxiety symptoms took Librium for 1 week and a similar group was given a placebo. Physiological and psychological measurements were made of all 30 patients before and after treatment. Librium was found to be significantly superior to the placebo on eight physiological, clinical, and psychological measurements. In a study were 500 clinic and private alcoholic patients were treated with Librium, Lawrence (1961) reports it to be highly effective in alleviating anxiety, tension, and related symptoms and in lessening the desire for alcohol. He further reports that the drug was helpful in establishing productive psychotherapeutic relationships and that patients treated with Librium remained longer in therapy than those treated previously by other methods.

Since the previously cited literature has indicated that both DMR and Librium are effective agents for reducing anxiety in anxious persons, it would be expected that patients treated by either of these approaches would respond in similar manners by showing similar decreases in anxiety. At the same time, a group of anxious patients given a placebo would show little improvement. If DMR proves to be as effective as the Librium in reducing anxiety, it would be beneficial to the alcoholics to teach them DMR as an alternative approach in dealing with anxiety. This is especially
true when considering the dangers involved in drug side effects or drug interactions with alcohol. In order to investigate these aspects the following hypotheses have been formulated:

I. The DMR-Placebo group will show significantly greater decrease in anxiety than the Placebo group.

II. The DMR-Placebo group will show significantly greater decrease in anxiety than the Drug group.

III. The Drug group will show significantly greater decrease in anxiety than the Placebo group.

Method

Subjects

The subjects were drawn from an inpatient unit of acute alcoholics. They were limited to a male population 20 to 40 years of age. All subjects were required to meet a set criterion of having I.Q.'s above 80 as measured by the Shipley Institute of Living Scale and having elevations above a T-score of 70 on both scales 2 (Depression) and 7 (Psychasthenia) of the MMPI. At the time of the study, they could not be taking any tranquilizing agent. Subjects with any severe physical problem or an organic brain syndrome were eliminated from the study.

Materials

The method of measurement used in this study was the MMPI. This test has been used to measure characteristics
and treatment changes in hospitalized alcoholics many times before. As mentioned earlier, Overall (1973) used the MMPI to measure the similarities and differences in the personalities of the alcoholic and the drug addict. Rohan, Tatro, and Rotman (1969) used the MMPI in measuring characteristics of hospitalized alcoholics, in estimating the degree of their improvement, and in relating the change to their subsequent adjustment. Shaffer, Hanlon, Wolf, Foxwell, and Kurland (1962) compared pretreatment and posttreatment MMPI profiles of alcoholic patients treated with a drug (Nialamide) or a placebo for approximately 30 days.

Previous studies with the MMPI indicate several primary profile configurations among alcoholics. Goldstein and Linden (1969) using a multivariate correlation grouping technique on a large sample of hospitalized alcoholics were able to identify four major types of personality patterns: psychopathic personality (Type I); psychoneuroses with severe alcoholism (Type II); alcoholism primarily with a secondary psychopathic personality mixed type of classification (Type III); and alcoholism with secondary characteristics of drug addiction and paranoid features (Type IV). They suggest that specific types may benefit from differential treatment programs. Rohan (1972) attempted a similar classification study with a much smaller sample (N = 40) and found representative subjects of three of the Goldstein-Linden classifications represented in his sample.
The subclass of interest in this study was that represented by elevations above a T-score of 70 on both scales two and seven of the MMPI, which conforms to the Goldstein-Linden classification of Type II. Generally the prime term applied to persons presenting such a profile is psychoneurosis. An approximation to this profile type is noted in all three actuarial volumes: Dahlstrom and Welsh (1951), Gilberstadt and Duker (1965), and Hathaway and Meehl (1960). The prominent feature of this group is anxiety and nervousness, with depression as a frequent accompaniment. When these persons are unable to tolerate additional anxiety, they become depressed, clinging, dependent, and self-deprecatory; they lose confidence and feel inferior. They often have somatic manifestations of anxiety, such as diarrhea, chest pain, nervous stomach or dizziness. For purposes of this study, anxiety was defined as elevations above a T-score of 70 on both scales two and seven (K corrected) of the MMPI.

The patients being treated by relaxation therapy were treated with the use of recorded relaxation exercises. The procedure involved relaxation obtained by tightening and relaxing various muscle groups, beginning with the upper extremities and progressing to the feet. The instructions were conveyed to the subjects with the use of a cassette player and four sets of connecting headphones. An example of the relaxation exercises can be found verbatim in Appendix A.
The use of taped relaxation sessions has been found to be an effective method of inducing relaxation in anxious patients. Recent studies from sources already cited indicate that instructions for training in relaxation can be presented to groups by means of a tape recording with no apparent loss of effectiveness (Brady, Luborsky, and Kron, 1974; Gershman and Clouse, 1974; Reed, Lewen, and Williams, 1972; Hartmon, 1973). Mayton and Atkinson (1974) have made a review of the literature surrounding the use of systematic desensitization applied in group settings with audio and video equipment. After reviewing the literature, they came to the conclusion that group desensitization and relaxation therapy was an effective means of reducing anxiety.

Procedure

Upon being admitted to the Alcoholism Treatment Unit, all patients were given a 1-week orientation program of which testing was a part. It was during this orientation period that the MMPI and Shipley Institute of Living Scale was first administered to the patients. Detoxication was thoroughly achieved before the testing was attempted. Patients meeting the criteria were placed randomly by the use of a table of random numbers into one of three groups: drug, DMR-placebo, and placebo. Throughout the study period all 37 patients were involved in AA, individual, and group therapy but
were not involved in either aversion therapy, DMR, or chemotherapy except where the experimental condition called for one of these.

The drug group was given medication at times and dosages prescribed by the attending physician. The Librium and placebo were identical in appearance. Neither the patient nor the nurses were aware of what the patient was being given. Both the drug group and the placebo group were told that they would be given the opportunity to be involved in the relaxation therapy as soon as an available position came open. The DMR-placebo group was given relaxation sessions 3 times per week for 3 weeks. The DMR instructions were a modified Wolpean technique. Relaxation instructions were relayed to the patient from a cassette player and connecting headphones. The apparatus was arranged so that a maximum of four patients were able to participate in each session. The subjects reclined in a secluded area on four different hospital beds and were instructed to follow through with the relaxation training. Before beginning the relaxation sessions, a therapist met individually with each subject and explained the purpose and rationale for relaxation therapy.

The study period consisted of 21 days. This should have been sufficient time for the medication to take effect. A previously mentioned study by Kelly, Brown, and Shaffer (1969) reported successful treatment of a group of patients with Librium over a one-week period of time. They found Librium
to be significantly superior to a placebo on eight physiological, clinical, and psychological measurements. During this 21-day period the DMR-placebo group was exposed to nine sessions of relaxation therapy. It was almost certain that the DMR-placebo subjects would not achieve the maximum relaxation skill during this short period of treatment. Bernstein and Borkovec (1972) suggest the minimum time of at least 6 months using relaxation therapy in order to achieve the maximum results. However, several previously cited studies successfully treated anxiety symptoms during a much shorter period of time. Gershman and Clouser (1974) successfully treated insomnia by using relaxation therapy two sessions per week for 4 weeks. Tasto and Chesney (1974) treated primary dysmenorrhea in five relaxation sessions over a 4 week period. Kraft (1969) reports a case of alcoholism successfully treated in nine sessions of systematic desensitization but failed to give the period of time over which the treatment took place. Paul (1969) did a thorough literature review over systematic desensitization. He found the maximum number of suggested relaxation sessions for purposes of learning relaxation skills before beginning desensitization to be not more than seven sessions. These studies suggest that during nine sessions of relaxation therapy the present subjects could acquire some of the expected relaxation skills.

At the end of the 21-day period, the study patients were retested with the MMPI. Two different MMPI booklets and
answer sheets were used in the testing in order to prevent the subjects from knowing they were being retested with the same test. On the first administration, subjects were tested with a standardized questionnaire form and answer sheet, whereas on the second testing a mimeographed test booklet and answer sheet was used. Upon both testings, subjects were told to answer the test as they felt at that time.

Scale two of the MMPI consists of 60 items, while scale seven consists of 48 items. Scale seven has a correction factor added in an effort to get a more subtle aspect of the patient's attitude. The more severe the subject's problem, the more items he marks on either scale. The results from the three groups was compared using analysis of covariance on both scales two and seven.

Results

The total number of subjects who participated in this study for the full 21-day period was 37. Numerous subjects were placed in the study, but, for reasons beyond the control of the experimenter, had to be eliminated. The primary reason for most of the eliminations was early departures by the patients before the experimental period was completed. Two of the placebo subjects and one of the DMR-placebo subjects were eliminated as a result of their being placed on a tranquilizing agent before completion of the 21-day period. One of the drug subjects was eliminated as a result of a
drug reaction. The final distribution of the subjects in the individual groups is as follows: drug, 13; placebo, 12; and DMR-placebo, 12. To indicate the effectiveness of the randomization, the mean ages for the drug, placebo, and DMR-placebo groups are 31.2, 33.08, and 30.5, respectively. The mean intelligence quotients for the three groups in the same sequence are 100.2, 96, and 98.

Examination of the analysis of covariance table for scale two (depression) in Table I indicates that there was not a significant difference among the three experimental groups at post-testing, $F=1.22$, $P>.05$.

### TABLE I

**ANALYSIS OF COVARIANCE FOR THE DEPRESSION SCALE**

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</tbody>
</table>

Hence, all groups responded in approximately the same manner despite the variation in treatment. However, examination of the adjusted post-means indicates that the results are in the hypothesized direction. The adjusted post-means are 23.46, 21.5, and 19.92 for the drug, placebo, and DMR-placebo groups, respectively. It is of interest to note that even
the placebo group responded with a lesser degree of depression than the drug group. This problem is discussed more thoroughly in the discussion section. The unadjusted means for scale two are presented in Appendix B.

Examination of the analysis of covariance for scale seven (psychasthenia) in Table II also indicates that the results of the three groups are not significantly different, $F=1.28$, $p .05$.

**TABLE II**

ANALYSIS OF COVARIANCE FOR THE PSYCHASTHENIA SCALE

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>$F$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>35</td>
<td>900.1514</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>33</td>
<td>835.1843</td>
<td>25.3086</td>
<td></td>
<td></td>
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<tr>
<td>Difference</td>
<td>2</td>
<td>64.9670</td>
<td>32.4835</td>
<td>1.2835</td>
<td>0.2905</td>
</tr>
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</table>

However, once again examination of the adjusted post-means indicates that the results are in the hypothesized direction. The adjusted post-means are 31.85, 29.49, and 28.76 for the drug, placebo, and DMR-placebo groups, respectively. Once again the drug group exhibits a greater amount of anxiety than the other two groups. The unadjusted means for scale seven are presented in Appendix C.
Discussion

Examination of the results leads to the rejection of all three hypotheses. Although the results did not indicate a significant difference between the DMR-placego group and the placebo or drug group on either of scales two or seven, the results did indicate that the DMR-placebo group was the least anxious and depressed after treatment. This was in the direction of the proposed hypotheses. As indicated previously, the 21-day period was probably not the ideal period of time for DMR to have its optimum effect. If the subjects were given more hours of relaxation therapy over a longer period of time, there would probably be more change in a favorable direction with this group. By examining the results one can easily see that both the DMR-placebo and placebo subjects responded as well to treatment as the drug group. This suggests that relaxation therapy was at least equal to the treatment effect of Libruim.

It should be noted that the drug group responded with the least amount of treatment effect. One possible way of accounting for these results was given in a study by Shaffer, Freinek, Wolf, Foxwell, and Kurland (1963). In a 30-day double-blind evaluation of Librium in the treatment of hospitalized alcoholics, patients were randomly assigned to one of three treatment categories: Librium, 10 mg., Librium, 20 mg., or placebo by capsule three times daily. After
treatment there was no evidence that Librium reduced either anxiety or the incidence of drinking among those subjects. In fact, trends noted were to the contrary. Although psychiatric ratings and patient self-ratings of anxiety and related states revealed no specific drug effects, a measure of anxiety derived from the MMPI was significantly higher at post treatment testing among patients receiving 20 mg. of active medication three times daily than among patients receiving a placebo. These researchers suggest that the higher levels of anxiety may have come about as a result of a drug rebound at the higher levels of dosage. This suggests that for a short period of time the drug might allay anxiety but eventually loses its ability to do so unless increased.

In the present study, it was of interest to note that of the subjects receiving the drug (N=13), there were two who showed dramatic increases on both scales two and seven; whereas, out of the subjects receiving DMR and the placebo (N=24), only one subject showed any increase in anxiety. This was indicated by a minute increase on that subject's scale seven. Overall, in the drug group there were much smaller decreases in anxiety as indicated by the MMPI.

Future research and studies would profit from discovering the conditions that govern an individual's response to drugs.

It is also possible that an anti-inhibition factor can account for the post-test scores of the drug group. The previous literature review on the use of Librium has
indicated that its use makes a patient more open and amenable to therapy. Instead of reflecting an increase in anxiety, the higher post-scores could be reflecting a greater insight and willingness to admit to emotional difficulties.

It should also be noted that the placebo group exhibited a decrease in anxiety. This could be explained by several factors. Many alcoholics become anxious and depressed and begin drinking in response to specific environmental stimuli and continue drinking until they are removed from these anxiety-provoking stimuli. Therefore, when they are removed to an inpatient alcoholic ward, they have been removed from the anxiety-provoking stimuli. It is possible that they have a sharp decrease of anxiety and depression because they have been removed from the environment that has brought about their anxious responses.

Another factor involved in decreasing the placebo subjects' anxiety and depression while on this particular alcoholic unit may be the great amount of structure placed on their lives. From the very moment that they were admitted, a schedule of activities specified exactly where they were to be and what they were supposed to be doing at a given moment. The fact that these subjects were removed from the anxiety-provoking stimuli and placed in a very structured program might have produced some decrease in both the anxiety and the depression.
A factor concerning the results found in all three treatment groups is the multiple therapies that all of the subjects were actually undergoing, e.g., Alcoholics Anonymous, individual and group therapies, mixed with drug, placebo and relaxation therapies. Therefore it was possible that any one of the groups' measured anxiety was affected by one of the other therapy modalities or an interaction among them.

In regard to suggestions for further research, it would be advantageous to have subjects matched more closely on number of years of excessive drinking. A person who has been responding to anxiety-provoking stimuli for twenty years would probably not be as apt to learn a new response to such stimuli as the individual who has been responding to those same stimuli for two or three years. Another area of weakness which needs to be considered centers around the need for various criteria of anxiety. In the present study, the MMPI was used as the only criterion of anxiety. Despite the large amount of research available on the MMPI, a more thorough study needs to be done with the use of several varied criteria including psychological, psychiatric interviews and physiological measurements. Also, some type of longitudinal follow-up needs to be carried out in order to determine treatment effects on alcoholics treated with various treatments. After all, the final criterion of successful treatment of an alcoholic is a rehabilitated alcoholic.
Indications from the present study suggest the possibility that relaxation therapy is a better means of anxiety reduction in alcoholics than chemotherapy. Relaxation therapy has the advantage of eliminating any danger which might arise as a result of drug side effects or drug interaction with alcohol. It also has the advantage of ability to be paired directly with the anxiety-provoking stimuli. Although there was not a statistically significant difference among the treatment groups, in all likelihood DMR is at least as beneficial as drug therapy. Therefore, in the future relaxation therapy may be a preferred means of reducing anxiety in alcoholics.
APPENDIX A

RELAXATION EXERCISE SCRIPT

Now I want you to settle back as comfortably as you can and attempt to relax yourself all over. (pause) As you relax like that, clench your right fist. Just clench your fist tighter and tighter. Study the tension as you do so. Keep it tensed and feel the tension in your right fist, hand, and forearm. (pause) Now, relax. Let the fingers of your hand become loose and observe the contrast in your fingers. (pause) Now let yourself go and try to become even more relaxed all over. (pause) Once more, clench your right fist very tight. Hold it. Notice the tension again. (pause) Now let go and relax. Your fingers straighten and you notice the difference once more. (pause) Now, repeat that with your left fist. Clench your left fist while the rest of your body relaxes. Clench your left fist tighter and feel the tension. (pause) Now relax again and enjoy the contrast. (pause) Repeat that once more. Clench your left fist tight and hold it. (pause) Now do the opposite of tension. Relax and feel the difference. Continue relaxing like that for a little while and appreciate the feeling of being relaxed. (pause) Now, clench both fists tight and tighter. With both fists tense, study the sensations. (pause) Now relax
and study the opposite sensation. Continue relaxing your hands and forearm more and more.

Now, bend your elbows and tense your biceps. Tense them harder and harder and study the tension. (pause) Now relax and study the difference again. Just let the relaxation develop. (pause) Once more, tense your biceps and hold the tension and observe it carefully. (pause) Now straighten your arms and relax. Relax to the best of your ability. (pause) Each time, pay close attention to your body and the sensations being experienced. (pause) Now, straighten your arms so you feel the tension in the back of your arms, along the triceps. Make them tense and tenser. (pause) Now, relax. Let the relaxation proceed on its own. Your arms will become comfortably heavy as you allow them to relax. (pause) Now, straighten your arms once more so that you feel the tension in the triceps. Straighten them and feel the tension. (pause) Now, relax. Concentrate on pure relaxation in the arms without any tension. Continue relaxing your arms even further. Even when your arms seem fully relaxed, try to go that extra bit further. (pause) Let all your muscles go lose and heavy. Settle back quietly and comfortably.

Now, wrinkle up your forehead. Wrinkle it tighter and tighter. (pause) Now stop wrinkling your forehead and relax. Just picture your forehead becoming smoother and smoother as the relaxation increases. (pause) Now, frown
and crease your brows and study the tension. Observe the tension. (pause) Now, relax. Let out the tension and smooth your forehead once more. (pause) Now close your eyes tight and tighter. Notice the tension. (pause) Now relax. Keep your eyes closed and appreciate the feeling of relaxation. (pause) Now, clench your jaw by biting your teeth together and study the tension throughout the jaw. (pause) Now, relax. Let your lips part slightly and appreciate the relaxation. (pause) Now, push your tongue hard against the roof of your mouth. Look for the tension. (pause) Alright, let your tongue return to a comfortable position. (pause) Now, purse your lips together. Purse them tighter and tighter. (pause) Now, relax. Notice the contrast between tension and relaxation. Feel the relaxation all over your face, all over your forehead, eyes, lips, tongue, jaws, and throat. (pause) Relaxation goes further and further. (pause)

Now, think about your neck muscle. Push your head back as far as you can go. Feel the tension. Now, roll it to the right; and now to the left. Feel the tension shift. Straighten your head and bring it forward pressing your chin against your chest. (pause) Now, let your head return to a comfortable position and study the feelings of relaxation. Bring your shoulders up very tightly and hold the tension. (pause) Now drop your shoulders and once again feel the
relaxation. Your neck and shoulders feel very relaxed.

(pause) Etc., etc.
APPENDIX B

UNADJUSTED MEANS AND STANDARD DEVIATIONS
FOR SCALE TWO (DEPRESSION)

<table>
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<th></th>
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<tr>
<td></td>
<td></td>
<td>Pre-test</td>
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<td>Total</td>
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<td>30.7027</td>
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<td></td>
<td></td>
<td>Post-test</td>
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<tr>
<td>Drug Group</td>
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<tr>
<td></td>
<td></td>
<td>Pre-test</td>
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<tr>
<td></td>
<td></td>
<td>Post-test</td>
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<td>Placebo Group</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Pre-test</td>
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</tr>
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<td>Post-test</td>
<td>21.0833</td>
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<td>Pre-test</td>
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<td>Post-test</td>
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## APPENDIX C

**UNADJUSTED MEANS AND STANDARD DEVIATIONS**

**FOR SCALE SEVEN (PYSCHASTHENIA)**

<table>
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<tbody>
<tr>
<td><strong>Total</strong></td>
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<td><strong>Drug Group</strong></td>
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<td>Pre-test 37.000</td>
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<td>Post-test 31.6923</td>
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<td>Pre-test 37.000</td>
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<td></td>
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<td><strong>DMR-Placebo</strong></td>
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<td><strong>Group</strong></td>
<td></td>
<td>Post-test 29.0833</td>
<td>3.3156</td>
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REFERENCES


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