The Influence of a Relaxation Training Program upon a Measure of Self-Actualization

Karl Bodtorf
Western Kentucky University

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Karl Roy

1976
THE INFLUENCE OF A RELAXATION TRAINING PROGRAM
UPON A MEASURE OF SELF-ACTUALIZATION

Recommended 6/25/76
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E. Clinton Layne

Approved 7-7-76
Dean of the Graduate College
ACKNOWLEDGMENTS

The writer wishes to express appreciation to those individuals whose support and guidance helped finalize this project: Richard Miller, chairman, for his tireless effort; Clinton Layne, for his insight; and David Shiek, for his objective comments.

Life as a graduate student has many highs and lows, friends such as Mike Cole and David Dunbar helped make the total experience a peak one. Special thanks to Kathy Garrett, whose love and understanding could incorporate a thesis as a third part of a relationship.

I dedicate this thesis to my mother, Mabel Bodtorf, and girlfriend, Kathy Garrett, whose support has been immeasurable throughout this academic endeavor.

"Things always take longer than they do."

R.O'B.
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Students at Western Kentucky University were asked to participate in a three week relaxation training program. The program focused upon relaxation as a coping skill and employed the Lazarus series of relaxation tapes, bio-feedback mediated relaxation training, and presentation of a relevant hierarchy in the form of an abbreviated systematic desensitization procedure. Subjects were measured prior to and following the relaxation program. It was hypothesized that subjects undergoing such a training procedure would experience gains as demonstrated by a measure of self-actualization when compared to individuals receiving no such treatment. A multivariate discriminant analysis indicated that the training program had an effect upon the global index of psychological functioning. Four out of the twelve scales on this index were found to be significant; those being Inner-Directed, Synergy, Acceptance of Aggression, and Capacity for Intimate Contact. Potential relationships of these subscales to the relaxation process were discussed and suggestions were offered for additional research.
Introduction

Physical relaxation is a relatively new technique in the field of psychology. In the past instructing individuals in the art of relaxation was a complex and tedious task spanning months of training and unfortunately was often unsuccessful due to individuals failing to grasp the physical or cognitive aspects of the relaxation process. The reason for such occurrences in conventional relaxation training seemed to be related to an individual's inability to know from an objective standpoint whether he was truly relaxed. Today's advancements in the field of psychobiology have alleviated the above problem thus improving the validity and reliability of relaxation training. A person can now directly receive physiological information relative to relaxation from biological feedback instruments. This feedback is crucial for gaining awareness into the cognitive and physical aspects of relaxation.

Research has indicated that relaxation training has been effective in reducing specific anxieties such as test and interview anxiety (Russell, 1973; Zeisset, 1968). The literature also indicated that when relaxation training is stressed as a coping skill, subjects make beneficial gains during training and continue to improve when training terminates.
(Sherman and Plummer, 1973). Bio-feedback-mediated relaxation has been shown to be learned much more quickly than conventional muscle relaxation (Budzynski and Stoyva, 1969) and that the effect produced by such a method is more dramatic than conventional methods (Reinking and Kohl, 1975). Bio-feedback-mediated muscle relaxation has been used effectively to reduce tension headaches. As a result of such training, individuals reported an increased awareness of the tension continuum and how to deal effectively with such tension (Budzynski, Stoyva and Adler, 1970). Furthermore, research has indicated that bio-feedback-mediated muscle relaxation has been effective in reducing chronic anxiety (Raskin, Johnson, and Rondestvedt, 1973; Townsend, House, and Addario, 1975).

Although research has indicated that relaxation training influences a number of specific psychological processes, no attempt has been made to determine the effect of a complex relaxation training program upon a global personality measure.
Literature Review

Today's physical relaxation techniques are an extension of those originated by Jacobson in the 1930's (Brown, 1974). He characterized tension as the prime cause of psychosomatic illness, and maintained that in order to relax, people had to learn to get in touch with the most evasive elements of muscle tension. Paul (1969) investigated the physiological effects of relaxation upon subjects. Results of this study indicated that subjects who successfully completed abbreviated relaxation training significantly differed on all physiological measures employed (i.e. a decrease in heart rate, muscle tension, respiratory rate, and skin conductance) from subjects who received no such training but were only told to relax. Additionally, relaxation training has proved to be effective in reducing such specific tensions as test and interview anxiety (Russell, 1973; and Zeisset, 1968).

Sherman and Plummer (1973) investigated the specific and general effects of self-relaxation. Their results indicated that relaxation subjects exhibited significant improvement on two out of three general anxiety measures in comparison to subjects not engaged in such relaxation training. It was suggested that relaxation training is not a panacea for psychological stress but may be useful as a behavioral
self-management skill for the reduction of tension in stress-
ful situations. Goldfried and Trier (1974) studied the ef-
ficacy of relaxation as an active coping skill, noting that, generally, people trained in relaxation learn the me-
chanics of how to relax, but never the cognitive aspects of
application of such training. The aforementioned study fo-
cused on three conditions: a standard relaxation group, a
self-control relaxation group where relaxation was stressed
as a coping skill, and a discussion group. Pretest-posttest
comparisons of change revealed that the self-control relax-
atation condition obtained consistent results in the direction
of improvement on several different instruments (i.e. Fear of
Negative Evaluation, Social Avoidance and Distress Scale,
State Anxiety Measure, etc.), whereas the other experimental
conditions did not. The results of this study also indicated
that subjects in the self-control relaxation condition con-
tinued to improve even after termination.

Research has indicated that relaxation training can be
enhanced by the operant learning principles of knowledge of
results and shaping (Budzynski and Stoyva, 1969). These au-
thors developed an instrument utilizing such learning prin-
ciples for producing deep muscle relaxation. To test the ef-
ficacy of this instrument, Budzynski and his colleagues
employed a design utilizing three groups: subjects receiving
electromyographic (EMG) feedback, subjects receiving irrele-
vant feedback, and subjects receiving no feedback. Results
of this study showed that subjects with EMG feedback reached
deeper levels of muscle relaxation than the other groups. One important finding of this study was that relaxation training mediated by EMG resulted in reducing muscle potential levels to 50% of baseline values after only three half hour feedback sessions. The EMG feedback had significantly reduced the amount of time needed to learn how to relax. It was further noted that bio-feedback-mediated relaxation training might be particularly effective with individuals who do not readily respond to relaxation training. This conclusion was offered due to the success of six subjects who reported previously being unable to learn relaxation via a modified Jacobson relaxation procedure.

Reinking and Kohl (1975) studied the effects of various forms of relaxation training on physiological and self-report measures of relaxation. Their research focused on five basic conditions: classic Jacobson-Wolpe instruction (Jacobson, 1938; Wolpe, 1958), EMG feedback, EMG feedback plus Jacobson-Wolpe instructions, EMG feedback plus a monetary reward, and a control group receiving no training. The effectiveness of the various training techniques in this study was measured via EMG and self-report assessments, the results revealing that all groups increased their ability to relax but the EMG feedback groups were superior to the Jacobson-Wolpe groups. The superiority was evident in both the speed of learning and depth of relaxation. It was concluded in this study that the classical relaxation training programs (Jacobson-Wolpe) were successful but did not produce a relaxation effect that was
as dramatic as the EMG feedback groups. Electromyograph feedback as a relaxation technique was also examined by Coursey (1975) in a design in which three basic conditions were studied: a group given EMG feedback, a group who were told to relax without meaningful feedback, and a group given instructions relative to relaxation and no meaningful feedback. The results of this study showed that the EMG feedback condition significantly differed in the direction of relaxation as compared to the other two groups. Measures of subjective anxiety were taken but failed to support any difference between any of the groups.

Budzynski, Stoyva, and Adler (1970) applied their feedback-induced muscle relaxation to tension headaches. Subjects were able to reduce frontalis EMG levels and concurrently reduce headache activity. During the course of the program patients reported changes in their daily lives that were characterized by a heightened awareness of maladaptive rising tension, an increasing ability to reduce tension and a decreasing tendency to overreact to stress. Wickramasekera (1972) critiqued the above report noting that it contained only a collection of case studies and lacked some necessary controls. He retained the concept of case study while manipulating the variable of knowledge of results in a formal research design. Subjects initially were observed for a three week period for the purpose of determining baserate EMG levels. The following three weeks the subjects received instruction in EMG feedback relaxation with true knowledge of
results as to change in their EMG activity. The next six sessions were conducted as above except the subjects received false knowledge of results, (information not accurately reflecting their EMG levels). Lastly, the subjects received six more sessions with true knowledge of results. Headache severity and duration decreased significantly for conditions moving from baseline to true knowledge of results and from false knowledge to true knowledge of results but did decrease significantly for the condition moving from true knowledge to false knowledge of results. The author concluded that the results provided support for the EMG-mediated feedback of results as a viable method for the reduction of frequency and intensity of tension headaches.

Riddick and Meyer (1973) investigated the effectiveness of automated relaxation training with response to contingent feedback. Three conditions were employed in this study: automated feedback, face-to-face, and attention-placebo. The automated feedback group received the relaxation training via taped instructions. The face-to-face group received the training with an experimenter present. The attention-placebo group were told that they were receiving a fast-acting muscle relaxant (Chlorpromobamatol) which would essentially relieve all tension. The results of this study did not support the superiority of automated feedback-induced training over face-to-face relaxation training. The two were equally as effective but were both superior to the attention placebo condition.
Relaxation training has been incorporated into many behavior therapy techniques. Desensitization for example employs relaxation training as an integral part of the procedure for the treatment of phobias. Wickramasekera (1972) successfully employed EMG-mediated relaxation training in conjunction with desensitization to relieve test anxiety. Although his report lacked a formal statistical analysis, his client successfully passed an examination that she had been avoiding, thus providing some support for the use of EMG-mediated relaxation. Budzynski and Stoyva (1973) also reported the successful use of EMG-mediated relaxation training concomitantly with desensitization on approximately twenty individuals. The above authors also reported a successful single case study where the use of electroencephalographic (EEG) feedback had been used as an adjunct to desensitization of a death related theme phobia (1973).

Raskin, Johnson, and Rondestvedt (1973) researched the treatment of chronic anxiety by feedback-induced muscle relaxation. More specifically these authors attempted to determine whether the daily practice of such training would reduce symptoms of anxiety in chronically anxious patients. Using EMG as the feedback modality, the authors found that the procedure had been beneficial for four out of ten subjects. The authors admitted that the results were far from being conclusive, but considering the chronicity of the patients, they felt that the procedure demonstrated viability for the reduction of anxiety. Townsend, House, and Addario
(1975) compared EMG-mediated relaxation to group psychotherapy as a means of treating chronic anxiety. Electromyograph produced significant decreases in mood disturbance and anxiety test scores whereas no observable differences were found for the group psychotherapy condition. It was suggested by the authors that EMG-mediated relaxation can be an effective concomitant therapeutic tool for chronic anxiety. The authors, viewing the project in retrospect, suggested that the limited contact with the patients (three hours feedback and five hours of taped instruction) had a detrimental effect upon the outcome of the study because subjects had not adequately learned the task. They suggested that future studies employ a more complete training program.

Despite research pointing to the fact that relaxation training, notably bio-feedback relaxation training, influences a number of psychophysiological processes, no attempts have been made to examine the influences of such training on a more global index of psychological functioning. It was the purpose of the present study to investigate the effects of a complex relaxation training program upon a global index of psychological functioning. The Personal Orientation Inventory (POI) which has a demonstrated capacity to discriminate global personality shifts (Hjelle, 1974; Nidich, Seeman, and Dreskin 1973; and Seeman, Nidich, and Banta 1972) was the instrument of choice as a dependent variable.

It was hypothesized that subjects undergoing a sequential relaxation training program would experience gains as
demonstrated by the P01 when compared with individuals receiving no such treatment.
Method

Subjects

Students at Western Kentucky University were asked to participate in a relaxation training program in which three sources were employed for obtaining subjects: Office of Undergraduate Advisement, undergraduate psychology courses, and through an advertisement in the college newspaper. Only those subjects currently experiencing some mild form of tension or anxiety were selected for the experiment, with individuals currently engaged in psychotherapy being excluded from the study. Eighteen individuals volunteered to participate in the relaxation training and were randomly assigned to either experimental or control conditions.

Instrument

The POI, an instrument with established reliability and validity (Shostrom, 1974), was employed as a measure of self-actualization. The POI is a 150 item two-choice instrument focusing on value and behavior judgments. The instrument is comprised of twelve dimensions, two of which are global indices (Inner-Directed and Time Competent) and ten subscales representing more discrete indices labeled as follows: Self-Actualization, Existentiality, Feeling Reactivity, Spontaneity, Self-Regard, Self-Acceptance, Nature of Man, Synergy,
Acceptance of Aggression and Capacity for Intimate Contact.
Table 1 lists all twelve subscales and describes the polarities characteristic of each.

Apparatus

The Electromyograph feedback monitor-NB 222 and Temperature feedback monitor-TM 301 manufactured by Narco Bio-Systems Incorporated were utilized in the relaxation training. Two tapes from a series by Lazarus (1965) dealing with gaining awareness of the tension/relaxation continuum were also utilized in the current study. Tape one presented exercises for gaining physical awareness while tape two presented exercises for gaining a cognitive awareness of said continuum.

Design

The dependent variable was self-actualization and was measured by the POI. The independent variable was the total sequence of training, where the actual training was stressed as a coping skill employing the Lazarus series of tapes; biofeedback-mediated relaxation training, and presentation of a brief relevant desensitization hierarchy. Dependent variable measurements for the experimental group were procured prior to and following a relaxation training program. Measurements for the control group were made at analogous times without the intervening training program. The above data were regarded in terms of change scores for subsequent comparison.

Procedure

Developmental concerns. An earlier study undertaken at this university employing biofeedback procedure (Brown, 1976),
<table>
<thead>
<tr>
<th>Subscale</th>
<th>Description of Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Competent (Tc)</td>
<td>Lives in the present--</td>
</tr>
<tr>
<td></td>
<td>Lives in the past.</td>
</tr>
<tr>
<td>Inner-Directed (I)</td>
<td>Self-supportive--</td>
</tr>
<tr>
<td></td>
<td>Seeks support of other's view.</td>
</tr>
<tr>
<td>Self-Actualization (SAV)</td>
<td>Holds self-actualizing values--</td>
</tr>
<tr>
<td></td>
<td>Rejects self-actualizing values.</td>
</tr>
<tr>
<td>Existentiality (Ex)</td>
<td>Flexible in application of values--</td>
</tr>
<tr>
<td></td>
<td>Rigid in application of values.</td>
</tr>
<tr>
<td>Feeling Reactivity (Fr)</td>
<td>Sensitive to own needs and feelings--</td>
</tr>
<tr>
<td></td>
<td>Insensitive to own needs and feelings.</td>
</tr>
<tr>
<td>Spontaneity (S)</td>
<td>Freely expresses feelings behaviorally--</td>
</tr>
<tr>
<td></td>
<td>Fearful of expressing feelings.</td>
</tr>
<tr>
<td>Self-Regard (Sr)</td>
<td>Has high self-worth--</td>
</tr>
<tr>
<td></td>
<td>Has low self-worth.</td>
</tr>
<tr>
<td>Self-Acceptance (Sa)</td>
<td>Accepts self including weaknesses--</td>
</tr>
<tr>
<td></td>
<td>Unable to accept self with weaknesses.</td>
</tr>
<tr>
<td>Nature of Man (Nc)</td>
<td>Sees man as essentially good--</td>
</tr>
<tr>
<td></td>
<td>Sees man as essentially bad.</td>
</tr>
<tr>
<td>Synergy (Sy)</td>
<td>Sees opposites in life as being related--</td>
</tr>
<tr>
<td></td>
<td>Sees opposites in life as antagonistic.</td>
</tr>
<tr>
<td>Acceptance of Aggression (A)</td>
<td>Accepts feelings of anger--</td>
</tr>
<tr>
<td></td>
<td>Denies feelings of anger.</td>
</tr>
<tr>
<td>Capacity for Intimate Contact (C)</td>
<td>Has warm interpersonal relationships--</td>
</tr>
<tr>
<td></td>
<td>Has difficulty with interpersonal relationships.</td>
</tr>
</tbody>
</table>
encountered three factors which adversely affected the design: they were subject attendance, task boredom, and irrelevancy of the training to personal needs of the subjects. The current study incorporated some control procedures in an attempt to circumvent the aforementioned difficulties. The subjects were chosen for this study only if they were currently experiencing some mild form of anxiety or tension. It was believed that this selection procedure would secure individuals who had a specific goal to work toward, reduction of tension, and that this goal would constitute more of an incentive than the usual class credit that is offered for participation in university research projects. Task boredom was reduced by shifting tasks every two sessions, a procedure which introduced some novelty into the training. The irrelevancy difficulty was reduced by applying the relaxation principles to a specific fear or anxiety by means of an abbreviated hierarchy comparable to systematic desensitization procedures.

An organizational meeting was held five days before the training was initiated. A brief statement was given concerning the nature of the project. The POI was then administered to all subjects at this meeting.

Experimental group. Following the organizational meeting the experimental subjects signed up for individual 45 minute sessions between the hours of 9:00 am. and 8:00 pm. Each subject participated in a total of nine sessions in the training program. At the initial session a brief intake
interview was conducted to gain information relative to each individual's current tension or anxiety. The remainder of the first session and the following session were devoted to listening to the taped relaxation series by Lazarus and the active participation in the exercises presented in tapes 1 and 2. The third and fourth sessions focused upon successful achievement of increasing skin temperature over baseline measurements. Temperature was obtained from a thermistor attached to the right thumb of each subject. The meter on the TM-301 was set on the center of the scale regardless of the absolute temperature of the hand so that, essentially, deflection of the needle to the subject's right indicated success in increasing skin temperature, as did the illumination of a red light on the instrument panel. Additionally, skin temperature activated an auditory cue which increased in frequency as temperature rose. The fifth and sixth sessions were devoted to the successful achievement in the reduction of EMG activity as compared to baseline measurements. The two sessions differed only in the nature of the position of the surface electrodes. Measurements for the fifth session were obtained from the right forearm extensor muscles whereas the sixth session utilized the frontalis muscles on the forehead. The NB-222 was adjusted so that if a subject was completely relaxed the needle would deflect to the far left. The instrument was also adjusted so that a reduction in EMG activity would be accompanied by a falling frequency in the form of an auditory cue. The seventh and eighth sessions
were devoted to concomitant (temperature and EMG) feedback relaxation training. Temperature measurements were obtained as previously described with relaxation characterized by feedback consisting of deflection of the meter to the subject's right and the illumination of a red light. Electromyograph activity was monitored from the frontalis muscles and feedback from successful relaxation consisted of deflection of the meter to the subject's left, as well as a falling auditory tone. The final session focused upon relaxation training as a coping skill and utilization of relaxation techniques into everyday life (e.g. differential relaxation). A hierarchy was devised by each subject and the experimenter centering around a specific fear or tension-producing situation relevant to that subject. This hierarchy was then presented to the subject in an abbreviated desensitization procedure while concomitantly receiving EMG feedback through the auditory modality. (See Appendix A for an example of a hierarchy). Following the training program, the POI was re-administered to all experimental subjects.

Control group. The control group received no relaxation training. At the end of the three week period (comparable to the time sequence for the training period), the POI was re-administered to all control subjects. Following the administration of the POI the control group members were offered relaxation training in the form of the Lazarus tapes.
Scoring and Analysis

The answer sheets of the POI were hand scored using the appropriate keys. Raw scores for each subscale were transformed to standard scores using population standard deviations from a study reported in the POI manual (Shostrom, 1974). The above transformation was calculated to guarantee equality of the subscales for subsequent comparison. A multivariate discriminant analysis was performed on the data to determine specific experimental and control sub-group differences, across pre- and posttestings (Cooley and Lohnes, 1971).
Results

Standard scores for each subscale of the POI were computed for experimental and control conditions across pre- and posttesting. Table 2 presents these standard score means as well as listing a computed change score based upon the standard score means. Note that the change scores for the experimental group trend in a positive direction. Figure 1 presents these standard mean score changes in graphical format for both experimental and control groups. Observation of this figure indicates that for the experimental group there was a distinct elevation of the change scores in the direction of self-actualization. The largest change scores for the experimental group were as follows: Time Competent (.36), Inner-Directed (.52), Self-Actualization (.43), Existentiality (.51), Self-Acceptance (.31), Nature of Man (.30), Synergy (.29), Acceptance of Aggression (.59) and Capacity for Intimate Contact (.44). Change scores for the control group do not show a consistent gain, in fact ten of twelve subscales are characterized by a negative change score away from self-actualization. As can be further seen in both table 2 and figure 1, a large magnitude of difference existed between experimental and control scores in several subscales. Notably these were: Inner-Directed (.73), Self-Actualization
Table 2
Mean Standard Scores and Mean Standard Change Scores for each Subscale Across Experimental and Control Conditions

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>(Tc)</td>
<td>.32</td>
<td>.04</td>
</tr>
<tr>
<td>(l)</td>
<td>-.09</td>
<td>.42</td>
</tr>
<tr>
<td>(SAV)</td>
<td>.14</td>
<td>.57</td>
</tr>
<tr>
<td>(Ex)</td>
<td>.11</td>
<td>.62</td>
</tr>
<tr>
<td>(Fr)</td>
<td>-.14</td>
<td>.11</td>
</tr>
<tr>
<td>(S)</td>
<td>.54</td>
<td>.65</td>
</tr>
<tr>
<td>(Sr)</td>
<td>.00</td>
<td>.27</td>
</tr>
<tr>
<td>(Sa)</td>
<td>-.06</td>
<td>.25</td>
</tr>
<tr>
<td>(Nc)</td>
<td>-.20</td>
<td>.10</td>
</tr>
<tr>
<td>(Sy)</td>
<td>.21</td>
<td>.50</td>
</tr>
<tr>
<td>(A)</td>
<td>-.53</td>
<td>.06</td>
</tr>
<tr>
<td>(C)</td>
<td>-.08</td>
<td>.35</td>
</tr>
</tbody>
</table>
CONTROL PERSONAL ORIENTATION INVENTORY

SUBSCALES

Figure 1. Mean standard score changes for experimental and control conditions.
(.54), Synergy (.72), Acceptance of Aggression (.93) and Capacity for Intimate Contact (.82).

A multiple discriminant analysis was calculated on the raw data from the POI to determine specific experimental and control sub-group differences. Table 3 presents the F-ratios and corresponding probability values for each subscale of the POI. The change scores of the experimental group differed significantly from those of the control subjects on the following subscales: Inner-Directed, $F(1,16)=8.76$, $p<.009$; Synergy, $F(1,16)=4.38$, $p<.05$; Acceptance of Aggression, $F(1,16)=11.21$, $p<.004$; and Capacity for Intimate Contact, $F(1,16)=8.39$, $p<.01$.

Experimental subjects consistently shifted toward self-actualization whereas control subjects consistently shifted away from self-actualization relative to their pre-test scores. This observation was confirmed by a multivariate Theta, $z=3.89$, $p<.0001$, which indicates that there was extremely high consistency in the directionality of change on the dependent measure.
Table 3
Multiple Discriminant Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>F-ratio</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tc</td>
<td>0.8790</td>
<td>0.6349</td>
</tr>
<tr>
<td>I</td>
<td>8.7582</td>
<td>0.0090</td>
</tr>
<tr>
<td>SAV</td>
<td>1.9481</td>
<td>0.1792</td>
</tr>
<tr>
<td>Ex</td>
<td>2.4636</td>
<td>0.1330</td>
</tr>
<tr>
<td>Fr</td>
<td>0.6154</td>
<td>0.5501</td>
</tr>
<tr>
<td>S</td>
<td>0.0648</td>
<td>0.7974</td>
</tr>
<tr>
<td>Sr</td>
<td>2.2304</td>
<td>0.1518</td>
</tr>
<tr>
<td>Sa</td>
<td>1.1561</td>
<td>0.2986</td>
</tr>
<tr>
<td>Nc</td>
<td>0.7050</td>
<td>0.5818</td>
</tr>
<tr>
<td>Sy</td>
<td>4.3784</td>
<td>0.0503</td>
</tr>
<tr>
<td>A</td>
<td>11.2154</td>
<td>0.0043</td>
</tr>
<tr>
<td>C</td>
<td>8.3886</td>
<td>0.0102</td>
</tr>
</tbody>
</table>
Discussion

The results of this study supported the original hypothesis that a complex sequential relaxation training program would affect global personality variables in a positive direction. Although the pattern of change for the experimental group was positive in all subscales, subsequent analysis indicated a significant difference existed between experimental and control conditions on only four of the twelve POI dimensions. The following four subscales were significant ($p<.05$): Inner-Directed, Synergy, Acceptance of Aggression, and Capacity for Intimate Contact.

Close examination of the results as characterized in Figure 1 reveal an interesting point. It is apparent that some environmental influence (e.g., pressures of a college atmosphere) affected the control group in such a way that change scores shifted away from pretest self-actualization. In as much as subjects were randomly assigned to control and experimental conditions, it might be logically assumed that these same factors were present in the environment of the experimental subjects. In spite of these possibly detrimental influences, the experimental group was able to make gains in the direction of self-actualization from their pretest
levels, adding further validity to the relaxation procedure employed in this study.

One might rightfully ask why were the aforementioned subscales affected by the training procedure. Certainly any explanation has to be somewhat tentative, subject to alternate approaches. However, one rationale might be viewed as follows. Successful acquisition of relaxation techniques do apparently affect a person's general psychological functioning in a positive manner. The application of these relaxation techniques to one's daily life would perhaps result in the ability to better control emotions in anxiety-producing situations. One might presume that this control could make an individual feel good about himself and his ability to act of his own volition. If this were true it might well be reflected on the Inner-Directed dimension.

The possibility exists that objectivity is an important bi-product of relaxation. A person successfully completing a relaxation program possibly could gain a certain degree of this objectivity and view life events from an unbiased perspective. This objectivity could allow an individual to ascertain that the opposites in life (work/play, love/hate, etc.) are not really antagonistic concepts but perhaps are meaningfully related. Such gains in objectivity would be reflected on the Synergy dimension.

Research has indicated that physical relaxation is accompanied by a reduction of certain physiological processes such as heart rate, respiratory rate, and skin conductance.
(Paul, 1969). The literature also supports the position that levels of hormones related to emotionality (i.e. norepinephrine and epinephrine) are found in reduced quantities in the bloodstream during periods of rest. Schachter and Singer (1962) have demonstrated that administration of epinephrine (thereby elevating its quantity in the blood) precipitates a pseudo-emotionality in humans. If activity of such hormones is reduced during periods of relaxation, it is very likely that a person will be able to relax in stressful situations and consequently have better control of aggression. Furthermore, when a person is able to relax in a tension-producing situation, he is more likely to become aware of which events precipitate his feelings of aggression. Perhaps through such a realistic assessment one might be better prepared to accept any feelings of aggression that he might have.

One might expect that successful completion of a relaxation program could have a positive effect on one's capacity for intimate contact. When a person is relaxed, he is more likely to be himself and to share his life experiences with others. This self-disclosure is important for close interpersonal relationships.

Although not statistically significant three additional variables trended in the direction of significance. They were Self-Actualization, Existentiality, and Self-Regard. In defense of the lack of statistical support for a training effect on these variables, one might note a limiting factor of the present design concerning the small sample size.
relative to the total number of variables. The sensitivity of a multivariate discriminant analysis is reduced when the above condition is present (Winer, 1971). Future research in the area should be undertaken utilizing larger sample sizes to alleviate this statistical limitation and to explore the possibility that the training may have a more dramatic influence on the dependent variable than that supported in the present study.

The present investigator recognizes that at least two factors could have reduced the total effect of the training on the dependent measure. The total contact time with the subjects in the training program was brief and the full impact of the training may have been reduced. Townsend et al. (1975) noted that to maximize the effect of a relaxation training program, contact time with subjects must be sufficient for acquisition of the task. A second limiting factor concerns individual differences. A personal observation by this investigator showed that some people simply learn the task more easily and can incorporate relaxation techniques into daily life more readily than others. Raskin (1973) as well as Brown (1976) also found individual differences to be an important variable in relationship to feedback-mediated relaxation training.

Although inconclusive as to what impact any singular dimension of the training program had on the dependent variable, it is apparent that the total systemic effect was demonstrated significantly by the observed changes in the POI.
The design of the present study was not constructed to examine the unitary dimensions of the training program, consequently, no statement can be legitimately made as to which aspects of the program were most responsible for the reported gain.

Subsequent research might wish to focus upon the question of the longevity of such gains as reported in the current study. Townsend (1975) found that six months after his study, his subjects retained the ability to relax. Future research might focus upon whether the ability to retain the relaxation response affects the long term gain in personality variables. A final question arises from the concept of individual differences. Researchers may wish to examine individual differences for the purpose of identifying the individual who is most adept at acquiring relaxation techniques, as well as the identity of the person who might most benefit from them.

Relaxation training apparently does affect global personality indices in a positive direction and thus presents an important clinical implication. The present study supports the contention that relaxation training may represent more than just an adjunct to conventional therapy. It is suggested that relaxation training, as presented here, may be a viable intervention procedure for the enrichment of a person's overall psychological functioning.
References


Coursey, R. Electromyograph feedback as a relaxation technique. *Journal of Consulting and Clinical Psychology*, 1975, 43, No. 6, 825-834.


Appendix A
Job interview anxiety

1. You are in your room thinking about employment prospects with various firms.
2. You read an add in the Herald publicizing that various firms will soon be on campus to conduct job interviews.
3. You think about signing up for several interviews.
4. After thinking for a while you go and sign up for several.
5. You receive notices that your interview appointments have been confirmed.
6. You are walking to where the interviews are held.
7. You are in the waiting room, waiting for the interviews to begin.
8. The representative of a firm introduces himself and takes you to his office.
9. The representative described the available position, company benefits etc.
10. The representative asks you why you feel you are suited for this particular job.
11. You listen to his question but can't think of an intelligent reply, you feel tongue tied.
12. You notice the representative looking at his watch, the interview ends.
13. You are walking home from the interview.