1979

Progressive relaxation training : effects on the communicative ability of aphasic adults

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AN ABSTRACT OF THE THESIS OF Mary T. Watts Withers for the Master of Science in Speech Pathology and Audiology presented July 6, 1979.

Title: Progressive Relaxation Training: Effects on the Communicative Ability of Aphasic Adults

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The purpose of this study was to investigate the effects of progressive relaxation training on the verbal ability of adult aphasics. Sixteen adult aphasics (15 males and 1 female) were administered a battery of four, 16 item verbal tests (VTB) following a period of relaxation training and a control period. The tasks of the VTB paralleled the four verbal subtests of the PICA (Porch, 1967). Subjects were required to give the function of 15 common objects, to name each object, to produce the name of each object after hearing a carrier phrase and to repeat the name of each object. Relaxation procedures employed a modified

Jacobson (1929) technique.

Results indicated aphasics' verbal communication was positively influenced by relaxation training. All of the VTB task means were higher following the relaxation condition than the control condition. Subjects' means for the naming task were significantly higher following the relaxation period at the .01 level. Although none of the mean differences for the other three VTB tasks were significantly different, the cumulative result of subjects' tendency to perform better following relaxation is reflected in overall VTB performance. The overall VTB mean was significantly higher at the .01 level following the relaxation period and furthermore, 4 of the 16 subjects illustrated higher overall VTB means following relaxation.

PROGRESSIVE RELAXATION TRAINING: EFFECTS ON THE COMMUNICATIVE ABILITY OF APHASIC ADULTS

by

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A Thesis submitted in partial fulfillment of
the requirements for the degree of

MASTER OF SCIENCE IN SPEECH:

EMPHASIS SPEECH PATHOLOGY AND AUDIOLOGY

Portland State University
1979

TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

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ACKNOWLEDGEMENTS

It is with great pleasure I can thank Dr. Robert C. Marshall in helping me plan and complete this study. Special appreciation is also extended to Dr. Robert Casteel who very generously and patiently provided advice and support when finalizing the final thesis product. Acknowledgement of their help and support is extended to the other members of my committee, Joan McMahon and Dr. Joseph Kaplan.

Loving appreciation is expressed to my husband, John, for his support and encouragement in helping me complete my work and to my loving parents for their immeasurable understanding.

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CHAPTER I

INTRODUCTION

Authorities in the field of speech pathology have stressed the importance of using relaxation techniques in the treatment of communication problems. Froeschels (1932) indicated the rationale for using relaxation with clinical speech cases is based on the premise that a state of general or specific body relaxation facilitates good speech production. As a consequence, relaxation training has been successfully employed in the treatment of a variety of hyperfunctional voice disorders (Brodnitz, 1962; Murphy, 1964; Fisher, 1966; Moore, 1971; Boone, 1971; Marshall and Watts, 1975) and stuttering (Wolpe, 1958; Damste, Zwaan and Shoenaker, 1968; Falck, 1969; Casteel and McMahon, 1978). Despite the fact relaxation procedures have been used successfully with certain adult speech cases, little mention has been made of their efficacy with the language impaired population.

Aphasia, a general language deficit resulting from brain injury (Schuell, Jenkins and Jinenex - Pabon, 1964), constitutes a common adult language problem encountered by rehabilitation personnel, and there is some reason to believe that unnecessary tension and anxiety may adversely affect the communicative ability of this patient group. Aphasic patients are impaired in their capacity to interpret and formulate language symbols. They may suffer from reduced availability of vocabulary, reduced efficiency in application of syntactical rules and reduced auditory retention span (Halpern, Darley and Brown, 1973). Studies of normal adults have shown experimentally induced anxiety to hinder performance in immediate memory (O'Brien, 1957; Chaney and Andreason, 1972), organizational

ability (Hassol, Cameron and Margaret 1952) abstract ability (Courts, 1942; Matarazzo, Ulett and Saslow, 1955) and gross motor skills (Chaney and Andreason, 1973). Goldstein (1939) points out that anxiety and tension may have an even greater effect on a brain-injured person. He indicates that under these conditions the brain-injured person may undergo a reduction in his perceptual field, become compulsive and find it difficult to shift tasks. Clinical observations suggest aphasics are likely to manifest some anxiety because of communication and physical incapacities. Numerous clinicians have alluded to the aphasic's fears for his physical well being, return to work, family relations and general communicative frustration (Granich, 1947; Wepman, 1951; Kingdon-Ward, 1969; Benson, 1973; Eisenson, 1973). Buck (1968) has indicated that aphasic patients, in states of anxiety, may perseverate when confronted with a word-finding problem, a changing situation or when excessively fatigued. The aphasic patient's sense of frustration combined with a sense of impotency, helplessness and fear of perpetual disability may produce a severe depressive state (Benson, 1973). It would appear, therefore, any technique that might possibly reduce unnecessary tension and anxiety for an aphasic patient, or conserve energy, also might serve to enhance communication. Accordingly, progressive relaxation techniques may be an effective adjunct to the treatment program of the adult aphasic.

PURPOSE

This study investigated the effects of progressive relaxation training upon the verbal communicative ability of aphasic adults.

Answers to the following specific questions were sought:

1. Does progressive relaxation training influence

the sentence formulation ability of adult aphasics?

2. Does progressive relaxation training influence the naming ability of adult aphasics?
3. Does progressive relaxation training influence the ability of adult aphasics to complete a common carrier phrase?
4. Does progressive relaxation training influence the repetition ability of adult aphasics?

CHAPTER II

REVIEW OF THE LITERATURE

Anxiety is present, to a greater or lesser degree, among people of all ages, occupations and socioeconomic levels (Chaney and Andreason, 1972). Anxiety is observed in those healthy individuals who suffer from everyday nervousness and muscular tension as well as in the chronically anxious person who complains of peptic ulcers, high blood pressure, headaches and insomnia.

This chapter briefly reviews the characteristics of anxiety and treatment approaches involving relaxation techniques which are employed to alleviate tension. This chapter will further discuss a specific relaxation technique, progressive relaxation (Jacobson, 1929; 1958), and its role in the area of speech pathology for the management of stuttering, voice and adult language disorders.

Concept of Anxiety

Anxiety, as clinically observed and defined, has a number of different properties. Anxiety can be recognized by such observable symptoms as sweating, flushing and shaking. The most significant symptom of anxiety is the increase in generalized muscle tension (Jacobson, 1929; 1958; Meyer, 1953; Matarazzo et al., 1955; Kuethe and Eriksen, 1957; Goldstein, 1964). In the literature the terms "tension" and "anxiety" are used interchangeably (Levitt, 1967). Anxiety is further described in terms of subjective psychological feelings such as a "...persistent or recurrent state of dread or apprehension" (Raskin, Johnson and Rondestvedt, 1973), "...or a vague feeling of restlessness" (Levitt, 1967).

Treatment Approaches Involving Relaxation Techniques

The use of relaxation techniques to reduce anxiety and tension has a long history (Boome and Richardson, 1932). Although there are many different approaches to treating the anxious patient, implicit in each approach is relaxation. Accordingly, relaxation techniques play an integral role in the traditional anxiety-therapy approaches such as hypnosis and psychoanalysis (Moss, 1965), systematic desensitization (Rachman, 1965; 1966a; 1966b; Wolpe, 1958), biofeedback therapy (Budzynski and Stoyva, 1969; Budzynski, Stoyva and Adler, 1970; Raskin et al., 1973; Blanchard et al., 1974), autogenic training (Schultz and Luthe, 1959; Yorkston and Sergeant, 1969) and drug therapy (Jarvik, 1970; Raskin et al., 1973).

Biofeedback training teaches the subject to be aware of subtle internal cues and to use these cues to bring about desired psychophysiological states. Patients learn to relax muscles when given feedback on the level of electromyographic activity (Blanchard et al., 1974). The procedure involves placing surface electrodes on the frontalis muscle. The electromyographic (EMG) activity is received through the electrodes and controls the pitch heard through a loudspeaker system. The pitch increases with an increase in EMG activity. Success in decreasing EMG activity is indicated by a lower pitch being heard through the loudspeaker system. Instructions to the patient are brief. The patient is asked to close his eyes while relaxing individual muscle groups. The patient is then asked to void his mind of thoughts by concentrating on his breathing or on pleasant and relaxing images.

Systematic desensitization is a recommended procedure for relaxing

the anxious patient (Rachman, 1965; 1966a; 1966b; Wolpe, 1958). In systematic desensitization therapy, a patient is trained to relax muscles all over his body and remain relaxed while a therapist describes scenes that would ordinarily arouse anxiety in him. The therapist, throughout the desensitization process, presents a hierarchy of feared tasks, beginning with the least feared and continuing up the hierarchy until all the tasks have been presented. This process substitutes muscular relaxation responses for the tension responses through a sequential exposure to a closer and closer approximation of the feared stimulus.

Tranquilizers reduce excessive excitability in the nervous system and are effective agents for alleviating anxiety without causing undue sleepiness. Tranquilizer users may occasionally suffer side effects ranging from faintness to apathy (Raskin et al., 1973).

The practice of muscle relaxation is central for autogenic training. Subjects relax while repeating suggestions that different parts of their bodies feel warm, heavy and sleepy. Schultz and Luthe (1959) postulate a minimum training period of one month before a patient can demonstrate a relaxed posture for 30 minutes.

Relaxation is an implicit part of hypnosis, although hypnotic techniques vary. The subject may be lying on a couch or seated in a chair. Generally, he fixates his gaze on a specific point. The forehead may be stroked (Klemperer, 1968). Throughout the hypnotic condition, it is the hypnotist who controls the situation by suggesting relaxation, heaviness and/or sleep (Barber and Hahn, 1963; Paul, 1966).

Progressive Relaxation

Edmund Jacobson, M.D. published his theory Progressive Relaxation in 1929. The book was originally designed to be read by physicians who would teach progressive relaxation training to patients who suffered from such diseases as peptic ulcers, nervous breakdown and high blood pressure. Jacobson's progressive relaxation techniques work toward complete physical relaxation by systematically tensing and relaxing muscles throughout the entire body. First, the subject tenses a muscle group for a few seconds while identifying where and how it feels tense. The subject then stops tensing and focuses his attention on how the muscles feel when relaxation replaces tension. The tension/relaxation process allows the subject to improve his awareness of different tension levels. By first tensing the muscles, the level immediately exceeds that at which the subject normally operates. When he relaxes, the tension falls below the original starting point. By alternately tensing and relaxing, the tension level progressively lowers to a point where no abnormal tension is present. With practice, the subject is able to differentially relax those muscles needed for an activity by merely thinking the relaxation process.

Jacobson suggested one hour be spent on relaxing a single muscle group and that therapy should continue for months or years. It was not until Haugen, Dixon and Dickel (1958) modified Jacobson's version that subjects were instructed to practice relaxation immediately after the initial training period in every situation. Casteel, Hustead and Stone (1977) adapted Jacobson's progressive relaxation technique into a three week program designed to teach the basic relaxation strategies. The

program is complete with daily assignments and a behavioral checklist in order to track observations of unnecessary tensions throughout the day. The program focused on tensing/relaxing twelve body sites. Specific sites for relaxing were presented on separate days during the first week. During the second week the subjects were asked to perform the same procedures, but were instructed to reduce the tension phase before relaxation. During the third week the tension phase was eliminated altogether.

Relaxation in the Treatment of Stuttering

The cause of stuttering, from a theoretical point of view, has been an important factor in deciding the best treatment method. Many clinicians see stuttering as a physical manifestation caused by an emotional/psychological disorder, and choose a psychoanalytic approach in the treatment of stuttering (Glauber, 1958). There are other clinicians who believe stuttering is a learned behavior, and utilize a behavioristic intervention program designed to modify observable symptoms. Even though stuttering theorists disagree as to the cause of stuttering and to the overall approach in treating stuttering, many believe progressive relaxation training is an integral adjunct to any treatment program of stuttering (Swift, 1931; Blanton and Blanton, 1936; Gifford, 1940; Hahn, 1941; Heltman, 1946; Johnson, 1946; Muirden, 1968; Falck, 1969; Casteel and McMahon, 1978).

Casteel and McMahon (1978) and Falck (1969) employ progressive relaxation procedures as a way to teach discrimination and identification of appropriate and inappropriate tension within muscle groups. Greene (1935) believed in treating the whole man and so his treatment uses a

composite of medical, social, psychiatric and re-educational techniques. He used progressive relaxation to teach the client to recognize and master his tension states and anxiety feelings. Even though the cause of stuttering remains unknown,the efficacy of relaxation therapy is generally accepted.

Relaxation in the Treatment of Voice

Speech pathologists employ progressive relaxation in the management of voice disorders. Although Brodnitz (1962) suggested any exercises that endeavor to relax the individual are of limited value, a growing number of clinicians indicate relaxation may be of help in teaching the mechanics of normal phonation. The use of relaxation with hyperfunctional voice cases assumes that voice disorders are caused and/or maintained by excessive tension within the laryngeal and pharyngeal musculature (Greene, 1964). Since it is difficult to achieve voluntary relaxation in the fine muscles of the tongue, throat and larynx simply by suggesting the patient relax, the process of progressive relaxation readily lends itself to symptomatic voice modification.

Excessive tension of the muscles of the larynx may give rise to such voice disorders as aphonia, spastic dysphonia, vocal pitch breaks, hoarseness, harshness, glottal fry and vocal nodules (Murphy, 1964; Fisher, 1966; Moore, 1971; Boone, 1971; Shearer, 1972). If a subject persists in phonating with extreme tension in the laryngeal muscles, the abnormal phonation may lead to contact ulcers, vocal nodules or thickening of the vocal folds. Resonance disorders such as strident voice, thin, and cul de sac resonance also are associated with imbalance in muscle contraction, specifically in the pharyngeal area. Although progressive

relaxation is not the only method employed in treating voice disorders, a number of clinicians report it is a valuable technique in restoring normal voice (McClosky, 1959; Greene, 1964; Murphy, 1964; Fisher, 1966; Moore, 1971; Boone, 1971; Shearer, 1972).

Relaxation in the Treatment of Aphasia

Though the use of progressive relaxation techniques have been beneficial with voice and stuttering disorders, little mention has been made of this technique with the language deficit patient. Increasing importance is given to the idea that the language deficit of aphasic individuals cannot be attributed solely to the physiological results of the brain injury (Stoicheff, 1960), but may be a function of anxiety as well. The physiological, psychological, situational and linguistic factors are all important in determining a patient's prognosis for recovery. Increased anxiety is negatively correlated with recovery (Keenan and Brassel, 1974). A review of the literature, however, reveals few reports of attempts to deal directly with the anxiety symptoms of the aphasic patient. Schuell et al., (1964) saw the general importance of relaxation since patients talk more readily when they are rested and relaxed than when they are tired. Kingdon-Ward (1969) indicated the importance of relaxation in the treatment of aphasic patients by stating that "...relaxation is too often overlooked."

It would appear, therefore, that any technique that might possibly reduce unnecessary tension and anxiety for an aphasic patient, might also serve to enhance communication. Accordingly, it was the purpose of this investigation to determine the effects of relaxation training upon the verbal communicative ability of aphasic adults.

CHAPTER III

METHODS AND PROCEDURES

Subjects

Subjects for this study were 16 aphasic adults (15 males and one female) ranging in age from 40 to 68 years (mean, 50.9 years) and in duration of aphasia from 4 to 70 months. All had incurred aphasia as a result of a thromboembolic cerebrovascular accident and had previously received or were currently receiving speech and language therapy at the Portland Veterans Administration Hospital. Selection of subjects was restricted in order to obtain a patient sample that represented a moderate to severe range of communicative impairment. Severity of aphasic involvement was determined on the basis of subject's overall percentile rankings on the Porch Index of Communicative Ability (PICA) (Porch, 1967) and only aphasics falling between the 35th and 80th percentiles on the PICA were used as subjects. Subjects are further described in Table I.

Procedures

Each subject was administered a battery of four, 15 item, verbal tasks following each of two conditions. This verbal task battery (VTB) was given once following a period of progressive relaxation training and once following a control (no treatment) period. The tasks of the VTB paralleled the four verbal subtests of the PICA (Porch, 1967). On the first subtest, the subjects were required to give the function of 15 common objects (ball, bell, brush, cards, cup, dollar, hammer, razor, saw, scissors, soap, spoon, telephone, towel, whistle). The specific instructions for subtest one were: "As completely as possible tell me what you

TABLE I

SUMMARY OF APHASIC SUBJECTS

SUBJECTS	SEX	AGE	MONTHS POST ONSET	OVERALL PICA PERCENTILE
1	M	53	14	70
2	M	56	24	75
3	M	40	7	73
4	M	40	4	60
5	M	50	47	72
6	F	45	70	78
7	M	42	39	69
8	M	58	24	67
9	M	68	4	49
10	M	65	27	46
11	M	53	8	65
12	M	60	4	53
13	M	65	9	52
14	M	43	4	38
15	M	57	38	53
16	M	49	26	62

do with each of these things." In the second subtest, the subject was required to name each of the 15 objects. The specific instructions for subtest two were: "Tell me the name of each of these." In the third subtest, the subject was asked to produce the name of each object in a carrier phrase ("You throw a ____."). The specific instructions for subtest three were: "Finish these sentences." In the fourth subtest, the subject was asked to repeat the name of each object. The specific instructions for subtest four were: "Now I'll say the name of each one and you say it after me."

The arrangement of the 15 items was identical for each subject (Figure 1). The most difficult VTB task, giving the function of the objects was administered first, followed by the next most difficult task, naming; and supplying the name of the object in a carrier phrase and repeating the names of the objects were the third and fourth tasks presented to each subject. Order of presentation of stimuli for the function and naming tasks were controlled by the subject; order of presentation for the carrier phrase and repetition tasks were controlled by the experimenter. Specific instructions for the administration of each VTB task are described in Appendix A.

Relaxation and Control Conditions

For the 30 minute relaxation condition the subject sat in a large comfortable arm chair facing the experimenter. To provide a degree of standardization, each subject followed the same set of procedures in terms of time spent relaxing various muscle groups and the sequence in which muscle groups were relaxed. In order to make the relaxation period as natural and spontaneous as possible, the experimenter utilized her own

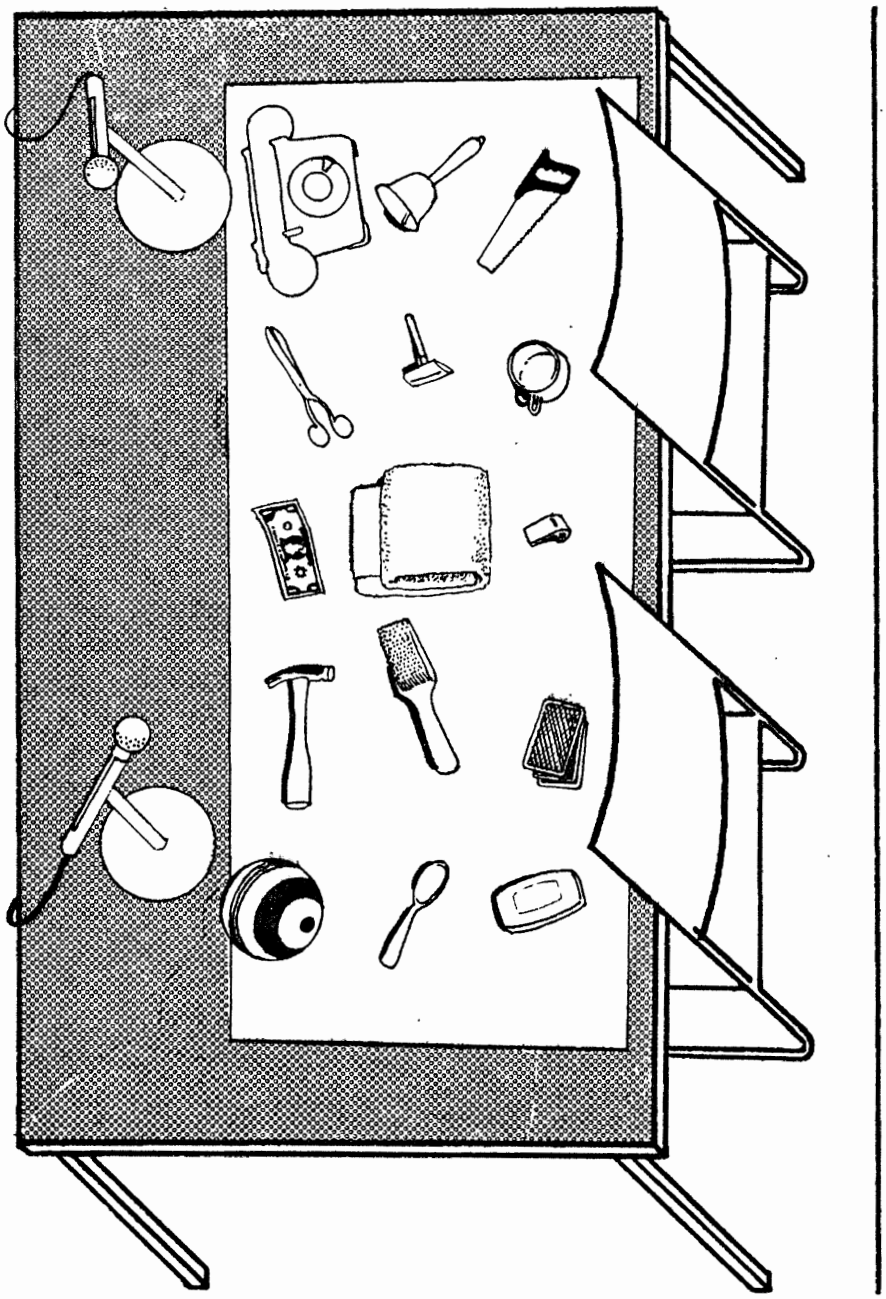

Figure 1. Arrangement of the 15 items used during the four verbal tasks.

terminology when instructing subjects but adhered strictly to the relaxation condition time limits (Appendix B).

Procedures employed essentially followed those described by Jacobson (1929; 1958), with the exception that the experimenter modelled each movement while instructing the subject and that several muscle groups were relaxed during the 30 minute period. The relaxation procedures included contraction and relaxation of the muscles within and around the eleven areas listed in Appendix B. The time allocated for the contraction/relaxation steps differs from area to area. Each subject was systematically taken through two complete sequences of the steps one through forty-six summarized in Appendix C. A two-minute rest period followed completion of the first sequence. During the control period the subject sat in the same chair in the same quiet room for the same length of time as the relaxation period.

The order of relaxation and control conditions was assigned on a random basis with the single restriction that for half of the subjects the relaxation condition preceded the first VTB. The VTB was administered 10 minutes following the relaxation or control periods at approximately the same hour with a two or three day interval between administrations.

Scoring

Administration and scoring of the VTB paralleled procedures used with the Porch Index of Communicative Ability (PICA). Briefly this system, described in detail by Porch (1967; 1971), rates the goodness of each response on a 1-16 multidimensional scoring system which takes into consideration the response attributes of accuracy, responsiveness, completeness, promptness and efficiency. Appendix C describes the 16 response

categories in detail.

Subjects' responses to VTB items were recorded on an Ampex (AG-500) tape recorder. All responses were scored from the tape by a trained PICA scorer who was uninformed whether VTB administration followed relaxation or control conditions. To serve as a measure of interscorer reliability, the individual administering the VTB (the author) also scored each subject's responses. Both scorers had extensive experience using the multidimensional scoring system of the PICA and the percentage of scorer agreement for the taped and live scoring exceeded 95 percent which is generally commensurate with interscorer agreement levels attained by trained PICA scorers.

Statistical Analysis

Statistical analyses were performed on each VTB task (function, naming, carrier phrase and repetition) as well as on the overall VTB means for each of the 16 subjects. Each analysis was based on a 2 x 2 repeated measures Latin Square Design (Winer, 1971). The analysis allows the groups in this study to act as their own control. Use of such a design (Figure 2) allowed the researcher to measure the variance of three discrete variables. In this study the three variables were:

1. The Order Effect: Did the order in which the subjects were administered the VTB (Group I - Relaxation first and Control second, Group II - Control first and Relaxation second) significantly affect their performance?
2. The Learning Effect: Was there a significant difference in subject performance between the first and second administrations of the VTB that would indicate that a learning effect had taken place?
3. The Treatment Effect: Was there a significant difference in subject performance based on the presence or absence of relaxation treatment prior to administration of the VTB?

Variable 2. The Learning Effect

Variable 1. The Order Effect	Subjects	1st VTB Admin.	2nd VTB Admin.
Group I	1, 2, 3, 4, 5, 6, 7, 8	Relaxation	Control
Group II	9, 10, 11, 12, 13, 14, 15, 16	Control	Relaxation

Variable 3. The Treatment Effect

Figure 2. The Latin square design used to measure the variance of 3 variables: the Order Effect, the Learning Effect and the Treatment Effect.

CHAPTER IV

RESULTS AND DISCUSSION

I. RESULTS

Subject and group means following the relaxation and control periods for each subtest of the verbal task battery (VTB) are shown in Table II. The overall VTB mean represent an average of the four VTB tasks. Analyses of variance are summarized for the function, naming, carrier phrase and repetition tasks as well as for overall VTB means in Tables III, IV, V, VI and VII respectively. Figures 3, 4, 5, 6, and 7 illustrate variation in subject performance for each task using the differences between the subjects' means. Minus values indicate a lower mean following the relaxation period, while plus values indicate a higher mean following the relaxation period.

Analysis of the variance affecting the order of test condition as indicated in Tables III, IV, V, VI and VII demonstrated that the order of the VTB conditions did not significantly influence subject performance ($p < .05$).

Analysis of the variance affecting the order of test administration as indicated in Tables III, IV, V, VI and VII demonstrated that there was no significant difference in subject performance between the first and second administrations of the VTB that would indicate that a learning effect had taken place ($p < .05$).

The Influence of Relaxation on the Function Subtest

The results of the subjects' performance on the Function Subtest,

TABLE II: SUBJECTS' VTB TASK MEANS, SUBJECTS' OVERALL VTB MEANS, GROUP VTB MEANS AND GROUP OVERALL VTB MEANS FOLLOWING THE RELAXATION (R) AND CONTROL (C) PERIODS

	Function		Naming		Carrier Phr.		Repetition		Overall Mean	
Subject Means	R	C	R	C	R	C	R	C	R	C
1	11.80	11.53	13.27	12.27	13.67	13.60	15.00	15.00	13.44	13.10
2	11.40	10.87	13.67	13.27	13.07	14.40	14.80	14.33	13.24	13.22
3	10.33	9.93	13.27	13.00	14.73	14.73	14.67	14.00	13.25	12.92
4	8.87	9.60	7.93	7.47	10.27	11.53	13.33	13.67	10.10	10.57
5	9.87	8.67	13.33	13.87	12.93	12.13	14.87	14.87	12.75	12.38
6	8.07	7.80	12.53	10.27	10.80	10.00	14.33	13.33	11.43	10.35
7	8.07	7.47	12.20	11.73	12.53	12.13	14.93	14.67	11.88	11.50
8	8.60	7.13	10.60	9.40	11.87	10.67	12.47	13.87	10.89	10.27
9	9.87	6.07	9.87	8.20	9.53	10.27	11.13	12.87	10.10	9.35
10	5.00	5.00	4.60	4.93	5.20	6.13	7.40	7.27	5.55	5.83
11	6.53	5.87	12.80	8.33	10.40	7.80	10.27	6.67	10.00	7.17
12	9.73	8.67	11.60	10.80	13.53	13.53	14.67	14.60	12.38	11.90
13	4.67	4.00	7.73	6.47	7.60	6.80	11.20	9.20	7.80	6.62
14	5.13	5.27	11.73	11.93	8.00	6.40	13.80	13.47	9.67	9.27
15	8.53	7.60	10.80	8.40	11.53	10.07	11.67	9.87	10.63	8.98
16	8.60	8.07	11.93	10.13	11.73	10.87	14.40	14.40	11.66	10.87
Group Means	8.45	7.73	11.12	10.03	11.07	10.69	13.06	12.64	10.92	10.27

TABLE III

ANALYSES OF VARIANCE TABLE FOR
THE FUNCTION SUBTEST

	SS	df	MS	F
The Order Effect	18	1	18	2.25
The Learning Effect	0	0	0	0
The Treatment Effect	5	1	5	4.385
Error	16	14	1.14	

SS = Sum of Square

df = Degree of Freedom

MS = Mean Square

TABLE IV

ANALYSES OF VARIANCE TABLE FOR
THE NAMING SUBTEST

	SS	df	MS	F
The Order Effect	0	1	0	
The Leaning Effect	0	1	0	
The Treatment Effect	10	1	10	12.66*
Error	11	14	.79	

SS = Sum of Square

df = Degree of Freedom

MS = Mean Square

* = Significant at .01

TABLE V

ANALYSES OF VARIANCE TABLE FOR
THE CARRIER SUBTEST

	SS	df	MS	F
The Order Effect	5	1	5	.36
The Learning Effect	2	1	2	4.0
The Treatment Effect	1	1	1	2.0
Error	7	14	.5	

SS = Sum of Square

df = Degree of Freedom

MS = Mean Square

TABLE VI

ANALYSES OF VARIANCE TABLE FOR
THE REPETITION SUBTEST

	SS	df	MS	F
The Order Effect	3	1	3	.25
The Learning Effect	0	1	0	
The Treatment Effect	1	1	1	1.27
Error	11	14	.785	

SS = Sum of Square

df = Degree of Freedom

MS = Mean Square

TABLE VII

ANALYSES OF VARIANCE TABLE FOR
OVERALL VTB SCORES

	SS	df	MS	F
The Order Effect	1	1	1.0	.1
The Learning Effect	0	1	0	
The Treatment Effect	3	1	3.0	10.53*
Error	4	14	.285	

SS = Sum of Square

df = Degree of Freedom

MS = Mean Square

* = significant at .01

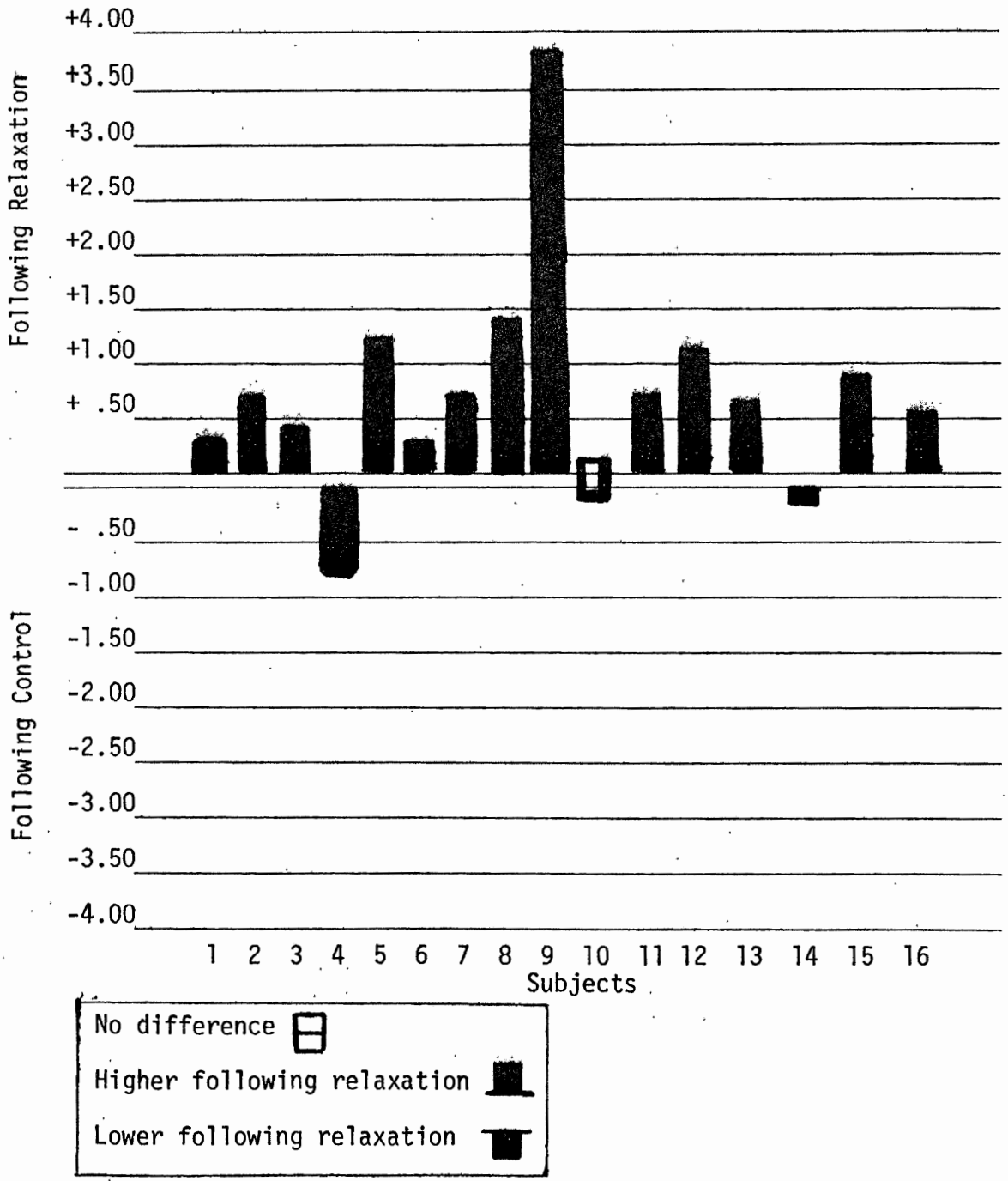

Figure 3. Mean difference between test conditions on function subtest for individual subjects.

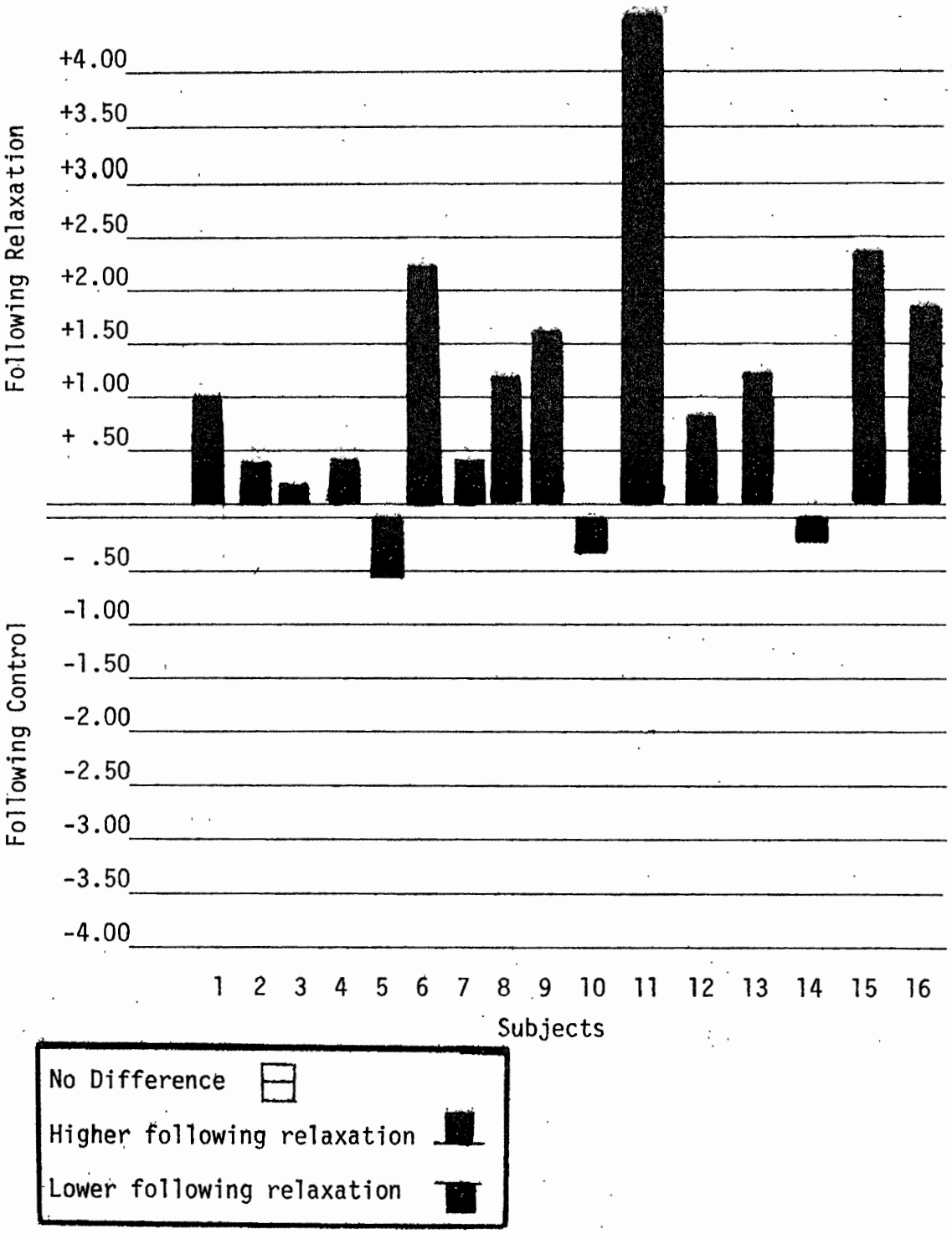

Figure 4. Mean difference between test conditions on naming subtest for individual subjects.

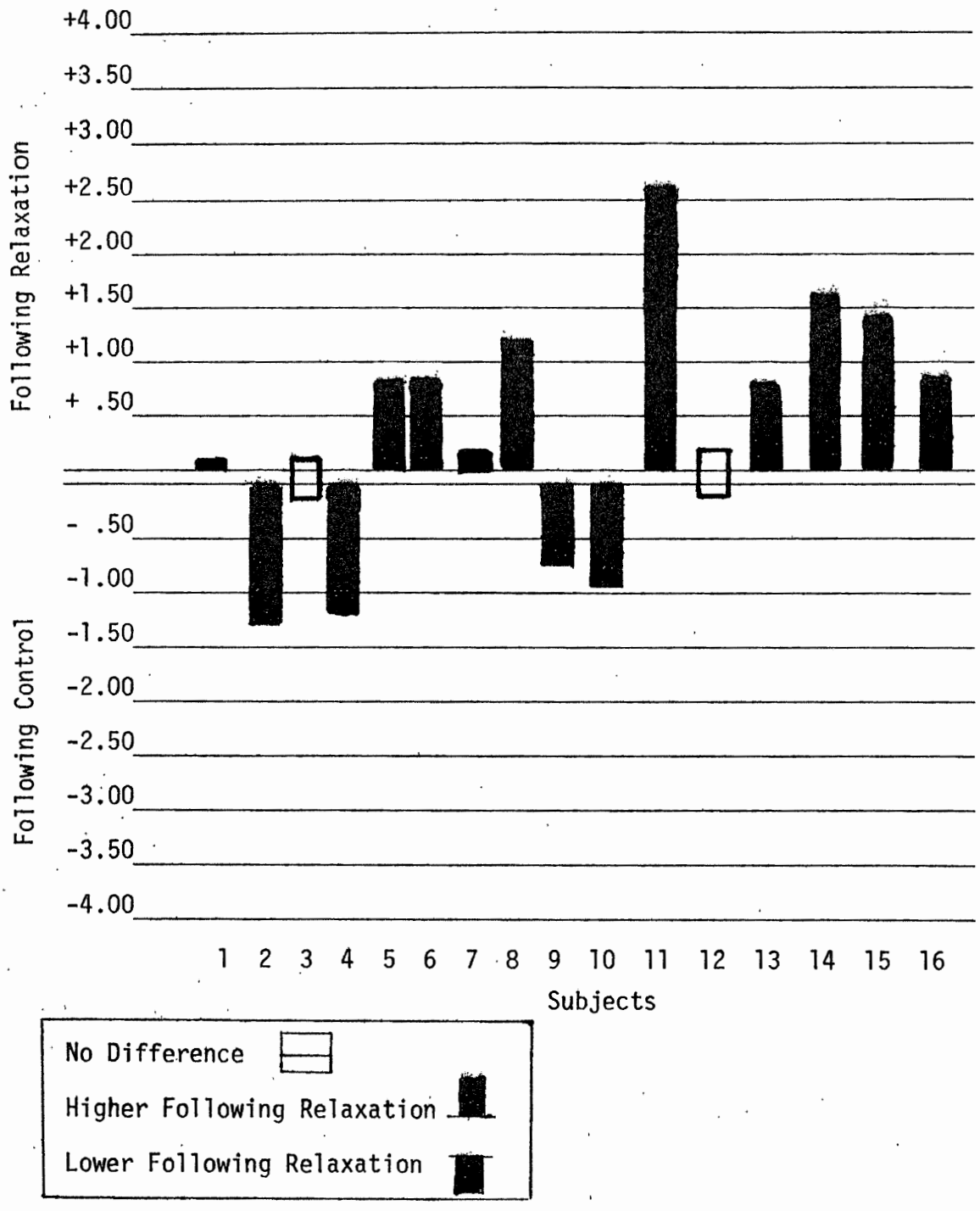

Figure 5. Mean difference between test conditions on carrier phrase subtest for individual subjects.

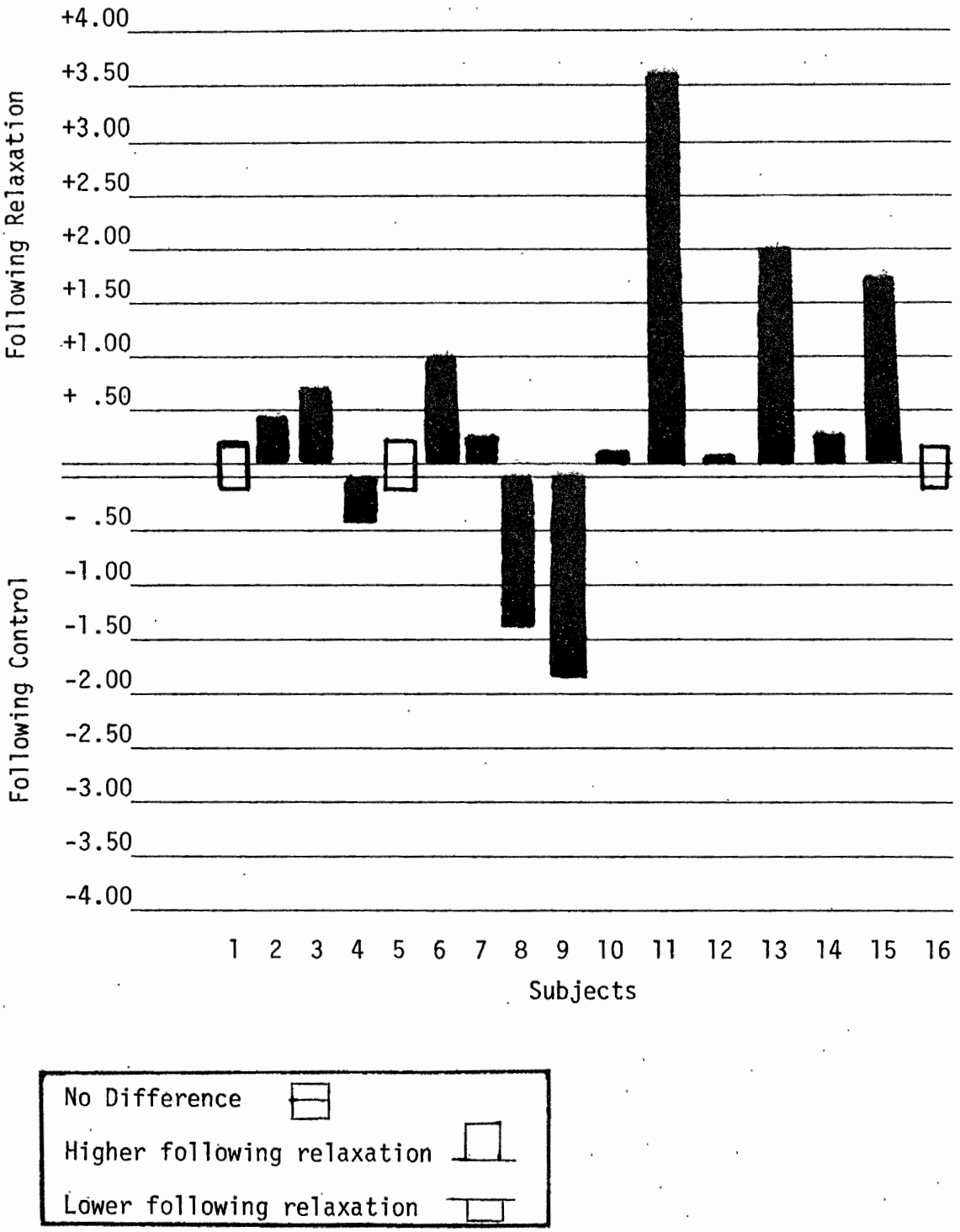

Figure 6. Mean difference between test conditions on repetition subtest for individual subjects.

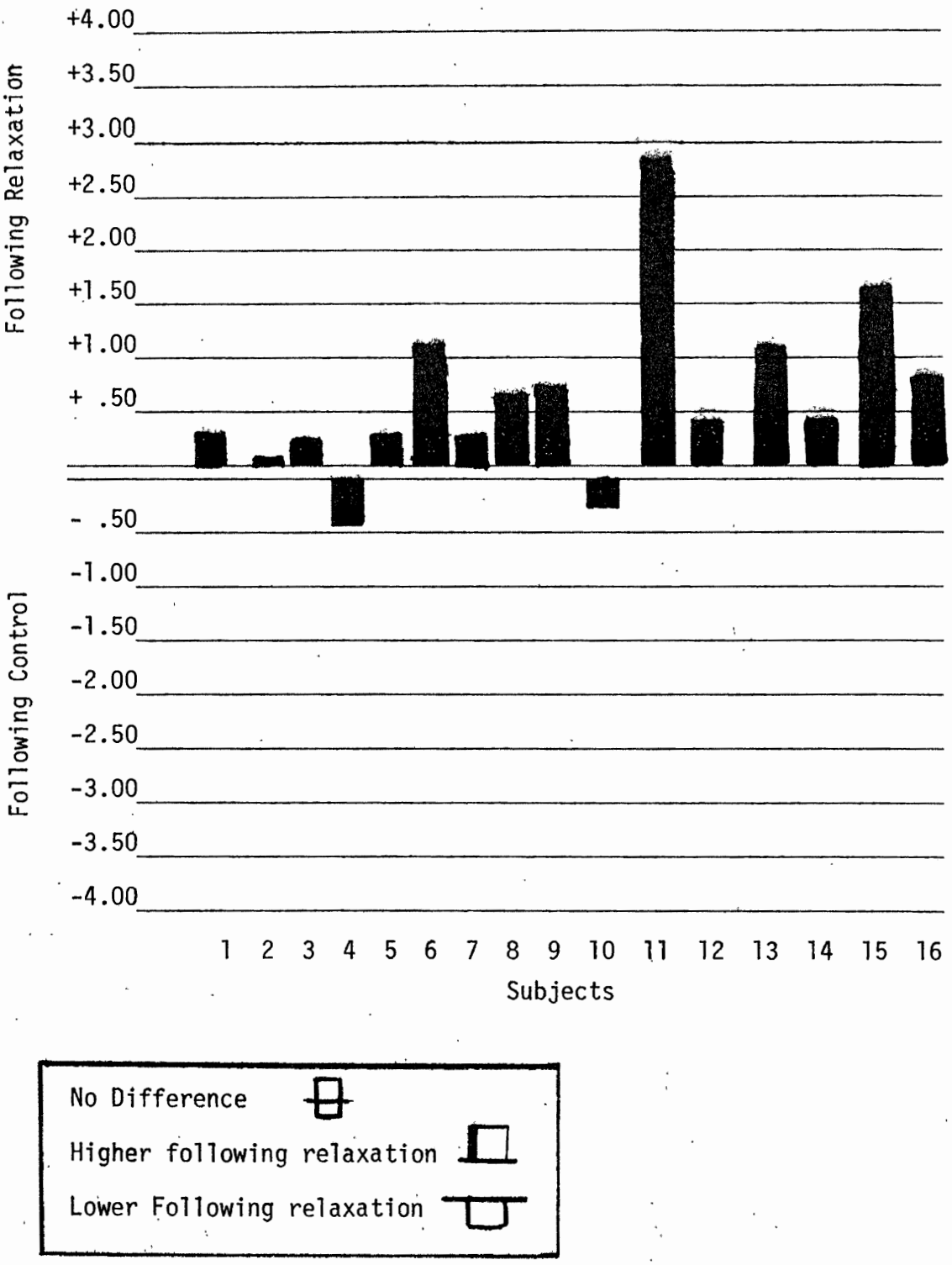

Figure 7. Combined mean difference between test conditions for all the four subtests.

contained in Figure 3, indicate 13 of the 16 subjects obtained higher scores following the relaxation condition. Table II shows the difference between the group means for the two conditions (relaxation = 8.45; control = 7.73) approached significance but did not surpass the .05 level.

The Influence of Relaxation on the Naming Subtest

The results of the subjects' performance on the Naming Subtest, contained in Figure 4, show that 13 of the 16 subjects obtained higher scores following the relaxation condition. Table II indicates that the differences between the two conditions (relaxation = 11.12; control = 10.03 were significant at the .01 level.

The Influence of Relaxation on the Carrier Phrase Subtest

The results of the subjects' performance on the Carrier Phrase Subtest, contained in Figure 5, indicate 10 of the 16 subjects obtained higher scores following the relaxation condition. Table II shows that the differences between the group means for the two conditions (relaxation = 11.07; control = 10.69) were not significant at the .05 level.

The Influence of Relaxation on the Repetition Subtest

The results of the subjects' performance on the Repetition Subtest, contained in Figure 6, indicate 10 of the 16 subjects obtained higher scores following the relaxation condition. Table II shows that the differences between the group means for the two conditions (relaxation = 13.06; control = 12.64) were not significant at the .05 level.

The Influence of Relaxation on the Overall VTB Mean

The results of the subjects' performance on the Overall VTB mean,

contained in Figure 7, indicate that 14 of the 16 subjects obtained higher scores following the relaxation condition. Table II shows that the difference between the group means for the two conditions (relaxation = 10.92; control = 10.27) were significant at the .01 level.

II. DISCUSSION

Although anxiety and tension are seen to adversely influence the speech of the adult aphasic (Schuell et al., 1964; Buck, 1968; Kingdon-Ward, 1969; Keenan and Brassel, 1974), there appears to be little experimental evidence which deals directly in alleviating these factors. The progressive relaxation techniques used in this study were easily administered to the aphasic subjects. The results following the progressive relaxation condition indicate that this technique may enhance their verbal performance. The results on the subjects' performance on the Function Subtest indicate that the subjects approached significance at the .05 level in obtaining higher scores following the relaxation condition. The results of the subjects' performance on the Naming Subtest and the Overall VTB Mean indicated the subjects significantly did better following the relaxation condition.

The results of this study suggest relaxation may have its most pronounced effect on those verbal tasks which are somewhat more difficult for an aphasic. The tendency for subjects to perform better following relaxation was more apparent on the complex function and naming tasks whereas performance differences for the easier carrier phrase and repetition tasks were smaller, in some cases non-existent, and in others higher following the control condition. The overall VTB means, which reflect an average of the four VTB tasks, may serve as the best indicator

of the subjects' verbal communicative proficiency. The trend for subjects to perform better on the more complex tasks may also indicate that relaxation has a more pronounced effect on those language tasks which are more similar to the demands of normal everyday language usage and as such may offer more to higher level aphasics who hold potential for returning to work.

The reasons for the success of the relaxation techniques are a matter of conjecture. Relaxation techniques when used with stuttering (Wolpe, 1958; Damste et al., 1968; Falck, 1969; Casteel and McMahon, 1978) and voice (Brodnitz, 1962; Murphy, 1964; Fisher, 1966; Moore, 1971; Boone, 1971 and Marshall and Watts, 1975) cases focuses on reducing tension within particular muscles of the vocal apparatus felt to be contributing to the abnormal speech. Although the voice and stuttering client can learn the basic progressive relaxation strategies in a matter of weeks, it is generally assumed that it takes at least six months before the client learns to differentially relax when necessary. In a study by Jacobson (1958), it was suggested that treatment should continue for months or years. Haugen et al., (1958) and Casteel et al., (1977) modified Jacobson's procedures and instructed their subjects to practice relaxation immediately after the first training period. The studies described above required the subjects to learn to differentiate between tensing and relaxing conditions. Over-time, it allowed their subjects to differentially relax those muscles needed for an activity by merely thinking the relaxation process. Although tension and relaxation differences were demonstrated to the patients, time for incorporation of relaxation knowledge was not provided in this investigation.

For subjects of this study, relaxation techniques were applied

generally. One can speculate that the relaxation techniques promoted a feeling of general well being and calm within the aphasic subjects and hence improved communicative performance. Possibly the quiet, dimly lit room as well as the relaxed manner in which the instructions were given influenced the subjects' general sense of ease. The benefits of positive suggestion inherent in relaxation instruction, and proven useful in the treatment of aphasic subjects in an earlier study by Stoicheff (1960), cannot be discounted. Each subject was told prior to the relaxation condition that they would take part in some relaxation therapy for about a half an hour. The word "relaxation" when heard by the aphasic subject may have served as a positive suggestion.

It must be remembered that this was a preliminary study which dealt only with the effects of a single session of progressive relaxation instructions. It is doubtful the positive results obtained on the verbal task battery was a result of a significant reduction in muscle tension but rather an increase in general well being. It would be necessary to train subjects in the use of progressive relaxation techniques for longer periods of time to determine if they could differentially learn to relax as well as determine if permanent changes in communication would result.

CHAPTER V

SUMMARY AND IMPLICATIONS

I. SUMMARY

The purpose of this study was to investigate the effects of progressive relaxation training on the verbal ability of adult aphasics. Sixteen adults aphasics (15 males and 1 female) were administered a battery of four 16 item verbal tests (VTB) following a period of relaxation training and a control period. The tasks of the VTB paralleled the four verbal subtests of the PICA (Porch, 1967). Subjects were required to give the function of 15 common objects, to name each object, to produce the name of each object after hearing a carrier phrase and to repeat the name of each object. Relaxation procedures employed a modified Jacobson (1929) technique.

Results indicated aphasics' verbal communication was positively influenced by relaxation training. All of the VTB task means were higher following the relaxation condition than the control condition. Subjects' means for the naming task were significantly higher following the relaxation period at the .01 level. Although none of the mean differences for the other three VTB tasks were significantly different, the cumulative result of subjects' tendency to perform better following relaxation is reflected in overall VTB performance. The overall VTB mean was significantly higher at the .01 level following the relaxation period and furthermore, 14 of the 16 subjects illustrated higher overall VTB means following relaxation.

II. CLINICAL IMPLICATIONS

From a therapeutic standpoint, relaxation procedures may have much to offer the aphasia clinician. It would be relatively simple to "tailor make" instructions and procedures for individual patients which could be commensurate with their level of comprehensional and physical ability. The patient, over time, should be instructed to differentially discriminate unnecessary tension levels. The aphasic could be taught to use these techniques in daily communications and report his successes (or lack of such) to the clinician. For many aphasics, fluctuation in day to day communicative efficiency is a constant complaint. It seems possible that relaxation instruction might be useful to such patients in coping with and perhaps minimizing such fluctuations. The technique might be particularly beneficial for patients who have returned to work but are unduly anxious in communication situations surrounding their jobs. Relaxation may allow the patient to become sensitive to signs of tension and fatigue. Finally, it should be stressed that relaxation procedures should be viewed as an adjunct to the aphasia clinician's armamentarium of clinical skills. They do not, and should not replace conventional speech and language techniques, but in some cases may facilitate the use of these techniques.

III. IMPLICATIONS FOR FURTHER RESEARCH

This study was limited in scope in that it only offered a single session of relaxation training. To determine if relaxation training would influence the communicative ability of adult aphasics over time, it would be necessary to design a relaxation program which covers days

or weeks. It would be interesting to see if the adult aphasic continues to improve over time or if he finally plateaus. Is the adult aphasic capable of learning how to discriminate between tension and relaxation? Would some clients be more responsive to training than others? In carrying out such a project, it would be beneficial, if not necessary, to teach patients to be their own instructors. Progressive relaxation training might provide a coping tool for the apahsic to offset in some cases, a life style of physical stress. It could prove to be a preventative measure against future insult.

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APPENDIX A

INSTRUCTIONS FOR VERBAL TASK BATTERY (VTB) SUBTESTS

I. Giving the function of each object

Example: This is test number one. Are you ready? As completely as possible tell me what you do with each of these things (gesture by passing hand over objects).

Repeat: Tell me what you do with each of these.

Cue: Have you ever used one of these? Tell me what you do with it.

II. Naming each object

Example: This is test number two. Tell me the name of each of these (gesture by passing hand over objects).

Repeat: Tell me the name of that.

Cue: Have you ever used one of these? What do you call it?

III. Supplying the name of each object in a carrier phrase

Example: This is test number three. Finish these sentences.

You cut wood with a _____.
You shave with a _____.
You talk on the _____.
You fix hair with a _____.
You pound a nail with a _____.
You eat soup with a _____.
You deal the _____.
You drink coffee from a _____.
You dry your hands with a _____.
You blow on a _____.
You buy things with a _____.
You ring a _____.

IV. Repeating the name of each object

Example: This is test number four. Now I'll say the name of each one and you say it after me.

Saw
Razor
Telephone
Brush
Hammer
Spoon
Cards
Cup
Towel
Ball
Whistle
Soap
Scissors
Dollar
Bell

Repeat: Repeat the instructions.

Cue: Repeat while pointing to the object.

APPENDIX B

SUMMARY OF RELAXATION PROCEDURES

AREA OF FOCUS	STEP	INSTRUCTIONS	TIME IN SECONDS
Wrist	1	Bend your wrist back and hold the position.	7.5
	2	Bend your wrist forward and hold the position.	7.5
	3	Repeat steps 1, 2	
	4	Relax	15.0
	5	Repeat steps 1, 2, 3, 4	
Hand/Arm	6	Make a tight fist and tense the muscles of your arm.	15.0
	7	Relax	15.0
	8	Repeat steps 6, 7	
Ankle	9	Bend your ankle up and back as far as you can.	7.5
	10	Press downward with your toes and push the ball of your foot into the floor as hard as you can.	7.5
	11	Relax	30.0
	12	Repeat steps 9, 10, 11	

AREA OF FOCUS	STEP	INSTRUCTIONS	TIME IN SECONDS
Leg	13	Raise your leg slowly to where it's parallel with the floor. Hold it.	15.0
	14	Relax	15.0
	15	Repeat steps 13, 14	
Foot/Leg	16	Tighten the muscles of your foot and leg.	15.0
	17	Relax	15.0
	18	Repeat steps 16, 17	
Abdomen/Back	19	Suck in your breath while pulling your stomach in slowly. Hold it.	7.5
	20	Relax	7.5
	21	Arch your back and hold the position.	7.5
	22	Relax	7.5
	23	Repeat steps 19, 20, 21, 22	
Arm	24	Lift your arm until it's parallel with the floor and slowly move it across the midline	10.0
	25	Reverse the direction and slowly move your arm until it's parallel with the floor again.	10.0
	26	Relax	10.0
	27	Repeat Steps 24, 25, 26	

AREA OF FOCUS	STEP	INSTRUCTIONS	TIME IN SECONDS
Shoulders	28	Make a tight fist, tense your arm and raise your shoulder slightly.	15.0
	29	Relax	15.0
	30	Repeat steps 28, 29	
Neck	31	Turn your head to the left as far as you can.	3.0
	32	Turn your head to the right as far as you can.	3.0
	33	Repeat steps 31, 32	
	34	Relax	15.0
	35	Turn (rotate) your head in a clockwise direction as if it were a swivle.	15.0
	36	Relax	15.0
	37	Repeat steps 31, 32, 33, 34, 35, 36	
Eyes	38	Open your eyes as wide as you can.	15.0
	39	Close your eyes as tight as you can.	15.0
	40	Relax	30.0
	41	Repeat steps 38, 39, 40	

AREA OF FOCUS	STEPS	INSTRUCTIONS	TIME IN SECONDS
Mouth	42	Close your teeth tightly. Hold it and then let go.	15.0
	43	Pull back your lips and bare your teeth. Hold it and then let go.	15.0
	44	Now close your lips as tight as you can. Hold it.	15.0
	45	Relax	15.0
	46	Repeat steps 42, 43, 44, 45	

APPENDIX C

MULTIDIMENSIONAL SCORING CATEGORIES
(Porch, 1972)

SCORE	LEVEL	DESCRIPTION
16	Complex	Accurate, responsive, complex, prompt, efficient
15	Complete	Accurate, responsive, complete, immediate response to test item.
14	Distorted	Accurate, responsive, complete, response to test item, but with reduced facility of production.
13	Complete-Delayed	Accurate, responsive, complete response to the test item which is significantly slow or delayed.
12	Incomplete	Accurate, responsive, response to test item which is lacking in completeness.
11	Incomplete-Delayed	Accurate, responsive, incomplete response to test item which is significantly slowed or delayed.
10	Corrected	Accurate response to test item self-correcting a previous error without request or after a prolonged delay.
9	Repetition	Accurate response to test item after a repetition of the instructions by request or after a prolonged delay.
8	Cued	Accurate response to test item stimulated by a cue, additional information, or another test item.
7	Related	Inaccurate response to test item which is clearly related to or suggestive of an accurate response.
6	Error	Inaccurate response to the test item.

SCORE	LEVEL	DESCRIPTION
5	Intelligible	Intelligible response which is not associated with the test item, for example, perseverative or automatic responses or an expressed indication of inability to respond.
4	Unintelligible	Unintelligible or incomprehensible response which can be differentiated from other responses.
3	Minimal	Unintelligible response which cannot be differentiated from other responses.
2	Attention	Patient attends to test item but gives not responses.
1	No Response	Patient exhibits no awareness of test item.