San Fernando Valley State College

EFFECTS OF NEUROLOGICAL IMPRESS METHOD ON READING GAINS

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Arts in Education

by

Joanne Tammy Enfield

June, 1972
The thesis of Joanne Tammy Enfield is approved:

San Fernando Valley State College
June, 1972
DEDICATION

This thesis is dedicated to
the writer's loving family.

J.T.E.
ACKNOWLEDGMENTS

The writer takes great pride in acknowledging several helpful people who gave their time and energies in support of this thesis.

Dr. Douglas J. Robertson, major advisor, whose intelligence, thoughtfulness, and dedication helped to stimulate and guide the thoughts put forth in this paper.

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Mrs. Mary Lou Wetter and Mr. Bill Zimmerman, the cooperating sixth grade teachers.

Miss Karen Jenson, Mrs. Stephenie Sussman, the certificated teachers.

Jackie and Mike, the prospective teachers.

Fifty-one children who participated as tutors and learners.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedication</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>iv</td>
</tr>
<tr>
<td>List of Tables</td>
<td>vii</td>
</tr>
<tr>
<td>List of Illustrations</td>
<td>viii</td>
</tr>
<tr>
<td>Abstract</td>
<td>x</td>
</tr>
</tbody>
</table>

## CHAPTER

### I. STATEMENT OF THE PROBLEM...

1. Rationale for the Study
2. Significance of the Study
3. Definition of Terms
4. Research Questions
5. Research Hypothesis
6. Limitations of the Study

### II. REVIEW OF RELATED LITERATURE...

11. Studies of Neurological Impress Method
2. Studies of Tutoring

### III. RESEARCH DESIGN AND PROCEDURES...

14. Sample Selection
2. Research Design
3. Research Instruments
4. Data Collection
5. Statistical Analysis
6. Tutor Training Procedures
7. Tutoring Schedule

### IV. PRESENTATION AND ANALYSIS OF THE DATA...

23. Treatment of the Data
2. Presentation of the Data
V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 42

Summary
Conclusions
Recommendations for Implications
Recommendations for Further Research

BIBLIOGRAPHY 55

APPENDICES 57
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A Comparison of Pretest and Posttest Vocabulary Mean Scores for Learners A (N = 14)</td>
<td>24</td>
</tr>
<tr>
<td>2. A Comparison of Pretest and Posttest Comprehension Mean Scores for Learners A (N = 14)</td>
<td>25</td>
</tr>
<tr>
<td>3. A Comparison of Pretest and Posttest Total Mean Scores for Learners A (N = 14)</td>
<td>26</td>
</tr>
<tr>
<td>4. A Comparison of Pretest and Posttest Vocabulary Mean Scores for Learners B (N = 12)</td>
<td>27</td>
</tr>
<tr>
<td>5. A Comparison of Pretest and Posttest Comprehension Mean Scores for Learners B (N = 12)</td>
<td>28</td>
</tr>
<tr>
<td>6. A Comparison of Pretest and Posttest Total Mean Scores for Learners B (N = 12)</td>
<td>29</td>
</tr>
<tr>
<td>7. A Comparison of Pretest and Posttest Vocabulary Mean Scores for Control Group (N = 11)</td>
<td>30</td>
</tr>
<tr>
<td>8. A Comparison of Pretest and Posttest Comprehension Mean Scores for Control Group (N = 11)</td>
<td>31</td>
</tr>
<tr>
<td>9. A Comparison of Pretest and Posttest Total Mean Scores for Control Group (N = 11)</td>
<td>32</td>
</tr>
<tr>
<td>10. A Comparison of Learners A and Learners B on the Vocabulary Reading Achievement Posttest Mean Scores</td>
<td>33</td>
</tr>
</tbody>
</table>
11. A Comparison of Learners A and Learners B on the Comprehension Reading Achievement Posttest Mean Scores ... 34
12. A Comparison of Learners A and Learners B on the Total Reading Achievement Posttest Mean Scores ... 35
13. A Comparison of Learners A and the Control Group on the Vocabulary Reading Achievement Posttest Mean Scores ... 36
14. A Comparison of Learners A and the Control Group on the Comprehension Reading Achievement Posttest Mean Scores ... 37
15. A Comparison of Learners A and the Control Group on the Total Reading Achievement Posttest Mean Scores ... 38
16. A Comparison of Learners B and the Control Group on the Vocabulary Reading Achievement Posttest Mean Scores ... 39
17. A Comparison of Learners B and the Control Group on the Comprehension Reading Achievement Posttest Mean Scores ... 40
18. A Comparison of Learners B and the Control Group on the Total Reading Achievement Posttest Mean Scores ... 41
# LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Illustration</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pretest-Posttest Control Group Design</td>
<td>17</td>
</tr>
</tbody>
</table>
ABSTRACT

EFFECTS OF NEUROLOGICAL IMPRESS METHOD ON READING GAINS

by

Joanne Tammy Enfield

Master of Arts in Education

June, 1972

The purpose of this study was to investigate the effects of the Neurological Impress Method on the reading achievement mean scores of low achieving fifth grade students. Further, the present study was designed to present empirical evidence regarding the Neurological Impress Method as taught by two second grade certificated teachers, two prospective teachers, and fourteen sixth grade tutors utilizing the same method with low achieving fifth grade students.

A Pretest-Posttest Control Group design was employed. There were two experimental groups and one control group. The two experimental groups were set up in order to measure the reading achievement mean scores of (1) fifth graders tutored by sixth grade tutors, and (2) fifth
graders tutored by adult instructors. The Control Group of fifth graders was only pretested and posttested.

The t test for correlated data was applied to test hypotheses one through nine. The t test for uncorrelated data was used to test hypotheses ten through eighteen. Each hypothesis was treated independently.

The findings of the present study indicate that significant t ratios were attained on all pretest and posttest comparisons for Learners A and Learners B with the exception of the comprehension subtest for Learners A. There was no significant t ratios attained on the pretest and posttest comparisons for the Control Group.

When Learners A were compared to Learners B in the vocabulary, comprehension, and total reading section of the California Achievement Test, Learners B had higher mean scores but did not significantly outperform Learners A when a t test was applied.

When Learners A were compared to the Control Group in the vocabulary, comprehension, and total reading section of the California Achievement Test, Learners A had higher mean scores but did not significantly outperform the Control Group when a t test was applied.

When Learners B were compared to the Control Group in the vocabulary, comprehension, and total reading section
of the California Achievement Test, Learners B had higher mean scores but did not significantly outperform the Control Group when a t test was applied.
CHAPTER I

STATEMENT OF THE PROBLEM

The purpose of this study was to investigate the effects of the Neurological Impress Method on the reading achievement mean scores of low achieving fifth grade students. Further, the present study was designed to present empirical evidence regarding the Neurological Impress Method as taught by two second grade certificated teachers plus two prospective teachers, compared with fourteen sixth grade tutors utilizing the same method with low achieving fifth grade students.

Rationale for the Study

Reading disabilities are generally considered to be a major problem in our schools. Betts (1957) cites various authorities who estimate that eight to fifteen percent of the nation's student population have various degrees of serious reading disabilities. Durrell (1940) states a percentage of 15.2 while Monroe (1938) reports that twelve to fifteen percent have reading deficiencies. Tinker
(1965) suggests that there are a large number of research studies published each year on visual and auditory perception in reading which emphasize the roles of both vision and hearing. Some children may be classified primarily as (1) visual learners, (2) auditory learners, or (3) tactile learners. The Neurological Impress Method incorporates the visual, listening, and speaking learning modalities. The technique exposes the child to accurate, correct reading patterns and impresses these correct patterns deeply on the child's neurological system.

The researcher contended that children being tutored by this multi-sensory approach will show significant gains in reading. Further, the researcher hypothesized that there will be no significant difference in the reading achievement mean scores of fifth grade students whether they receive tutoring from sixth graders or from adult instructors.

One component of the research consisted of fourteen sixth grade tutors working with fourteen fifth graders who were one to three years below grade level in reading. The fifth and sixth grade children have a measured IQ of eighty-five or above as determined by the Stanford Binet Intelligence Test. The other component included two teachers plus two prospective teachers working with another
group of twelve fifth graders following the same criteria.

The study was intended to measure the reading achievement mean scores of fifth grade children who were instructed in the Neurological Impress Method by two teachers and two prospective teachers as compared to sixth grade students serving as tutors.

Definition of Terms

The following definitions were selected for this study:

Neurological Impress Method. Heckelman (1962) defined the Neurological Impress Method as

A system of a unison reading process whereby the student and teacher read aloud, simultaneously, at a rapid rate. It is a multi-sensory approach involving hearing, vision, and speaking. The disabled reader sits slightly to the front of the teacher with the student and the teacher holding the book jointly. As the student and teacher read the same material in unison, the voice of the teacher is directed into the ear of the student at close range. In most instances the student has his right hand free and he is able to use his finger as a locater. He slides his finger along the line following the words that are being spoken. The finger must be at the location of the spoken word. At times the instructor may be louder and faster than the student and at other times he may read softer than the reading voice of the student and lag slightly behind. No preliminary preparation is done about the reading material before the students see it. The approach to the reading is spontaneous and as few pauses are made in this reading process.
as possible. The goal is to cover as many pages of reading material as can be done in the time available and without causing physical discomfort on the part of the student. Dryness of mouth and fatigue of voice are two types of discomfort experienced. At no time does the teacher attempt to teach sounds of the words or word recognition. No attention is called to accompanying pictures or content of the story. After the reading session the teacher refrains from asking a student any questions about what the child was reading but permits the child to volunteer any information that he wishes to give at that time. The teacher always comments positively as to the success of the child and calls his attention to the new fluidness with which he is now reading and suggests to him that he is now able to read. Any positive activation and stimulation that can be given to the child is permitted.

In this study, the Neurological Impress Method was used to help fifth graders improve their reading ability. The method was employed by two distinct groups: (1) Sixth grade student tutors and (2) Adult instructors.

Learners A: Learners A were fourteen fifth grade students receiving instruction in the Neurological Impress Method from fourteen sixth grade tutors. These students have a measured IQ of eighty-five or above as determined by the Stanford Binet Intelligence Test. These students were one to three years below grade level in reading achievement as determined by the California Achievement Tests Form W.
Learners B: Learners B were twelve fifth grade students receiving instruction in the Neurological Impress Method from two certificated teachers and two prospective teachers. These students have a measured IQ of eighty-five or above as determined by the Stanford Binet Intelligence Test. These students were one to three years below grade level in reading achievement as determined by the California Achievement Tests Form W.

Tutors A: Tutors A were comprised of fourteen sixth grade students trained to give instruction to fifth graders using the Neurological Impress Method. These students were reading on or above grade level as determined by the California Achievement Tests Form W.

Tutors B: Tutors B were comprised of two certificated second grade teachers and two prospective teachers who provided reading instruction for fifth graders utilizing the Neurological Impress Method.

Control Group: The control group was made up of eleven fifth grade students receiving no special reading instruction. They received only normal classroom reading instruction. These students were one to three years below grade level in reading as determined by the California Achievement Tests Form W. These students have a measured
IQ of eighty-five or above as determined by the Stanford Binet Intelligence Test.

**Adult Instructors:** Adult instructors were students enrolled in San Fernando Valley State College who were working toward their elementary teaching credential, or certificated classroom teachers. The training was the same for both the certificated teacher and the San Fernando Valley State students in the application of the Neurological Impress Method. An assumption was made that the San Fernando Valley State students were as competent as the certificated teacher regarding their ability to instruct fifth grade children using the Neurological Impress Method. The San Fernando Valley State students have had previous experiences with teaching reading. The adult instructor group had four subjects. Two were certificated elementary teachers and two were San Fernando Valley State students.

**Research Questions**

The two basic questions to be dealt with were: (1) Do low achieving fifth graders show significant reading gains when tutored via the Neurological Impress Method, and (2) Do low achieving fifth graders show significant reading gains when tutored by either (a) adult instructors...
or (b) sixth grade tutors.

Research Hypotheses

The intent of the study was to test and analyze the following null hypotheses:

_Hypothesis 1:_ There will be no significant difference in the vocabulary pretest and posttest reading achievement mean scores for Learners A.

_Hypothesis 2:_ There will be no significant difference in the comprehension pretest and posttest reading achievement mean scores for Learners A.

_Hypothesis 3:_ There will be no significant difference in the total pretest and posttest reading achievement mean scores for Learners A.

_Hypothesis 4:_ There will be no significant difference in the vocabulary pretest and posttest reading achievement mean scores for Learners B.

_Hypothesis 5:_ There will be no significant difference in the comprehension pretest and posttest reading achievement mean scores for Learners B.
Hypothesis 6: There will be no significant difference in the total pretest and posttest reading achievement mean scores for Learners B.

Hypothesis 7: There will be no significant difference in the vocabulary pretest and posttest reading achievement mean scores for the Control Group.

Hypothesis 8: There will be no significant difference in the comprehension pretest and posttest reading achievement mean scores for the Control Group.

Hypothesis 9: There will be no significant difference in the total pretest and posttest reading achievement mean scores for the Control Group.

Hypothesis 10: There will be no significant difference between Learners A and Learners B on the vocabulary reading achievement posttest mean scores.

Hypothesis 11: There will be no significant difference between Learners A and Learners B on the comprehension reading achievement posttest mean scores.

Hypothesis 12: There will be no significant difference between Learners A and Learners B on the total reading achievement posttest mean scores.
Hypothesis 13: There will be no significant difference between Learners A and the Control Group on the vocabulary reading achievement posttest mean scores.

Hypothesis 14: There will be no significant difference between Learners A and the Control Group on the comprehension reading achievement posttest mean scores.

Hypothesis 15: There will be no significant difference between Learners A and the Control Group on the total reading achievement posttest mean scores.

Hypothesis 16: There will be no significant difference between Learners B and the Control Group on the vocabulary reading achievement posttest mean scores.

Hypothesis 17: There will be no significant difference between Learners B and the Control Group on the comprehension reading achievement posttest mean scores.

Hypothesis 18: There will be no significant difference between Learners B and the Control Group on the total reading achievement posttest mean scores.

Limitations of the Study

This study was conducted in an elementary school
which: (1) drew from a lower class community, (2) had a relatively high transiency rate, and (3) had a cooperative administrator and teaching staff. Therefore, this study can only be generalizable to schools with similar conditions.
CHAPTER II

REVIEW OF RELATED LITERATURE

There are few studies related to the specific reading method utilized in the present study.

Studies of the Neurological Impress Method

Heckelman (1962) and Gardner (1963) conducted a pilot program using the Impress Method of Reading Habilitation in the Merced County Schools (1961). Twenty-two students took part. The students were in grades five through twelve. They showed a mean reading gain of 2.6 on the Gilmore Oral Reading Test. The total time for instruction for each student was five hours.

In 1963, a pilot project was carried out in Sonoma County School (1963) by C. Gardner. Using six students, for a period of six weeks of instruction with the Impress Method of Reading Habilitation, (renamed Neurological Impress Method, 1965) the students showed a growth of 1.6 years. The time spent was five hours for each student at ten minutes a day.
In 1965, Gardner (1963) reports another experiment (Cooperative Reading Project No. 2-167, California State Department of Education). Twenty children in grades five through eight, were used. Gains were reported as significant and maintained over a period of time. No control group was reported. Numerical gains were omitted.

Kaluger and Kolson (1969) reported a study in which they used the Neurological Impress Method. Approximately three hundred students took part ranging from grades one through nine. Students received fifteen minutes of instruction daily for a thirty minute period. The socio-economic level of the students was not determined (see Appendix A and B for the letters to Kaluger and Kolson). Kaluger and Kolson (1969) stated that:

Although we do not get the same results as the developer (Heckelman) of this technique, we have found that in cases displaying some expressive difficulty, when this technique is used improvement occurs in about fifty per cent of the cases. A child with a large discrepancy between comprehension and accuracy on the Gilmore Reading Test in favor of comprehension, may be helped by this technique.

The technique was the Neurological Impress Method.

Studies of Tutoring

Research indicates that quite often children learn from other children who are their own age or older. In
a Doctoral Dissertation, Robertson (1971) reported the following information:

Horst (1940) summarized the results of 4,000 students who were tutored covering a fifteen year period. Horst found that 2,400 or 60 per cent of the students benefited scholastically from being tutored. Ellison (1968), Harrison (1967, 1968, and 1969), Lippitt (1968) and Niedermeier (1970) conducted studies which attempted to compare the instructional behaviors and effectiveness of trained and untrained student tutors. They unanimously concluded that students who received training in specific instructional behaviors and the use of instructional materials were generally more effective as tutors than were students who lacked such training.

Robertson (1971) conducted a study measuring the effects of an intergrade tutoring experience on tutor attitudes and reading achievement. Robertson found that experience as a tutor was a powerful independent variable in that trained fifth grade student tutors developed positive attitudes toward the concepts: (1) Reading, (2) Teachers, and (3) Self while outperforming the Control Group in reading achievement.
CHAPTER III

RESEARCH DESIGN AND PROCEDURES

The purpose of the present study was to measure: (1) The reading achievement of the fifth graders instructed in the Neurological Impress Method as compared to the control group and (2) The difference in reading achievement mean scores of Learners A as compared to Learners B, of Learners A as compared to the Control Group, and of Learners B as compared to the Control Group.

Fourteen trained sixth grade tutors instructed fourteen fifth graders who were one to three years below grade level in reading achievement based on the California Achievement Tests Form W. Instruction was given using the Neurological Impress Method.

Two certificated teachers plus two prospective teachers instructed fifth graders who were two to three years below grade level in reading achievement based on the California Achievement Tests Form W. Instruction was given using the Neurological Impress Method.
Sample Selection

The fourteen fifth grade students received instruction in the Neurological Impress Method from fourteen sixth grade tutors. The fifth graders have a measured IQ of eighty-five or above as determined by the Stanford Binet Intelligence Test. These students were one to three years below grade level in reading achievement as determined by the California Achievement Tests Form W. These students have been defined as Learners A.

The fourteen sixth graders were students reading on or above grade level. They have been defined as Tutors A. These students were randomly selected from a list of names representing sixth grade students reading on or above grade level. The selected subjects were randomly assigned to tutor one of fourteen fifth grade students defined as Learners A.

The two certificated teachers and the two prospective teachers were randomly assigned to tutor one of twelve fifth grade students using the Neurological Impress Method. The twelve fifth grade students have a measured IQ of eighty-five or above as determined by the Stanford Binet Intelligence Test. These students were one to three years below grade level in reading achievement as determined by
the California Achievement Tests Form W. These students have been defined as Learners B.

The name of the school where the study took place is Arcane Elementary School which is located in Simi, California. This is a disadvantaged area characterized by the number of (1) people on welfare, and (2) aid to dependent children.

The experimental groups (Learners A and Learners B), received ten minutes of instruction a day for a period of eight weeks, ranging from four hours twenty minutes to six hours thirty minutes of instruction time.

Research Design

The design was composed of three groups. There were two experimental groups and one control group. The two experimental groups were set up in order to measure the reading achievement mean scores of (1) fifth graders tutored by sixth graders and (2) fifth graders tutored by adult instructors. The control group was only pre-tested and posttested.

A modified Pretest-Posttest Control Group Design was used (Campbell and Stanley, 1969). The organization of the experimental treatments are presented in Illustration 1.
### Illustration 1

**Pretest-Posttest Control Group Design**

<table>
<thead>
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<th>Week 1-8</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>$O_1$</td>
<td>$X$</td>
<td>$O_2$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Experimental Group I)</td>
</tr>
<tr>
<td></td>
<td>$O_1$</td>
<td>$X'$</td>
<td>$O_2$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Experimental Group II)</td>
</tr>
<tr>
<td></td>
<td>$O_1$</td>
<td>$X$</td>
<td></td>
<td>$O_2$</td>
</tr>
</tbody>
</table>

Where:  
- $O$ indicates a reading achievement test occurs.  
- $X$ indicates administration of tutor training sessions.  
- $X'$ indicates administration of the tutoring program.  
- $Mr$ indicates subjects are matched according to pre-determined criteria; then, members of each matched trio are randomly assigned to Experimental Group I, Experimental Group II or the Control Group.

### Research Instrument

The California Achievement Tests Form W were used for the pretest to assess the differences in reading achievement mean scores between Learners A, Learners B, and the Control Group. The California Achievement Tests Form Y were used for the posttest to assess the difference in
reading achievement mean scores among Learners A, Learners B, and the Control Group.

The California Achievement Tests were selected because of: (1) Unbiased sample for standardization, (2) Excellent directions for administration of the Test, (3) Appropriate subtests, and (4) Availability.

In Buros' (1959) The Fifth Mental Measurements Yearbook, Neidt reviewed the California Achievement Tests Form W. He stated that, "In the standardization of the battery, extensive provisions for selected an unbiased sample were followed. Pupils in adjacent grades were not tested in the same school system. The final norm group was based upon random sampling of schools."

The directions for administering the test are clearly stated and the format of the manuals and test booklets is outstanding.

Buros (1965) reported that:

The 1963 norms for the California Achievement Tests are based on modal-age groups (18 months age range per grade) drawn from a stratified national sample of 15,351 pupils. To gauge the effects of the renorming on the grade placement scores, the reviewer took the raw score values that yielded grade placements of 4.9, 6.9, and 8.9, respectively, on the 1957 norms and found their corresponding grade placements on the 1963 norms. Some revised reliability data are reported for four of the five levels in the 1963 edition of the separate manuals. The Kuder-Richardson formula 21 reliabilities of the junior
high level apparently have not been recomputed, since the coefficients and the standard deviations for a group of 200 eighth grade pupils are the same in the 1957 and 1963 manuals. These reliabilities are .83 for spelling, .84 for arithmetic reasoning, and between .90 and .95 for the other parts and the subtest total scores.

It is stated in the Test Manual that measurement is usually more helpful than the reliability coefficient (1957). The reliability coefficients for the California Achievement Tests forms W X Y Z are .91 in reading vocabulary, .92 in reading comprehension, and .95 in total reading.

Buros further stated:

The Kuder-Richardson formula 21 reliability reported in the 1963 manuals for the primary, elementary, and advanced batteries are based on single-grade groups ranging in size from 115 to 384 pupils. No information about the procedures used for drawing these samples is given, nor is any explanation offered for the small sizes of the samples. As compared with the corresponding Kuder-Richardson reliabilities reported for groups of 200 pupils in the 1957 Technical Report, the newly reported reliabilities for the six parts are lower by an average of about .06 for the lower primary level and higher by an average of about .09 for the upper primary level. The changes in the reliabilities for these three levels are evidently attributable mainly to the differences between the standard deviations of the 1957 and 1963 samples, since none of the standard errors of measurement for the subtests have changed by as much as one raw score point. The average part score reliability of the advanced level for the eleventh grade is about the same for the 1957 and 1963 samples.
The reported reliabilities for the total reading, total arithmetic, and total language scores are satisfactory, in general, falling in the range of .86 to .96. The estimated reliabilities for the total battery scores for all five levels are consistently high, ranging from .95 to .98. These reliability estimates were obtained by applying the Spearman-Brown formula to the average reliability of the six subtests, equally weighted, of each level. Validity data are given validity in the 1957 Technical Report in terms of correlations with other test scores, item analyses statistics, and other criteria.

In summary, Buros stated:

...although the reliability coefficient may be spurious, the California Achievement Tests represent a generally well constructed achievement test battery designed to measure the basic fundamentals of reading, mathematics, and language from grades one through fourteen.

The California Achievement Tests Forms W and Y consist of two subtests for reading. Both subtests were used. Form W was used for the pretest and Form Y was used for the posttest. The two subtests were: (1) reading vocabulary, and (2) reading comprehension.

Data Collection

The pretests and posttests were administered during the regular school day with the compliance of the students' classroom teachers. All test data were scored, analyzed, and interpreted by the investigator.
Statistical Analysis

The \( t \) test for correlated data was applied to hypotheses through nine. The \( t \) test for uncorrelated data was used for hypotheses ten through eighteen. In each instance, the level of significance necessary to reject the null hypotheses was set at the .01 level.

Tutoring Training Procedures

The present study focused on the following: (1) The effect of the Neurological Impress Method upon low achieving fifth grade students, (2) The effect of sixth grade students instructing low achieving fifth grade students using the Neurological Impress Method, and, (3) The effect of adult instructors utilizing the Neurological Impress Method on low achieving fifth grade students.

Prospective sixth grade tutors were trained by the researcher in how to instruct utilizing the Neurological Impress Method. The sixth grade tutors and the adult instructors were directed to use positive reinforcement while working with the fifth grade students. The sixth grade tutors and the adult instructors were given time to practice using the Neurological Impress Method. They practiced their fellow peers in simulated role-playing
situations.

The training was done in five, one-hour sessions within a one-week period during the second week in January, 1972. At the completion of the training sessions, each tutor was randomly assigned to work with a fifth grade student.

**Tutoring Schedule**

The tutoring sessions were held Monday through Friday for eight weeks beginning with the third week in January, 1972. Learners A were fifth grade students receiving instruction in the Neurological Impress Method from sixth grade tutors.

There were fourteen fifth graders working one to one with fourteen sixth graders. There were twelve fifth graders receiving individual tutoring from four adult instructors. Each fifth grader worked with the same tutor throughout the study.

Learners B were twelve fifth grade students receiving instruction in the Neurological Impress Method from one of four adult instructors.

Each fifth grade student received ten minutes of individualized instruction per day from his tutor.
CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

This chapter presents the data and analyzes the results of the study.

Treatment of the Data

The \textit{t} test for correlated data was applied to test hypotheses one through nine. The \textit{t} test for uncorrelated data was used for hypotheses ten through eighteen. In each instance the level of significance necessary to reject the null hypotheses was set at the .01 level. Each hypothesis was treated independently. Hypotheses one through nine dealt with pretest and posttest reading achievement mean scores within the groups. Hypotheses ten through eighteen compared one group to another. When the \textit{t} ratio was found to be significant for a given hypothesis, the null hypothesis was rejected. When the \textit{t} ratio was not significant, the null hypothesis was not rejected. An abbreviated n.s. was used to indicate non-significance.
The total reading achievement scores represent a combination of the vocabulary and comprehension subtests.

**Presentation of the Data**

**Hypothesis No. 1**

The null hypothesis stated that there would be no significant difference in the vocabulary pretest and post-test reading achievement mean scores for Learners A (Learners A were tutored by sixth grade students utilizing the Neurological Impress Method). The statistical data in Table 1 show the results of the *t* test.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th><em>t</em></th>
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<tr>
<td>Pretest</td>
<td>14</td>
<td>3.95</td>
<td>.599</td>
<td>.774</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>14</td>
<td>5.25</td>
<td>.627</td>
<td>.79</td>
<td>.21</td>
<td>13</td>
<td>4.46*</td>
</tr>
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</table>

*p < .01 (2.47)*

There was a significant difference in the vocabulary pretest and posttest reading achievement mean scores for Learners A. Therefore, Hypothesis No. 1 was rejected.
beyond the .01 level of significance. Learners A who received individual tutoring by sixth grade students via the Neurological Impress Method of reading made significant gains on the vocabulary subtest of the California Achievement Test.

Hypothesis No. 2

The null hypothesis stated that there would be no significant difference in the comprehension pretest and posttest reading achievement mean scores for Learners A (Learners A were tutored by sixth grade students utilizing the Neurological Impress Method). The statistical data in Table 2 show the results of the t test.

TABLE 2

A COMPARISON OF PRETEST AND POSTTEST COMPREHENSION MEAN SCORES FOR LEARNERS A (N = 14)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>14</td>
<td>4.30</td>
<td>1.24</td>
<td>1.11</td>
<td>.30</td>
<td>13</td>
<td>2.01</td>
</tr>
<tr>
<td>Posttest</td>
<td>14</td>
<td>5.17</td>
<td>1.37</td>
<td>1.17</td>
<td>.31</td>
<td>(n.s.)</td>
<td></td>
</tr>
</tbody>
</table>

There was not a significant difference in the comprehension pretest and posttest reading achievement mean
scores for Learners A. Consequently, the null hypothesis was not rejected. Learners A who received individual tutoring by sixth grade students via the Neurological Impress Method did not make significant gains on the comprehension subtest of the California Achievement Test.

Hypothesis No. 3

The null hypothesis stated that there would be no significant difference in the total pretest and posttest reading mean scores for Learners A (Learners A were tutored by sixth grade students utilizing the Neurological Impress Method). The statistical data in Table 3 show the results of the \( t \) test.

**TABLE 3**

A COMPARISON OF PRETEST AND POSTTEST TOTAL MEAN SCORES FOR LEARNERS A \((N = 14)\)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>14</td>
<td>4.16</td>
<td>.721</td>
<td>.849</td>
<td>.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>14</td>
<td>5.26</td>
<td>.823</td>
<td>.907</td>
<td>.24</td>
<td>13</td>
<td>3.31*</td>
</tr>
</tbody>
</table>

* \( p < .01 \) (2.47)
There was a significant difference in the total pretest and posttest reading achievement mean scores for Learners A. Therefore, Hypothesis No. 3 was rejected beyond the .01 level of significance. Learners A who received individual tutoring by sixth grade students via the Neurological Impress Method of reading made significant gains on the total reading section of the California Achievement Test.

Hypothesis No. 4

The null hypothesis stated that there would be no significant difference in the vocabulary pretest and posttest reading achievement mean scores for Learners B (Learners B were tutored by adult instructors utilizing the Neurological Impress Method). The statistical data in Table 4 show the results of the t test.

TABLE 4

A COMPARISON OF PRETEST AND POSTTEST VOCABULARY MEAN SCORES FOR LEARNERS B (N = 12)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>12</td>
<td>4.02</td>
<td>.867</td>
<td>.932</td>
<td>.27</td>
<td>11</td>
<td>3.22*</td>
</tr>
<tr>
<td>Posttest</td>
<td>12</td>
<td>5.44</td>
<td>1.470</td>
<td>1.21</td>
<td>.35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .01 (2.47)
There was a significant difference in the vocabulary pretest and posttest reading achievement mean scores for Learners B. Hence, Hypothesis No. 4 was rejected beyond the .01 level of significance. Learners B who received individual tutoring by adult instructors via the Neurological Impress Method of reading made significant gains on the vocabulary subtest of the California Test.

Hypothesis No. 5

The null hypothesis stated that there would be no significant difference in the comprehension pretest and posttest reading achievement mean scores for Learners B (Learners B were tutored by adult instructors utilizing the Neurological Impress Method). The statistical data in Table 5 show the results of the t test.

TABLE 5

A COMPARISON OF PRETEST AND POSTTEST COMPREHENSION MEAN SCORES FOR LEARNERS B (N = 12)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>12</td>
<td>4.23</td>
<td>.741</td>
<td>.861</td>
<td>.25</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Posttest</td>
<td>12</td>
<td>5.37</td>
<td>1.450</td>
<td>1.20</td>
<td>.35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .01 (2.47)
There was a significant difference in the comprehension pretest and posttest reading achievement mean scores for Learners B. Therefore, Hypothesis No. 5 was rejected beyond the .01 level of significance. Learners B who received individual tutoring by adult instructors via the Neurological Impress Method of reading made significant gains on the comprehension subtest of the California Achievement Test.

Hypothesis No. 6

The null hypothesis stated that there would be no significant difference in the total pretest and posttest reading achievement mean scores for Learners B (Learners B were tutored by adult instructors utilizing the Neurological Impress Method). The statistical data in Table 6 show the results of the t test.

TABLE 6

A COMPARISON OF PRETEST AND POSTTEST TOTAL MEAN SCORES FOR LEARNERS B (N = 12)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>12</td>
<td>4.17</td>
<td>.587</td>
<td>.766</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td>3.39*</td>
</tr>
<tr>
<td>Posttest</td>
<td>12</td>
<td>5.50</td>
<td>1.261</td>
<td>1.12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .01 (2.47)
There was a significant difference in the total pre-test and posttest reading achievement mean scores for Learners B. Therefore, Hypothesis No. 6 was rejected beyond the .01 level of significance. Learners B who received individual tutoring by adult instructors via the Neurological Impress Method of reading made significant gains on the total reading section of the California Achievement Test.

Hypothesis No. 7

The null hypothesis stated that there would be no significant difference in the vocabulary pretest and post-test reading achievement mean scores for the Control Group (Control Group received only normal classroom reading instruction). The statistical data in Table 7 show the results of the t test.

TABLE 7

A COMPARISON OF PRETEST AND POSTTEST VOCABULARY MEAN SCORES FOR CONTROL GROUP (N = 11)

<table>
<thead>
<tr>
<th></th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>11 3.84</td>
<td>.861</td>
<td>.928</td>
<td>.28</td>
<td>10</td>
</tr>
<tr>
<td>Posttest</td>
<td>11 5.02</td>
<td>1.698</td>
<td>1.30</td>
<td>.39</td>
<td>(n.s.)</td>
</tr>
</tbody>
</table>
There was no significant difference in the vocabulary pretest and posttest reading achievement mean scores for the Control Group. Consequently, the null hypothesis was not rejected. The Control Group of fifth graders did not make significant reading achievement mean score gains on the vocabulary subtest of the California Achievement Test.

**Hypothesis No. 8**

The null hypothesis stated that there would be no significant difference in the comprehension pretest and posttest reading achievement mean scores for the Control Group (Control Group received only normal classroom reading instruction). The statistical data in Table 8 show the results of the \( t \) test.

**TABLE 8**

A COMPARISON OF PRETEST AND POSTTEST COMPREHENSION MEAN SCORES FOR CONTROL GROUP (\( N = 11 \))

<table>
<thead>
<tr>
<th></th>
<th>( N )</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>11</td>
<td>4.23</td>
<td>.630</td>
<td>.794</td>
<td>.24</td>
<td>10</td>
<td>1.96</td>
</tr>
<tr>
<td>Posttest</td>
<td>11</td>
<td>5.10</td>
<td>1.540</td>
<td>1.24</td>
<td>.37</td>
<td>(n.s.)</td>
<td></td>
</tr>
</tbody>
</table>
scores for the Control Group. Hence, the null hypothesis was not rejected. The Control Group of fifth graders did not make significant reading achievement mean score gains on the comprehension subtest of the California Achievement Test.

Hypothesis No. 9

The null hypothesis stated that there would be no significant difference in the total pretest and posttest reading achievement mean scores for the Control Group (Control Group received only normal classroom reading instruction). The statistical data in Table 9 show the results of the t test.

TABLE 9
A COMPARISON OF PRETEST AND POSTTEST TOTAL MEAN SCORES FOR CONTROL GROUP (N = 11)

<table>
<thead>
<tr>
<th></th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>4.14</td>
<td>.474</td>
<td>.689</td>
<td>.21</td>
<td>10</td>
</tr>
<tr>
<td>Posttest</td>
<td>5.17</td>
<td>1.480</td>
<td>1.22</td>
<td>.37</td>
<td>10</td>
</tr>
</tbody>
</table>

There was no significant difference in the total pretest and posttest reading achievement mean scores for the Control Group. Thus, the null hypothesis was not rejected.
The Control Group of fifth graders did not make significant reading achievement mean score gains on the total section of the California Achievement Test.

Hypothesis No. 10

The null hypothesis stated that there would be no significant difference between Learners A and Learners B on the vocabulary reading achievement posttest mean scores. The statistical data in Table 10 show the results of the t-test.

<table>
<thead>
<tr>
<th></th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners A</td>
<td>5.26</td>
<td>0.627</td>
<td>0.792</td>
<td>.21</td>
<td></td>
</tr>
<tr>
<td>Learners B</td>
<td>5.44</td>
<td>1.460</td>
<td>1.21</td>
<td>.35</td>
<td>24</td>
</tr>
</tbody>
</table>

There was no significant difference between Learners A and Learners B on the vocabulary reading achievement posttest mean scores. Therefore, the null hypothesis was not rejected. Neither Learners A nor Learners B significantly outperformed each other on the vocabulary subtest of the California Achievement Test.
Hypothesis No. 11

The null hypothesis stated that there would be no significant difference between Learners A and Learners B on the comprehension reading achievement posttest mean scores. The statistical data in Table 11 show the results of the t-test.

TABLE 11

A COMPARISON OF LEARNERS A AND LEARNERS B ON THE COMPREHENSION READING ACHIEVEMENT POSTTEST MEAN SCORES

<table>
<thead>
<tr>
<th></th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners A</td>
<td>14 5.17 1.370</td>
<td>1.17</td>
<td>.31</td>
<td></td>
<td>24 0.435</td>
</tr>
<tr>
<td>Learners B</td>
<td>12 5.37 1.450</td>
<td>1.20</td>
<td>.35</td>
<td>(n.s.)</td>
<td></td>
</tr>
</tbody>
</table>

There was no significant difference between Learners A and Learners B on the comprehension reading achievement posttest mean scores. Hence, the null hypothesis was not rejected. Neither Learners A nor Learners B significantly outperformed each other on the comprehension subtest of the California Achievement Test.

Hypothesis No. 12

The null hypothesis stated that there would be no
significant difference between Learners A and Learners B on the total reading achievement posttest mean scores. The statistical data in Table 12 show the results of the t-test.

**TABLE 12**

A COMPARISON OF LEARNERS A AND LEARNERS B ON THE TOTAL READING ACHIEVEMENT POSTTEST MEAN SCORES

<table>
<thead>
<tr>
<th></th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners A</td>
<td>5.26</td>
<td>.822</td>
<td>.907</td>
<td>.24</td>
<td>24</td>
</tr>
<tr>
<td>Learners B</td>
<td>5.51</td>
<td>1.26</td>
<td>1.12</td>
<td>.32</td>
<td>(n.s.)</td>
</tr>
</tbody>
</table>

There was no significant difference between Learners A and Learners B on the total reading achievement posttest mean scores. Therefore, the null hypothesis was not rejected. Neither Learners A nor Learners B significantly outperformed each other on the total of the California Achievement Test.

**Hypothesis No. 13**

The null hypothesis stated that there would be no significant difference between Learners A and the Control Group on the vocabulary reading achievement posttest mean scores. The statistical data in Table 13 show the results
of the t test.

**TABLE 13**

A COMPARISON OF LEARNERS A AND THE CONTROL GROUP ON THE VOCABULARY READING ACHIEVEMENT POSTTEST MEAN SCORES

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners A</td>
<td>14</td>
<td>5.26</td>
<td>.627</td>
<td>.792</td>
<td></td>
<td>.21</td>
</tr>
<tr>
<td>Control Group</td>
<td>11</td>
<td>5.02</td>
<td>1.690</td>
<td>1.30</td>
<td>23</td>
<td>0.535 (n.s.)</td>
</tr>
</tbody>
</table>

There was no significant difference between Learners A and the Control Group on the vocabulary reading achievement posttest mean scores. Consequently, the null hypothesis was not rejected. Neither Learners A nor the Control Group significantly outperformed each other on the vocabulary subtest of the California Achievement Test.

**Hypothesis No. 14**

The null hypothesis stated that there would be no significant difference between Learners A and the Control Group on the comprehension reading achievement posttest mean scores. The statistical data in Table 14 show the results of the t test.
TABLE 14
A COMPARISON OF LEARNERS A AND THE CONTROL GROUP ON THE COMPREHENSION READING ACHIEVEMENT POSTTEST MEAN SCORES

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners A</td>
<td>14</td>
<td>5.17</td>
<td>1.370</td>
<td>1.17</td>
<td>.31</td>
<td>23</td>
<td>0.146</td>
</tr>
<tr>
<td>Control Group</td>
<td>11</td>
<td>5.10</td>
<td>1.540</td>
<td>1.24</td>
<td>.37</td>
<td>(n.s.)</td>
<td></td>
</tr>
</tbody>
</table>
There was no significant difference between Learners A and the Control Group on the total reading achievement posttest mean scores. Thus, the null hypothesis was not rejected. Neither Learners A nor the Control Group significantly outperformed each other on the total of the California Achievement Test.

Hypothesis No. 16

The null hypothesis stated that there would be no significant difference between Learners B and the Control Group on the vocabulary reading achievement posttest mean scores. The statistical data in Table 16 show the results of the t-test.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners A</td>
<td>14</td>
<td>5.26</td>
<td>.823</td>
<td>.24</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Control Group</td>
<td>11</td>
<td>5.17</td>
<td>1.480</td>
<td>.37</td>
<td>23</td>
<td>0.191</td>
</tr>
</tbody>
</table>

(n.s.)
TABLE 16

A COMPARISON OF LEARNERS B AND THE CONTROL GROUP ON THE VOCABULARY READING ACHIEVEMENT POSTTEST MEAN SCORES

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners B</td>
<td>12</td>
<td>5.44</td>
<td>1.460</td>
<td>1.21</td>
<td>.35</td>
<td>21</td>
</tr>
<tr>
<td>Control Group</td>
<td>11</td>
<td>5.02</td>
<td>1.690</td>
<td>1.30</td>
<td>.39</td>
<td>(n.s.)</td>
</tr>
</tbody>
</table>

There was no significant difference between Learners B and the Control Group on the vocabulary reading achievement posttest mean scores. Thus, the null hypothesis was not rejected. Neither Learners B nor the Control Group significantly outperformed each other on the vocabulary subtest of the California Achievement Test.

Hypothesis No. 17

The null hypothesis stated that there would be no significant difference between Learners B and the Control Group on the comprehension reading achievement posttest mean scores. The statistical data in Table 17 show the results of the t test.
TABLE 17

A COMPARISON OF LEARNERS B AND THE CONTROL GROUP ON THE COMPREHENSION READING ACHIEVEMENT POSTTEST MEAN SCORES

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners B</td>
<td>12</td>
<td>5.37</td>
<td>1.45</td>
<td>1.20</td>
<td>.35</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Control Group</td>
<td>11</td>
<td>5.10</td>
<td>1.54</td>
<td>1.24</td>
<td>.37</td>
<td></td>
<td>(n.s.)</td>
</tr>
</tbody>
</table>

There was no significant difference between Learners B and the Control Group on the comprehension reading achievement posttest mean scores. Hence, the null hypothesis was not rejected. Neither Learners B nor the Control Group significantly outperformed each other on the comprehension subtest of the California Achievement Test.

Hypothesis No. 18

The null hypothesis stated that there would be no significant difference between Learners B and the Control Group on the total reading achievement posttest mean scores. The statistical data in Table 18 show the results of the t test.
TABLE 18

A COMPARISON OF LEARNERS B AND THE CONTROL GROUP ON THE TOTAL READING ACHIEVEMENT POSTTEST MEAN SCORES

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners B</td>
<td>12</td>
<td>5.51</td>
<td>1.26</td>
<td>1.12</td>
<td>.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>11</td>
<td>5.17</td>
<td>1.48</td>
<td>1.22</td>
<td>.37</td>
<td>21</td>
<td>0.684</td>
</tr>
</tbody>
</table>

There was no significant difference between Learners B and the Control Group on the total reading achievement posttest mean scores. Consequently, the null hypothesis was not rejected. Neither Learners B nor the Control Group significantly outperformed each other on the total of the California Achievement Test.
CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study investigated the effects of the Neurological Impress Method on low achieving fifth grade students.

The significance of the present study was based on the assumptions that (1) fifth grade students receiving instruction in the Neurological Impress Method would significantly improve their reading achievement mean scores on the California Achievement Test when compared with the Control Group, and (2) there would be no significant difference in reading achievement mean scores on the California Achievement Test between the fifth grade students who were tutored by trained adults or fifth grade students who were tutored by trained sixth graders.

The subjects were thirty-seven fifth grade students identified as low achievers in reading based on the California Achievement Tests Form W. The sample was
divided into two experimental groups (Learners A and Learners B) and one control group. A modified Pretest-Posttest Control Group Design was used.

The California Achievement Tests consist of two subtests for reading. The subtests include reading vocabulary and reading comprehension. Both subtests were used. The California Achievement Test Form W was used for the pretest. The California Achievement Test Form Y was used for the posttest.

Following the pretests, Tutors A and Tutors B were trained by the researcher in how to instruct utilizing the Neurological Impress Method. Tutors A and Tutors B were directed to use positive reinforcements. Role-playing techniques were employed in training Tutors A and Tutors B. The training period was done in five, one-hour sessions within a one-week period.

The subjects defined as Learners A were randomly assigned to a tutor defined as Tutors A. The subjects defined as Learners B were randomly assigned to a tutor defined as Tutors B. The subjects assigned to the Control Group were only pretested and posttested.

The t test for correlated data was applied to test hypotheses one through nine. The t test for uncorrelated data was used for hypotheses ten through eighteen. In
each instance the level of significance necessary to reject the null hypothesis was set at the .01 level. Each hypothesis was treated independently.

**Null Hypothesis No. 1** was rejected. There was a significant difference in the vocabulary pretest and post-test reading achievement mean scores for Learners A. Learners A who received individual tutoring by sixth grade students via the Neurological Impress Method of reading made significant gains on the vocabulary subtest of the California Achievement Test.

**Null Hypothesis No. 2** was not rejected. There was no significant difference in the comprehension pretest and posttest reading achievement mean scores for Learners A. Learners A who received individual tutoring by sixth grade students via the Neurological Impress Method of reading did not make significant gains on the comprehension subtest of the California Achievement Test.

**Null Hypothesis No. 3** was rejected. There was a significant difference in the total pretest and posttest reading achievement mean scores for Learners A. Learners A who received individual tutoring by sixth grade students via the Neurological Impress Method of reading made
significant gains on the total reading section of the California Achievement Test.

Null Hypothesis No. 4 was rejected. There was a significant difference in the vocabulary pretest and posttest reading achievement mean scores for Learners B. Learners B who received individual tutoring by adult instructors via the Neurological Impress Method of reading made significant gains on the vocabulary subtest of the California Achievement Test.

Null Hypothesis No. 5 was rejected. There was a significant difference in the comprehension pretest and posttest reading achievement mean scores for Learners B. Learners B who received individual tutoring by adult instructors via the Neurological Impress Method of reading made significant gains on the comprehension subtest of the California Achievement Test.

Null Hypothesis No. 6 was rejected. There was a significant difference in the total pretest and posttest reading achievement mean scores for Learners B. Learners B who received individual tutoring by adult instructors via the Neurological Impress Method of reading made significant gains on the total reading section of the
Null Hypothesis No. 7 was not rejected. There was no significant difference in the vocabulary pretest and posttest reading achievement mean scores for the Control Group. The Control Group did not make significant gains on the vocabulary subtest of the California Achievement Test.

Null Hypothesis No. 8 was not rejected. There was no significant difference in the comprehension pretest and posttest reading achievement mean scores for the Control Group. The Control Group did not make significant gains on the comprehension subtest of the California Achievement Test.

Null Hypothesis No. 9 was not rejected. There was no significant difference in the total pretest and posttest reading achievement mean scores for the Control Group. The Control Group did not make significant gains on the total reading section of the California Achievement Test.

Null Hypothesis No. 10 was not rejected. There was no significant difference between Learners A and Learners B on the vocabulary reading achievement posttest mean scores. Neither Learners A nor Learners B significantly
outperformed each other on the vocabulary subtest of the California Achievement Test.

Null Hypothesis No. 11 was not rejected. There was no significant difference between Learners A and Learners B on the comprehension reading achievement posttest mean scores. Neither Learners A nor Learners B significantly outperformed each other on the comprehension subtest of the California Achievement Test.

Null Hypothesis No. 12 was not rejected. There was no significant difference between Learners A and Learners B on the total reading achievement posttest mean scores. Neither Learners A nor Learners B significantly outperformed each other on the total reading section of the California Achievement Test.

Null Hypothesis No. 13 was not rejected. There was no significant difference between Learners A and the Control Group on the vocabulary reading achievement posttest mean scores. Neither Learners A nor the Control Group significantly outperformed each other on the vocabulary subtest of the California Achievement Test.

Null Hypothesis No. 14 was not rejected. There was no significant difference between Learners A and the
Control Group on the comprehension reading achievement posttest mean scores. Neither Learners A nor the Control Group significantly outperformed each other on the comprehension subtest of the California Achievement Test.

Null Hypothesis No. 15 was not rejected. There was no significant difference between Learners A and the Control Group on the total reading achievement posttest mean scores. Neither Learners A nor the Control Group significantly outperformed each other on the total reading section of the California Achievement Test.

Null Hypothesis No. 16 was not rejected. There was no significant difference between Learners B and the Control Group on the vocabulary reading achievement posttest mean scores. Neither Learners B nor the Control Group significantly outperformed each other on the vocabulary subtest of the California Achievement Test.

Null Hypothesis No. 17 was not rejected. There was no significant difference between Learners B and the Control Group on the comprehension reading achievement posttest mean scores. Neither Learners B nor the Control Group significantly outperformed each other on the comprehension subtest of the California Achievement Test.
Null Hypothesis No. 18 was not rejected. There was no significant difference between Learners B and the Control Group on the total reading achievement posttest mean scores. Neither Learners B nor the Control Group significantly outperformed each other on the total reading section of the California Achievement Test.

Conclusions

The findings of the present study indicate that Learners A, Learners B, and the Control Group made some reading achievement mean score gains.

Significant t ratios were attained on all pretest-posttest comparisons for Learners A and Learners B, with the exception of the comprehension subtest for Learners A.

There were no significant t ratios attained on the pretest-posttest comparisons for the Control Group.

When Learners A were compared with Learners B on the vocabulary subtest, Learners B had higher mean scores but did not significantly outperform Learners A when a t test was applied.

When Learners A were compared with Learners B on the comprehension subtest, Learners B had higher mean scores but did not significantly outperform Learners A when a t test was applied.
When Learners A were compared with Learners B on the total reading section, Learners B had higher mean scores but did not significantly outperform Learners A when a t-test was applied.

When Learners A were compared with the Control Group on the vocabulary subtest, Learners A had higher mean scores but did not significantly outperform the Control Group when a t-test was applied.

When Learners A were compared with the Control Group on the comprehension subtest, Learners A had higher mean scores but did not significantly outperform the Control Group when a t-test was applied.

When Learners A were compared with the Control Group on the total reading section, Learners A had higher mean scores but did not significantly outperform the Control Group when a t-test was applied.

When Learners B were compared with the Control Group on the vocabulary subtest, Learners B had higher mean scores but did not significantly outperform the Control Group when a t-test was applied.

When Learners B were compared with the Control Group on the comprehension subtest, Learners B had higher mean scores but did not significantly outperform the Control Group when a t-test was applied.
When Learners B were compared to the Control Group on the total reading section, Learners B had higher mean scores but did not significantly outperform the Control Group when a *t* test was applied.

When Learners A were compared to Learners B in the vocabulary, comprehension, and total reading section of the California Achievement Test, Learners B had higher mean scores but did not significantly outperform Learners A when a *t* test was applied.

When Learners A were compared to the Control Group in the vocabulary, comprehension, and total reading section of the California Achievement Test, Learners A had higher mean scores but did not significantly outperform the Control Group when a *t* test was applied.

When Learners B were compared to the Control Group in the vocabulary, comprehension, and total reading section of the California Achievement Test, Learners B had higher mean scores but did not significantly outperform the Control Group when a *t* test was applied.

Six possible explanations are offered:

First, Sixth grade tutors were as effective as the adult instructors. Second, Although the mean score differences of Learners A and Learners B were higher than for the Control Group, the differences were not great.
enough for the t ratio to be significant. Third, The Control Group did receive normal classroom instruction. Fourth, Four hours and twenty minutes to six hours and thirty minutes of instruction time may have been an insufficient amount of time for all subjects in this study to produce significant gains. Fifth, The Neurological Impress Method may not have been an effective method for all subjects in this study to produce significant gains. Sixth, The California Achievement Test may not have been the most accurate instrument to measure reading gains achieved by use of the Neurological Impress Method.

**Recommendations for Implementation**

The following factors seemed to have produced the results indicated in the present study.

The tutors were: (1) trained specifically to tutor utilizing the Neurological Impress Method; (2) shown examples of instruction utilizing the Neurological Impress Method; (3) given opportunities to role play the part of the tutor; (4) given opportunities to role play the part of the child receiving instruction; and, (5) informed regarding the purposed and expected outcomes of the program.

It is important that at least one adult be available to train the tutors and supervise the program. The adult
should be well-informed regarding method of instruction (Neurological Impress Method): (1) testing procedures, (2) tutoring techniques, and, (3) record keeping.

**Recommendations for Further Research**

The following recommendations could be used for further research:

First, a different reading test achievement could be used other than the California Achievement Test. The Gilmore Oral Reading Test, The Nelson Reading Test, The Mc Calls Crabs Reading Test, or the Stanford Diagnostic Reading Test might have measured the effects of the Neurological Impress Method more accurately.

Second, other grade levels should be used. For example, third grade tutors could tutor first graders utilizing the Neurological Impress Method.

Third, a group of untrained sixth grade tutors could be used. A group of untrained adults could also be used to determine the effect of the tutor training procedures.

Fourth, other reading methods could be used as the treatment as could any other academic skills.

Fifth, some longitudinal studies could be made to determine whether the measured effects were lasting or only temporary.
Sixth, the present study could be replicated to verify the results found in this investigation.
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APPENDICES
<table>
<thead>
<tr>
<th>APPENDIX</th>
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<tbody>
<tr>
<td>A</td>
<td>Letter requesting information . . . .</td>
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<tr>
<td>B</td>
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<tr>
<td>C</td>
<td>Pretest-Posttest Raw Data for Learners A. . . . . . .</td>
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<tr>
<td>D</td>
<td>Pretest-Posttest Raw Data for Learners B. . . . . . .</td>
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<td>Pretest-Posttest Raw Data for Control Group . . . . . .</td>
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APPENDIX A

November, 1971

Mr. George Kaluger,

I am currently working on my Master's Degree in Reading Improvement at San Fernando Valley State College which is located in Southern California. I am doing research that centers around the Neurological Impress Method of Reading Habilitation. I have your book "Reading and Learning Disabilities". On page 272 you refer to a study that you did using the Neurological Impress Method. I would be very grateful if you could send me more specific information regarding your study as I have already read the excerpt from R. G. Heckelman entitled "A Neurological Impress Method of Reading Instruction". I would like to know the following:

1) Number of students used
2) Grade level of students in your population
3) Socio-economic level
4) How much time of instruction was given?

Waiting to hear from you.

Thank you,

Joanne Enfield
4600 Saltillo
Woodland Hills, California 91364
APPENDIX B

November, 1971

Mr. Clifford J. Kolson,

I am currently working on my Master's Degree in Reading Improvement at San Fernando Valley State College which is located in Southern California. I am doing research that centers around the Neurological Impress Method of reading instruction, also referred to as the Impress Method of Reading Habilitation. I have your book "Reading and Learning Disabilities". On page 272 you refer to a study that you did using the Neurological Impress Method. I would be very grateful if you could send me more specific information regarding your study as I have already read the excerpt from R. G. Heckelman entitled "A Neurological Impress Method of Reading Instruction". I would like to know the following:

1) Number of students used
2) Grade level of students in your population
3) Socio-economic level
4) How much time of instruction was given?

Waiting to hear from you.

Thank you,

Joanne Enfield
4600 Saltillo
Woodland Hills, California
### APPENDIX C

**PRETEST-POSTTEST RAW DATA FOR LEARNERS A (N = 14)**

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\( \bar{x} = 55.1 \) \( \bar{x} = 73.6 \) \( \bar{x} = 60.2 \) \( \bar{x} = 62.4 \) \( \bar{x} = 58.2 \) \( \bar{x} = 73.6 \)

\( M = 3.93 \) \( M = 5.25 \) \( M = 4.30 \) \( M = 5.17 \) \( M = 4.16 \) \( M = 5.26 \)
### APPENDIX D

**Pretest-Posttest Raw Data for Learners B (N = 12)**

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\[ M = 4.02 \quad M = 5.44 \quad M = 4.23 \quad M = 5.37 \quad M = 4.17 \quad M = 5.50 \]
## APPENDIX E

**PRETEST-POSTTEST RAW DATA FOR CONTROL GROUP (N = 11)**

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