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Comparative Programs in Ninth Grade Corrective Reading

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COMPARATIVE PROGRAMS IN NINTH GRADE CORRECTIVE READING

by

Keith John Thomas

Previous Degree:
B.S., Illinois State University, 1965

Submitted to the Graduate School of Loyola University of Chicago in partial fulfillment of the requirements for the degree of Master of Arts in Education

Chicago, Illinois 1970
The experimental study herein reported was conducted during the Spring Semester of the 1968-69 school year. All experimental procedures took place at Homewood-Flossmoor High School, Flossmoor, Illinois.

Considerable background research was involved in the planning stage of the study. Many worthwhile and valuable sources were consulted though not directly cited in the text. In the spirit of fostering continued investigations of this type, these sources have been compiled into a supplementary bibliography listed under Appendix C.

Very little of this study could have been accomplished without the involvement, cooperation and professional help of Mr. Louis P. Ross, Guidance Counselor, and Mr. John T. Fabian, School Social Worker. They willingly gave of their time and energies to a degree consistent with their sincere concern for helping children to adjust and succeed in the school environment.

My sincere thanks to Dr. Marion E. Gardner, Director of Guidance at Homewood-Flossmoor High School, who assisted with the statistical analysis of data.

Equally appreciated were the perceptive suggestions of Sr. M. Constantine, SSJ, of Loyola University. Her
encouragement helped to overcome "experimental frustration" and fatigue, and made the over-all effort a gratifying experience.

K.J.T.
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CHAPTER ONE

The Problem of High School Corrective Reading:
An Introduction and Review of Background Research

The vast amount of research published annually on successful reading methodology, materials, and courses of study gives testimony to the indecision that exists regarding a specific program of optimum learning experiences designed to correct reading difficulties. In reviewing this research, most of which is conducted in the elementary school grades, the high school teacher of corrective reading finds himself in a perplexing situation.

With few exceptions, these research findings will provide an educationally sound and worthwhile basis upon which to organize a corrective reading program. But the essence of the high school teacher's perplexity lies not in the choice of methods or materials, but rather in the complexity of both the individual student and his reading difficulty. Because the individual has experienced at least several years of academic and personal failure or frustration, the reading difficulty that may have begun as a mere stumbling block to educational growth could have developed into a serious impediment to social and emotional adjustment. To further complicate matters, the student's parents may have become disgruntled with the child's record of failure, creating additional frustration. They, too, may have adopted his attitudes
of futility, resignation and despair. Overlooking the implications of these possibilities disregards significant instructional priorities for optimum learning.

In planning a high school corrective reading program, therefore, the teacher must be concerned with more than selection of materials and appropriate teaching methods. He must consider the possible effects of prolonged reading failure on (1.) the child's personality, self-concept, and attitudes; and (2.) the child's interpersonal relations with his parents. Both must be viewed particularly in terms of how they may influence optimum learning within the framework of corrective instruction.

How personality may be affected by prolonged difficulty or failure in reading development has concerned professional educators and reading specialists for years. Blanchard indicated that "when the reading disability persists over a period of years, it leads to failures in school and thus sets up a feeling of inferiority in the individual."1 Bennett recognized the reciprocal relationship of reading disability and personality maladjustment; he suggested that in older and more seriously handicapped readers both the disability and the maladjustment needed intensive treatment.2


2Chester Bennett, "An Inquiry Into the Genesis of Poor Reading," *Teachers College Contributions to Education* (New York: Columbia University, 1938), no. 755, p. 36.
According to Sornson's findings, failures experienced by poor readers tended to produce feelings of insecurity and brought about social maladjustment.\(^3\)

The frustration of social acceptance as a result of reading failure was described by Smith and DeChant.

Poor reading ability not only contributes directly to a sense of inadequacy but it threatens social acceptance. It makes the child an object of poor publicity as it were. Such a child suffers social humiliation and hurt. He is bound to feel ashamed. He is likely to become shy and withdrawn. Reading failure frequently is interpreted as a sign of stupidity, both by other students and by the poor reader himself. Failure tends to breed more failure, just as success tends to breed success.\(^4\)

As social acceptance is of extreme importance to the high school student, the relative seriousness of the situation becomes apparent. Considering the years of failure and numerous experiences of frustration, the teacher cannot expect the child to have developed a strong and positive sense of self-confidence or self-worth.

Many clinical studies have indicated that personality maladjustment in some degree usually accompanies reading disability. Witty and Kopel stated that one-half of the problem readers in the Northwestern University clinic


exhibited "fears and anxieties so far-reaching that no program of re-education could possibly succeed which did not aim to re-establish self-confidence and to remove anxieties."5 In a longitudinal study of 100 reading failures over a period of from four to nine years, Preston concluded that submissive children became increasingly anti-social.6 Bouise indicated that introversion had a greater tendency to be characteristic among poor readers than among good readers.7 The results of Siegel's study showed that personality maladjustment frequently accompanied reading disability, but no single personality structure was characteristic of reading failure.8 After reviewing clinical cases, Robinson explained that repeated failure in reading produced one of three behavioral patterns: agression, withdrawal, or lack of emotional affectivity.9


In separate studies, Gann, Ladd, and Gates also found that a high percentage of poor readers exhibited unfavorable personality maladjustment. Deviations in social and personal adjustment patterns, therefore, can be expected to accompany reading difficulties, particularly in cases where the reading failure has precipitated prolonged failure. The question of how to plan meaningful and optimum learning experiences in corrective reading in light of these findings yet remains.

Sherman suggested that maladjustment resulting from failure should be evaluated from two standpoints.

First, the failures involve frustration, accompanied by emotional disorganization and conflict formation. The result may be aggressive, defensive reactions, not only toward the learning situation itself, but also toward all situations associated with school work and especially reading problems. Second, the constant failures of a child decrease the intensity of his motivation to learn in a given situation.

Frustration and failure, consequently, may not only complicate the specific disability by promoting social and personal maladjustment, they also have a tendency to reduce the student's willingness to overcome the reading problem.

Also commenting on the effects of continual failure, Stauffer identified specific defense mechanisms likely to be employed by the unsuccessful reader. He stated that since modern living necessitates ability to read both in and out of school, to adjust, the poor reader "may resort to rationalization, compensation, projection, sublimation, or withdrawal." In addition, Stauffer enumerated certain ego-oriented outlets often frustrated by reading failure.

Since he cannot read or dislikes reading, he is denied therapeutic values inherent in reading -- identification, relaxation, fun, escape, moral insight, aesthetic appreciation -- which the good reader so abundantly enjoys.

The degree to which the poor reader may have been denied these outlets could account for his seeming inability to respond to corrective or remedial instruction. They unquestionably contributed, as Dolch suggested, to the individual's retardation in skill development. And because the


15 Ibid.

poor reader's lack of ability compels him to demonstrate his "ignorance" and ineptitude, Dolch has further maintained that the child may actually come to "hate" reading and associated activities. Hence, poor attitude can become a serious deterrent to remediation.

The role of attitudes in reading failure was further explored by Sandin and Ladd. Their findings were similar: students with retarded reading skills were likely to view the school and learning negatively; successful readers exhibited positive attitudes toward both.

Perhaps the best summary of the research dealing with the relationship of reading disability and personality maladjustment was compiled by Tinker and Bond. In coalescing the evidence, their suggestions and recommendations were similar to those of Gates and Holmes, though more comprehensive.

1. In a relatively small proportion of the cases, children are emotionally upset and maladjusted when they arrive at school. The origin of their personality difficulties may be something constitutional or may come from

17 Ibid.
19 M.R. Ladd, loc. cit.
20 Arthur Gates, loc. cit.
unfortunate environmental conditions. Many of these children will encounter difficulties in their attempts to learn to read.

2. In a relatively large proportion of reading cases, the children will have formed well-adjusted personalities before they arrive at school. The frustration from failure to learn to read results in some degree of personality maladjustment. In these cases, reading disability causes the emotional difficulty.

3. Emotional maladjustment may be both an effect and a cause of reading disability in many cases. The emotional disturbance produced by failure to learn to read may then become a handicap to further learning. A vicious circle is formed, i.e., there is a reciprocal relationship between the emotional conditioning and the reading disability.

4. If the personal and social maladjustment is due to reading disability, it tends to disappear in most cases when the child becomes a successful reader.

5. A few children need to be referred to a psychiatric social worker, a clinical psychologist, or a psychiatrist for psychotherapy. These include two types of reading disability cases. First, there are the children who are so emotionally upset that they do not respond to the best efforts of the remedial teacher. They must achieve better adjustment through specialized aid before they are ready to learn effectively. Second, with a few children, the emotional maladjustment associated with reading is so ingrained in their responses that it remains after they learn to read well. They continue to feel nervous and insecure about their reading ability. Special therapy is needed to help them achieve more satisfactory emotional adjustment.
6. Adverse attitudes toward reading, the teacher, and school activities are due frequently to failure in reading. These undesirable attitudes are symptoms of personal and social maladjustment.  

The teacher planning a corrective reading program for high school students must be aware, therefore, of the likelihood of dealing with extremely complex reading problems which necessitate far more than traditional corrective or remedial classroom techniques and materials.

The presence of reading difficulties at the secondary level may, in fact, be mere symptoms of broad and serious learning difficulties which affect the total life of the student. In such cases, the teacher is apt to receive referrals typically described as unmotivated, slow-to-learn, introverted, overtly hostile, or socially maladjusted. And in planning an instructional program, particularly re-education in reading, personal adjustment cannot be left to incidental learning experiences. The lack of adjustment, as indicated through research, may have a significant relationship to the student's reading problem. In some cases, to ignore the maladjustment factor is to ignore the cause of the reading difficulty. Hence, the implication of considering the possible effects of prolonged reading failure on the child's personality, self-concept, and attitudes becomes obvious: the teacher must select or design learning experiences which

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will maximize the correction of specific reading difficulties, and, concurrently, provide direct opportunity for personality and attitudinal adjustment.

Interpersonal relations between the parent and child is yet another possible complicating factor that cannot be neglected in planning for optimum learning. The impact and significance of these relations has been commented on by several reading authorities. Spache explained the relevance of home atmosphere in terms of reading difficulty and personality maladjustment.

Unfavorable emotional relationships, such as ambivalence, rejection of the child by the parent, and marital discord, are accepted as playing a prominent role in reading difficulties. The reports of all kinds of clinics confirm the fact that the emotional tone of the home and the interaction of personalities there are highly significant in the pupil's reading and personality difficulties.\(^2\)

Gray and Reese indicated the extent to which the home influence may affect the poor reader. In their opinion, parental anxiety toward the child's seeming ineptitude can act as a catalyst for further failure.\(^2\) The parent's attitudes concerning the situation may be in part responsible for the child's frustration in reading.

\(^2\)George Spache, "Factors Which Produce Defective Reading," Corrective Reading in Classroom and Clinic: Supplementary Educational Monographs, Ed. by Helen Robinson (Chicago: University of Chicago Press, 1953), No. 79, p. 54.

\(^2\)Lillian Gray and Dora Reese, Teaching Children to Read (New York: Ronald Press, 1957), p. 221.
A cause and effect relationship involving continued failure and the home and classroom environment was also suggested by Spache.

This relationship between adult and pupil may also operate to cause reading difficulty as well as help overcome them. Parents and teachers who are highly autocratic, unsympathetic, and inflexible in their handling of children probably produce a good proportion of our cases in retarded reading. Those teachers and parents who are anxious about the child's success and who press for arbitrary standards of performance also help to produce poor readers. Even if an adult of either of these types is apparently successful in producing good readers, he also implants in these children feelings of resistance or of anxiety and guilt which may readily manifest themselves in attitudes toward reading and eventually lead to reading difficulties.  

Encouragement to achieve, consequently, can result in the opposite of its intended effect; it can be interpreted as overbearing pressure, rather than sincere concern and an attempt to motivate. Spache's remarks strongly suggest that, if, as is likely in situations involving high school aged students, parental attitudes have been a complicating factor, an attempt at corrective instruction might well necessitate both the cooperation and re-education of the parents, particularly in terms of the nature, diagnosis, and treatment of reading disabilities.

25 George Spache, loc. cit.
Actually the entire question of interpersonal relations involving the parents, teacher, and child has been recognized as being of paramount concern in learning to read. In summarizing the related research, Bell deduced the following implications for classroom teachers.

1. The necessity for the teacher to be aware of the emotional relationship between herself and the child in order to adequately understand the child and plan an educational program for him;

2. the importance of linking reading with the child's previously learned behavior pattern by associating reading with his normal activities and interests;

3. the value of providing opportunities for the child to express resistance against academic exercises;

4. the need of teacher alertness to the meaning of school success or failure of the child; and

5. the essentiality of a working arrangement between the teacher and the child's parents.

It requires but little insight on the part of the teacher to conclude from background research that, because of the possible complexity of the situation, a high school corrective reading program should include more than a typical instructional approach. Opportunities must be provided to satisfactorily overcome the complications of the reading difficulty if effective learning is to occur. In the final analysis, Stauffer's comments seem to encompass the total need.

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Remedial instruction, therefore, must give attention to the social and emotional status of the retarded reader and must provide instruction that affects functional adjustments psychologically as well as pedagogically.27

A high school program in corrective reading must, therefore, include experiences planned to overcome the adverse effects of prolonged reading failure in terms of the child's personality, self-concept, attitudes and interpersonal relations with his parents. Just such a program might include group guidance and counseling to augment the classroom activities of corrective reading instruction. Directly involving the parents of the students in guidance and discussion sessions should also contribute positively towards the correction of the specific reading difficulties of each student.

27Russell Stauffer, loc. cit.
CHAPTER TWO

Group Guidance and Parental Involvement:
A Hypothesis, Review of Related Studies and
Definition of Terms

The Hypothesis and Deduced Consequences

In Chapter One of this study a review of background research indicated that reading difficulties exhibited by high school students are likely to be accompanied by serious complications due to the effects of prolonged academic and personal failure or frustration. These complications, usually manifested as some form of personality or social maladjustment, have their genesis in the student's deprecating view of himself and are nurtured by continual failure and overt parental pressure for success or covert parental resignation and despair.

It was concluded that in planning a high school corrective reading program the teacher cannot ignore these factors if optimum learning is expected to occur. The suggestion was made that such a program should include group guidance and counseling to augment the corrective reading instruction. In addition, the parents of children participating in a corrective reading program should be educated in the nature, diagnosis, and treatment of reading difficulties to promote a thorough understanding of their child's learning problem and to better mobilize their energies.
toward helping the individual rather than hindering his progress and adjustment.

The hypothesis of this study is based upon these findings. Therefore, a corrective reading program which combines traditional classroom reading instruction, group counseling and parental involvement will prove superior to a program of traditional instruction only, in terms of improving reading grade-level equivalents of the subjects involved. If this hypothesis proves correct, students whose regular classroom reading instruction is augmented by group counseling and parental involvement in group discussion sessions will improve their respective reading grade level to a greater degree than students who receive classroom instruction only. The superiority of this experimental program could suggest curricular changes or alterations regarding the teaching of corrective reading to high school students. What may prove true in terms of correctional instruction in reading may have implications for remedial work in other subject areas, such as, English, mathematics, and science. As yet another possible consequence may be additional insight into and understanding of the relationship between personality adjustment and reading disability.

Review of Related Studies

Studies have been conducted that examined aspects of the proposed hypothesis, but none were specifically the same
in terms of the consequences or the framework in which the hypothesis was tested.

Gershenfeld reported a study in which reading experiences were included as part of a guidance program. The many and varied experiences included recreational reading activities, oral and written reports and group discussions. These activities were conducted with high school freshmen during their homeroom periods. The discussion groups dealt with a variety of topics, usually arising from the material read. There was no concerted effort during the guidance sessions to deal with personality or social-emotional problems. The program was not essentially designed for readers with reading difficulties nor was there any attempt to directly involve the parents of the students. Though not specifically mentioned, it seems that the over-all emphasis of this study was on proper adjustment and orientation of these freshmen to the learning situation in high school.²⁸

Strickler investigated group counseling within the framework of remedial reading instruction. He tested the hypothesis that counseled students would make comparable gains in reading performance to students who received no counseling, but the former would show significantly greater improvement with regard to the acquisition of more positive school and social attitudes. The experiment included both

elementary and high school students who exhibited both reading disability and attitudinal problems. The hypothesis proved to be correct and the results revealed that of the two school levels involved, the elementary level retarded readers demonstrated a greater ability to benefit from the specialized treatment in reading and counseling.29 The author's conclusion that group counseling can improve school and social attitudes among poor readers suggests that the emphasis was primarily on attitudinal change, rather than comparative increases in reading ability.

Two studies have been reported that specifically dealt with subjects exhibiting overt personality adjustment problems. Lipton and Feiner reported on a group of fourth grade boys who were failing all their school subjects and were doing especially poor in reading. After a series of planned sessions in guidance, a marked change was noticed in their attitudes, work habits and readiness to learn and read.30 The outcome suggested that specialized educational counseling can promote effective learning and adjustment in school, and, in some cases, may be imperative if the child is to succeed.


Fisher experimented with 12 boys in an institution for delinquent children. Each boy showed a definite need for social adjustment as well as remedial teaching. The boys were divided into two groups: one received reading instruction only; the other received group-centered therapy and reading instruction. The group involved in therapy sessions gained more in reading remediation than the group receiving instruction only. The emphasis of the study, however, was upon students who had definite and serious anti-social behavior traits. But the results definitely suggested that, at least in the case of serious social adjustment problems, more effective learning takes place if the reading problem is dealt with at both a symptomatic and causative level.

Grandison reported an experimental study which included group counseling and remedial reading instruction among fifth and sixth grade students who manifested anxieties as well as retarded reading skills. After dividing the students into two groups, each received identical instruction in remedial reading. One group, however, also received group counseling. At the conclusion of the experiment, little difference existed between the groups in terms of over-all reading ability, but the group which was counseled showed more improvement in behavioral adjustment and a tendency to perform better in the

more difficult tasks on the reading test employed. Although the results were not deemed significant, the experiment gave an indication that group counseling as an integral part of the instructional program, did contribute to more effective learning.\textsuperscript{32} How significant the experimental experiences may have been would best be determined over a longer period of time, perhaps a period of years rather than a single school term.

Healy used a combination of small group instruction, reading partners and individualized teaching in an attempt to ascertain the effects of changing fifth grade students' attitudes toward reading. Reading skills were inventoried and remedied through other language arts instruction, though the study was not limited to students with reading difficulties. A significant difference was found between the experimental and control subjects in total reading achievement gains. Healy concluded that changing the attitudes of children at the fifth grade level appears to increase achievement and encourage wider reading. Furthermore, the effects of these changes in attitudes persist at least into the junior high level and influence reading habits in a positive manner.\textsuperscript{33}

\textsuperscript{32}Frances Leonidas Grandison, "An Investigation of Two Schedules of Reading Instruction on Manifest Anxiety and Behavior Adjustment: A Comparison of Varied Amounts of Time Devoted to Reading Instruction and Their Effects on Level of Manifest Anxiety and School Behavior Adjustment Among Fifth and Sixth Grade Children In a Public School Setting," Doctoral Dissertation, New York University, 1961 as reported in \textit{Journal of Reading}, No. 9 (April-May 1966), p. 313.

The groundwork for the experiment designed to investigate the proposed hypothesis of this study has been well laid. However, the framework and design of this study differs from those cited in several important aspects.

1. The students in this experiment are ninth grade students attending a public high school. The subjects volunteered for a course in corrective reading.

2. Parents of the subjects in one group will be involved in the experiment. The purpose is to ascertain if the parental treatment will have any noticeable influence on the dependent variable.

3. The counseling sessions in which the experimental groups will participate are to be directive in nature and are designed to deal with the general reading, learning and attitudinal problems of the group.

4. The emphasis of this experiment is on improvement of reading skills; attitudinal adjustment is considered as a means to this end, not an
end in itself. The ultimate question under investigation is which reading program employed produces optimum re-learning or correction of reading difficulties.

Definition of Terms

Since the concepts and terminology in the field of reading instruction often possess multiple and vague meanings, several terms used in the following procedural explanation and report of findings will require clarification.

"Corrective reader" refers to an individual whose grade level equivalent in the study-type reading skills, as measured by the Iowa Silent Reading Test, Advanced Level and Revised Edition, is at least one grade level below his academic level. However, since this experimental study is concerned with a classroom approach to correcting reading difficulties, individuals who are found to be behind in reading according to this criterion, because of known physiological or neurological impairment will not be considered corrective readers. These cases, more appropriately termed remedial readers, generally necessitate a clinical approach to both diagnosis and remediation. Effective re-learning in these instances usually requires total individualization as well as special educational techniques of instruction.
"Reading skills" as used in this report mean the study-type reading skills as defined and measured by the sub-tests of the Iowa Silent Reading Test, Advanced Level and Revised Edition. These include the reading skill areas of rate and comprehension, directed reading, poetry comprehension, word meaning, sentence meaning, paragraph comprehension, use of an index, and selection of key words. Several of these skill areas may require further delineation. The following additional descriptions and explanations are summarized from the manual of directions for the Iowa Silent Reading Test, Advanced Level and Revised Edition.

Directed Reading: This part of the test is designed to measure the pupil's ability to comprehend specific situations expressed in the content without unduly stressing memory. While this test is designed to measure the ability to comprehend and answer questions of a rather detailed type, it makes a special effort to avoid pure identification or matching of words.

Poetry Comprehension: One important phase of silent reading is the reading and understanding of poetry. This test, by a series of questions based upon a poem, measures the understanding of the poem as shown by ability to find passages which answer questions.

Word Meaning: To a certain extent pupils must be trained specifically for assimilative reading in each subject, and this training must consist primarily of development of a vocabulary in that subject. Terminology in any subject is more than a mere list of words; it is a catalogue of the important
concepts in that subject. A pupil's failure to group any portion of the subject matter will be indicated by vagueness regarding the meaning of the terms involved in that portion of the subject. Tests which will measure special or technical vocabulary of a school subject are tools of fundamental importance which a teacher may use in order to aid in determining the ability of the pupils to study the subject efficiently. This test has been designed, therefore, to measure understanding of significant words in four high school subjects: social science, science, mathematics, and English.

Sentence Meaning: The sentences comprising this test are stated in such a way that in each case the meaning of the sentence as a whole must be comprehended.

Paragraph Comprehension: Two specific aspects of paragraph comprehension are included in this test; namely, (1.) the ability to select the central topic of the paragraph, and (2.) the ability to identify the details essential to the meaning of the paragraph.

Use of an Index and Selection of Key Words: One of the major outcomes of instruction in silent reading of the work-study type is the ability to locate information quickly and accurately in the light of the problem at hand. This test [entitled Location of Information] includes two major elements involved in locating information. Part A refers the pupil directly to a simple index as a source of answers to specific questions. Part B measures the ability to select words
under which information about a given question might be found.34

The term "traditional instructional methods" refers to a series of planned learning experiences in reading instruction using teacher-prepared and published materials. These methods include periods of explanation (lecture-type instructions) and use of informal and standardized reading exercises during laboratory or work periods. Published materials available for use include the following series: Be A Better Reader by N.B. Smith; Tactics in Reading I and II published by Scott Foresman Co.; III B Reading Laboratory published by Science Research Associates; Word Clues published by Educational Developmental Laboratories; Studies Skills Library also published by EDL; and Standard Test Lessons in Reading by W.M. McCall and L.M. Crabbs. Machines and mechanical devices include the EDL Controlled Reader and the SRA Reading Accelerator. Word Attack by C. Roberts and Words by Susan Markle are the independent workbooks and texts selected for use. Assignment of these materials to particular individuals is left to the discretion of the reading teacher and is strictly dependent upon the needs of each student.

A series of group guidance and counseling sessions with the corrective readers is referred to as "group counseling."

The structure of these groups is determined according to the experimental design of the study. These sessions attempt to assist the student in examining his attitudes toward reading, the school and himself, hopefully affecting a change toward a more positive image. Focus of these counseling sessions is limited to matters pertaining to the tasks of the student, thereby restricting the possibilities of the meetings becoming meaningless. These sessions are conducted by a guidance counselor with the assistance of the reading teacher.

The term "parental group discussion" refers to sessions planned for the parents of the corrective reading students. These sessions are similar to those attended by the students. Their purpose is twofold: to inform the parent as to the nature, diagnosis and correction of reading difficulties; and to encourage the parent to examine his own feelings about his child's reading problem and help the parent mobilize his energies to be more helpful to his child in school. A social worker and guidance counselor with extensive background in reading preside at these parental sessions. The reading teacher involved with these parents' children does not participate except as a resource person in this activity as it is felt his presence may have an inhibiting effect on the involvement of the parents.
CHAPTER THREE

The Hypothesis in Experimental Design: The Procedures Employed

Purpose of the Experiment

The purpose of the experiment was to test the hypothesis that, on the high school level, a corrective reading program which combined traditional classroom reading instruction, group counseling and parental involvement would prove superior to a program of traditional instruction only, in terms of improving reading grade-level equivalents of the subjects involved. The experiment necessitated a comparison of several varying instructional programs in corrective reading. Thus, three programs were designed for the comparison: a program of traditional classroom reading instruction, that is, a series of planned learning experiences in reading skills using teacher-prepared and published materials; a program consisting of traditional reading instruction and group counseling; a program consisting of the latter with the addition of parental involvement in the form of group discussion. The experiment was conducted among high school freshmen.

Using a pre-test and post-test structure it was planned to determine which corrective reading program produced optimum growth in reading skills of the work-study type as measured by the Advanced Form of the Iowa Silent Reading
Test. It was hoped the experiment would likewise yield some insight into the intricate relationship between personality adjustment, or maladjustment, and the existence of reading difficulties. The introduction of parental involvement as an additional independent instructional program variable was included to gain some insight into parent/sibling relations as they affect the overcoming of difficulties in reading skills.

Although overall significance of the experiment might be lessened due to limitations in the population sample, the experiment should yield conclusions concerning the relative value of each of the instructional programs compared. These conclusions, in turn, would perhaps suggest certain guidelines or criteria for the establishment of reading classes in the high school curriculum. The experiment would, regardless of the specific outcome, offer some answers to the perplexing question: "How can the high school instructional program eliminate reading difficulties of adolescents and what means, methods or course structures appear to be most effective?"

Summary of Procedure

The subjects involved in the experiment took part in a corrective reading program offered to high school freshmen on a voluntary basis. They were divided into three groups: one control group and two experimental groups, each consisting of 10 students. All subjects involved took a pre-test
and post-test, alternate forms of the Iowa Silent Reading Test, Advanced Form, for two purposes. The results of the tests were used as the basis of (1.) statistical comparison among the three groups before and after the experiment, (2.) planning each subject's work in reading for the duration of the program (as a diagnostic tool). All groups then entered as separate classes a period of 12 weeks of traditional reading instruction designed to improve their proficiency in study-type reading skills and raise their grade-level equivalent. The control group spent five class periods of 55 minutes per week in a classroom and laboratory situation working in group and individualized reading activities. The two experimental groups worked four periods of 55 minutes per week in an identical classroom and laboratory situation. One 55 minute class period per week for each experimental group was devoted to group counseling.

Each week a parental discussion session, composed of parents of subjects in the second experimental group, met with the school social worker and a guidance counselor for approximately one hour. At the termination of the experimental period, the three student groups were compared to ascertain which of the three corrective reading programs employed was most effective in improving their grade-level equivalents in reading ability. The average improvement made by each group was analyzed to determine if there was
any statistically significant difference on the dependent variable (reading grade level) attributable to the differences in treatment.

The Paradigm

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Pre-Test</th>
<th>Treatment</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group (C)</td>
<td>$T_1$</td>
<td>$X$</td>
<td>$T_2$</td>
</tr>
<tr>
<td>Experimental group (E$_1$)</td>
<td>$T_1$</td>
<td>$XY$</td>
<td>$T_2$</td>
</tr>
<tr>
<td>Experimental group (E$_2$)</td>
<td>$T_1$</td>
<td>$XYZ$</td>
<td>$T_2$</td>
</tr>
</tbody>
</table>

The experimental design illustrated by the paradigm was chosen as most suitable because, along with strict procedures in selecting the population sample and testing instrument, it exercised rigorous control over factors that might have affected the internal validity. Since the subjects were not aware of participating in any experimental situation, the effect awareness might have on the external validity did not appear relevant to the outcome of this specific experiment and, therefore, was not considered a serious weakness of the design. Other factors such as, population size, representativeness, and the practice effect of pre-testing were considerations of weakness, but due to impossibilities of implementation, a more rigid design was not feasible.

In the paradigm, $T_1$ represented the pre-test: Advanced Form Am of the Iowa Silent Reading Test. $T_2$ was a comparable and alternate form of $T_1$: Advanced Form Bm of the Iowa Silent Reading Test. Treatment $X$ was traditional reading instruction; treatment $XY$ was traditional reading instruction and group counseling. Traditional reading instruction, group
counseling and parental discussion sessions was represented as treatment XYZ. The independent variables consisted of the three modes of treatment, while the dependent variable was grade-level equivalent in reading ability.

Initially it was planned to employ just two groups, one control and one experimental. Under this plan the experimental group would receive treatment XYZ; there would be no treatment XY. However, after careful consideration of background research, it was decided that perhaps it would be more revealing to include parental involvement as a separate, though integral, part of the group counseling program. Thus it was decided to form three types of treatment and three corresponding groups of subjects. This structure would better enable the experimenter to ascertain whether the group counseling alone had any noticeable effect on the dependent variable. This revised structure also afforded the opportunity to compare the effects of group counseling with group counseling and parental involvement as separate modes of treatment, enabling conclusions to be made with regard to the relative merits of each. In this manner the experimenter was able to judge which independent variable, the group counseling or the combination of group counseling and parental involvement, affected the dependent variable and to what degree their influences were significant.

The Population

The population involved in the experiment consisted of freshmen high school students whose grade-level equivalents
in reading as measured by the Iowa Silent Reading Test, Advanced Form, were at least one year behind their academic grade level. As the experimental period occurred during the second semester of the 1968-69 school year, all the subjects had one semester of secondary education.

Forty-six subjects were originally referred by their counselors and classroom teachers on the basis of their school performance both in high school and before. All had given recent indications of exhibiting difficulties in reading skills or had a history of reading problems while in the elementary and junior high grades. All were given the Iowa Silent Reading Test to ascertain their present reading grade level. Thirty-six of the original 46 scored at least one year behind their academic level and were selected as possible subjects to be included in the experiment.

The case history of each subject's school experiences was carefully examined to determine if the reading difficulty might have had its genesis due to some physiological or neurological impairment. These cases would not be considered in this experiment as the instructional program was not designed to include a clinical approach to both diagnosis and remediation of reading problems. Effective re-learning in these instances would require total individualization as well as special educational techniques of instruction. Administrative limitations and restrictions made this an impossibility.
Six of the 36 students were found to have definite perceptual problems and were thus eliminated from the sample. Thus the final sample numbered 30 subjects.

Through a series of interviews with the reading teacher, the students were encouraged to enroll in the corrective reading program being offered during the second semester. The final decision was left to each individual, as the reading course was an elective and, therefore, voluntary. A positive response occurred in each case. The subjects were then divided randomly into three groups of 10 students each for the duration of the experimental period.

All subjects in the final sample were regularly enrolled students in Homewood-Flossmoor High School, Flossmoor, Illinois. Each undertook the normal academic load of course work required of full time students in the school. The 11 girls and 19 boys constituting the sample population ranged in age from 14 to 16 years.

Sources of Data and Instruments Employed

The Iowa Silent Reading Test, Advanced Form was selected as the principal means of measurement because of its suitability as both an evaluative and diagnostic instrument. As an evaluative instrument it presented the advantages of comparable alternate forms which were required for the pre-test and post-test. The test was reportedly constructed with great attention to accuracy and reliability, and had
been revised several times to update the norms. The raw scores on the individual subtests are converted to standard scores, then to percentiles while an average of the subtest standard scores can be converted into the reading grade-level equivalent. The test was specifically recommended by the reading teacher who had used it for several years and was well satisfied regarding its reliability and validity.

As a diagnostic instrument, the Iowa Silent Reading Test offered several advantages. Since the emphasis of the corrective reading program was on increasing proficiency in the reading skills most often required to function successfully in high school, the study-type skills of the Iowa tests were deemed most acceptable. The nature and extent of the various subtests enabled the reading teacher to construct a comprehensive profile for each of the subjects. The teacher used these subtest profiles to plan independent work in the subjects' respective areas of greatest need. The grade-level equivalent score obtained from the subtest median score helped the teacher decide on grade-level placement in the respective materials used. For these reasons, the Iowa Silent Reading Test was considered the best of existing instruments, based on the needs of the experiment, the needs of the proposed corrective reading program, and the needs of the subjects involved.

Another source of data used throughout the experimental period was the subjects' cumulative record files kept in the
guidance department of their high school. These files proved invaluable as a resource in checking the past academic histories of the subjects. Most of the individual files were quite extensive, particularly of those students who had progressed through the elementary and junior high schools encompassed by the high school district. The guidance and counseling program within the district was well organized and the records included grade reports, aptitude and achievement test scores, clinical reports on diagnostic testing, and teacher recommendations, observations, and anecdotal reports. Subjects who had moved into the district in the latter years of elementary education did not have files as complete as the others, but pertinent information such as grade reports and test results were included.

**Traditional Classroom Instruction**

The classroom instruction phase of the treatments was consistent among the three groups in both structure and content. Initially, the reading teacher made an analysis of the pre-test (Form Am). The profile, made up of the results of the various subtests, of each subject was used to help select the materials most suitable for affecting skill improvement in each respective case. The overall grade-level equivalent in reading ability was used to select the most functional operating level for each student within the material. The specific materials chosen for the independent work included *Be A Better Reader* by N.B. Smith, *III B Reading*

In addition to independent work, the reading teacher planned several units of study designed as group instruction. One unit emphasized group work in comprehension using Tactics in Reading, published by Scott Foresman Co., as core material. A second such unit included group and individual instruction and exercises in rate and comprehension utilizing Standard Test Lessons in Reading by W.M. McCall and L.M. Crabbs, and the EDL Controlled Reader. A vocabulary development unit based upon Word Attack by C. Roberts and Words by Susan Markle was also included as a group oriented activity.

At the termination of the experimental period, 12 weeks, each subject took the Iowa Silent Reading Test, Advanced Form Bm as a post-test. The differences between reading grade-level equivalents on the pre-test and post-test were used to measure how much improvement, if any was made.

With each of the three groups of subjects, the instructional treatment was held as constant as possible. To safeguard against any deviations, the same structure, materials, and teacher were employed for each group. Some variation was bound to occur as a result of meeting the individual needs of the students, but nothing considered significant that might endanger the control over this variable actually took place.
Group Counseling

Group counseling treatment was experienced by both experimental groups. These counseling sessions were held for one 55 minute class period per week. The group sessions were jointly led by the reading teacher and a guidance counselor, with the counselor being introduced as the teacher's aid but playing an instrumental role in both guiding and interpreting the group process. Focus of these sessions was limited to matters pertaining to the tasks of the student, thereby restricting the possibility of these meetings becoming meaningless.

Initially, the students were encouraged to evaluate themselves and their peers as to their previous success or lack of success in learning experiences, particularly in reading. With few exceptions, they expressed little or no self-esteem and viewed themselves as personally incompetent having experienced virtually no success in an environment (the school) that to date had provided little but frustration for them. A review of their past histories by the teacher and counselor indicated that most had been characterized as poorly motivated, immature, having limited spans of attention, of not caring for school, or of being more concerned with socializing than working. The attitudes observed in both the counseling sessions and previous classroom experiences ranged from hostile aggression to withdrawal and passivity. It was decided by the teacher and counselor, on the basis of this
information and first-hand observation, that the primary objective of the counseling sessions should be to develop a sense of personal adequacy and positive self-esteem within the students. Activities for these sessions were then considered toward attainment of this objective.

Discussions centered around the concept of adjustment within and without the school setting became the primary mode of treatment. Special emphasis was placed on the idea of how to "survive" as well as possible in the academic environment; and, through role playing, an attempt was made to create empathy in understanding teachers, deans and other school personnel. Students from within the group who had experienced success in some phase of school life were chosen as models and were analyzed from the standpoint of what personal characteristics were assets, what characteristics might be liabilities. Although many of the activities were led and directed by the guidance counselor, whenever appropriate, the reading teacher indicated the particular relevance the situation under consideration might have to overcoming reading difficulties. As with the classroom instructional treatment, except for deviations due to specific needs within the groups, the counseling treatment remained generally consistent from one experimental group to the other.

Parental Involvement

A parent of each subject in the second experimental group was involved in the parental discussion sessions. The meetings
were held one hour per week and were conducted by the school social worker and the same guidance counselor who worked with the corrective readers.

Prior to the beginning of the experimental period, a letter explaining the nature of the corrective reading program and inviting the parents to participate in weekly discussion sessions was sent to the homes of the 10 students in the second experimental group. In addition to the introductory letter, a questionnaire asking for a commitment to attend the discussion sessions was sent (see Appendix A). A positive response was virtually unanimous. The two homes from which no reply was received were approached through personal contact by the school social worker and positive commitments were secured. Because of the time designated as most convenient on the questionnaire, the composition of the group was made up of the subjects' mothers only.

As stated previously, the purpose of these parental sessions was twofold: to inform the parent as to the nature, diagnosis and correction of reading difficulties; and to encourage the parent to examine his or her own feelings about the child's reading problem and to help mobilize energies to be more helpful to the child in school. The reading teacher was used as a resource to attain this first purpose; the social worker and guidance counselor worked toward the second purpose. When the reading teacher had fulfilled his role in the discussion sessions, he no longer participated
as it was felt his continued presence might have an inhibiting effect on the involvement of the parents.

In order to attain the second purpose outlined for the sessions, the mothers were encouraged by the social worker to be open and honest about their feelings regarding their child's general lack of success in school and particularly in reading. With few exceptions, they described themselves as being at "wits' end" over the situation. They admitted failure in guiding their respective child and were resigned to this admission. Their collective attitudes, in fact, somewhat paralleled those of their children.

Using the similarities of each case, the social worker and counselor emphasized mutual identification of the problem. The group then became as one in its resolve to seek some possible means to help correct the academic, and personal difficulties of their children. Guided and directed jointly by the social worker and counselor, the mothers decided that efforts should be made to encourage, without pressure, their child at every opportunity. They, too, realized that the child's self-esteem was of paramount concern. Among their conclusions was that their role in the home should not be that of a teacher, in an authoritative sense, or a tutor unless specific help was requested. Henceforth, their resolve was to praise any and all positive accomplishments of their child regardless of nature or circumstances.
CHAPTER FOUR

The Quantitative Measurements: An Analysis of Results

Statistical Analysis of Data

Drawing conclusions concerning the hypothesis of this experimental study necessitated a comparison of reading ability growth as measured in grade-level equivalent among the three participating groups. In computing the average growth for each group, an analysis of the pre-test, post-test and respective gains resulted in the following distributions.

Table 1. - CONTROL GROUP (C): DISTRIBUTION OF READING GRADE-LEVEL SCORES ON PRE- AND POST-TEST AND RESPECTIVE GROWTH (YEARS-MONTHS)

<table>
<thead>
<tr>
<th>Pre-Test (T₁)*</th>
<th>Post-Test (T₂)**</th>
<th>Growth in Grade-Level Equivalent (T₂-T₁)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>8.1</td>
<td>.1</td>
</tr>
<tr>
<td>5.1</td>
<td>7.4</td>
<td>2.3</td>
</tr>
<tr>
<td>6.8</td>
<td>6.8</td>
<td>0</td>
</tr>
<tr>
<td>4.5</td>
<td>5.3</td>
<td>.8</td>
</tr>
<tr>
<td>8.0</td>
<td>9.0</td>
<td>1.0</td>
</tr>
<tr>
<td>8.0</td>
<td>8.2</td>
<td>.2</td>
</tr>
<tr>
<td>7.9</td>
<td>8.5</td>
<td>.6</td>
</tr>
<tr>
<td>6.6</td>
<td>8.4</td>
<td>1.8</td>
</tr>
<tr>
<td>7.9</td>
<td>9.2</td>
<td>1.3</td>
</tr>
<tr>
<td>8.0</td>
<td>8.2</td>
<td>.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N=10</th>
<th>N=10</th>
<th>N=10</th>
</tr>
</thead>
<tbody>
<tr>
<td>M=7.08</td>
<td>M=7.91</td>
<td>M=.83</td>
</tr>
</tbody>
</table>

* - Iowa Silent Reading Test, Advanced Level Form Am
** - Iowa Silent Reading Test, Advanced Level Form Bm
### Table 2. - EXPERIMENTAL GROUP ONE (E1): DISTRIBUTION OF READING GRADE-LEVEL SCORES ON PRE- AND POST-TEST AND RESPECTIVE GROWTH (YEARS-MONTHS)

<table>
<thead>
<tr>
<th>Pre-Test (T₁)*</th>
<th>Post-Test (T₂)**</th>
<th>Growth in Grade-Level Equivalent (T₂-T₁)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.3</td>
<td>8.0</td>
<td>.7</td>
</tr>
<tr>
<td>8.0</td>
<td>8.8</td>
<td>.8</td>
</tr>
<tr>
<td>6.5</td>
<td>7.7</td>
<td>1.2</td>
</tr>
<tr>
<td>5.9</td>
<td>9.0</td>
<td>3.1</td>
</tr>
<tr>
<td>4.9</td>
<td>6.9</td>
<td>2.0</td>
</tr>
<tr>
<td>7.0</td>
<td>7.7</td>
<td>.7</td>
</tr>
<tr>
<td>7.4</td>
<td>9.2</td>
<td>1.8</td>
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<tr>
<td>7.7</td>
<td>10.6</td>
<td>2.9</td>
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<tr>
<td>7.7</td>
<td>8.2</td>
<td>.5</td>
</tr>
<tr>
<td>4.4</td>
<td>6.4</td>
<td>2.0</td>
</tr>
<tr>
<td>N=10</td>
<td>N=10</td>
<td>N=10</td>
</tr>
<tr>
<td>M=6.68</td>
<td>M=8.25</td>
<td>M=1.57</td>
</tr>
</tbody>
</table>

* - Iowa Silent Reading Test, Advanced Level Form Am  
** - Iowa Silent Reading Test, Advanced Level Form Bm  

### Table 3. - EXPERIMENTAL GROUP TWO (E2): DISTRIBUTION OF READING GRADE-LEVEL SCORES ON PRE- AND POST-TEST AND RESPECTIVE GROWTH (YEARS-MONTHS)

<table>
<thead>
<tr>
<th>Pre-Test (T₁)*</th>
<th>Post-Test (T₂)**</th>
<th>Growth in Grade-Level Equivalent (T₂-T₁)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.9</td>
<td>11.0</td>
<td>3.1</td>
</tr>
<tr>
<td>6.8</td>
<td>10.0</td>
<td>3.2</td>
</tr>
<tr>
<td>5.2</td>
<td>7.6</td>
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</tr>
<tr>
<td>7.3</td>
<td>9.2</td>
<td>1.9</td>
</tr>
<tr>
<td>8.0</td>
<td>10.4</td>
<td>2.4</td>
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<td>7.3</td>
<td>8.6</td>
<td>1.3</td>
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<tr>
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<td>8.2</td>
<td>1.8</td>
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<tr>
<td>6.1</td>
<td>7.1</td>
<td>1.0</td>
</tr>
<tr>
<td>6.8</td>
<td>8.2</td>
<td>1.4</td>
</tr>
<tr>
<td>5.9</td>
<td>7.0</td>
<td>1.1</td>
</tr>
<tr>
<td>N=10</td>
<td>N=10</td>
<td>N=10</td>
</tr>
<tr>
<td>M=6.77</td>
<td>M=8.73</td>
<td>M=1.96</td>
</tr>
</tbody>
</table>

* - Iowa Silent Reading Test, Advanced Level Form Am  
** - Iowa Silent Reading Test, Advanced Level Form Bm
By simple inspection of the three distributions it was obvious that both experimental groups experienced superior gains to those of the control group in terms of mean growth. Group \( E_1 \) improved .74 years or approximately \( 7\frac{1}{2} \) months more than group \( C \), while group \( E_2 \) improved 1.13 years or approximately 1 year, \( 1\frac{1}{2} \) months more than group \( C \). It was also noted that there was a sizable difference in mean growth between the two experimental groups: \( E_2 \) improved .39 years or almost 4 months more than \( E_1 \). It was clearly evident from this method of treating the data that the growth experienced by \( E_2 \) was in fact, superior to that of \( E_1 \) and \( C \); the growth experienced by \( E_1 \), though inferior to that of \( E_2 \), was also greater than that of \( C \). Mere inspection, however, provided little substantial evidence, other than size of arithmetic means, upon which to base any conclusions or generalizations regarding the results or their relation to the hypothesis. A more detailed investigation and statistical analysis was mandatory. Thus, of primary concern, was the question of the reliability of the differences between the mean growth of each group.

To establish the reliability of the difference between the mean growths it was decided to make the following comparisons: the mean growth of \( C \) with the mean growth of \( E_1 \), the mean growth of \( C \) with the mean growth of \( E_2 \), and the mean growth of \( E_1 \) with the mean growth of \( E_2 \).
The statistical formulas used for this computation were taken from *Statistics in Psychology and Education* by Henry E. Garrett and were selected particularly because they are employed when the N of a population is small, that is, 30 or less. The N for each of the study groups under analysis was 10.

According to Garrett, when the N's are small one gets a "better estimate of the 'true' SD [Standard Deviation] by pooling the sums of the squares of the deviations around the means of the two groups and computing a single SD."\(^{35}\) The simplified formula used in this computation is:

\[
\text{Pooled SD} = \sqrt{\frac{(SD_1)^2 \times (N_1-1) + (SD_2)^2 \times (N_2-1)}{(N_1-1) + (N_2-1)}}
\]

The standard error of the difference between means in small samples is computed by using the pooled SD with the following formula:

\[
SE_D = SD \sqrt{\frac{N_1 + N_2}{N_1 N_2}}
\]

Dividing the $SE_D$ into the actual difference between the means results in a measure of critical ratio that is used with a probability table to determine the reliability or

level of significance between the means. In treating the
data of this experiment, Table D from the Appendix of Tables
in Garrett's text was used.

Thus, five steps were involved in computing the re-
liability of the differences between the means of the three
groups.

1. computing M and SD of growth for
each group: C, E1, E2
2. computing the "pooled" SD of C
   and E1, C and E2, E1 and E2
3. computing the SE_D between C and
   E1, C and E2, E1 and E2
4. computing the critical ratio be-
tween C and E1, C and E2, E1 and
   E2
5. determining the level of signif-
icance for each critical ratio
   using a probability table

The above computations resulted in the following critical
ratios:

C and E1 = CR of 6.29
C and E2 = CR of 10.56
E1 and E2 = CR of 3.36

The probability chart revealed that in each comparison,
using a degree of freedom numbering 18, the differences be-
tween the mean growth was significant beyond the .01 level.
In other words, in less than one case out of 100 would the
differences between the means be attributable to chance
rather than the differences in the treatments employed (see
Appendix B for complete computation).
Check for Validity

Having moved a step closer to drawing valid conclusions by determining significance levels between the means, the question of whether or not the independent variable or variables actually produced the change in the dependent variable yet remains. It is conceivable that the experimental groups showed significantly more growth than the control group as a result of extraneous variables rather than as a result of the different treatments employed. Consequently, the internal and external validity of the experimental design must be carefully scrutinized. The factors discussed in the following check for validity are detailed in Deobald Van Dalen's *Understanding Educational Research*.

Internal Validity

Contemporary History: an event in or out of the experimental setting, besides exposure to the treatment, that may have affected the dependent variable scores seems to have little relevance to this particular study. Outside interaction was, in fact, encouraged in the case of group $E_2$. It was hoped, furthermore, that the parents of subjects in $E_2$ would confound the variable through help or encouragement. This was the purpose of involving the parents as part of the

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instructional program and, thus it became an integral part of the treatment design.

Maturation Processes: changes in the psychological processes within the subjects could confound the effects on the variable, but, again it was hoped that this would occur in the cases of \( E_1 \) and \( E_2 \). This was also a purpose of including the parents of subjects in \( E_2 \) and was a primary purpose in exposing \( E_1 \) and \( E_2 \) to group counseling.

Pre-Testing Procedures: the pre-test may have served as a learning experience that caused the subjects to alter their responses on the post-test, but since each group participated in these procedures, any effect the testing may have had would presumably have been felt by all, not just by one group.

Measuring Instruments: since the two forms of the Advanced Level Iowa Silent Reading Test are comparable in validity and reliability, and have a high positive correlation, it seems distinctly improbable that any difference between them could account for differences in the respective group performances.
Statistical Regression: due to the strenuous screening of possible subjects before the sample was selected, it seems that this factor could not have been a significant threat to the internal validity. Had the pre-test alone been relied upon as the sole selection criterion, it might have warranted serious consideration. But the subjects selected were known, from past histories, to have had reading difficulties and were known to have been behind in reading development. What was simply unknown was the extent of their retardation.

Differential Selection of Subjects: pre-experimental differences between the subjects was another factor controlled by the strict selection process employed. Any unknown difference that may have filtered through should have been nullified by the random assignment of the subjects to the various groups.

Experimental Mortality: since all subjects who began the experimental procedures completed the corrective reading programs, this factor could not have interfered.

Interaction of Selection and Maturation or History: motivation, which is a prime
concern of this factor, should have been fairly consistent from subject to subject as all were volunteers and special effort was made not to unduly persuade any candidate to enter the program unless he so chose. Intelligence, another important concern, could have had a significant effect on the results. However, after determining the mean and standard deviation of I.Q.'s for each group, an inspection of the distribution indicated no significant difference between them. (See Appendix B for computations.)

External Validity

Interaction Effects of Selection Biases and the Dependent Variable: this factor, which determines how extensively the findings can be generalized, requires special scrutiny. The population from which the sample was drawn was carefully defined and, therefore, any conclusions drawn can be done only in terms of those limitations. The population consisted of freshmen high school students whose reading ability (grade-level equivalent) was at least one year behind their academic level. It was hoped that the sample would reflect "average" or "typical" members of this population.
Since the sample was selected from a single high school district, it may not have included a cross section of the socio-economic stratum. This fact could possibly bear some relevance to the external validity and must be made explicit in terms of the generalizations expressed.

Reactive or Interaction Effect of Pre-Testing: it is true that giving a pre-test may alert the subjects to issues, problems or information that they might not ordinarily notice, but this is usually the essence of any corrective learning program. Awareness of problems and acquisition of information or skills is generally a major purpose of the re-learning. This factor has no relevance to the specific experiment under question.

Reactive Effects of Experimental Procedures: the subjects were never informed of their participation in an experimental environment either before or after the termination of the reading programs. At no time did they give implications that the thought even occurred to them.

Multiple-Treatment Interference: since the subjects in the experimental groups
experienced multiple treatment be design, the findings must be generalized only to persons who experience the same sequence of treatments.

Conclusions

Among ninth grade students with reading difficulties equivalent to at least one year of retardation the following conclusions can be drawn:

1. Participation in a corrective reading program augmented by group counseling, to develop self-esteem and self-worth, results in significantly more growth in reading grade level than a program consisting of traditional classroom instruction only.

2. Participation in a corrective reading program augmented by group counseling of subjects and parental involvement designed to inform, encourage, and promote self-evaluation results in significantly more growth in reading grade level
than either programs of traditional classroom instruction only, or instruction and group counseling.

Apparently developing self-esteem and self-worth has a very positive effect on overcoming reading difficulties if not learning difficulties in general. The effect that an encouraging and understanding parent can have on an individual who has experienced frequent failure is likewise both favorable and significant in terms of re-learning. In retrospect, it is unfortunate that the experiment did not include instruments that could measure the changes, if any, in self-esteem or parent/sibling relationships and attitudes.

Though they cannot be considered valid conclusions as no pre-experimental criteria was established against which they could be compared, several observations were made by the reading teacher, social worker, and guidance counselor. These key persons indicated that, in general, the students who had been counseled were more tolerant of individual differences within their respective groups, were less hostile toward their teachers and other authority figures, and seemed more positive toward the school environment at the termination of the experiment.

As the experiment unfolded, it became clearly evident that there is need for considerably more research in aspects of the study undertaken. In fact, the experiment reported
should be conducted again with a larger sample and should include students from a number of separate schools as well as a cross section of socio-economic levels. The results could thus be generalized even further.

Additional research called for should include an in-depth study of the psychological effects of the counseling sessions and parental discussions. Perhaps a suitable instrument can be found, or constructed, which measures deviations in attitudes and self-concept. Such a test or inventory would make it possible to diagnose specific negative personality traits for treatment in the counseling sessions; it could likewise function as a means, through post-testing, of assessing any positive growth or change. More extensive research might show positive correlation between certain personality traits and the presence of specific reading or learning disabilities; the instrument could have predictive value.

The ramifications of this study in terms of curriculum planning for high school corrective reading programs seem obvious. However, research in allied areas of corrective instruction, such as remedial English, mathematics, and the sciences, needs formulation. What was found to be true in terms of the hypothesis of this study may be indicative of other disciplines. These points need examination and clarification.
BIBLIOGRAPHY


Preston, Mary I. "Reading Failure and the Child's Security." *American Journal of Orthopsychiatry,* X (April, 1940), 239-252.


Spache, George D. "Factors Which Produce Defective Reading." Corrective Reading in Classroom and Clinic: Supplementary Educational Monographs, No. 79. Edited by Helen Robinson (Chicago, University of Chicago Press, 1953), 49-57.

Stauffer, Russell G. "Basic Problems in Corrective Reading Difficulties." Corrective Reading in Classroom and Clinic: Supplementary Educational Monographs, No. 79. Edited by Helen Robinson (Chicago, University of Chicago Press, 1953), 118-126.


APPENDIX A

COMMUNICATION TO AND QUESTIONNAIRE FOR PARENTS OF SUBJECTS IN GROUP $G_2$
Dear Parents:

This semester your son/daughter has enrolled in a Corrective Reading course. The purpose of this course is to identify specific areas of reading difficulty and provide instructional measures designed to improve your child's reading ability, and increase his opportunity for success in his total high school program.

Most students who have difficulty in reading also have difficulty in other areas of their school program, as reading is so essential to be successful in school. As a result, many have developed attitudes toward school that are not conducive to learning and have little confidence in their ability to succeed. It is our belief that these attitudes are as much a contribution to their difficulty in reading as any other single factor. It is, therefore, our contention that a natural supplement to the reading instruction is an attempt to assist the student in examining these attitudes and, hopefully, effect a change that will assist the student in viewing both school and himself/herself in a more positive manner.

Our plan is to provide one class period per week for group counseling. These sessions would be directed by a member of the Guidance staff and the Corrective Reading teacher. These meetings would take place in the classroom and would not interfere with any other phase of the student's program. Using this method we hope students will learn more about themselves, and certainly the school should learn and understand more about the students.

The school is dedicated to providing the most meaningful educational experience possible for each individual child. It is our belief that the school and the home working cooperatively have a much greater opportunity for success than each working independently of each other. Therefore, we feel if our efforts are to be fruitful your cooperation and participation is essential. We would like to meet with the parents of the students once a week for one hour at the school. These meetings would be conducted by the school social worker, a member of the Guidance staff, and the Corrective Reading teacher. We know from previous experience that parents can learn from each other and find certain relief in knowing they are not alone in their efforts to assist their children.
in the learning process. We are aware that not all parents will be able to attend, but we would appreciate your making as concerted an effort as possible.

We have enclosed a brief questionnaire for you to complete and return in the envelope provided by February 11, 1969. If you have any questions regarding this program please call us as we are most interested in your reaction.

Sincerely,

John T. Fabian A.C.S.W.

Louis P. Ross, Counselor
QUESTIONNAIRE

I. We will be able to participate in the weekly parent meetings.

If you can participate, please designate who will attend and suggest the most convenient day and time for you.

<table>
<thead>
<tr>
<th>Both</th>
<th>Mother only</th>
<th>Father only</th>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
</table>

II. Please feel free to make any comments you wish about the program.

Signature: ____________________________

Father

Mother

Date: ____________________________
APPENDIX B

COMPUTATIONS
**COMPUTATION: CONTROL GROUP**

**STANDARD DEVIATION OF GROWTH SCORES**

<table>
<thead>
<tr>
<th>Growth (years-months)</th>
<th>M Growth</th>
<th>X</th>
<th>X^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1</td>
<td>.83</td>
<td>.73</td>
<td>.5329</td>
</tr>
<tr>
<td>2.3</td>
<td>.83</td>
<td>1.47</td>
<td>2.1609</td>
</tr>
<tr>
<td>0</td>
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<td>.0009</td>
</tr>
<tr>
<td>1.0</td>
<td>.83</td>
<td>.17</td>
<td>.0289</td>
</tr>
<tr>
<td>.2</td>
<td>.83</td>
<td>.63</td>
<td>.3969</td>
</tr>
<tr>
<td>.6</td>
<td>.83</td>
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<td>.0529</td>
</tr>
<tr>
<td>1.8</td>
<td>.83</td>
<td>.97</td>
<td>.9409</td>
</tr>
<tr>
<td>1.3</td>
<td>.83</td>
<td>.47</td>
<td>.2209</td>
</tr>
<tr>
<td>.2</td>
<td>.83</td>
<td>.63</td>
<td>.3969</td>
</tr>
</tbody>
</table>

\[ N = 10 \quad M = .83 \]

\[
SD = \sqrt{\frac{\sum X^2}{N}}
\]

\[
SD = \sqrt{\frac{5.4210}{10}}
\]

\[
SD = \sqrt{.5421}
\]

\[ SD = \text{approx. } .235 \]

\[ SD = .24 \]
## COMPUTATION: GROUP E1

### STANDARD DEVIATION OF GROWTH SCORES

<table>
<thead>
<tr>
<th>Growth (years-months)</th>
<th>M Growth</th>
<th>X</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td>.7</td>
<td>1.57</td>
<td>.87</td>
<td>.7569</td>
</tr>
<tr>
<td>.8</td>
<td>1.57</td>
<td>.77</td>
<td>.5929</td>
</tr>
<tr>
<td>1.2</td>
<td>1.57</td>
<td>.37</td>
<td>.1369</td>
</tr>
<tr>
<td>3.1</td>
<td>1.57</td>
<td>1.53</td>
<td>2.3409</td>
</tr>
<tr>
<td>2.0</td>
<td>1.57</td>
<td>.43</td>
<td>.1849</td>
</tr>
<tr>
<td>.7</td>
<td>1.57</td>
<td>.23</td>
<td>.0529</td>
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<td>1.57</td>
<td>1.33</td>
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</tr>
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<td>2.9</td>
<td>1.57</td>
<td>1.07</td>
<td>1.1449</td>
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<tr>
<td>.5</td>
<td>1.57</td>
<td>.43</td>
<td>.1849</td>
</tr>
<tr>
<td>2.0</td>
<td>1.57</td>
<td></td>
<td>7.9210</td>
</tr>
</tbody>
</table>

N = 10  \hspace{1cm} M = 1.57

\[
SD = \sqrt{\frac{\sum X^2}{N}}
\]

\[
SD = \sqrt{\frac{7.9210}{10}}
\]

\[
SD = \sqrt{.79210}
\]

SD = approx. .281

SD = .28
**COMPUTATION: GROUP E2**

**STANDARD DEVIATION OF GROWTH SCORES**

<table>
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<th>Growth (years-months)</th>
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<th>( x^2 )</th>
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<td>1.96</td>
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<td>.1936</td>
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<td>1.9</td>
<td>1.96</td>
<td>.06</td>
<td>.0036</td>
</tr>
<tr>
<td>2.4</td>
<td>1.96</td>
<td>.44</td>
<td>.1936</td>
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<td>.66</td>
<td>.4356</td>
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<td>1.96</td>
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<td>1.96</td>
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<td>1.96</td>
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<tr>
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<td>1.96</td>
<td>.86</td>
<td>.7396</td>
</tr>
</tbody>
</table>

\[ \text{SD} = \sqrt{\frac{\sum x^2}{N}} \]

\[ \text{SD} = \sqrt{\frac{5.6640}{10}} \]

\[ \text{SD} = \sqrt{.5664} \]

\[ \text{SD} = \text{approx.} \ .2359 \]

\[ \text{SD} = .24 \]
COMPUTATION: STANDARD ERROR OF DIFFERENCE

BETWEEN MEANS OF C AND E₁

Pooled SD = \sqrt{\frac{(SD₁)^2 \times (N₁-1) + (SD₂)^2 \times (N₂-1)}{(N₁-1) + (N₂-1)}}

SD = \sqrt{\frac{(.24)^2 \times 9 + (.28)^2 \times 9}{9 + 9}}

SD = \sqrt{\frac{(.0576) \times 9 + (.0784) \times 9}{18}}

SD = \sqrt{\frac{1.2240}{18}}

SD = \sqrt{.068} \quad \text{or} \quad SD = .26

SE₉ = \frac{SD}{\sqrt{\frac{N₁ + N₂}{N₁N₂}}}

SE = .26 \sqrt{\frac{10 + 10}{100}}

SE₉ = .26 \sqrt{.20}

SE₉ = .26 \times .447

SE₉ = .116
COMPUTATION: STANDARD ERROR OF DIFFERENCE

BETWEEN MEANS OF C AND F2

Pooled SD = \[
\sqrt{\frac{(SD_1)^2 \times (N_1-1) + (SD_2)^2 \times (N_2-1)}{(N_1-1) + (N_2-1)}}
\]

SD = \[
\sqrt{\frac{(.24)^2 \times 9 + (.24)^2 \times 9}{9 + 9}}
\]

SD = \[
\sqrt{\frac{(.0576) \times 9 + (.0576) \times 9}{18}}
\]

SD = \[
\sqrt{1.0368}
\]

SD = \[
\frac{1.0368}{18}
\]

SD = \[
\sqrt{.058}
\] or \[
SD = .24
\]

SE_D = Pooled SD \[
\sqrt{\frac{N_1 + N_2}{N_1N_2}}
\]

SE_D = .24 \sqrt{.20}

SE_D = .24 \times .447

SE_D = .107
COMPUTATION: STANDARD ERROR OF DIFFERENCE

BETWEEN MEANS OF $E_1$ AND $E_2$

\[
Pooled \ SD = \sqrt{\frac{(SD_1)^2 \times (N_1-1) + (SD_2)^2 \times (N_2-1)}{(N_1-1) + (N_2-1)}}
\]

\[
SD = \sqrt{\frac{(.28)^2 \times 9 + (.24)^2 \times 9}{9 + 9}}
\]

\[
SD = \sqrt{\frac{(.0784) \times 9 + (.0576) \times 9}{18}}
\]

\[
SD = \frac{1.2240}{18}
\]

\[
SD = 0.068 \quad \text{or} \quad SD = 0.26
\]

\[
SE_D = Pooled \ SD \sqrt{\frac{N_1 + N_2}{N_1 N_2}}
\]

\[
SE_D = 0.26 \sqrt{0.20}
\]

\[
SE_D = 0.26 \times 0.447
\]

\[
SE_D = 0.116
\]
COMPUTATION: CRITICAL RATIO
BETWEEN MEANS

C and E₁

Critical Ratio = \( \frac{M_{N1} - M_{N2}}{SE_D} \)

\[ CR = \frac{.73}{.116} \]

CR = 6.29

C and E₂

Critical Ratio = \( \frac{M_{N1} - M_{N2}}{SE_D} \)

\[ CR = \frac{1.13}{.107} \]

CR = 10.56

E₁ and E₂

Critical Ratio = \( \frac{M_{N1} - M_{N2}}{SE_D} \)

\[ CR = \frac{.39}{.116} \]

CR = 3.36
## I.Q. Distribution

<table>
<thead>
<tr>
<th>Control</th>
<th>( E_1 )</th>
<th>( E_2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>93</td>
<td>105</td>
</tr>
<tr>
<td>95</td>
<td>99</td>
<td>95</td>
</tr>
<tr>
<td>90</td>
<td>95</td>
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<tr>
<td>92</td>
<td>91</td>
<td>94</td>
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<tr>
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<td>88</td>
</tr>
<tr>
<td>105</td>
<td>102</td>
<td>98</td>
</tr>
<tr>
<td>96</td>
<td>97</td>
<td>102</td>
</tr>
</tbody>
</table>

- **N = 10**
- **\( M = 96.0 \)**
- **SD = 5.20**

- **\( E_1 \)**
- **\( E_2 \)**

- **N = 10**
- **\( M = 96.0 \)**
- **SD = 4.89**

- **\( E_1 \)**
- **\( E_2 \)**

- **N = 10**
- **\( M = 96.1 \)**
- **SD = 5.01**
**COMPUTATION: CONTROL GROUP**

**STANDARD DEVIATION OF I.Q.**

<table>
<thead>
<tr>
<th>I.Q.</th>
<th>M I.Q.</th>
<th>X</th>
<th>$X^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>96</td>
<td>9</td>
<td>81</td>
</tr>
<tr>
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<td>96</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>6</td>
<td>36</td>
</tr>
<tr>
<td>92</td>
<td>96</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>98</td>
<td>96</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>89</td>
<td>96</td>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td>94</td>
<td>96</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>96</td>
<td>96</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>105</td>
<td>96</td>
<td>9</td>
<td>81</td>
</tr>
<tr>
<td>96</td>
<td>96</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

$N = 10$

$$SD = \sqrt{\frac{\Sigma X^2}{N}}$$

$$SD = \sqrt{\frac{272}{10}}$$

$$SD = \sqrt{27.2}$$

$$SD = 5.20$$
### COMPUTATION: GROUP E\(_1\)

#### STANDARD DEVIATION OF I.Q.

<table>
<thead>
<tr>
<th>I.Q.</th>
<th>M I.Q.</th>
<th>(X)</th>
<th>(X^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>96</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>99</td>
<td>96</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>95</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>91</td>
<td>96</td>
<td>5</td>
<td>25</td>
</tr>
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<td>96</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>91</td>
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<td>96</td>
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<tr>
<td>102</td>
<td>96</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>97</td>
<td>96</td>
<td>1</td>
<td>240/10</td>
</tr>
</tbody>
</table>

\(N = 10\)

\[
SD = \sqrt{\frac{\sum X^2}{N}}
\]

\[
SD = \sqrt{\frac{240}{10}}
\]

\[
SD = \sqrt{24}
\]

\[
SD = 4.89
\]
### COMPUTATION: GROUP E<sub>2</sub>

**STANDARD DEVIATION OF I.Q.**

<table>
<thead>
<tr>
<th>I.Q.</th>
<th>M I.Q.</th>
<th>X</th>
<th>X&lt;sup&gt;2&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>105</td>
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<td>4</td>
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<td>102</td>
<td>96</td>
<td>6</td>
<td>36</td>
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</tbody>
</table>

\[ \text{SD} = \sqrt{\frac{\sum X^2}{N}} \]

\[ \text{SD} = \sqrt{\frac{251}{10}} \]

\[ \text{SD} = \sqrt{25.1} \]

\[ \text{SD} = 5.01 \]

\[ N = 10 \]
APPENDIX C

SUPPLEMENTARY BIBLIOGRAPHY
SUPPLEMENTARY BIBLIOGRAPHY


Below, B. "Long-Term Effect of Remedial Reading Instruction." *The Reading Teacher, 18* (April, 1965), 581-586.

Botel, M. "We Need a Total Approach to Reading." *The Reading Teacher, 13* (1960), 254-257.


Reitan, R.M. "Relationships Between Neurological and Psychological Variables and Their Implications for Reading Instruction." Conference on Reading, 26 (University of Chicago, 1964), 100-110.


Rudman, H.C. "Parents and Their Children's Reading Interests." The Reading Teacher, 10 (1956), 26-32.


Strang, Ruth. "Reading and Personality Formation." Personality, 1 (April, 1950), 131-140.

Townsend, A. "Emotionality and Reading." Bibliography on The Reading Teacher, 18 (March, 1965), 519.


Wilking, S.V. "Personality Maladjustment as a Causative Factor in Reading Disability." Elementary School Journal, 42 (1941), 268-279.

Wittiek, M.L. "Effects of Social and Emotional Problems on Reading." Conference on Reading, 26 (University of Chicago, 1964), 75-82.
APPROVAL SHEET

The thesis submitted by Keith J. Thomas has been read and approved by members of the Department of Education.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

May 22, 1970
Date

Sister Mary Constantine
Signature of Advisor