To the Graduate Council:

I am submitting herewith a dissertation written by Donna Barnes Hoover entitled "A Comparative Study of Reading Attitudes, Self-Concept, and Achievement Between Students of Two Reading Programs." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Curriculum and Instruction.

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A COMPARATIVE STUDY OF READING ATTITUDES, SELF-CONCEPT, AND ACHIEVEMENT BETWEEN STUDENTS OF TWO READING PROGRAMS

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

Donna Barnes Hoover

August 1985

DEDICATION

Throughout the residency and coursework of my doctoral program and the beginning of this dissertation, I was extremely privileged to have had the expert guidance of Dr. Paul C. Burns. His untimely death in July 1983 was a tremendous loss to the educational community. Due to his support, professional guidance, and inspiration, I most heartily wish to dedicate this dissertation.

ACKNOWLEDGEMENTS

This dissertation is an endeavor which could not have been accomplished alone. Deep appreciation and sincere thanks are expressed to Dr. J. Estill Alexander, major advisor and director of the dissertation, for his support, understanding, encouragement, and guidance. Sincere gratitude is also expressed to Dr. C. Glennon Rowell for his support and advice. His professional and scholarship standards were invaluable and greatly appreciated. Special thanks are also due Dr. Lester N. Knight and Dr. Robert K. Roney for serving as members of the doctoral committee and for their advice, support, and professionally constructive criticisms. Appreciation and heartfelt thanks are also expressed to C. James Dunigan and Thomas A. Odom for their friendship and technical assistance, without which this study could not have been completed.

Appreciation, which can never be measured, is expressed to my husband, Bob, for his patience, tolerance, understanding, and support. Special thanks are also due my three children, Barbara, Jennifer, and Tom, for the love they continued to show a part-time mother.

Special inspiration has been a tremendous help and support from many friends in Kingsport, Tennessee, and even though too numerous to mention, they each deserve special thanks. And lastly, appreciation and gratitude is extended to Dr. Ralph E. Evans, Superintendent of Kingsport City Schools, and to the principals, teachers, and students for their cooperation and participation in the study.

ABSTRACT

The main purpose of this study was to investigate the differences among reading attitudes, self-concept, and reading achievement when considering sex and intelligence of fourth and fifth grade students enrolled in either a developmental reading program or a computer managed reading program, and to determine if there were any correlations among reading attitudes, self-concept, and reading achievement during the school year in which the study was undertaken. A secondary purpose of the study was to develop an instrument which was designed for the purpose of measuring the attitudes toward reading of the students who were involved in learning to read by either of the two methods of instruction in use in the classroom during the study.

The subjects included the total population of fourth and fifth grade students in Kingsport, Tennessee during the school year 1982-83. Complete data were collected on 600 students. The Metropolitan Achievement Tests, the Piers-Harris Children's Self-Concept Scale, and the Hoover Reading Attitude Inventory were administered to all students as both pre- and post-tests. The Otis-Lennon School Ability Test was used to place students in groups of high, average, or low ability.

Several statistical analyses were conducted. These included: a multivariate analysis of variance, the Duncan Multiple Range Test, and a multiple correlation analysis. Conclusions drawn from this study included:

1. It cannot be concluded from this study that either the developmental reading program or the computer managed reading program was better in improving self-concept or reading achievement.

2. It can be concluded from this study that reading attitudes were improved through the use of the computer managed reading program.

3. It can be concluded from this study that females improved more than males in both reading achievement and reading attitudes regardless of the instructional program followed.

4. It can be concluded from this study that high ability students consistently achieved greater gains than did average and low ability students in the areas of self-concept, reading achievement, and reading attitudes regardless of the instructional program followed.

5. It can be concluded from this study that grade level appeared to make no difference in reading attitudes, self-concept, or reading achievement regardless of the instructional program followed.

6. It can be concluded from this study that high ability students improved reading achievement through the computer managed reading program; however, the average and low ability students improved reading achievement through the developmental reading program.

7. It can be concluded that only high ability males and low ability females improved reading attitudes through the computer managed reading program.

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CHAPTER 1

THE NATURE OF THE STUDY

A major task confronting the elementary school teacher is that of teaching young children to read. Many different approaches and materials have been used as teachers strive to meet the learning needs of early and maturing readers. Another task, and one which may not receive the attention it deserves, is ensuring that once children have learned the skills necessary for reading, they will want to put those skills to use by engaging in reading at available opportunities. The goal of reading teachers is not only to prepare students for reading, but to create in students a desire to read.

Meeting the instructional needs of many children is the purpose of individualized instruction. This involves taking into account individuals' learning styles, rates of learning, achievement levels, and personal interests. Individualized instruction is not new; its theme goes back to the colonial period and the one-room schoolhouse.

Classroom teachers today continue to struggle with the problem of meeting every child's educational needs and can become overwhelmed by the task. Teachers are urged to diagnose the needs of each learner and to select instructional materials appropriate to the ability levels of the students. This is known as diagnostic and prescriptive teaching. Harris and Sipay (1980) stated that these diagnostic procedures, preparation of the necessary individual prescriptive lessons as indicated by the diagnosis, organization of

materials, record keeping, and provision for individual help leaves the teacher little time for telling, explaining, questioning, leading discussions, motivation, and other group interaction activities. Computer managed reading instruction emerged during the late sixties as a program which allowed teachers to manage diagnostic and prescriptive (individualized) teaching more efficiently (Scanlon and Connolly, 1974). The more traditional or developmental (group) reading instruction program has been the most common form of teaching reading found in the schools until the advent of the eighties and the emphasis on the mastery of necessary skills.

A diagnostic/prescriptive reading program such as that available with computer managed instruction appears to fit well into teaching the basics of the mastery of skills and is concerned mainly with the cognitive processes of learning. Robeck and Wilson (1984) have defined reading as "a process of translating signs and symbols into meaning and incorporating the new meanings into existing cognitive and affective systems" (p. 41). With total reliance on the mastery of skills the affective dimension of learning may not receive the attention it deserves.

I. THE PROBLEM

Statement of the Problem

A growing concern of teachers of reading and classroom teachers has been the attitudes toward reading of the children being taught to read. Children may be learning the skills of reading, but are they reading? Charlotte Huck (1962) has postulated that it may

be possible to create illiterate literates (those who are able to read but choose not to read). Roach Van Allen (1965) stressed that being able to read and not wanting to read is as much a tragedy as not being able to read. Reading is more than mastery of skills; it involves lifelong reading and the continued use of an enjoyment derived from the practice of those skills. Alexander and Filler (1976) postulated that an understanding of attitudes toward reading, self-concept, and reading achievement was important because of their possible interactions. Quandt and Selznick (1984) stated that a positive association exists between self-concept and reading achievement with some indication that students receiving high self-concept scores also were high achieving readers. Therefore, the acquisition of reading skills without attention being given to affective components is a problem which needs to be considered.

Purposes of the Study

The primary purpose of this study was to investigate the differences among reading attitudes, self-concept, and reading achievement when considering sex and intelligence of fourth and fifth grade students enrolled in either a developmental reading program (group instruction) or a computer managed reading program (individualized instruction), and to determine if there were any correlations among reading attitudes, self-concept, and reading achievement during the school year in which the study was undertaken. A secondary purpose of the study was to develop an instrument which was designed for the purpose of measuring the attitudes toward reading of the students who

were involved in learning to read by either of the two methods of instruction in use in the classroom during the study.

Importance of the Study

Sometimes it happens that children who score well on reading achievement tests score low on reading attitude inventories and are considered to have negative attitudes toward reading. Other children do poorly on reading achievement tests but score high on reading attitude inventories. Teachers need to be able to assess the attitudes toward reading of the children they teach.

When children are engaged in a skills mastery approach to teaching reading the classroom teacher needs to be especially aware of the reading attitudes which are being developed in congruence with reading skills. Knowing the reading attitudes of the children will enable teachers to provide opportunities and experiences to enhance or improve the reading activities. Harris and Sipay (1980) remind teachers that attitudes are unique and unpredictable with each person. They feel that attitudes about reading vary with each reader's level of ability, background, effort, and peer influence.

Reading attitudes are a part of one's affective domain. The affective domain, however, is comprised of more than attitudes. Self-concept is also an important part of one's affective domain and may also be an important factor in one's reading ability. Combs and Snygg (1959) believe that the concepts a person has about self and abilities dictate thinking as well as behavior. How one acts in a given situation is dependent upon one's perception of self and one's

perception of the situations in which one is placed. Attention to the affective domain cannot be neglected when the teaching of reading today is becoming a program stressing the mastery of skills. The mastery of skills alone will not ensure that life-long readers are being produced.

It has been generally accepted that positive attitudes and self-concepts can aid and reinforce mastery of the reading process, but the reverse of this is not necessarily true; mastery of reading skills alone does not assure that positive attitudes and self-concepts will develop. A reading instruction program should be concerned with the mastery of certain skills necessary to the reading process along with the development of the desire to read and the cultivation of life-long reading interests. The two methods of reading instruction in use during the time that this study was undertaken were a computer managed instruction program (individualized instruction) aimed at the mastery of certain skills in order to chart achievement and progress in the program and a traditional developmental reading instruction program (group instruction).

A significant difference in reading achievement of students in either the developmental reading instruction program or the computer managed reading instruction program would demonstrate a need for the schools in the study to examine the characteristics of the higher achieving program, with consideration for implementation in the schools. However, if achievement is comparable over the two programs, but a significant difference occurs in self-concept, then consideration should be given to implementing that program which

encourages a positive self-concept. If reading achievement and self-concept are both found to be comparable over the two programs, but one program is shown to foster more positive attitudes toward reading, then this should demonstrate a need to implement that reading program in the schools since it is the development of life-long readers which is the purpose of reading instruction.

II. DEFINITION OF TERMS

Affective Domain

The affective domain encompasses feelings, beliefs, attitudes, values, likes and dislikes toward significant others, self, and life experiences (Nave, 1980).

Attitudes

Attitudes are beliefs or predispositions which have been socially learned and are highly susceptible to change. These beliefs, which are comprised of affective, cognitive, and behavioral components, interact in some form of behavior, either positively or negatively toward an object, person, group, or activity. A positive reaction would be one which could be interpreted as the approach of an object, person, group, or activity. A negative reaction would be one which could be interpreted as the avoidance of an object, person, group, or activity.

Behavioral Objective

A behavioral objective is one which states the condition under which a specified behavior will occur, the type of behavior that is to occur as a result of planned instruction, and the performance level that will be accepted (Harris and Sipay, 1980).

Cognitive Domain

The cognitive domain encompasses mental skills which govern learning, remembering, and thinking behavior through the process of knowing, comprehending, applying, analyzing, synthesizing, and evaluating facts and concepts (Bloom, 1956).

Computer Managed Instruction

Computer managed instruction (CMI) is a computer information system linked to the school by a central data terminal. The system prepares and records each student's study plan, keeps track of achievement, and provides regular reports on progress. The computer is programmed to monitor and direct the learning of each student on an individual basis, but the actual instruction takes place off-line from the computer (Mayo, 1974). Computer managed instruction can be considered a diagnostic and prescriptive approach to the teaching of reading and is a form of individualized instruction.

Criterion-Referenced Test

A criterion-referenced test is a test which indicates whether or not the test taker has mastered a specific skill, rather than how well his or her performance compares with that of others. Since it

is a test designed to assess mastery of specific objectives it can be useful in individualizing instruction (Harris and Sipay, 1980).

Developmental Reading Instruction

Developmental reading instruction is a program designed to teach students to read efficiently according to their abilities and needs. The class may be divided into three or more reading groups which are working at different levels of the material. Basal readers, along with correlated workbooks and materials, are used to improve reading skills. Supplemental reading kits, tradebooks, and other materials may be used to improve skills, obtain information, and receive enjoyment from reading (VanSickle, 1977).

Diagnosis

Diagnosis is the process by which the state of the learner at a given moment of time is assessed in relation to certain factors as the basis for determining learning needs (Hickey and Hoffman, 1973).

Individualized Instruction

Individualized instruction is an approach to instruction wherein materials are tailored to serve the needs, interests, learning, learning style, rate of learning, and achievement level of each individual student.

Intelligence

Intelligence is the degree of ease or difficulty with which the individual learns various things (Robeck and Wilson, 1974). For

the purpose of this study high intelligence will be considered to be a demonstrated score falling 112 and above on the Otis-Lennon School Ability Test, average intelligence will be considered to be as falling between 88 and 111, and low intelligence will be considered to be as falling 87 and below (Ottis and Lennon, 1979).

Mastery Learning

Mastery learning is a term denoting the stating of instructional objectives, frequent assessment of student attainment of those objectives, and the inclusion of a feedback provision through which students may reapply themselves to obectives not achieved (Bloom, 1971).

Module

A module is a specific instructional unit or lesson which the student will follow and complete. It is assigned through the prescription.

Prescription

The process by which modifications are made in the activities or learning comprising a generalized learning program in order to meet the specifically identified or diagnosed needs of the learner is called prescription (Hickey and Hoffman, 1973).

Project Manage

Project Manage is the name of the specific CMI reading program being used in the school system in which the study was undertaken.

It was developed by the Upper East Tennessee Educational Cooperative.

Self-Concept

A self-concept is the perception one holds about oneself based on the beliefs about the self as they relate to one's value and ability. Self-concept is demonstrated by one's behavior toward situations in which one is placed. Quandt and Selznick (1984) define a good or positive self-concept as one in which the person perceives him/herself as capable and/or important. By contrast, a poor or negative self-concept is one in which the person perceives him/herself as incapable and/or unimportant.

III. ASSUMPTIONS

It was assumed in this study that:

1. The students expressed their feelings accurately and honestly when responding to the items on the reading attitude inventory, thereby providing an adequate means of measuring attitudes toward reading.

2. The students expressed their feelings accurately and honestly when responding to the items on the self-concept scale, thereby providing an adequate means of measuring self-concept.

IV. DELIMITATIONS

1. The study was limited to the fourth and fifth grade students who were enrolled in the seven elementary schools in the Kingsport City School System during the 1982-83 school year.

2. The thirty-two classroom teachers whose students were involved in the study remained responsible to structure the reading programs in their respective classrooms with no changes in the curriculum being made for either the developmental reading group or the computer managed reading group.

3. The component factors which determine an individual's attitudes toward reading were not investigated in this study.

4. The students' attitudes toward school, toward the particular reading program, or toward the teachers were not considered in this study.

V. DESCRIPTION OF SUBJECTS

The population consisted of 331 fourth grade students and 394 fifth grade students enrolled in the seven elementary schools of a small metropolitan school system in upper East Tennessee during the school year 1982-83. Each of the classrooms consisted of heterogenous groups of children whose reading levels ranged from beginning reading through a level which would be comparable to that of high school or above. The school system had approximately 5200 students and was comprised of 91.1 percent Caucasian, 7.6 percent Black, 1.0 percent Asian, 0.05 percent Hispanic, and 0.01 percent Indian children in grades kindergarten through twelve.

Effort was taken to minimize any effects or reactions due to the knowledge of participation in a study on the part of the students. No student or groups of students were tested outside of

the regular classroom or at a time different from the time other members of the class were tested. Total classes were tested at a time, with those scores for which permission was not received or incomplete composites of scores being eliminated. No changes were made in the curriculum for either the developmental or the computer managed instruction group.

VI. RESEARCH QUESTIONS

The following research questions were generated from a review of the literature and were tested as null hypotheses as found in Chapter 3.

1. Were there any differences obtained in the reading attitudes, self-concept, or reading achievement scores of the students who were enrolled in a developmental reading program as compared with the scores of those students who were enrolled in a computer managed reading program?

2. Were there any differences obtained in reading attitudes, self-concept, or reading achievement scores of the students enrolled in the two reading programs when sex was considered to be a variable?

3. Were there any differences obtained in reading attitudes, self-concept, or reading achievement scores of the students enrolled in the two reading programs when intelligence was considered to be a variable?

4. Were there any differences obtained in reading attitudes, self-concept, or reading achievement scores of the students enrolled in the two reading programs when grade level was considered to be a variable?

5. Were there any correlations among reading attitudes, self-concept, or reading achievement scores of the students who were enrolled in the two reading programs?

The data for each of the dependent variables (reading attitudes, self-concept, and reading achievement scores) were subjected to a multivariate analysis of variance, with the independent variables of reading method (CMI or developmental), grade level (grade 4 or grade 5), sex (male or female), and intelligence (high, average, and low) being examined for the main effects and the interaction effects on the dependent variables.

Correlation coefficients were computed on the dependent variables to determine if there were any correlations among reading attitudes, self-concept, and reaching achievement.

The 0.05 level of significance was established as the criterion for rejecting the null hypotheses.

VII. ORGANIZATION OF THE STUDY

The report of the study is organized into five chapters. Chapter 1 contains a discussion of the nature of the study and consists of the introduction, the problem, definition of terms, assumptions and delimitations, descriptions of subjects, research questions, and organization of the study.

A review of the literature as it pertains to the relationship of attitudes toward reading, self-concept, and reading achievement, individualizing reading through the use of computer managed

instruction, and construction of an instrument suitable for measuring attitudes toward reading is included in Chapter 2.

Chapter 3 includes the design of the study and the procedures used in completing the investigation.

A presentation and analysis of the data generated from the investigation are included in Chapter 4.

Chapter 5 includes the summary, conclusions from the investigation, and recommendations.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The literature was reviewed as it related to the major concerns of this study. This chapter contains a review of the literature as it pertains to the following: (1) the relationship of attitudes toward reading, self-concept, and reading achievement, (2) individualizing reading through the use of computer managed instruction, and (3) construction of an instrument suitable for measuring attitudes toward reading.

I. THE RELATIONSHIP OF ATTITUDES TOWARD READING, SELF-CONCEPT, AND READING ACHIEVEMENT

Reading and the right of all to learn to read is a priority concern in our nation. Much research has been done during the past decades involving the various methods of teaching reading. It is generally accepted that there is no one best approach to the teaching of reading (Fillmer and Griffith, 1973). Within the framework of an established curriculum, teachers have been granted autonomy to experiment with a variety of methods and materials and choose the ones which prove the most beneficial. Many states and school districts today are moving in the direction of establishing required curricula for all students. The fact remains, however, that there is a responsibility toward the student of providing the most optimum reading program possible. Another factor of any reading program

is the student's attitudes toward reading, self, and learning. This may well be a determiner of the success or failure of any reading program. The teacher also plays an important part in promoting and maintaining positive attitudes through his/her own attitudes toward reading, students, teaching, nonverbal behaviors, atmosphere, and the modeling which is provided for students (Alexander and Filler, 1976).

A review of the literature revealed contradictory findings. Since the literature was concerned with trying to establish a relationship between individual attitudes and an individual's behavior toward some aspect of learning, a need arises to define what is meant by attitudes.

Definition of Attitudes

Blum and Naylor (1968) defined attitudes as enduring predispositions which are learned rather than innate, being regarded as either mental readiness or predispositions which direct general or consistent influence on a rather large class of evaluative responses which are directed toward some object, person, or group. It can be concluded that attitudes constitute beliefs relating to an object, person, or group; and that these beliefs are learned and susceptible to change.

The thought that attitudes refer to certain irregularities of an individual's feelings, thoughts, and predispositions to act toward some aspect of the environment was postulated by Secord and Backman (1964). Feelings are referred to as the affective component,

thoughts as the cognitive component, and predispositions to act as the behavioral component.

Three emphases necessary when discussing attitudes were identified by Shaw and Wright (1967). First, an attitude is a generalized pervasive disposition of an individual. Second, attitudes have a specific referent or referents. And third, attitudes are divided into three components: affective, cognitive, and behavioral. Gage (1963) listed four areas of general agreement usually found when defining attitudes:

> 1. Attitudes are socially formed. They are based upon cultural experiences and training, and are revealed in cultural products. The study of life history data reveals the state of mind of the individual, and of the social group from which he derives, and concerning the values of the society in which he lives.
>
> 2. Attitudes are orientations toward others and toward objects. They incorporate the meaning of potential or actual activity.
>
> 3. Attitudes are selective. They provide a basis for discrimination between alternative courses of action and introduce consistency or response to social situations of an otherwise diverse nature.
>
> 4. Attitudes reflect a disposition to an activity, not a verbalization. Attitudes are organizations of incipient activities or actions not necessarily completed, and represent therefore the underlying dispositional or motivational urge (p. 404).

According to Harris and Sipay (1980) "attitudes are unique, personal, and highly unpredictable" (p. 516). They surmised that attitudes about reading may vary with the reader's level of reading ability, his/her background, effort, and peer influence.

In this study attitudes are considered to be socially learned and tend to reflect an individual's beliefs or predispositions while

being highly susceptible to change. These beliefs, which are comprised of affective, cognitive, and behavioral components, interact in some form of behavior, either positively or negatively toward an object, person, group, or activity.

Relationship Between Self-Concept and Attitudes Toward Reading

Many of the factors involved in reading are not understood. One such variable might be an individual's self-concept. Combs and Snygg (1959) stated that the concepts a person has about himself and his abilities dictate his thinking as well as his behavior. How one acts in a given situation is dependent upon one's own perception of self and one's perception of the situations in which one is placed.

Quandt and Selznick (1984) especially emphasize an individual's perceptions of one's own value and ability. Self-concept may be further defined as "the total collection of attitudes, judgements, and values which an individual holds with respect to his behavior, his ability, his body, his worth as a person--in short, how he perceives and evaluates himself" (Byrne, 1974, p. 271).

William Purkey (1970) defined self-concept as "a complex and dynamic system of beliefs which an individual holds true about himself, each belief with a corresponding value" (p. 7).

For the purpose of this study self-concept will be defined as one's perception of self based on beliefs about self as they relate to one's value and ability, and demonstrated by one's behavior toward situations in which one is placed.

There was not much research found in which the relationship between self-concept and attitudes toward reading had been investigated. Most research has been done relating self-concept to achievement in reading. Claytor (1978) found that the student's attitude, behavior, and the way he/she sees him/herself is highly related to reading achievement. Quandt and Selznick (1984) concluded that a positive association does exist between self-concept and reading achievement with high achieving readers exhibiting higher self-concept scores. Quandt and Selznick also report that the following correlates are well defined:

1. Influence of Significant Others. A low self-concept may be caused by the child's low evaluation of his/her reading performance or by the evaluation of significant others, such as parents, peers, and/or teachers.

2. Age. Most young children possess very positive self-concepts because of the fact that they have not internalized the importance of school achievement. Around third grade children begin to lower their self-concepts.

3. Counteractions. A learner who feels that he has failed in the eyes of others may counteract by avoiding the reading act, such as disinterest in or hatred of reading, lack of effort, or refusal to read.

4. Self-Concept Consistency. The learner may reinforce his/her own self-concept by believing he/she will not succeed in reading because of a past experience, and therefore may not succeed.

5. Spiraling Process. Due to self-concept, the reader may become either progressively better or poorer. Success may cause a greater effort while failure results in less effort, which causes progressively poorer performance as school age increases. Alexander and Filler (1976) indicated that an understanding of self-concept, attitudes toward reading, and reading achievement are important because of their possible interactions.

In an earlier study, Zimmerman and Allebrand (1965) sought to determine whether good or poor readers perceive themselves differently. Examining the attitudes and personality characteristics of good and poor readers in fourth and fifth grade students, there was found to be significant differences in the two groups with good readers showing more positive attributes and presenting themselves as being better adjusted in every area. The poor readers showed evidence of nervous symptoms, limited personal freedom, feelings of isolation, as well as minimal social skills and standards. The major differences between good and poor readers seemed to be in the area of personal and not social adjustment. One might wonder if these negative feelings of self-worth are the result of being a poor reader or a contributing factor to the cause since both groups were equally matched for age, sex, ethnic composition, and intelligence. Quandt and Selznick (1984) stated that, "Not only does poor self-concept interfere with learning to read, but the resulting reading disability leads to an even poorer self-concept" (p. 9).

Cole (1974), in a study involving third graders of average ability which investigated the relationship between self-concept, attitude, achievement in reading, language, spelling, and mathematics, found that self-concept was positively correlated with attitude and academic achievement in all areas except spelling. It was explained that the skill necessary for spelling achievement was memorization involving time and determination with motivation being greater than spelling confidence or how one feels about oneself. This study was important in that it indicated that more than cognitive factors were involved in achievement. Similarly, Alexander (1981) found that a remedial reading program designed to improve reading achievement of fourth and fifth graders was significantly effective in improving attitudes toward reading and self-concept of fifth grade students. Fourth grade students, however, did not show significant improvement in self-concept, but did in attitudes toward reading. This lack of self-concept improvement of fourth grade students may be due to the fact that they were just emerging from actual beginning reading instruction and had not yet realized the impact of being a remedial reader. Both groups did reveal significant improvement in reading achievement.

However, from a study by Fulk (1976) in which there was an investigation of differences among reading achievement, reading attitudes, and self-concept of fourth and sixth grade students taught with and without the use of a management system, it was concluded that fourth grade students had better reading achievement scores and

higher self-concept scores when taught with the use of a management system. Interestingly, though, it was the sixth grade students, taught with the use of a management system, who exhibited higher reading attitude scores. This was in contrast to a study done by Johnson (1965) in which it was indicated that children in lower grades had better attitudes toward reading with the attitudes getting poorer with each higher grade. In another study it was found that self-concept did not correlate significantly with either reading achievement or reading attitudes (Talan, 1980).

Relationship Between Attitudes Toward Reading and Reading Achievement

Historically, educators have placed more attention on the cognitive aspects of reading than on the affective components of reading. However, there is beginning to be an increasing awareness of the affective areas of reading development. The investigator could find few studies in the literature in which the relationship between attitudes toward reading and reading achievement had been investigated. Among those which were found, results were contradictory with some showing positive results and some showing negative results.

Among those studies showing positive results were several dealing with individualized reading instruction (Gurney, 1966; Nearine, 1968; Askov, 1970; Davis and Lucas, 1971). It was found that positive correlations did exist between attitudes toward reading and reading achievement when students were involved in an individualized reading instruction program. Perhaps in an individualized

situation where children are allowed to choose reading materials more in keeping with their interests a more positive attitude toward the skill involved was developed due to the satisfaction received from the process. However, in a study by Crandall (1973), no significant differences in reading attitudes took place and no highly positive correlation was found between reading attitudes and reading achievement of first grade children using an individualized language experience approach to reading.

Carole Talan (1980) determined in a study of reading attitudes, home literary environment, reading achievement, and self-concept that there was a significant correlation between reading achievement and reading attitudes. Her study also examined many aspects of the home literary environment and found significant correlations among reading attitudes and number of books owned, number of nonschool required books read the previous year, amount read to as a child, and amount of newspapers read on a daily basis.

Other studies showed positive relationships between reading achievement and attitudes toward reading. Harrington (1972) found a significant positive relationship existing between the two in a study of third and fifth grade students. Combs (1977) stated that reading achievement and attitudes appeared to be significantly correlated in a study of fourth, fifth, and sixth grade students. Crews (1978) also found that attitudes toward reading and reading achievement were significantly correlated at the sixth grade level, but not at the seventh or eighth grade levels. This was in agreement with those studies which tend to reveal that reading attitudes decrease

as years in school increase. Perhaps seventh and eighth graders are not as interested in reading as they once were, due to the increased amount of reading in their content academic areas. The emphasis has shifted to one of reading for a purpose, not reading for reading's sake.

Askov and Fischback (1973) found in a study of first and third graders that attitudes toward reading were more positive with improved achievement. They concluded that efforts of teachers and reading programs might be more properly focused on improving reading skills and achievement. It is this investigator's opinion, however, that the total emphasis on the development of cognitive skills alone without some accompanying development of the affective dimensions of reading may produce students with the necessary skills for reading who do not choose to read.

Attitudes may also affect achievement as was shown in a study of attitudes of fifth and sixth grade sutdents toward content-type material and their critical reading scores. Groffe (1962) concluded that reading comprehension can be influenced by an attitude toward the type of content material read. According to Groffe, the influence seemed greater when the students were asked to reason about the material rather than to simply recall the material read. This would tend to support the fact that students need to be involved in higher levels of thinking and comprehension activities. This study also indicated a significant positive correlation between general reading ability and attitudes toward reading.

Healy (1963) also found that attitudes toward reading could be changed by allowing ten-year-old children to choose their reading groups according to interest and to select their own reading materials and (1965) that by changing the attitudes toward reading in fifth grade students an apparent increase in achievement was found and more actual reading took place. This would support the theory that children who feel good about reading will want to read. However, Johnson (1965) found that attitudes toward reading did not hold constant over time. It was reported that as the grade level increased, attitudes toward reading decreased with primary children exhibiting the more positive attitudes.

In a study of environmentally deprived Black students (Greenburg et al., 1965) it was found that high achievement in school did not correlate with good attitudes toward school. These children did reflect apparent positive attitudes with attitudes toward reading ranking fifth (out of 13). This may be due to poor readers assigning more value to reading because it was seen as socially acceptable. Similarly, Neale and Proshek (1967) found that culturally deprived children valued books relatively high, but evaluated "reading a book" relatively low. This might reflect that they viewed books as socially valuable but did not enjoy reading them.

Adams (1977) found, when investigating the relationship of pre- and posttest attitude scores and reading scores of selected fifth and sixth grade Black students who had received three months of special reading instruction, that the students seemed to have more positive

attitudes on the pretest and that there was no significant relationship between the attitude scores and reading scores on either the pre- or the posttest. Three months may not have been a sufficient time span to measure an increase in reading attitude scores. Conversely, Simpson (1977) reported that attitudes toward reading were a separate entity and were unrelated to achievement.

Frey, Schinkichi, and Woodruff (1967) determined that students involved in a programmed instruction approach exhibited a significant drop in attitudes toward programmed study over a period of one school year. There also was a marked decline in achievement during the second semester as opposed to achievement recorded during the first semester. It was concluded that prolonged use of programmed study without relief through other instructional techniques and materials prevented possible attitude growth.

It would be remiss not to report a study conducted by Patsy Davis (1978) in which a most thorough review and evaluation of journal published research on attitudes in reading, 1900-1977, was collected. Through this review, Davis found that reading attitudes were more related to achievement than to ability.

Alexander and Filler (1976) listed five insights which are valuable for teachers when considering the relationship between reading attitudes and reading achievement. These insights are:

1. Some children may perceive that their ability to read is responsible for their attitude, thus making reading improvement programs a high priority for some underachievers.

2. The attitudes of the reader toward the material may affect his/her level of comprehension of that material.

3. The development of more favorable attitudes may result, for some students, in increased achievement and more reading that may be maintained over time.

4. For some students, a positive attitude toward reading in the lower grades may not be self-maintaining and may lessen over time. Attention to attitude development and maintenance is important at all levels.

5. Although relationships are sometimes found between achievement and attitudes, there is not always a positive correlation between high achievement and favorable attitudes (pp. 5-6).

Relationship Between Attitudes Toward Reading and Sex

Only a few studies were found in which the investigators explored the relationship between sex and attitudes toward reading. For the most part, historically it has been assumed that girls display more favorable attitudes toward reading than do boys. However, research does not conclusively bear this out and teachers should be cautioned against expecting that girls will have more positive attitudes than boys will have.

Groffe (1962) examined a child's expressed attitudes toward reading and critical reading scores and found that there were significant differences in attitudes toward reading because of sex. Girls exhibited more highly correlated scores between attitudes toward reading and critical reading than did boys.

In a study of third and fifth grade students, Harrington (1972) found that girls had significantly more positive attitudes toward reading than boys at both the third and fifth grade levels. Johnson (1965), Askov and Fischback (1973), and also Kennedy and

Halinski (1975) found, too, that attitude scores were significantly more higher for girls than for boys.

Conversely, Greenberg and others (1965), when studying Black fourth grade students, reported that boys exhibited higher attitudes toward reading than did girls. Another study reporting boys with higher reading attitudes was done by Bennie (1973) who investigated student attitudes in an individually prescribed lab reading program and reported that boys tended to have more positive attitude responses toward the program than did girls.

In a study by Neale and others (1970) it was found that attitudes which were measured at the end of the school year studied were consistently less positive than they had been earlier in the year, independent of sex. This might be explained by the fact that the beginning of a new school year usually brings with it fresh excitement which may wane as the year progresses. Another study of sixth, seventh, and eighth grade students by Crews (1978) also failed to show any significant correlation between attitudes toward reading and reading achievement or attitudes toward reading and self-concept in terms of sex. Also, no significant mean differences in attitudes toward reading in terms of self-concept and sex were found. Adams (1977) also reported that no significant relationship between pre- and posttest reading achievement and attitudes based on sex. Quintiliani (1977), in a study of seventh grade remedial students in a reading lab program, found no significant positive attitude changes regardless of sex. However, there were significant negative attitude changes reported for both boys and girls. It was concluded

that the reading lab did not change the positive attitudes significantly, but that negative attitudes were changed significantly from negative to more positive.

Relationship Between Attitudes Toward Reading and Intelligence

The few studies found in which there was an examination of the relationship between reading attitudes and intelligence tend to disprove the notion that a higher intellect naturally supports a more positive attitude toward reading. Teachers are cautioned against assuming that the more intelligent students will have positive attitudes toward reading. The opposite may often occur as highly intelligent students may view reading as merely a means to an end and not enjoy the process at all.

A study by Neale and others (1970) showed that intelligence scores made a significant contribution to the prediction scores of attitudes toward social studies and science, but not reading, for girls. Adams (1977) found the existence of an inverse relationship between pre-reading achievement and attitude scores of fifth and sixth grade students for the low intelligence group. She also failed to find evidence to support the existence of a relationship for any other intelligence group. The study was conducted over a three-month period and it may well be that more time was necessary to show any significant changes in attitudes. Groffe (1962) only found negligible relationships existing between intelligence and attitudes toward any school subject. Actual intelligence may be difficult to truly assess in elementary age children. Many variables

may be present and intelligence scores in young children are known to be subject to change.

Penelope Peterson (1979), in reporting on some of her work and also that of others, has released some interesting aspects of direct instruction (where learning is closely directed, monitored, and controlled by the teacher) and the ability level of students. She concluded that "a student with an internal locus of control may chafe under the restraints of direct instruction while a student with an external locus of control might relish the opportunity to leave the responsibility in the teacher's hands" (p. 47). While not necessarily having to do specifically with attitudes toward reading, two studies (Solomon and Kendall, 1976; Ebmeir and Good, 1979) have reported that high achieving, task-oriented students do not do as well in a direct instruction learning situation as they do in less direct situations. Apparently high ability students do better when they maintain some form of control over their own learning and they benefit from interactions and information exchanges with other students (Peterson, 1979).

Summary

The following statements can generally summarize the literature which was reviewed:

1. Studies dealing with attitudes toward reading are relatively new with most being done during the past twenty years. Since the interest in attitudes is relatively new, the literature is sparse, but is beginning to increase during the past ten years.

2. Evidence reported contradictory findings about attitudes toward reading as they related to self-concept, reading achievement, sex, and intelligence.

3. Recent research studies are beginning to demonstrate a greater breadth of investigation, examining more variables as they pertain to attitudes toward reading and also including larger populations in the studies.

4. Many of the studies examined urged that teachers display caution when relying on students' attitudes. However, it was clearly pointed out that a need exists for teachers to be more aware of students' attitudes and place more emphasis on aiming instruction at those attitudes.

II. INDIVIDUALIZING READING THROUGH THE USE OF COMPUTER MANAGED INSTRUCTION

The computer has taken a significant place in education over the past two decades. Computers were first confined to the business office, the student personnel office, and the employee administration office. In recent years, researchers have investigated ways of computer usage in instructional processes. Computer technology has been viewed as a key ingredient in reaching the goal of individualized instruction (Scanlon and Connolly, 1974).

This section deals with individualized instruction in reading, a rationale for computer managed instruction, a description of early and existing systems, and some advantages and disadvantages of computer managed instruction.

Individualized Instruction in Reading

There has been much concern among educators and the general public for improved achievement in the basic skills. It has been estimated that there are 23 million adults in the United States who are reading at less than an eighth grade level (Caldwell and Rizza, 1979). Children are individuals with different needs, learning levels, and rates of learning. The teacher is usually the person responsible for meeting these multiple needs, learning levels, and rates of learning.

Individualized instruction in based on Benjamin Bloom's model of mastery learning which includes instructional objectives, assessment of the student's achievement of those objectives, and the provision for feedback to provide added instruction for unmet objectives (Bloom, 1976).

A diagnostic and prescriptive process is used to meet the needs of the student. Hickey and Hoffman (1973) defined the process as "developing a student needs profile which includes reading level, cognitive style, learning style, and preferred mode of instruction; structuring the learning program to the individual's needs around behavioral objectives in a necessary sequence; and utilizing student placement data" (p. 36).

Johnson (1973) stated that individualized reading requires an initial and continuing assessment of each student in order to maintain the flexibility necessary for continuing to provide for changing needs, learning levels, and rates of learning.

Dunkleberger and Smith (1977) reached the conclusion that individualized instruction met limited success due to too many students, not enough personnel, too much record-keeping, and not enough time spent in meaningful teacher-student interactions.

Rationale for Computer Managed Instruction

Classroom teachers and individual schools have made many attempts toward individualizing classroom programs in the past. Those who attempt this practice are often overwhelmed by classroom paper work. The necessity of keeping extensive records, diagnosing individual needs, prescribing, and instructing individual lessons during the course of each school day constantly interferes with the successful implementation of individualization (Anglin, 1974). Many good programs are dropped altogether or altered to a more manageable form of instruction.

When every pupil is progressing at his/her own rate and experiencing a unique set of successes and learning difficulties the classroom teacher has been the one to regulate this activity. It becomes readily apparent that in order to operate in such a context a teacher must be provided assistance in the management aspects of individualized instruction (Baker, 1971). Thompson stated that the computer can serve as a tool to assist the teacher in diagnostic, prescriptive, evaluative, and record-keeping tasks (1980).

The computer can refer the teacher or student to certain pages and problems in a textbook or other materials available. Up-to-date student records pinpoint the weaknesses as well as outstanding

progress. Progress in achievement, remediation suggestions, appropriate learning exercises and scheduling of the program are all part of computer managed instruction (Bitter and Aguilu, 1973). Also the computer allows the teacher access to current individual and group achievement profiles, which facilitate the flexible and ever-changing group recommendations for instructional purposes (Thompson, 1980).

Scanlon and Connolly (1974) listed three features of CMI which might be important to educators. They are: "(1) CMI systems can help to further individualize many of the existing instructional programs in schools; (2) The computer provides clerical and management assistance to the teacher; and (3) The per-student operational costs are relatively low since the computer spends little time interacting with each student" (p. 235).

Description of Early and Existing Systems

During the sixties a number of research groups began working on the idea of CMI almost simultaneously. After an initial period of development where existing systems were found to be mainly produced commercially, a growing trend has emerged whereby individual school districts or cooperatives are developing their own CMI curricula.

Three systems were found in the early stages of CMI involvement in individualized reading instruction. They were: (1) Program for Learning in Accordance with Needs (project PLAN), (2) Individually Prescribed Instruction (IPI), and (3) Individually Guided Instruction (IGE) (Scanlon and Connolly, 1974).

Three other major computer-based instructional systems were also surveyed by Baker in 1971. Some are still the major current programs in existence today. They are: (1) Instructional Management System (IMS), (2) Automated Instructional Management System (AIMS), and (3) Computer Managed System (CMS).

Other computer managed instructional systems have been reported in the literature. Some of these are commercially available systems and some have been developed specifically to fit existing needs of the school districts in which the programs are being used. These remaining systems include: (1) Wisconsin System for Instructional Management (WIS-SIM) (Spuck and Bozeman, 1978), (2) Learning Management Program (Goldberg, 1976), and (3) Project Manage (Miller and Strickland, 1981).

Project Manage is new and was first put into operation in the fall of 1982 in nine school systems in upper East Tennessee. It is the computer managed reading instruction program in use in the CMI schools in this study. Project Manage is a computer managed instructional system in reading and mathematics and was developed by the Upper East Tennessee Educational Cooperative. It was felt that a program designed specifically for the students for whom it would be used would be more beneficial. Project Manage provides for diagnostic tests to be given each student at the beginning of the program and also at scheduled intervals throughout the program. This test data is then fed into the computer system by a teacher aide and specific individual prescriptions for each student are

generated. The student is then able to take this prescription, with the individual help of a teacher and a teacher aide, and select appropriate modules of work and proceed at his/her own rate to work through the various materials which are provided. Each module is directed to a single objective. Upon completion of each module, a posttest is taken which allows the system to provide student achievement information on a regular basis. Reports are sent home to parents regularly and teachers are encouraged to use this achievement information to form flexible groups for further instruction (Miller and Strickland, 1981).

Advantages and Disadvantages

There was a diversity of professional opinion about computers in education. Developers and users of CMI seemed to have much praise of the system, while other professional educators questioned the benefits gained from its use.

Advantages. Rick McInturff (personal communication, 1976) cited the following advantages of CMI: "(1) Provisions were made for a total individualized instructional setting; (2) The program was designed to develop basic skills; (3) A variety of materials and approaches was used; (4) The student developed a degree of independence; (5) A management tool was provided for the teacher; (6) The teacher was relieved of record-keeping; and (7) More functional time was allowed for the teacher to tutor and/or teach. Another advantage might be the decreasing unit costs of computing and the

increased availability of curricula and software materials (Scanlon and Connolly, 1974).

Mayo (1974) stated that CMI permits the superior student to achieve the objectives of a course without being slowed down by less superior students while slower students receive instruction suited to their level and style of learning with more review and practice. In this manner both time and instructional materials are geared to the individual student.

Dunkleberger and Smith (1977) found that high school students, after one year of learning science using CMI, had developed significantly higher attitudes toward the learning of science than had the control group.

Disadvantages. Lawler and others (1974) report that typically when using CMI, students were required to demonstrate proficiency on each module before continuing with subsequent modules. Proficiency was usually determined by scoring 80 percent or better on criterion-referenced test items. If criterion was not reached, the student was given remedial work and then again returned to the proficiency test. If a hierarchial dependency between modules did not exist, one would not expect required mastery on one module to facilitate mastery on any other. It also has not been demonstrated that mastery on a particular module would hold true for the same skill at a later test date. Lawler and colleagues also questioned that with too many repeated attempts at mastery the student might develop undesirable attitudes toward CMI and the particular subject matter.

Bozeman (1978) also cautioned about overlooking the dimension of the human element when involving computer managed instruction.

Silberman (1969) noted that a problem resulting from CMI usage was the slow cycle for correcting prescriptions when they did not work. In classroom tutorial situations, this correction was made immediately, but this could not be done when CMI was used. Scanlon and Connolly (1974) also cited problems such as depersonalization of the educational process, limited financial resources, and resistance to computers from traditional teachers.

Summary

Developers of existing CMI programs are hoping to help educators by providing clerical and management assistance. The systems discussed in this part of the chapter used behavioral objectives, criterion-referenced tests, and a programmed approach matched to each student's abilities.

Advantages were many and teachers were able to manage individualized instruction with greater ease. Disadvantages reported were mainly concerned with the social needs of the student.

Computers have assumed a place in today's education and considerable interest is being shown at the public school level. CMI definitely seems to be a system which enables teachers to manage individualized instruction with minimal record maintenance in a more complete and efficient manner.

III. CONSTRUCTION OF AN INSTRUMENT SUITABLE FOR MEASURING ATTITUDES TOWARD READING

Attitude measurement has been found in the literature in several forms during the past fifty years: public opinion polling, market research, employee attitudes and morale, education and training, and research in social psychology (Anastasi, 1976). The affective domain and its relative importance to the teaching of students has been in the literature for the past two decades. However, the specific measurement of attitudes related to the various academic areas of the curriculum or instructional techniques is relatively new. There is some controversy over the possibility and ease of attitude measurement (Anastasi, 1976).

Problems in Attitude Measurement

Anastasi (1976) defined several problem areas in attitude measurement which include: validity, reliability, questionnaire construction, sampling, and administration. Validity presents a problem when trying to assess if verbally expressed opinions are indicators of "real" attitudes or non-verbal overt behavior. Also, whether or not a person "honestly" responds to the items on a questionnaire can be suspect (Mager, 1968). Correlation with another established attitude scale can be used, as can criterion groups of actual observable behavior (Oppenheim, 1966). Heathington (1975) reported another procedure for checking validity which involved statistically comparing the mean scores of an identified group of

students having observable positive attitudes and those having definite negative atttitudes as identified by their classroom teachers, with the mean scores of the pilot group administration.

Reliability questions for attitude measurement devices center around the questionnaire construction, adequate sampling of the population, and conditions under which the survey is administered (Anastasi, 1976). Reliability can be established by either the test-retest method or the split-half method.

Oppenheim (1966) suggested that careful pilot work be undertaken during the construction of the attitude measurement instrument. This should include interviews to explore the attitude area in question and to obtain straightforward statements of attitudes from respondents for use as an item pool for the scale, followed by several pilot administrations of the scale to indicate any confusing or ambiguious statements or items which were not found to be discriminating either positively or negatively.

Oppenheim (1966) further recommended that the sample population used in the pilot studies be as similar as possible to those in the final study. He also stated that thirty or forty preliminary interviews were needed to get these statements of attitudes for the item pool from the respondents. He also suggested that these interviews be tape-recorded.

The actual writing of the attitude statements should be an area of concern. Edwards (1957) suggested the following guidelines for writing the statements which will comprise the item pool:

1. Avoid statements that refer to the past rather than to the present.

2. Avoid statements that are factual or capable of being interpreted as factual.

3. Avoid statements that may be interpreted in more than one way.

4. Avoid statements that are irrelevant to the psychological object under consideration.

5. Avoid statements that are likely to be endorsed by almost everyone or by almost no one.

6. Select statements that are believed to cover the entire range of the affective scale of interest.

7. Keep the language of the statements simple, clear, and direct.

8. Statements should be short, rarely exceed 20 words.

9. Each statement should contain only one complete thought.

10. Statements containing universals such as all, always, none, and never often introduce ambiguity and should be avoided.

11. Words such as only, just, merely, and others of a similar nature should be used with care and moderation in writing statements.

12. Whenever possible, statements should be in the form of simple sentences rather than in the form of compound or complex sentences.

13. Avoid the use of words that may not be understood by those who are to be given the completed scale.

14. Avoid the use of double negatives (pp. 13-14).

Once the statements comprising the item pool have been written they need to be placed in random order. Although controversies in attitude measurement remain, the recognition of these problems and

the careful consideration to the above suggestions will help to ensure the creation of a better and more useful instrument.

Scaling Techniques for Measuring Attitudes

Heathington (1975) identified four categories of attitude instruments. These were single question technique, attitude scales, projective devices, and physiological reactions. Due to the nature of this study, only the category of attitude scales will be discussed. There are two classic scaling techniques which have been found in the literature: the Thurstone scale and the Likert scale.

The Thurstone scale. The Thurstone scale makes use of equal-appearing intervals and is the work of L. L. Thurstone and associates. It first appeared in the literature in the late twenties (Remmers, 1954; Edwards, 1957; Remmers et al., 1965; Oppenheim, 1966; Anastasi, 1976). Thurstone's scale involves a group of judges (30 or more) sorting the statements in the item pool into eleven categories along a continuum from the most favorable to the least favorable with the center position being neutral. Statements which are unambiguous and relevant and which represent equal steps along the continuum are retained. Subjects are then asked to mark all those statements which express their sentiments or attitudes with the resulting attitude score being the median scale value of all the opinions endorsed.

While the work of Thurstone and associates made a significant contribution to the development of attitude scale construction,

several possible disadvantages should be kept in mind when choosing to utilize this technique. First, an area of difficulty may be found in the possible effects of the attitudes of the judges on the classification of the statement (Anastasi, 1976). And, secondly, this particular technique of attitude scale construction is very time-consuming and laborious (Remmers et al., 1965; Oppenheim, 1966).

The Likert scale. The Likert scale is a method of summated ratings and was developed by Rensis Likert and associates. It appeared in the literature in the early thirties (Remmers, 1954; Edwards, 1957; Remmers et al., 1965; Oppenheim, 1966; Anastasi, 1976). As in the Thurstone technique, an item pool of attitude statements is collected. These statements are then arranged in questionnaire form and given a continuum of response categories of "strongly disagree, disagree, undecided, agree, strongly agree" with accompanying score weights of 1, 2, 3, 4, and 5. These statements should be constructed so that they are evenly distributed between positive and negative statements representing a favorable attitude. These items should then be administered to an experimental group whose respondents choose one of the five choices for each statemnt. An item-analysis of each statement is then performed to determine the discrimination power of each item and the removal of those items which are non-discriminatory. The final attitude scale should be reduced to contain no more than twenty-five items. Scoring procedures for the Likert scale may be determined to have "5" indicate either "strongly agree" or "strongly disagree" as long as the

scoring is consistent with a total score being the sum of the individual item values.

Several criticisms have been brought against this type of scale (Oppenheim, 1966). One criticism is that the same overall score can be reached in different ways, making two identical scores have different meanings. Another criticism is that there is no neutral point so it is not possible to know where scores in the middle range change from negative to positive.

There are some advantages of the Likert scaling procedure which make it desirable for use in this study. It has been found that the Likert scales correlate well with the Thurstone scales (Oppenheim, 1966). A Likert-type scale is fairly easy to construct and score (Remmers et al., 1965) and will yield a fairly reliable ordering of people (Oppenheim, 1966). Another important advantage is that this type of scale provides information pertaining to the degree or intensity of agreement or disagreement (Oppenheim, 1966).

A secondary purpose of this study was to develop an instrument which was designed to measure the attitudes toward reading of the students who were involved in learning to read by either one of the two methods of instruction being investigated in the study. This decision was partly made because of the results of a study by VanSickle (1977) in which no significant gains in reading attitudes were found for students in either a computer managed or a developmental instructional setting. The Heatington Intermediate Attitude Scale (Heathington, 1975) was used in this study, and it was recommended by VanSickle (1977) that a reading attitude scale be developed

which included methods and vocabulary actually used in the instruction of a computer managed reading program. It was further recommended by Oppenheim (1966) that attitude scales yield more positive results when developed for the specific group with whom the scale is intended to be used. Since VanSickle (1977) suggested that the Heathington Attitude Scale may not have been designed to pick up differences in these types of programs, an attitude scale was developed for this study.

A decision was made by this investigator to use a Likert-type scaling technique in the development of an attitude inventory instrument for use with students in grades four and five who were specifically involved in either a developmental or a computer managed instructional approach to reading. It was felt that this technique was superior because it provides for multiple categories of attitude intensity and also because of its ease in construction and scoring.

Certain requirements for an effective classroom instrument for measuring attitudes toward reading were established by Heathington (1975). It was decided to follow these requirements in the construction of an attitude inventory instrument suitable for use in this study. These requirements are:

1. The instrument should be one that requires no reading on the part of the child.

2. The instrument should be one that can be used early in the school year.

3. The instrument should be one that requires minimal time for administration and scoring.

4. The instrument should be one that is reliable and valid.

5. The instrument should be one that measures important aspects of a child's reading environment.

6. The instrument should be one that takes into account that attitudes should be measured throughout the formative period (grades one through six).

7. The instrument should be one that contains items which are representative of children's feelings toward reading (pp. 38-39).

The literature in this chapter has been reviewed as it pertained to: (1) the relationship of attitudes toward reading, self-concept, and reading achievement, (2) individualized reading through the use of computer managed instruction, and (3) construction of an instrument suitable for measuring attitudes toward reading.

CHAPTER 3

DESIGN OF THE STUDY

The main purpose of this study was to investigate the differences among reading attitudes, self-concept, and reading achievement when considering sex and intelligence of fourth and fifth grade students enrolled in either a developmental reading program or a computer managed reading program, and to determine if there were any correlations among reading attitudes, self-concept, and reading achievement during the school year in which the study was undertaken. A secondary purpose of the study was to develop an instrument which was designed for the purpose of measuring the attitudes toward reading of the students who were involved in learning to read by either of the two methods of instruction in use in the classroom during the study.

A decision was made by this investigator to develop an instrument which was designed to measure the attitudes toward reading of the students who were involved in learning to read by either one of the two methods of instruction being investigated in the study. An earlier study by VanSickle (1977) found no significant gains in reading attitudes for students of either a computer managed reading program or a developmental reading program. She recommended that a reading attitude scale be developed which included methods and vocabulary actually used in the instruction of a computer managed

reading program with the possibility that a more accurate assessment might be obtained. Oppenheim (1966) also recommended that attitude scales yield more positive results when developed for the specific group for whom the scale is to be used.

This chapter contains two sections: (1) development of an instrument to measure reading attitudes, and (2) methods and procedures of the study. The following steps were utilized during the instrument development stage: selection of sample, development of instrument, pilot administrations of the instrument, and validity and reliability procedures. The following additional steps were designed and implemented to accomplish the main purpose of the study: description of the population, instrument selection, data collection, and analytical techniques.

I. DEVELOPMENT OF AN INSTRUMENT TO MEASURE READING ATTITUDES

Selection of Sample

The sample used in this part of the study was selected from the fourth and fifth grade students in the Kingsport, Tennessee, City Schools during the school year 1981-82. Nineteen fourth grade students and twenty-three fifth grade students from the total population of 844 fourth and fifth grade students comprised the total sample of forty-two students.

The sample was chosen by a stratified random selection of males and females from each grade so that there would be equal representation according to sex and grade level. Table 1 shows the number of

students in the sample from each school by grade level and sex. The school system was comprised of 7.6 percent Blacks, and 7.1 percent Blacks were included in the sample. It was felt that this random selection of the sample ensured that a wide range of both achievement and socio-economic levels were included.

TABLE 1

SAMPLE POPULATION FOR PILOT INTERVIEWS
(NUMBER PER SEX AND GRADE LEVEL)

	Grade					
	4th			5th		
School	Boys	Girls	Total	Boys	Girls	Total
Madison	1	1	2	2	1	3
Lincoln	2	2	4	2	2	4
Dickson	1	1	2	2	1	3
Jackson	2	1	3	2	2	4
Jefferson	1	1	2	1	2	3
Johnson	2	2	4	2	2	4
Washington	1	1	2	1	1	2
Total	10	9	19	12	11	23

Permission was obtained from the Superintendent of Schools to conduct the study. Interviews were conducted with each of the principals of the seven schools in order to explain the purpose of the study. Students were then randomly selected from grade rosters, by sex, independent of individual classes within each grade. Parental permission was obtained from the parents of the forty-two students

who were involved. A copy of the consent form used can be found in Appendix A.

Development of Instrument

Oppenheim (1966) recommended that the sample population used in the pilot studies be as similar as possible to those in the final study. He also stated that thirty or forty preliminary interviews were needed to get straightforward statements of attitudes from respondents for use as an item pool for an attitude scale. He also suggested that such interviews be tape-recorded.

Forty-two students from seven elementary schools (see Table 1) were interviewed. These interviews were tape-recorded and were structured around the following five questions:

1. Can you name all the places and situations in which you think someone your age would enjoy reading? Where would you go if you wanted to read? What would you do?

2. Can you describe someone you know who likes to read? How would this person act? What would he/she say?

3. Can you describe someone you know who doesn't like to read? How would this person act? What would he/she say?

4. Can you name some of the things you like about reading class as it is being taught in your classroom?

5. Can you name some of the things you do not like about reading class as it is being taught in your classroom?

The actual statements elicited from the students during the interviews were placed into categories and then were used to determine a pool of statements suitable for the attitude scale. These statements were then randomly ordered to comprise the initial scale.

The investigator determined that the instrument format used by Heathington (1975) was suitable for use in this attitude scale. A decision was made to use a Likert-type scale with five choices representing the feelings of the respondents toward the statements. The answer sheet was designed so that the student was asked to put an "X" in a box to show whether one "strongly agrees," "agrees," is "uncertain," "disagrees," or "strongly disagrees" with each of the statements which were read to the students. Scores ranged from a "5" which equaled a very positive response to a "1" which equaled a very negative response. The range of possible scores was from 5 x 44 (220) to 1 x 44 (44). Twenty-seven of the items were written so that a very positive response of strongly agree received a score of "5". The remaining seventeen items were written so that a strongly disagree indicated a very positive response and also received a score of "5".

After pilot administrations of the instrument, the final scale contained twenty-five statements about reading. The range of possible scores was from 5 x 25 (125) to 1 x 25 (25). Thirteen of the items were written in such a way so that a very positive response of "strongly agree" receives a score of "5". The remaining twelve

items were written so that a "strongly disagree" indicates a very positive response and also receives a score of "5". Oppenheim (1966) stated that an equal balance of positive and negative items is desirable and is especially important when using a Likert scaling procedure. The final instrument and answer wheet can be found in Appendix B.

II. PILOT ADMINISTRATIONS OF THE INSTRUMENT

Openheim (1966) discusses several examples of poorly written questions. He stated that poor questions will be either misunderstood by part of the sample or will produce a narrow range of responses. He suggested that a preliminary tryout of the questions be administered to a sample of about fifty people. It was determined that the initial forty-four statements on the attitude scale should also be subjected to a preliminary tryout.

A preliminary administration of the original forty-four statements was administered by 85 fifth grade students. Items which caused confusion among the students or which produced ambiguous responses were noted and revised.

The next step involved administering these forty-four revised statements to a sample of eight different fifth grade classes. Items which were found not to be discriminating either positively or negatively when subjected to an item analysis were eliminated from the scale. Nineteen such statements were eliminated. Twenty-five statements remained and comprise the final scale (see Appendix B).

A test-retest administration of the final scale was given to determine the reliability of the instrument (Oppenheim, 1966).

III. VALIDITY AND RELIABILITY PROCEDURES

Item analysis was used to determine if the items were discriminating either positively or negatively. Validity was checked by comparing mean scores of two groups of students (positive and negative) who were identified by teachers (Askov, 1970). Content validity was attempted to be built into the inventory by choosing the item pool directly from the actual statements of students as they reported their likes and dislikes about reading elicited during the interviews (Jersild, 1952). Reliability was checked using the test-retest method (Oppenheim, 1966).

IV. METHODS AND PROCEDURES OF THE STUDY

Description of the Population

The students used in this study were the entire population of fourth and fifth grade students in the Kingsport, Tennessee City schools during the school year 1982-83. There was a total of 331 fourth grade students and 394 fifth grade students in the population. Seven hundred sixteen students began the study in the fall. A copy of the consent form used in the study is found in Appendix A. Parental consent was not received from nine students causing these students to be eliminated from the study. At the end of the data collection, complete information was available on 600 students. There were 116

students with incomplete test data and these were not included in the study. Table 2 shows the distribution of the population by schools of the participants. Table 3 shows the distribution of the population by method of instruction on the participants.

TABLE 2

COMPARISON OF POPULATION BY SEX, GRADE AND SCHOOL

	Grade					
	4th			5th		
School	Boys	Girls	Total	Boys	Girls	Total
Lincoln	27	30	57	37	30	67
Johnson	31	18	49	33	31	64
Washington	13	18	31	14	19	33
Dickson	25	11	36	25	21	46
Madison	14	17	31	16	17	33
Jackson	22	17	39	26	23	49
Jefferson	18	19	37	13	15	28
Total	150	130	280	164	156	320

Instrument Selection

The Metropolitan Achievement Tests, Elementary, Form JS (Reading Subtest) was utilized for the fourth grade students to determine the reading achievement of each student. The Metropolitan Achievement Tests, Intermediate, Form JS (Reading Subtest) was utilized for the fifth grade students to determine the reading achievement of each student. Each of these tests was used with the

TABLE 3

COMPARISON OF POPULATION BY SEX, GRADE AND METHOD OF INSTRUCTION

Method	Grade 4th Boys	4th Girls	4th Total	5th Boys	5th Girls	5th Total
Computer Managed Reading Instruction	96	77	173	109	101	210
Developmental Reading Instruction	54	53	107	55	55	110
Total	150	130	280	164	156	320

level of student for which the test was designed and these scores were utilized because they were readily available as a part of each student's permanent record due to a testing requirement in the school system in which the study was undertaken.

It was stated that the content validity of each of these tests must be determined by each school and it was not claimed that the tests were universally valid (Prescott and others, 1978). However, the investigator offers as evidence of validity the fact that an extensive item analysis was conducted during October 1975 and January 1976 with approximately 14,000 test items. Approximately 93,000 students from 44 school systems representing national school populations in terms of geographic region, enrollment, and socio-economic

status, were included in this program (Prescott and others, 1978). The reliability of the Metropolitan Achievement Tests, Elementary, Form JS (Reading Subtest) was 0.96 as estimated by the Kuder-Richardson Formula 20 and the reliability of the Metropolitan Achievement Tests, Intermediate, Form JS (Reading Subtest) was 0.95 as was also estimated by the Kuder-Richardson Formula 20 (Prescott and others, 1978).

The Metropolitan was utilized because it was already in use in the school system in which the study was undertaken. It was administered by each classroom teacher during the third week of September 1982 as a regular part of the total classroom program. It was readministered by each classroom teacher for this study during the first week of May 1983. The Metropolitan provided a total reading achievement score for each student both as a pretest and a posttest.

The Piers-Harris Children's Self-Concept Scale was chosen by this investigator to assess the self-concept of each student. The Piers-Harris was chosen because it was a self-report instrument suitable for the level of the students who were involved in the study. The Piers-Harris was recommended for group use with students having approximately a third grade reading knowledge (Piers, 1969). The scale is comprised of only 80 items and is easy to administer, only taking 15 to 20 minutes. It was recommended that it be read aloud to the students and the manual stated that it was permissable to define some of the words as they may be difficult for various

children. If any student did not understand an item, it was explained fully by the investigator. The Piers-Harris was administered in all classes during the fourth week of September 1982 and the second week of May 1983. Each classroom teacher remained in the room during the test administration to assist in monitoring the students.

Piers and Harris (Piers, 1969) attempted to ensure content validity of their study by defining the universe to be measured from Jersild's study (1952) in which students reported qualities they liked or disliked about themselves. An original pool of 164 statements was reduced to 140 items by a preliminary administration sample which eliminated those items which were answered in one direction by fewer than 10 percent or more than 90 percent. Three judges then classified the items as either showing adequate or inadequate self-concept and eliminating the repetitious items: leaving 100 items. An item analysis further reduced this scale to 80 items which were determined to significantly descriminate between high and low groups and which were answered in the expected direction by half or over half of the high group. This resulted in the present scale.

Reliability was determined on both the 95 item scale and the 80 item scale. The 95 item scale had an internal consistency range of 0.78 to 0.93 when estimated by the Kuder-Richardson Formula 21 and resulting coefficients of 0.87 and 0.90 when using the Spearman-Brown odd-even formula. Four month test-retest reliability

coefficients of 0.72, 0.71, and 0.72 were obtained on the 95 item scale. The 80 item scale had a reliability coefficient of 0.77 for both a two-month and a four-month test-retest situation.

The Hoover Reading Attitude Inventory was designed by the investigator to assess the attitudes toward reading of the students in this study. Actual test construction procedures have been presented earlier in this chapter. The scale is comprised of 25 items and can be easily administered in approximately 15 minutes. It was read aloud by the investigator and any items which were not understood were explained fully. The Hoover Reading Attitude Inventory was administered in all classes during the fourth week of September 1982 and the second week of May 1983. Each classroom teacher remained in the room during the test administration to assist in monitoring the students.

Content validity was built into the Hoover Reading Attitude Inventory by choosing the item pool directly from the actual statements of children who were representative of the population for which the test was designed. A t-test performed on the means of the scores obtained from the two groups of students, identified by their teachers as demonstrating either very positive attitudes toward reading or very negative attitudes toward reading, yielded twenty-five items which obtained a 0.90 level of confidence or above.

These twenty-five items were then subjected to a three-week test-retest situation. Reliability coefficients of 0.87 and 0.93 were obtained using the Alpha 2 and the Spearman-Brown formula respectively.

The Otis-Lennon School Ability Test, Primary II, was used to determine the intelligence level of the fourth grade students. The score obtained for each student was used to place students in groups of high, average, or low intelligence. High intelligence was considered to be a demonstrated score falling between 112 and above, average intelligence was considered to be as falling between 88 and 111, and low intelligence was considered to be as falling between 87 and below (Otis and Lennon, 1979). The Otis-Lennon was utilized because nearly all of the fourth grade students in the study had these scores available as a part of their permanent records from the previous year.

The Otis-Lennon School Ability Test, Elementary, was chosen by this investigator to determine the intelligence level of the fifth grade students and the few fourth grade students who were missing these scores. The score obtained for each student was used to place students in the same groups of high, average, or low intelligence as was already cited. The Otis-Lennon was chosen by this investigator for the fifth grade students and the fourth grade students whose scores were missing because both these Otis-Lennon tests, yielding deviational scores, were compatible with each other for the purposes of this study.

The Otis-Lennon was administered by the classroom teacher during mid-year and was scored by the State Testing Center in Knoxville, Tennessee. The results were returned to the investigator and then shared with the respective schools and teachers.

Validity of the Otis-Lennon School Ability Test was reported by several correlations. Correlations between the Otis-Lennon scores and teacher grades were obtained from four diverse school systems involving nearly 3,000 students. These correlations ranged from 0.40 to 0.60, with a median of 0.49 (Otis and Lennon, 1979). Additional correlations have been done relating the Otis-Lennon School Ability Test and the Metropolitan Achievement Tests.

Item analysis data drawn from nearly 55,000 students in 27 school systems from all geographic regions of the United States were used to determine the actual items found in the Otis-Lennon Tests. School systems were of varying socio-economic characteristics with items selected being judged rigorously on content, difficulty, and discrimination. An advisory panel of minority educators evaluated the items for possible ethnic stereotypes and minority appropriateness. Possible sex bias was also evaluated (Otis and Lennon, 1979).

The Kuder-Richardson Formula 20 coefficients yielded reliability estimates ranging from 0.91 to 0.95 for both the Otis-Lennon School Ability Test, Primary II and the Otis-Lennon School Ability Test, Elementary, thus supporting the claim that the Otis-Lennon is a homogeneous measure of general school ability. Test-retest reliability coefficients, providing a six-month stability factor, were 0.84 and 0.86 respectively for Primary II and Elementary levels.

Data Collection

After permission to conduct this study was obtained from the Superintendent of Schools of the Kingsport City Schools, the investigator then met with each of the seven elementary principals during August 1982, to discuss the purpose and scope of the study. Written information was provided each principal as to the exact responsibilities of the investigator, the expected assistance of each classroom teacher, the amount of classroom time necessary to administer the tests, the information needed from the students' permanent records, and the time span of the study. This information was left with each principal so that questions from parents and/or teachers might be adequately answered. Each principal was to discuss the study with the participating teachers.

Consent forms were provided each teacher, who then distributed and collected them. These forms were then filed by the investigator. Only the scores of those subjects with a consent form on file were used in the statistical analyses in the study. A copy of the final consent form used in the study is available in Appendix A.

The data for this study were collected during September 1982 and May 1983. The students in fourth and fifth grades in four elementary schools which used a computer managed reading instruction program, Project Manage, and the students in fourth and fifth grades in three elementary schools which used a traditional developmental reading instruction program were administered pretests and posttests of the Metropolitan Achievement Tests, the Piers-Harris Children's

Self-Concept Scale, and the Hoover Reading Attitude Inventory. These data were recorded on a data sheet which also recorded the Otis-Lennon School Ability Test scores. Only the scores of those students with complete data information were included in the statistical analyses in the study.

Analytical Techniques

The data were analyzed by the Computer Center at The University of Tennessee using the Statistical Analysis System (SAS).

The data for each of the dependent variables (reading achievement, reading attitude, and self-concept scores) were subjected to a multi-variate analysis of variance, with the independent variables of reading method (CMI or developmental), grade level (grade 4 or grade 5), sex (male or female), and ability level (high, average, and low) being examined for the main effects and the interaction effects on the dependent variables. The Duncan Multiple Range Test was used as a post hoc test to determine where any significant mean differences were occuring.

Correlations coefficients were computed on the dependent variables to determine if there were any correlations among reading attitudes, self-concept, and reading achievement.

The alpha level selected for rejection of the following null hypotheses was set at $p = 0.05$:

1. There will be no significant mean difference in the reading attitude scores of the students who were enrolled in a

developmental reading program and the scores of those who were enrolled in a computer managed reading program.

2. There will be no significant mean difference in the reading attitude scores between males and females who were enrolled in the two reading programs.

3. There will be no significant mean difference in the reading attitudes scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

4. There will be no significant mean difference in the reading attitude scores between fourth grade students and fifth grade students who were enrolled in the two reading programs.

5. There will be no significant mean difference in the self-concept scores of the students who were enrolled in a developmental reading program and the scores of those who were enrolled in a computer managed reading program.

6. There will be no significant mean difference in the self-concept scores between males and females who were enrolled in the two reading programs.

7. There will be no significant mean difference in the self-concept scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

8. There will be no signigicant mean difference in the self-concept scores between fourth grade students and fifth grade students who were enrolled in the two reading programs.

9. There will be no significant mean difference in the reading achievement scores of the students who were enrolled in a developmental reading program and the scores of those who were enrolled in a computer managed reading program.

10. There will be no significant mean difference in the reading achievement scores between males and females who were enrolled in the two reading programs.

11. There will be no significant mean difference in the reading achievement scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

12. There will be no significant mean difference in the reading achievement scores between fourth grade students and fifth grade students who were enrolled in the two reading programs.

13. There will be no significant correlations among the reading attitude scores, self-concept scores, and reading achievement scores of the students who were enrolled in the two reading programs.

CHAPTER 4

PRESENTATION AND ANALYSIS OF THE DATA

A purpose of this chapter is to present the analysis of the data which were collected during the study. It is also a purpose of this chapter to present the pilot administrations and validity and reliability information of the reading attitude inventory which was designed for use in the study.

I. SECONDARY PURPOSE OF THE STUDY

The forty-two subjects used in the development of a reading attitude inventory were chosen by a stratified random selection of males and females from both fourth and fifth grade. Table 1, page 49, shows the number of students in the sample from each school by grade level and sex.

Structured interviews were then conducted with these forty-two students. The interviews were tape-recorded. The actual statements elicited from the students were used to form a pool of statements suitable for the attitude scale. Statements were then randomly ordered on the initial scale.

A Likert-type scaling technique was used. It was felt that this technique was superior because it allows five categories of attitude intensity and also because of its ease in construction and scoring. The answer sheet was designed so that the student was asked to put an "X" in a box to show whether one "strongly agrees,"

"agrees," is "uncertain," "disagrees," or "strongly disagrees" with each of the statements which were read to the students. Scores ranged from a "5" which equaled a very positive response to a "1" which equaled a very negative response. The range of possible scores was from 5 x 44 (220) to 1 x 44 (44). Twenty-seven of the items were written so that a very positive response of strongly agree received a score of "5." The remaining seventeen items were written so that a strongly disagree indicated a very positive response and also received a score of "5."

Oppenheim (1966) discusses several examples of poorly written questions. He stated that poor questions will be either misunderstood by part of the sample or will produce a narrow range of responses. He suggested that a preliminary tryout of the questions be administered to a sample of about fifty people. It was determined that the initial statements on the attitude scale should also be subjected to a preliminary tryout.

For this purpose four fifth grade classes were chosen from four different elementary schools, two of which used a computer managed reading instruction program and two of which used a developmental reading instruction program. There were 85 students in this sample. Fifth grade students were chosen so that when the actual study was completed using this attitude scale, these fifth grade students would have become sixth grade students and would not be included in the population of the study to be conducted.

Items which caused confusion among the students or which produced ambiguous responses were noted. The four classroom teachers involved remained in the classroom during the pilot administration and also offered suggestions pertaining to directions and actual wording of some of the statements. The statements and directions in question were then changed according to suggestions. One class suggested a different wording on the answer sheet. This involved changing "strongly agree" and "strongly disagree" to "super agree" and "super disagree." This was readily accepted and understood by the students as some had had difficulty with the word "strongly."

The next step involved administering these forty-four revised statements to a sample of eight different fifth grade classes. It was realized that the entire pool of forty-four statements was too lengthy and it was hoped that some items would be found not to be discriminating either positively or negatively when subjected to an item analysis and that these statements could be eliminated from the scale. The revised statements were administered by the investigator and the administration progressed quite smoothly in all classrooms.

The forty-four revised statements were administered to a sample population of eight different fifth grade classes. Again, fifth grade students were chosen so that they would not be a part of the actual study the following year. Validity was checked following a procedure outlined by Askov (1970) in which teachers of the classes involved in this administration of the scales were asked

to identify five students who demonstrated the most positive attitudes toward reading and five students who demonstrated very negative attitudes toward reading. A t-test was then performed on the mean scores of the two groups. Forty students were identified as demonstrating positive attitudes toward reading and forty students were identified as demonstrating negative attitudes toward reading. Through this procedure, nineteen items were eliminated as not discriminating between positive and negative attitudes toward reading. The 0.90 level of confidence or above was obtained by all of the remaining twenty-five items which constitute the Hoover Reading Attitude Inventory.

After this administration of the scale it was found that nineteen of the statements could be eliminated due to lack of discrimination ability. Twenty-five statements were retained and this was felt to be a satisfactory set of items for the scale (see Appendix B).

Content validity was built into the inventory by choosing the item pool directly from the actual statements of students elicited during the interviews (Jersild, 1952).

A final procedure was necessary for completion of this reading attitude inventory scale and this was a test-retest administration to determine the reliability of the instrument (Oppenheim, 1966). Again, four different fifth grade classes were chosen for this procedure, two from schools using a computer managed reading instruction program and two from schools using a developmental reading instruction program. These classes were chosen from the same four schools as the previous administration, but different

fifth grade classes were chosen. The instrument was administered three weeks apart to 86 students in the four classes. Of these remaining twenty-five items, thirteen were written in a positive form and twelve were written in a negative form. Oppenheim (1966) stated that an item pool should be reasonably balanced and is particularly important when using a Likert response scale.

A copy of the consent form used in the pilot administrations of the instrument can be found in Appendix A.

Reliability data were obtained using the test-retest method (Oppenheim, 1966). Four additional fifth grade classes were again chosen. An Alpha 2 correlation coefficient between the two forms was 0.87. The Spearman-Brown coefficient obtained was 0.93. The scale was thus judged to be a reliable instrument for use in this study.

II. PRIMARY PURPOSE OF THE STUDY

To continue with the main purpose of this study, the analysis of the data which were collected will be presented. Through these analyses, an attempt was made to determine if there were any significant mean differences among the dependent variables of reading attitudes, self-concept, and reading achievement scores when examined by the independent variables of reading method (CMI or developmental), grade level (grade 4 or grade 5), sex (male or female), and intelligence level (high, average, and low).

Certain data were obtained from the permanent records of the students. The Metropolitan Achievement Tests, Elementary. Form

JS (Reading Subtest) scores for the fourth grade students and the Metropolitan Achievement Tests, Intermediate, Form JS (Reading Subtest) scores for the fifth grade students were obtained ex post facto in the pretest form only. Other data were obtained from the administration of certain tests by the investigator as both pretests and posttests. These tests included the Piers-Harris Children's Self-Concept Scale and the Hoover Reading Attitude Inventory. The posttest data from the Metropolitan Achievement Tests, Elementary, Form JS (Reading Subtest) and the Metropolitan Achievement Tests, Intermediate, Form JS (Reading Subtest) were obtained from the administration of these tests by the classroom teachers involved in the study. The Otis-Lennon School Ability Test, Primary II scores for the fourth grade students were obtained ex post facto from the permanent records. The Otis-Lennon School Ability Test, Elementary scores for the fifth grade students and those few fourth grade students for whom those scores were missing were obtained from the administration of these tests by the classroom teachers. The Otis-Lennon School Ability Test, Elementary, posttests of the Metropolitan Achievement Tests, Elementary, and the Metropolitan Achievement Tests, Intermediate, were administered by the classroom teachers, and not the investigator, because some of the corresponding scores which were obtained from the permanent records had also been administered by classroom teachers.

The data obtained from these instruments were analyzed with respect to the thirteen null hypotheses. For those twelve hypotheses

dealing specifically with reading attitudes, self-concept, and reading achievement, a multivariate analysis of variance was utilized to determine whether or not there was a significant difference among the dependent variables, with the independent variables of reading method (CMI or developmental), grade level (grade 4 or grade 5), sex (male or female), and intelligence level (high, average, or low) being examined for the main effects and the interaction effects on the dependent variables. The Duncan Multiple Range Test was used as a post hoc test to determine where any significant mean differences were occurring. The alpha level selected for rejection of the null hypotheses was set at $p \geq 0.05$.

The null hypothesis dealing with the correlations among reading attitudes, self-concept, and reaching achievement was subjected to a multiple correlation procedure.

III. TESTS OF NULL HYPOTHESES

The main purpose of this study was to investigate the differences among reading attitudes, self-concept, and reading achievement when considering sex and intelligence of fourth and fifth grade students enrolled in either a developmental reading program or a computer managed reading program, and to determine if there were any correlations among reading attitudes, self-concept, and reading achievement during the school year in which the study was undertaken.

Thirty-two classes and thirty-two classroom teachers were involved in the study with thirteen classes being taught to read by

a developmental reading program and nineteen classes taught by the use of a computer managed reading program. Data were collected on the number of years of experience and the number of master's degrees of the teachers of the two groups. Before the null hypotheses were tested, a t-test was performed on the mean scores of the two groups to determine whether or not the groups were statistically different for years of experience and number of master's degrees at the 0.05 level of confidence. It was revealed that there was no statistically significant difference between the years of experience of the teachers of the classes taught to read by a developmental reading program and the teachers of the classes taught by a computer managed reading program, as shown in Table 4.

TABLE 4

t-TEST FOR NUMBER OF YEARS TEACHING EXPERIENCE FOR TEACHERS OF TWO GROUPS

	M	SD	t	p
CMI	3.73	0.56	1.64 NS	0.12
Dev	3.23	1.01		

NS = Not significant.

Table 5 shows that there was no statistically significant difference between the number of master's degrees of the teachers of the classes taught to read by a developmental reading program and

the teachers of the classes taught by a computer managed reading program.

The three ability ranges based on Otis-Lennon School Ability Test scores were set at 112 and above for high ability, 88 to 111 for average ability, and 87 and below for low ability. Before the

TABLE 5

t-TEST FOR NUMBERS OF MASTER'S DEGREES FOR TEACHERS OF TWO GROUPS

	M	SD	t	p
CMI	1.52	0.51	0.35 NS	0.73
Dev	1.46	0.52		

NS = Not significant.

null hypotheses were tested, a t-test was performed on the mean scores of each ability group to determine whether or not the computer managed reading group and the developmental reading group wwere statistically different for ability at the 0.05 level of confidence. The data shown in Table 6 reveals that there was no statistically significant difference in the ability of the students taught to read by a developmental reading program and those students taught by a computer managed reading program of the high and low ability groups. However, there was a difference in the average ability group, with the developmental reading group scoring slightly higher.

Basic descriptive statistical information about the data used in the study, such as the range of the scores on each of the tests

TABLE 6

t-TEST FOR HIGH, AVERAGE, AND LOW ABILITY STUDENTS OF TWO GROUPS

	M	SD	t	P
High Ability				
CMI	120.75	8.35	-0.41 NS	0.68
Dev	121.24	7.59		
Average Ability				
CMI	99.96	6.62	-2.37*	0.02
Dev	101.88	6.66		
Low Ability				
CMI	79.99	6.50	0.30 NS	0.77
Dev	79.58	7.69		

NS = Not Significant.

*Significant at 0.05 level.

given, along with the means and standard deviations, can be found in Appendix C.

A multivariate analysis of variance of the reading attitude scores was performed to satisfy the requirements of hypotheses 1-4. Table 7 shows the complete model of the data generated from the multivariate analysis of variance. The findings related to null hypotheses 1-4 are as follows:

Hypothesis 1. There will be no significant mean difference in the reading attitude scores of the students who were enrolled in

TABLE 7

MANOVA OF HOOVER READING ATTITUDE INVENTORY SCORES OF FOURTH AND FIFTH GRADE MALES AND FEMALES OF HIGH, AVERAGE, OR LOW ABILITY ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Sum of Squares	df	Mean Squares	F	P
Model	78992.3445	26	3038.1671	13.38	0.0001
Error	130095.4889	573	227.0427		
Total	209087.8333	599			

Source	Type III Sum/Squares	df	Mean Squares	F	P
Achievement/Pretest	401.0950	1	401.0950	1.77	0.1843
Attitude/Pretest	34172.8627	1	34172.8627	150.51	0.0001*
Self-Concept/Pretest	764.1655	1	764.1655	3.37	0.0671
Grade	168.2380	1	168.2380	0.74	0.3897
Ability	2769.8550	2	1384.9275	6.10	0.0024*
Grade*Ability	264.9581	2	132.4791	0.58	0.5583
Sex	1132.5541	1	1132.5541	4.99	0.0259
Grade*Sex	18.3368	1	18.3368	0.08	0.7764
Ability*Sex	306.2512	2	153.1256	0.67	0.5098
Grade*Ability*Sex	505.2335	2	252.6168	1.11	0.3294
Teaching	1491.7276	1	1491.7276	6.57	0.0106*
Grade*Teaching	245.3917	1	245.3917	1.08	0.2990
Ability*Teaching	44.9705	2	22.4853	0.10	0.9057
Grade*Ability*Teaching	966.3109	2	483.1555	2.13	0.1200
Sex*Teaching	3.8450	1	3.8450	0.02	0.8965
Grade*Sex*Teaching	226.2645	1	266.2645	1.00	0.3186
Ability*Sex*Teaching	1596.2582	2	798.1291	3.52	0.0304*
Grade*Ability*Teach	88.7409	2	44.3705	0.20	0.8225

N = 600

*Significant at 0.05 level.

a developmental reading program and the scores of those students who were enrolled in a computer managed reading program.

Mean reading attitude scores of fourth and fifth grade students enrolled in a computer managed reading program were significantly higher from the reading attitude scores of fourth and fifth grade students enrolled in a developmental reading program, as shown in Table 8. The null hypothesis was rejected. The graph shown in Figure 1 shows the relationship of the means of the scores of the two groups. A comparison of the mean scores of the two groups shows that a significant gain in reading attitude was made by those students enrolled in a computer managed reading program over those students enrolled in a developmental reading program.

Hypothesis 2. There will be no significant mean difference in the reading attitude scores between males and females who were enrolled in the two reading programs.

Table 9 shows that the reading attitude scores of fourth and fifth grade female students were significantly higher from those of the males. The null hypothesis was rjected. Figure 2 shows the relationship of the mean scores of males and females with females acquiring the higher reading attitude scores than males.

Hypothesis 3. There will be no significant mean difference in the reading attitude scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

TABLE 8

MANOVA OF HOOVER READING ATTITUDE INVENTORY SCORES OF FOURTH AND FIFTH GRADE STUDENTS ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Teaching	1491.7276	1	6.57	0.0106*
Error	227.0427	573		

*Significant at 0.05 level.

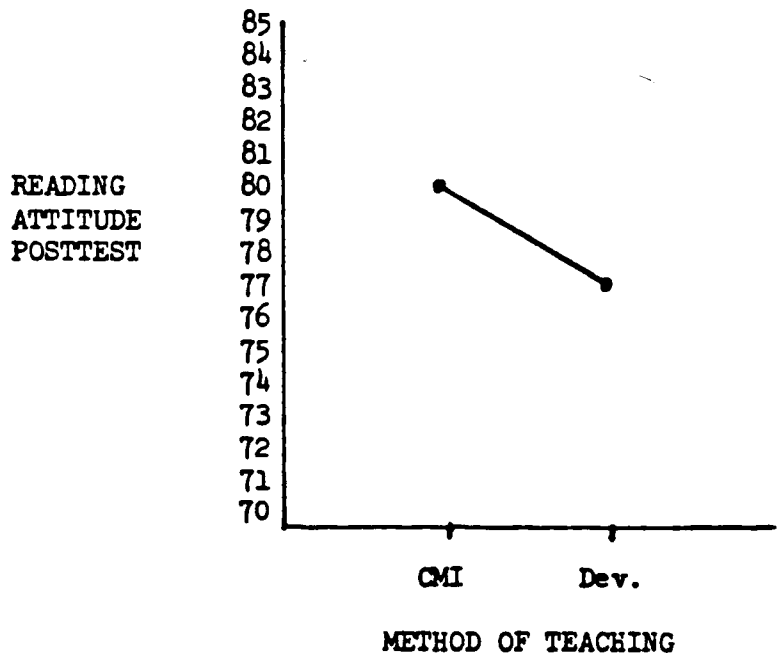

Figure 1. Linear regression model showing the relationship of the mean scores of fourth and fifth grade students enrolled in a developmental reading program and those enrolled in a computer managed reading program.

TABLE 9

MANOVA OF HOOVER READING ATTITUDE INVENTORY SCORES OF FOURTH AND FIFTH GRADE MALES AND FEMALES ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Sex	1132.5541	1	4.99	0.0258*
Error	227.0427	573		

*Significant at 0.05 level.

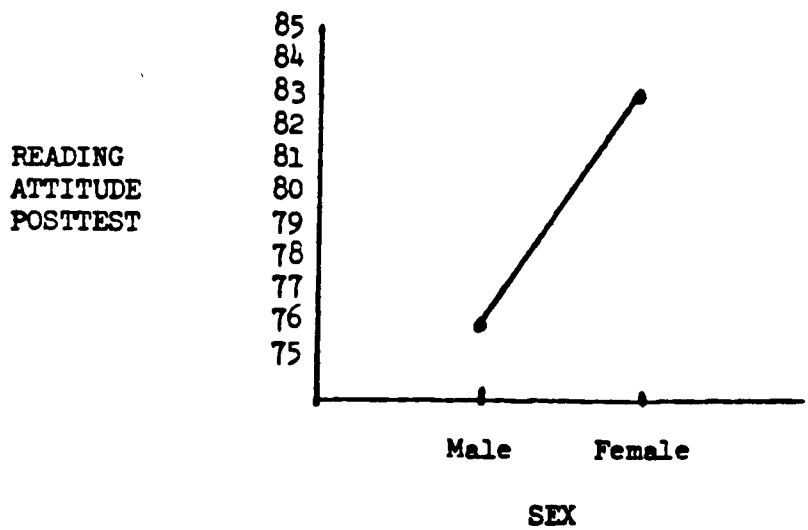

Figure 2. Linear regression model showing the relationship of the mean scores of fourth and fifth grade males and females enrolled in a developmental reading program and those enrolled in a computer managed reading program.

The summary of data presented in Table 10 revealed that there was a significant difference in reading attitude scores of high ability, average ability, and low ability with those students of high ability having the higher reading attitude scores over those of average ability and those of low ability. A Duncan Multiple Range Test revealed that students of average ability also had a significant difference in mean reading attitude scores over those students of low ability. The null hypothesis was rejected. Figure 3 shows the relationship of the mean scores of the three ability groups.

The graphs shown in Figures 4 and 5 reveal that an interaction effect occurred among ability levels, sex, and method of teaching on reading attitude. Figure 4 shows that an interaction took place for low ability level males who were enrolled in both a developmental reading program and a computer managed reading program. Figure 4 also shows that high ability males enrolled in a computer managed reading program obtained greater reading attitude scores than did high ability males enrolled in a developmental reading program. Those males of average ability enrolled in a computer managed reading program also scored somewhat greater than did average ability males enrolled in a developmental reading program. This analysis is somewhat interesting due to the fact that it was the average ability developmental reading group which scored slightly higher than the computer managed reading group of average ability (see Table 6, page 74).

TABLE 10

MANOVA OF HOOVER READING ATTITUDE INVENTORY SCORES OF FOURTH AND FIFTH GRADE STUDENTS OF HIGH, AVERAGE, OR LOW ABILITY ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Ability	1384.9275	2	6.10	0.0024*
Error	227.0427	573		

*Significant at 0.05 level.

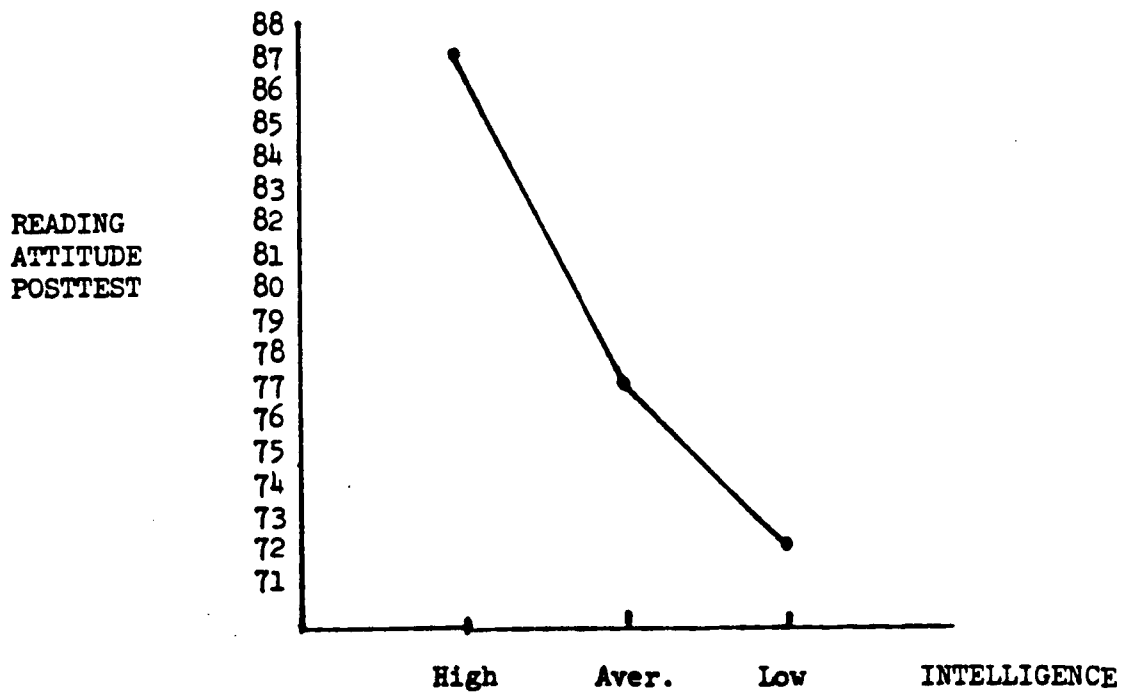

Figure 3. Linear regression model showing the relationship of the mean scores of fourth and fifth grade students of high, average, or low ability enrolled in a developmental reading program and those enrolled in a computer managed reading program.

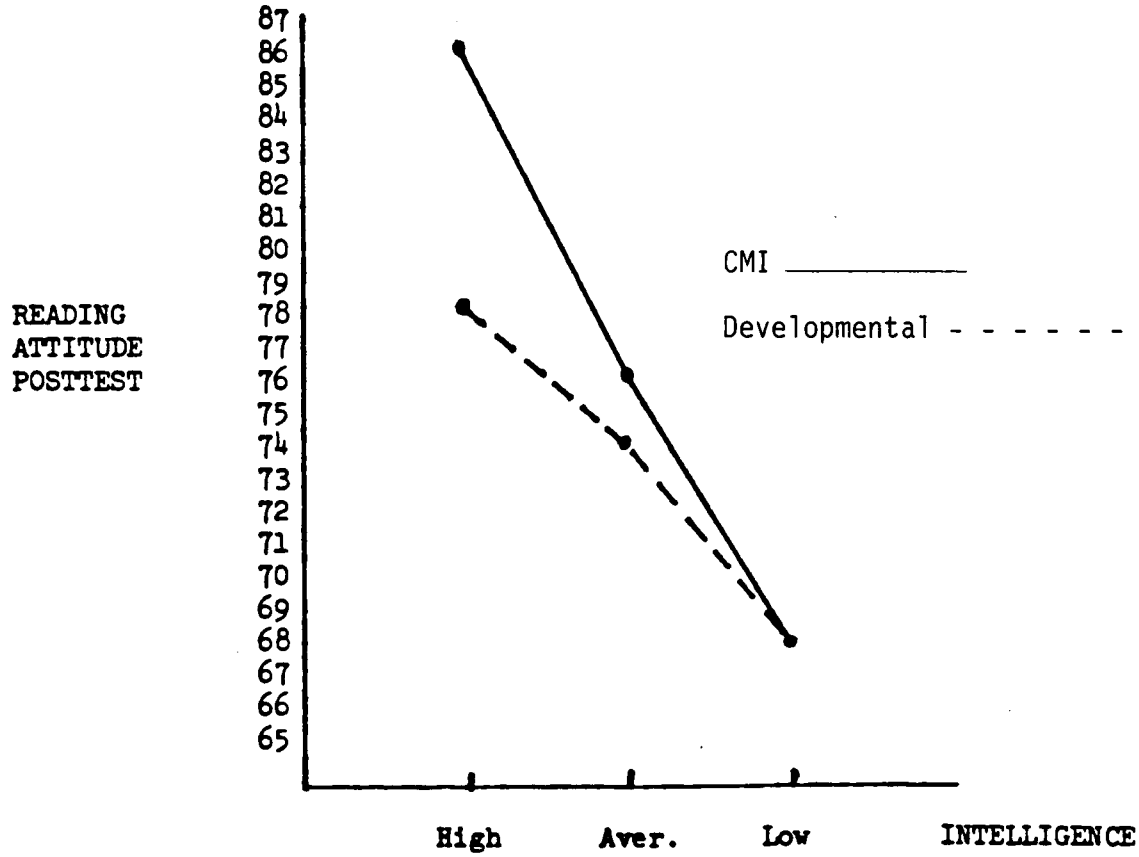

Figure 4. Linear regression model showing the relationship of the mean scores of fourth and fifth grade males of high, average, or low ability enrolled in a developmental reading program and those enrolled in a computer managed reading program.

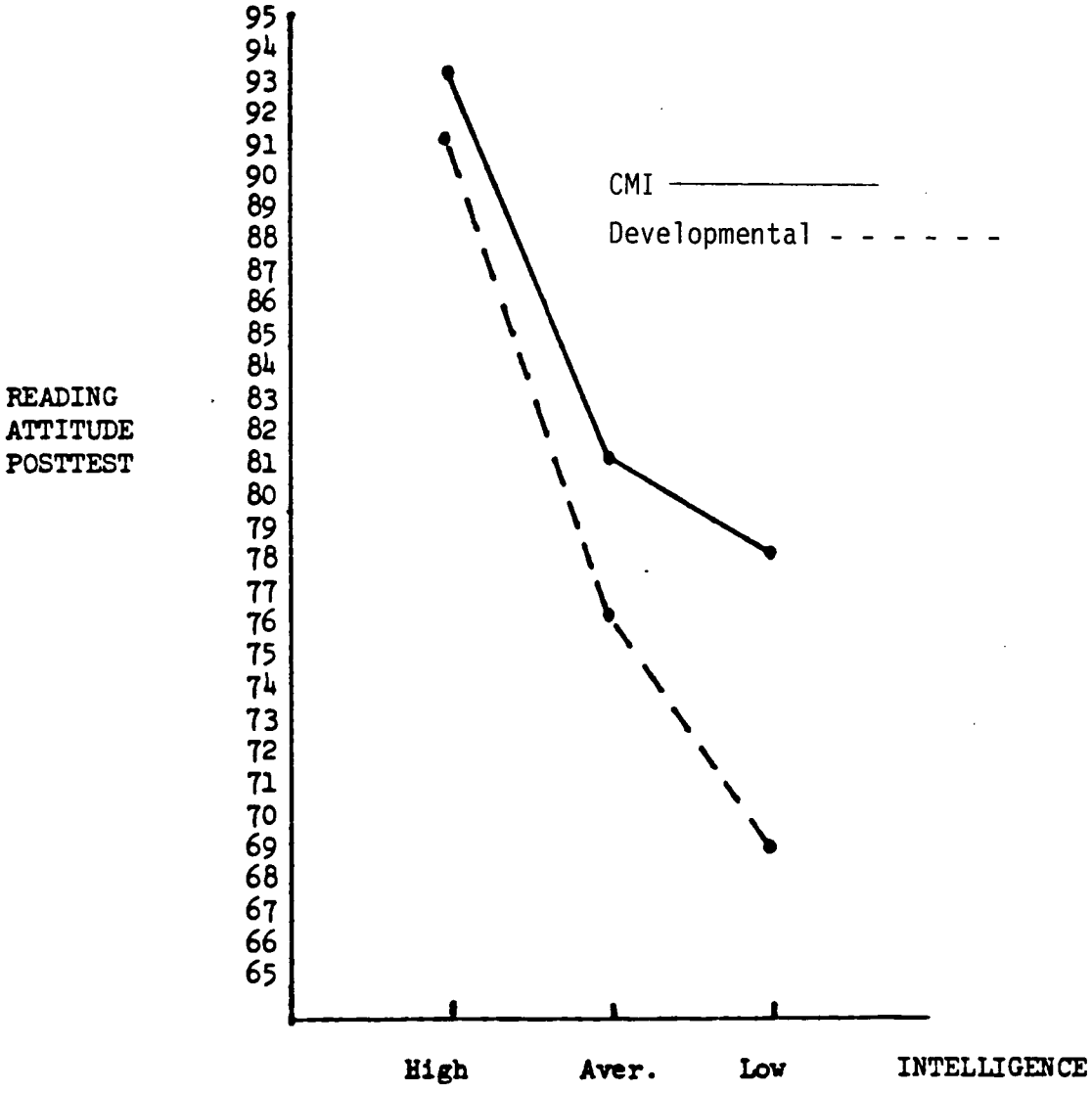

Figure 5. Linear regression model showing the relationship of the mean scores of fourth and fifth grade females of high, average, or low ability enrolled in a developmental reading program and those enrolled in a computer managed reading program.

Figure 5 shows that low ability females enrolled in a computer managed reading program obtained greater reading attitude scores than did low ability females enrolled in a developmental reading program. Average and high ability females enrolled in a computer managed reading program also scored higher in reading attitude than did those average and high ability females enrolled in a developmental reading program. This, too, is interesting because the average ability developmental reading group which scored higher than the average ability computer managed reading group (see Table 6, page 74).

Hypothesis 4. There will be no significant mean difference in the reading attitude scores between fourth grade students and fifth grade students who were enrolled in the two reading groups.

The mean reading attitude scores of the fourth grade students were not significantly different from the mean scores of the fifth grade students. The null hypothesis was not rejected. The summary of the data is shown in Table 11.

TABLE 11

MANOVA OF HOOVER READING ATTITUDE INVENTORY SCORES OF FOURTH AND FIFTH GRADE STUDENTS ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Grade	168.2380	1	0.74	0.3897 NS
Error	227.0427	573		

NS = Not significant.

A multivariate analysis of variance of the self-concept scores was performed to satisfy the requirements of hypotheses 5-8. Table 12 shows the complete model of the data generated from the multivariate analysis of variance. The findings related to null hypotheses 5-8 are as follows.

Hypothesis 5. There will be no significant mean difference in the self-concept scores of the students who were enrolled in a developmental reading program and the scores of those students who were enrolled in a computer managed reading program.

An examination of the data presented in Table 13 shows that there was no significant difference in the mean self-concept scores of fourth and fifth grade students enrolled in a developmental reading program and the scores of fourth and fifth grade students enrolled in a computer managed reading program. The null hypothesis was not rejected.

Hypothesis 6. There will be no significant mean difference in the self-concept scores between males and females who were enrolled in the two reading programs.

The summary of the data presented in Table 14 reveals that there was no significant difference in the mean self-concept scores of fourth and fifth grade males and females who were enrolled in the two reading programs on the Piers-Harris Children's Self-Concept Scale. The null hypothesis was not rejected.

TABLE 12

MANOVA OF PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE SCORES OF FOURTH AND FIFTH GRADE MALES AND FEMALES OF HIGH, AVERAGE, OR LOW ABILITY ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Sum of Squares	df	Mean Squares	F	P
Model	52722.1038	26	2027.7732	22.97	0.0001
Error	50577.7362	573	88.2683		
Total	103299.8400	599			

Source	Type III Sum/Squares	df	Mean Squares	F	P
Achievement/Pretest	53.5741	1	53.5741	0.61	0.4363
Attitude/Pretest	0.0363	1	0.0363	0.00	0.9838
Self-Concept/Pretest	33975.0789	1	33975.0789	384.91	0.0001*
Grade	11.9866	1	11.9866	0.14	0.7126
Ability	1125.5202	2	562.7601	6.38	0.0018*
Grade*Ability	122.2511	2	61.1256	0.69	0.5007
Sex	7.5947	1	7.5947	0.09	0.7694
Grade*Sex	36.8835	1	36.8835	0.42	0.5183
Ability*Sex	429.2027	2	214.6014	2.43	0.0888
Grade*Ability*Sex	148.4626	2	74.2313	0.84	0.4318
Teaching	73.1984	1	73.1984	0.83	0.3629
Grade*Teaching	22.5050	1	22.5050	0.25	0.6138
Ability*Teaching	76.5853	2	38.2927	0.43	0.6482
Grade*Ability*Teaching	361.2347	2	180.6174	2.05	0.1302
Sex*Teaching	4.2865	1	4.2865	0.05	0.8257
Grade*Sex*Teaching	3.0161	1	3.0161	0.03	0.8534
Ability*Sex*Teaching	160.8928	2	80.4464	0.91	0.4025
Grade*Ability*Sex*Teach	225.6415	2	112.8208	1.28	0.2793

N = 600

*Significant at 0.05 level.

TABLE 13

MANOVA OF PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE SCORES OF FOURTH AND FIFTH GRADE STUDENTS ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Teaching	73.1984	1	0.83	0.3629 NS
Error	88.2683	573		

NS = Not significant.

TABLE 14

MANOVA OF PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE SCORES OF FOURTH AND FIFTH GRADE MALES AND FEMALES ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Sex	7.5947	1	0.09	0.7694 NS
Error	88.2683	573		

NS = Not significant.

Hypothesis 7. There will be no significant mean difference in the self-concept scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

An examination of the data presented in Table 15 revealed that there was a significant difference in the mean self-concept scores

TABLE 15

MANOVA OF PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE SCORES OF FOURTH AND FIFTH GRADE STUDENTS OF HIGH, AVERAGE, OR LOW ABILITY ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Ability	562.7601	2	6.38	0.0018*
Error	88.2683	573		

*Significant at 0.05 level.

of the students of high ability, average ability, and low ability with those students of high ability having the higher self-concept scores over those of average ability and those of low ability. A Duncan Multiple Range Test revealed that students of average ability also had a significant difference in mean self-concept scores over those students of low ability. The null hypothesis was rejected. Figure 6 shows the relationship of the mean scores of the three ability groups.

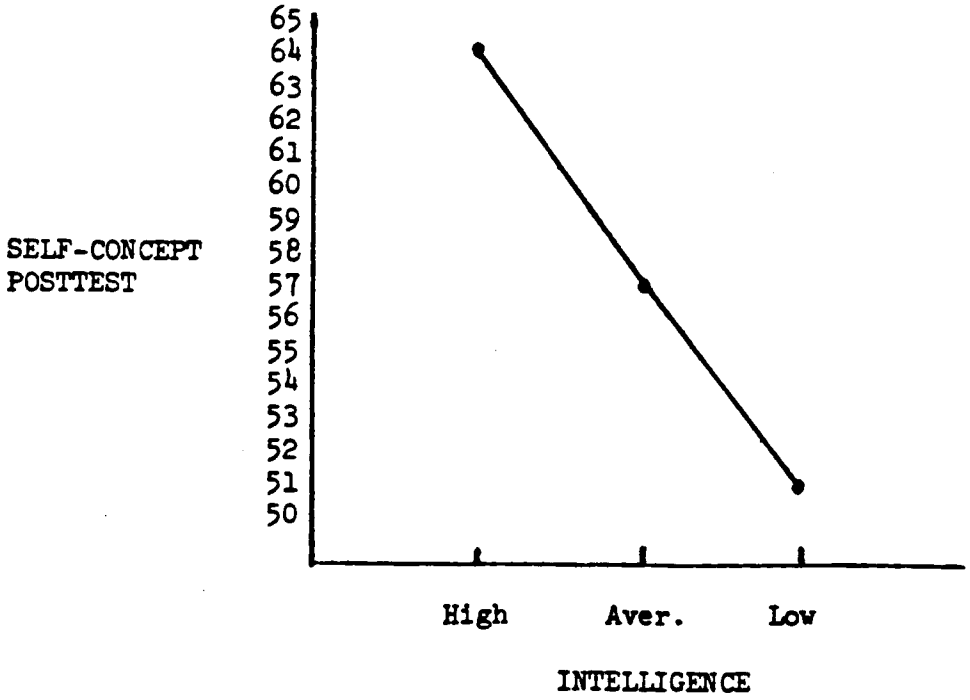

Figure 6. Linear regression model showing the relationship of the mean scores of fourth and fifth grade students of high, average, or low ability enrolled in a developmental reading program and those enrolled in a computer managed reading program.

Hypothesis 8. There will be no significant mean difference in the self-concept scores between fourth and fifth grade students who were enrolled in the two reading programs.

Mean self-concept scores of fourth grade students who were enrolled in the two reading programs showed no significant differences from the scores of fifth grade students who were enrolled in the two reading programs. The null hypothesis was not rejected. Table 16 shows the summary of the data.

A multivariate analysis of variance of the reading achievement scores was performed to satisfy the requirements of hypotheses

TABLE 16

MANOVA OF PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE SCORES OF FOURTH AND FIFTH GRADE STUDENTS ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Grade	11.9866	1	0.14	0.7126 NS
Error	88.2683	573		

NS = Not significant.

9-12. Table 17 shows the complete model of the data generated from the multivariate analysis of variance. The findings related to null hypotheses 9-12 are as follows.

Hypothesis 9. There will be no significant mean difference in the reading achievement scores of the students who were enrolled in a developmental reading program and the scores of those students who were enrolled in a computer managed reading program.

An examination of the data presented in Table 18 shows that there was no significant difference in the mean reading achievement scores of fourth grade and fifth grade students enrolled in a computer managed reading program and the scores of those fourth and fifth grade students enrolled in a developmental reading program. The null hypothesis was not rejected.

TABLE 17

MANOVA OF METROPOLITAN ACHIEVEMENT TESTS SCORES OF FOURTH AND FIFTH GRADE MALES AND FEMALES OF HIGH, AVERAGE, OR LOW ABILITY ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Sum of Squares	df	Mean Squares	F	P
Model	57711.5666	26	2219.6756	42.81	0.0001
Error	29710.5067	573	51.8508		
Total	87422.0733	599			

Source	Type III Sum/Squares	df	Mean Squares	F	P
Achievement/Pretest	16644.3573	1	16644.3573	321.00	0.0001*
Attitude/Pretest	19.5760	1	19.5760	0.38	0.5392
Self-Concept/Pretest	1.6621	1	1.6621	0.03	0.8580
Grade	16.8791	1	16.8791	0.33	0.5685
Ability	1714.4822	2	857.2411	16.53	0.0001*
Grade*Ability	295.7489	2	147.8745	2.85	0.0586**
Sex	221.6364	1	221.6364	4.27	0.0391*
Grade*Sex	59.3061	1	59.3061	1.14	0.2853
Ability*Sex	120.6050	2	60.3025	1.16	0.3133
Grade*Ability*Sex	179.0283	2	89.5142	1.73	0.1789
Teaching	43.7534	1	43.7534	0.84	0.3587
Grade*Teaching	50.3247	1	50.3247	0.97	0.3250
Ability*Teaching	296.7661	2	148.3831	2.86	0.0580**
Grade*Ability*Teaching	37.1216	2	18.5608	0.36	0.6993
Sex*Teaching	16.5623	1	16.5623	0.32	0.5722
Grade*Sex*Teaching	1.6624	1	1.6624	0.03	0.8580
Ability*Sex*Teaching	166.7209	2	83.3605	1.61	0.02013
Grade*Ability*Sex*Teach	63.5915	2	31.7958	0.61	0.5420

N = 600.

*Significant at 0.05 level.

**Approaches significance at 0.05 level.

TABLE 18

MANOVA OF METROPOLITAN ACHIEVEMENT TESTS SCORES OF FOURTH AND FIFTH GRADE STUDENTS ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Teaching	43.7534	1	0.84	0.3587 NS
Error	51.8508	573		

NS = Not significant.

Hypothesis 10. There will be no significant mean difference in the reading achievement scores between males and females who were enrolled in the two reading programs.

The analysis of the mean reading achievement scores of fourth and fifth grade students, as shown in Table 19, revealed that the scores of females were significantly higher than those of the males. The null hypothesis was rejected. Figure 7 shows the relationship of the mean scores of males and females with females obtaining the higher reading achievement scores than males.

Hypothesis 11. There will be no significant mean difference in the reading achievement scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

The summary of data presented in Table 20 revealed that there was a significant difference in the mean reading achievement scores

TABLE 19

MANOVA OF METROPOLITAN ACHIEVEMENT TESTS SCORES OF FOURTH AND FIFTH GRADE MALES AND FEMALES ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Sex	221.6364	1	4.27	0.0391*
Error	51.8508	573		

*Significant at 0.05 level.

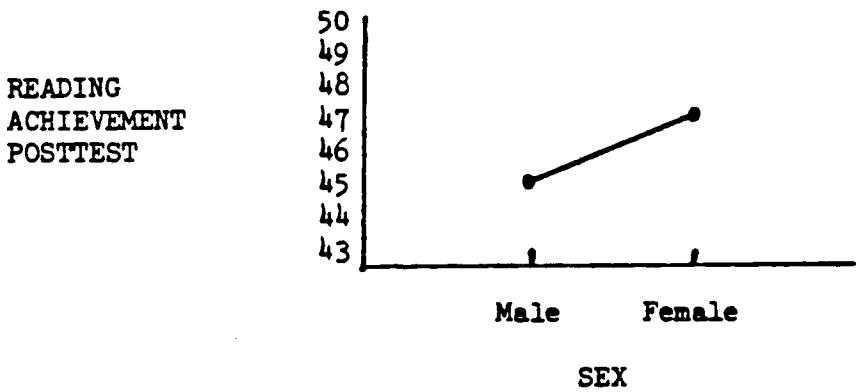

Figure 7. Linear regression model showing the relationship of the mean scores of fourth and fifth grade males and females enrolled in a developmental reading program and those enrolled in a computer managed reading program.

of students of high ability, average ability, and low ability with those students of high ability having the greater achievement scores over those of average ability and those of low ability. A Duncan Multiple Range Test revealed that students of average ability also had a significant difference in mean reading achievement scores over those students of low ability. The null hypothesis was rejected. Figure 8 shows the relationship of the mean scores of the three ability groups.

TABLE 20

MANOVA OF METROPOLITAN ACHIEVEMENT TESTS SCORES OF FOURTH AND FIFTH GRADE STUDENTS OF HIGH, AVERAGE, OR LOW ABILITY ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Ability	857.2411	2	16.53	0.001*
Error	51.8508	573		

*Significant at 0.05 level.

The graph shown in Figure 9 reveals that an interaction effect occurred which was approaching significance ($p = 0.0580$) between ability level and method of teaching on reading achievement. The interaction took place for high ability students who were enrolled in both a developmental reading program and a computer

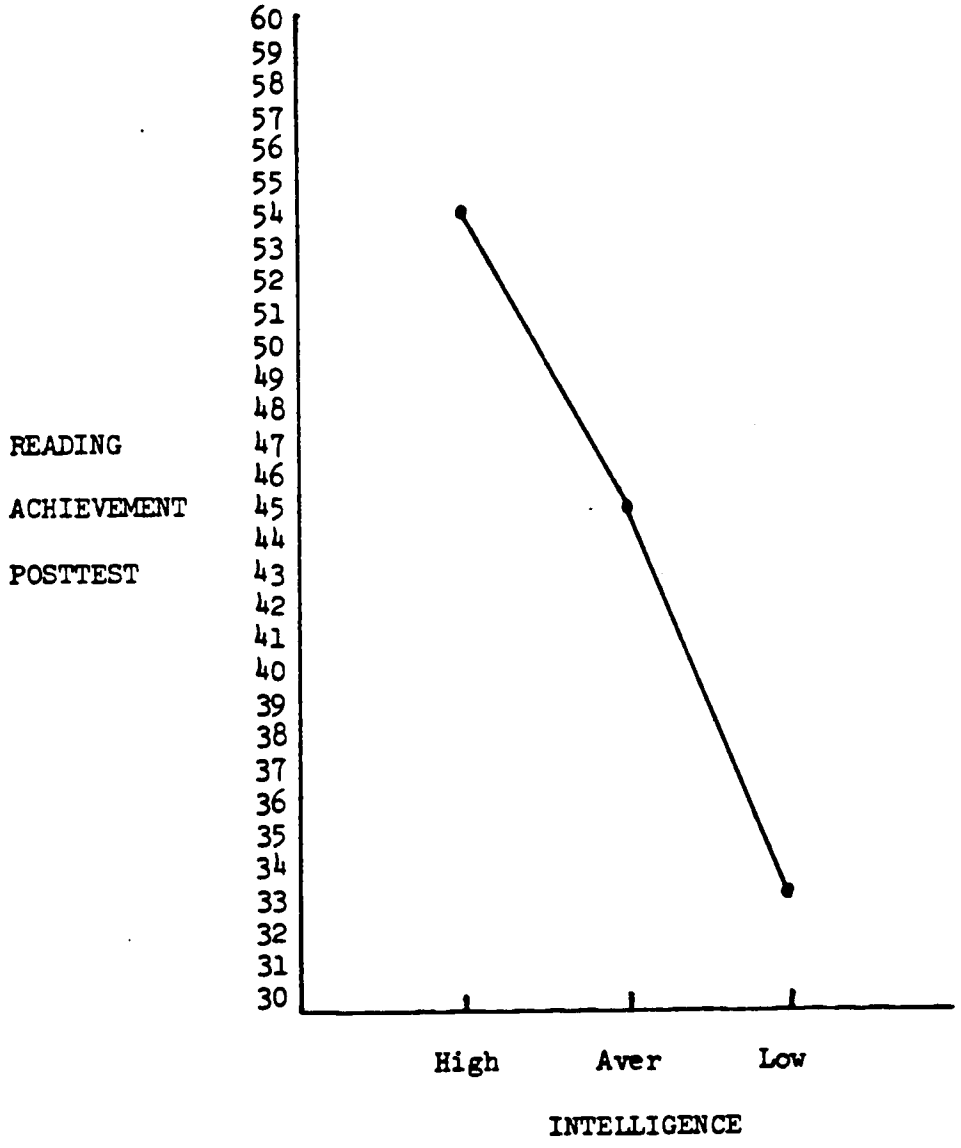

Figure 8. Linear regression model showing the relationship of the mean scores of fourth and fifth grade students of high, average, or low ability enrolled in a developmental reading program and those enrolled in a computer managed reading program.

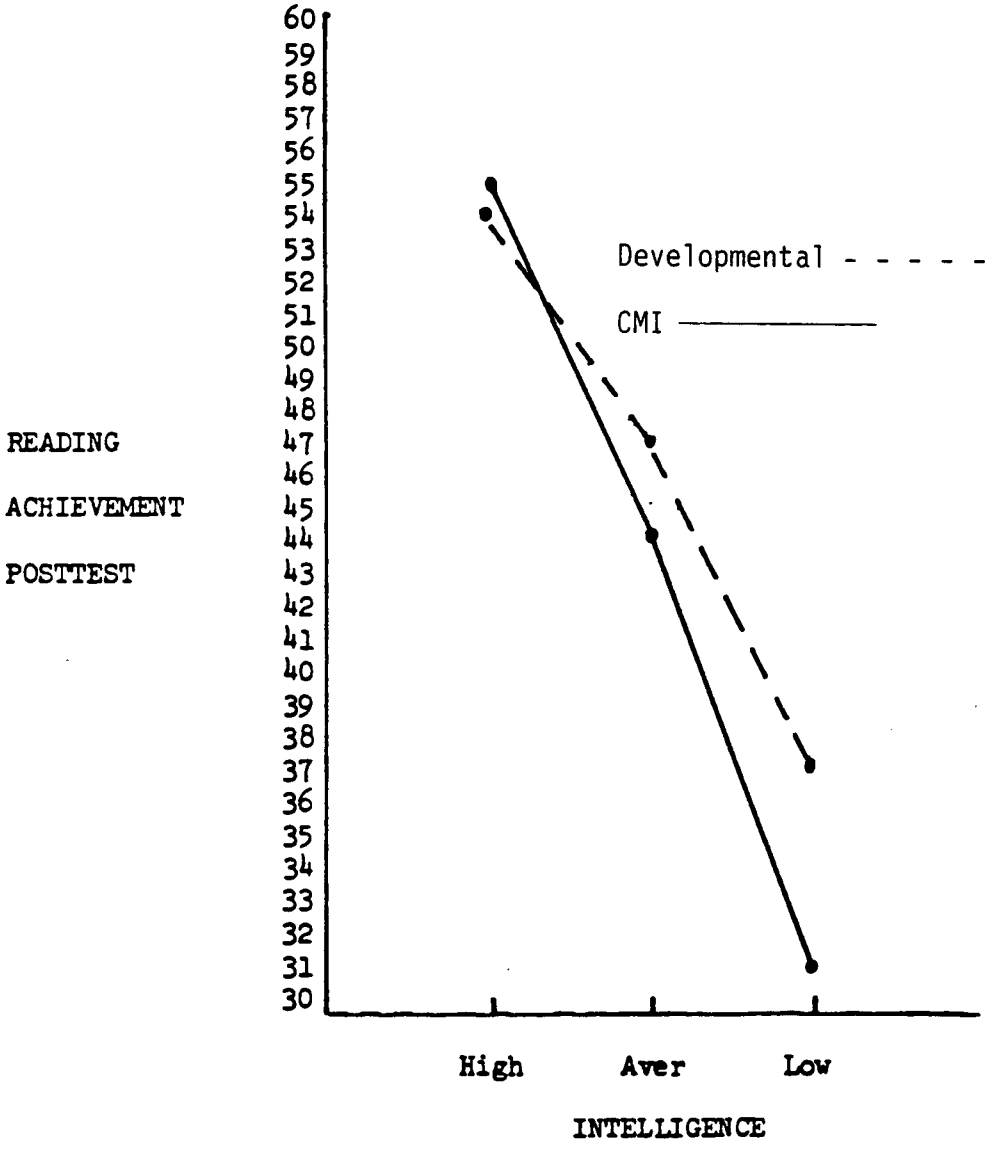

Figure 9. Linear regression model showing the interaction of the mean scores of students of high, average, or low ability enrolled in a developmental reading program and those enrolled in a computer managed reading program.

managed reading program with those high ability students taught by a computer managed reading program scoring slightly higher for reading achievement than those high ability students taught by a developmental reading program. However, the figures are reversed for students of average and low ability with average and low ability students taught by a developmental reading program receiving higher reading achievement scores than average and low ability students taught by a computer managed reading program.

Hypothesis 12. There will be no significant mean difference in the reading achievement scores between fourth grade students and fifth grade students who were enrolled in the two reading programs.

Mean reading achievement scores of fourth grade students who were enrolled in the two reading programs revealed no significant difference from the reading achievement scores of fifth grade students who were enrolled in the two reading programs. The null hypothesis was not rejected. The summary of the data is shown in Table 21.

However, an interaction effect took place which was approaching significance ($p = 0.0586$) when ability levels were also examined along with grade levels on reading achievement. Figure 10 shows that an interaction effect occurred between ability level and grade level on reading achievement. The interaction took place for high ability students of both grades four and five with high ability fifth grade students receiving slightly higher reading achievement scores than did high ability fourth grade students. However, the figures are

TABLE 21

MANOVA OF METROPOLITAN ACHIEVEMENT TESTS SCORES OF FOURTH AND FIFTH GRADE STUDENTS ENROLLED IN A DEVELOPMENTAL READING PROGRAM AND THOSE ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Source	Mean Squares	df	F	p
Grade	16.8791	1	0.33	0.5685 NS
Error	51.8508	573		

NS = Not significant.

reversed for students of average or low ability fourth grade students scoring higher in reading achievement than did average or low ability fifth grade students.

A multiple correlation procedure of the reading attitude scores, self-concept scores, and reading achievement scores revealed the following findings related to null hypothesis 13.

Hypothesis 13. There will be no significant correlations among the reading attitude scores, self-concept scores, and reading achievement scores of the students who were enrolled in the two reading programs.

The data revealed in Table 22 shows that there were significant correlations found among reading attitude scores, self-concept scores, and reading achievement scores. However, it should

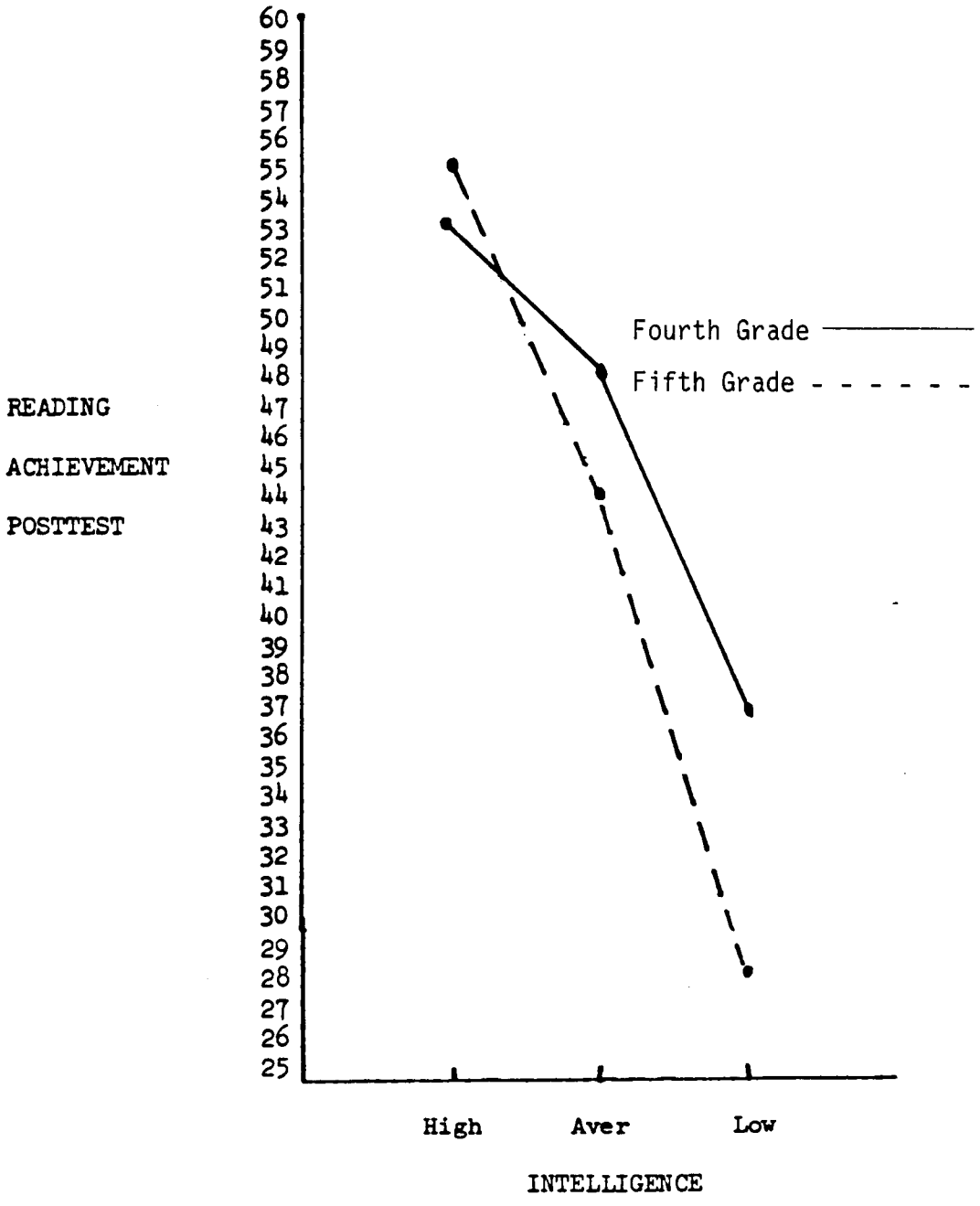

Figure 10. Linear regression model showing the interaction of the mean scores of fourth and fifth grade students of high, average, or low ability enrolled in the two reading programs.

TABLE 22

CORRELATIONS AMONG READING ATTITUDE, SELF-CONCEPT, AND READING ACHIEVEMENT

	Self-Concept/ Pretest	Achievement/ Pretest	Attitude/ Posttest	Self-Concept/ Posttest	Achievement/ Posttest	P
Attitude/ Pretest	0.31631*	0.35365*	0.55676*	0.24563*	0.32134*	0.0001
Self-Concept/ Pretest		0.26441*	0.24595*	0.68510*	0.24685*	0.0001
Achievement/ Pretest			0.30661*	0.27903*	0.77167*	0.0001
Attitude/ Posttest				0.33481*	0.29582*	0.0001
Self-Concept/ Posttest					0.29146*	0.0001

*Significant at 0.05 level.

be reported that, even though significance was obtained at the 0.001 level of confidence for all of the correlations, they were all low positive scores. This could be attributed to the large numbers involved in the correlation. The only score which approached any significance for correlation scores was that found between the achievement pretest scores and the achievement posttest scores, which revealed a 0.77 correlation. The next highest correlation was obtained between the self-concept pretest scores and the self-concept posttest scores, which revealed a correlation of 0.69. The lowest correlation of those greater than low positive was 0.56 and was obtained between the reading attitude pretest and posttest scores. All of these correlation scores do reveal that there was a positive correlation between how students respond on a posttest based on how they responded on the pretest. The other low positive correlation scores (see Table 22) had a range of from 0.25 to 0.35.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to present a summary of the study and the conclusions resulting from the findings. This chapter will contain the following sections: a review of the nature of the study, a summary of the review of the related literature, a summary of the design of the study, a summary of the findings, conclusions and discussion drawn from the findings, and recommendations.

I. REVIEW OF THE NATURE OF THE STUDY

The primary purpose of this study was to investigate the differences among reading attitudes, self-concept, and reaching achievement when considering sex and intelligence of fourth and fifth grade students enrolled in either a developmental reading program or a computer managed reading program, and to determine if there were any correlations among reading attitudes, self-concept, and reading achievement during the school year in which the study was undertaken. A secondary purpose of the study was to develop an instrument which was designed for the purpose of measuring the attitudes toward reading of the students who were involved in learning to read by either of the two methods of instruction in use in the classroom during the study. Thirteen null hypotheses were formulated to accomplish the primary purpose of this study. The alpha level selected for rejection of all the null hypotheses was set at $p \geq 0.05$.

II. SUMMARY OF THE REVIEW OF RELATED LITERATURE

The review of the literature was begun by acknowledging that there is no one best approach to the teaching of reading. Teachers have traditionally experimented with a variety of methods and materials leading to those which prove to be the most beneficial. A factor involved in the success or failure of any reading program is the students' attitudes toward reading, self, and learning. With so much emphasis in the schools today being placed on the mastery of skills, it becomes increasingly important for teachers to be aware of the affective components of each child's learning behavior. A reading instruction program should be concerned with the mastery of certain skills necessary to the reading process along with the development of the desire to read and the cultivation of life-long reading interests.

To summarize, the following statements were gleaned from the literature:

1. Studies dealing with attitudes toward reading are relatively new with most being done during the past twenty years. Since the interest in attitudes is relatively new, the literature is sparse, but is beginning to increase during the past ten years.

2. Evidence reported contradictory findings about attitudes toward reading as they related to self-concept, reading achievement, sex, and intelligence.

3. Recent research studies are beginning to demonstrate a greater breadth of investigation, examining more variables as they

pertain to attitudes toward reading and also including larger populations in the studies.

4. Many of the studies examined urged that teachers display caution when relying on students' attitudes. However, it was clearly pointed out that a need exists for teachers to be more aware of students' attitudes and place more emphasis on aiming instruction at those attitudes.

III. SUMMARY OF THE DESIGN OF THE STUDY

The subjects used in this study were the entire population of the fourth and fifth grade students in the Kingsport, Tennessee City Schools during the school year 1982-83. There was a total of 331 fourth grade students and 394 fifth grade students in the population. Permission was obtained for 716 students to begin the study in the fall of 1982 with complete data sets available on 600 students at the end of the study in the spring of 1983. Three hundred eighty-three of these students were enrolled in a computer managed reading instruction program and 217 students were enrolled in a developmental reading instruction program.

Three instruments were utilized to collect pre- and posttest data for the study. They were: the Metropolitan Achievement Tests (Reading Subtest), the Piers-Harris Children's Self-Concept Scale, and the Hoover Reading Attitude Inventory. A fourth test, the Otis-Lennon School Ability Test, was utilized to place students in groups of either high, average, or low ability.

The data for this study were collected during September 1982 and May 1983. The students in fourth and fifth grades in four elementary schools which used a computer managed reading instruction program, Project Manage, and the students in fourth and fifth grades in three elementary schools which used a traditional developmental reading instruction program were administered pretests and posttests.

The data analyses were performed using the Statistical Analysis System (SAS) at the Computer Center of The University of Tennessee, Knoxville. The data for the dependent variables (reading achievement, reading attitudes, and self-concept scores) were subjected to a multivariate analysis of variance, with the independent variables (reading method, grade level, sex, and ability level) being examined for the main effects and the interaction effects on the dependent variables. The Duncan Multiple Range Test was then used as a post hoc test to determine where any significant mean differences were occurring. Correlation coefficients were computed to determine if there were any correlations among reading attitudes, self-concept, and reading achievement.

IV. SUMMARY OF THE FINDINGS

A summary of the findings of the study is presented in this section.

Hypothesis 1. There will be no significant mean difference in the reading attitude scores of the students who were enrolled in

a developmental reading program and the scores of those students who were enrolled in a computer managed reading program.

Null hypothesis 1 was rejected. There was a significant difference found in the reading attitude scores of those students enrolled in a computer managed reading program at the 0.05 level of confidence.

Hypothesis 2. There will be no significant mean difference in the reading attitude scores between males and females who were enrolled in the two reading programs.

Null hypothesis 2 was rejected. There was a significant difference found in the reading attitude scores of females when compared with males at the 0.05 level of confidence.

Hypothesis 3. There will be no significant mean difference in the reading attitude scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

Null hypothesis 3 was rejected. There was a significant difference found in the reading attitude scores of high ability students over those of average and low ability at the 0.05 level of confidence with high ability students receiving higher reading attitude scores. A significant difference was also found to exist between reading attitude scores of average and low ability students.

An interaction effect occurred between ability levels, sex, and method of teaching on reading attitudes. The interaction took place for low ability males enrolled in both the developmental

reading program and the computer managed reading program. High ability males enrolled in a computer managed reading program obtained greater reading attitude scores than did high ability males enrolled in a developmental reading program. Low ability females enrolled in a computer managed reading program obtained greater reading attitude scores than did the low ability females enrolled in a developmental reading program.

Hypothesis 4. There will be no significant mean difference in the reading attitude scores between fourth grade students and fifth grade students who were enrolled in the two reading programs.

Null hypothesis 4 was not rejected. There was found to be no significant mean difference in the reading attitude scores of fourth and fifth grade students at the 0.05 level of confidence.

Hypothesis 5. There will be no significant mean difference in the self-concept scores of the students who were enrolled in a developmental reading program and the scores of those students who were enrolled in a computer managed program.

Hypothesis 5 was not rejected. There was found to be no significant mean difference in the self-concept scores of the students enrolled in the two reading programs at the 0.05 level of confidence.

Hypothesis 6. There will be no significant mean difference in the self-concept scores between males and females who were enrolled in the two reading programs.

Hypothesis 6 was not rejected. There was found to be no significant mean difference in the self-concept of males and females enrolled in the two reading programs at the 0.05 level of confidence.

Hypothesis 7. There will be no significant mean difference in the self-concept scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

Hypothesis 7 was rejected. There was a significant difference found in the self-concept scores of high ability students over those of average ability and low ability at the 0.05 level of confience. A significant difference was also found to exist between self-concept scores of average and low ability students.

Hypothesis 8. There will be no significant mean difference in the self-concept scores between fourth and fifth grade students who were enrolled in the two reading programs.

Hypothesis 8 was not rejected. There was found to be no significant mean difference in the self-concept scores of fourth and fifth grade students enrolled in the two reading programs at the 0.05 level of confidence.

Hypothesis 9. There will be no significant mean difference in the reading achievement scores of the students who were enrolled in a developmental reading program and the scores of those students who were enrolled in a computer managed reading program.

Hypothesis 9 was not rejected. There was found to be no significant mean difference in the reading achievement scores of students enrolled in the two reading programs at the 0.05 level of confience.

Hypothesis 10. There will be no significant mean difference in the reading achievement scores between males and females who were enrolled in the two reading programs.

Hypothesis 10 was rejected. There was a significant difference found in the reaching achievement scores of females over males at the 0.05 level of confidence.

Hypothesis 11. There will be no significant mean difference in the reading achievement scores among students of high ability, average ability, or low ability who were enrolled in the two reading programs.

Hypothesis 11 was rejected. There was a significant difference found in the reading achievement scores of high ability students over those of average ability and low ability. A significant difference was also found to exist between self-concept scores of average and low ability students.

An interaction effect occurred which was approaching significance ($p = 0.0580$) between ability level and method of teaching on reading achievement. The interaction took place for high ability students who were enrolled in both programs with high ability computer managed reading program students scoring slightly higher than those high ability students enrolled in a developmental reading program. However, students of average or low ability enrolled in a developmental reading program received higher reading achievement scores than did the average or low ability computer managed reading program students.

Hypothesis 12. There will be no significant mean difference in the reading achievement scores between fourth grade students and fifth grade students who were enrolled in the two reading programs.

Hypothesis 13. There will be no significant correlations among reading attitude scores, self-concept scores, and reading achievement scores of the students who were enrolled in the two reading programs.

Hypothesis 13 was rejected. Significant correlations were found among reading attitude scores, self-concept scores, and reading achievement scores. All correlations reported were low positive.

The following statements summarize the statistically significant findings of this study:

1. Mean reading attitude scores of the students enrolled in a computer managed reading program were higher than the scores of the students enrolled in a developmental reading program.

2. Mean reading attitude scores of females enrolled in the two reading programs were higher than the scores of males.

3. Mean reading attitude scores of high ability students were higher than the scores of students of average or low ability.

4. Mean reading attitude scores of average ability students were higher than the scores of students of low ability.

5. Mean reading attitude scores of low ability males were equal for those males enrolled in a developmental reading program and a computer managed reading program.

6. Mean reading attitude scores of high ability males enrolled in a computer managed reading program were higher than the scores of the high ability males enrolled in a developmental reading program.

7. Mean reading attitude scores of low ability females enrolled in a computer managed reading program were higher than the scores of the low ability females enrolled in a developmental reading program.

8. Mean self-concept scores of high ability students were higher than the scores of students of average or low ability.

9. Mean self-concept scores of average ability students were higher than the scores of students of low ability.

10. Mean reading achievement scores of females enrolled in the two reading programs were higher than the scores of males.

11. Mean reading achievement scores of high ability students were higher than the scores of students of average or low ability.

12. Mean reading achievement scores of average ability students were higher than the scores of students of low ability.

13. Mean reading achievement scores of high ability students enrolled in a computer managed reading program were higher than the scores of high ability students enrolled in a developmental reading program.

14. Mean reading achievement scores of average ability students enrolled in a developmental reading program were higher than the scores of average ability students enrolled in a computer managed reading program.

15. Mean reading achievement scores of low ability students enrolled in a developmental reading program were higher than the

scores of low ability students enrolled in a computer managed reading program.

16. Significant low positive correlations were found to exist among reading attitude scores, self-concept scores, and reading achievement scores.

V. CONCLUSIONS AND DISCUSSION DRAWN FROM THE FINDINGS

Several conclusions were apparent following an examination of the findings of this study. Those conclusions with appropriate discussion are as follows:

1. It cannot be concluded from this study that either the developmental reading program or the computer managed reading program was better in improving self-concept or reading achievement.

A possible factor for no increase in self-concept improvement for either reading program could be due to the broad, survey-type, self-report instrument used in the study. A lack of increase in self-concept might also be due to the difficulty of measuring self-concept. A teacher-observation instrument or an instrument which measures one's reading self-concept might yield more accurate data. It was felt by the investigator that the achievement test used in the study may not have been the best possible choice to measure reading improvement for either group. The test had a ceiling raw score and some of the high and even average ability students had either reached or nearly reached the ceiling on the pretest administration thereby making true growth on the posttest impossible

to measure. The test also only tested for reading comprehension; no other components of reading instruction were measured by the test. Another choice of test which more accurately reflected actual classroom instruction for both groups might yield more accurate data for measuring improvement in reading achievement.

2. It can be concluded from this study that reading attitudes were improved through the use of the computer managed reading program.

This conclusion can be interpreted as meaning that the computer managed reading program was more effective in developing positive attitudes toward reading than the developmental reading program. Since the purpose of any reading program is to create lifelong readers, then educators may need to investigate the impact that computer managed reading instruction may have on students' attitudes when taught in an individualized setting. Students may be feeling more positive about reading when they are able to experience success and to make progress as they move through the program.

3. It can be concluded from this study that females improved more than males in both reading achievement and reading attitudes regardless of the instructional program followed.

The fact that females scored higher than males in reading attitudes is consistent with some of the findings in the literature. However, it is wise to remember that there were other studies which showed males receiving the higher reading attitude scores and researchers have cautioned against accepting the generalization that girls show more favorable reading attitudes than do boys.

4. It can be concluded from this study that high ability students consistently achieved greater gains than did average and low ability students in the areas of self-concept, reading achievement, and reading attitudes regardless of the instructional program followed.

It was felt by the investigator that several items on the self-concept instrument presented vocabulary or ambiguity problems for some of the students as questions for clarifications were asked in every class on many of the same items. (This was allowed in the manual.) High ability students may have been better able to understand the true nature of the items and the self-report instrument in general. This finding also supports the knowledge that as grade levels increase, the resulting range in ability and achievement also increases with higher ability students able to obtain greater gains in achievement and lower ability students maintaining a lesser rate of achievement. High ability students appeared to view reading favorably. This may be due, in part, to the fact that high ability students are having no difficulty with the process of reading. It can also be pointed out that the high ability students also had the greater gains in self-concept and reading achievement. This can be seen as supporting Quandt and Selznick's (1984) conclusion that higher achieving students have higher self-concept scores.

5. It can be concluded from this study that grade level appeared to make no difference in reading attitudes, self-concept,

or reading achievement regardless of the instructional program followed.

Students have generally acquired the skills necessary for the reading process by the end of the primary grades. With the exception of a small group ofstudents, most of the students in this study would fit into this category. They were then engaged in developing and strengthening their reading skills and making progress in whichever type of intermediate reading program instruction was taking place.

6. It can be concluded from this study that high ability students improved reading achievement through the computer managed reading program; however, the average and low ability students improved reading achievement through the developmental reading program.

These students of average or low ability may need the more sustained interaction between teacher and student and between students within the group for greater understanding and motivation which is what generally occurs in a developmental reading program. High ability students may be more able to work well without this constant contact with others.

7. It can be concluded that only high ability males and low ability females improved reading attitudes through the computer managed reading program.

A previously mentioned conclusion stated that students enrolled in a computer managed reading program obtained greater gains in reading attitudes than did those students enrolled in a

developmental reading program. This is further substantiated by the fact that high ability males and low ability females improved their reading attitudes while receiving instruction in a computer managed reading program. High ability males may enjoy the structure and individualization provided by CMI while preferring not to have to rely on interactions and socializations found within a group (developmental) instruction situation. The opposite was found to be true among females, with low ability females improving reading attitudes while receiving instruction in a computer managed reading program. This may be explained, in part, by the fact that low ability females may perceive the need to receive highly structured, individualized instruction in order to become successful with the process. This success may be reflected in more positive attitudes toward reading.

The fact that these conclusions revealed the opposite for males and females and also for high and low ability groups only further reminds educators not to rely on commonly held generalizations about the attitudes of males and females or the attitudes of high or low ability students. Further investigations are needed in these areas.

VI. RECOMMENDATIONS

Certain recommendations may be based upon the findings of this study. The investigator cautions the reader to remember, however, that since a random sample of the population was not used in

this study, these recommendations are not generalizable to other populations. The recommendations are as follows:

1. Since self-concept and reading achievement were both found to be comparable over the two programs, but the computer managed reading program was proven to be the more effective in fostering more positive reading attitudes, then this should demonstrate a need to implement that reading program in the school which are not already using a computer managed reading program.

2. This study should be replicated on a longitudinal basis to determine what, if any, retention of reading attitudes, self-concept, and reading achievement have been maintained by the orignal students involved in the study.

3. This study should be replicated with students of other populations and using random samples of these populations so that the results can be more widely generalized.

4. A study should be conducted with a different self-concept instrument specifically designed for students involved in a computer managed reading program.

5. A study should be conducted with a different type of reading achievement instrument so as to receive more accurate data on student learning.

6. Teachers and administrators are cautioned to remember that the affective domain of learning is a complex and little understood process. Care should be taken to ensure that, during this age of emphasis on the mastery of cognitive skills, the affective components of learning should not be overlooked.

This study was an attempt to study two different reading programs in use in one school district in terms of reading attitudes, self-concept, and reading achievement. It is hoped that further research will be generated regarding the mastery of essential reading skills and their interrelationships with the affective domain of learning.

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APPENDIXES

APPENDIX A

Letter to be sent to the parents whose children will be involved in the initial interviews:

Dear Parent,

Your child has been randomly selected to participate in a study being conducted by Donna B. Hoover, a student at The University of Tennessee.

This study will include the development of a scale for assessing the attitudes toward reading of children in grades four and five. Mrs. Hoover plans to talk to your child about reading and to use a tape recorder during the interviews. A minimum amount of time will be involved. The tapes will be used only by Mrs. Hoover and will be destroyed at the conclusion of the research. At no time will any child's name be used in the study.

Your child is under no obligation to participate in the study and should your child (with your consent) choose to participate, he/she may withdraw at any time without any penalty.

After completion of the study, August 1983, you may obtain a brief summary of the study through your principal. If you have any questions regarding the study you may call Mrs. Hoover at 245-4673 during the week-end hours only.

Please sign the following and return to your child's teacher. Your child's participation and your cooperation are greatly appreciated.

I give my permission for _____
(child's name)
to participate in the above study.

signature _____
(parent or guardian)

Letter to be sent to the parents whose children will be involved in the field test procedures:

Dear Parent,

Your child's class has been selected to participate in a study being conducted by Donna B. Hoover, a student at The University of Tennessee.

This study will include the determination of validity and reliability of a scale for assessing the attitudes toward reading of children in grades four and five. The investigator will administer the reading attitude survey instrument to your child's class which will take approximately fifteen minutes of the class time.

The students will be asked not to put their names on the test as the investigator is only concerned with comparing the total and not the individual scores. No student's name will be used in the study. Your child is under no obligation to participate in the study and should your child (with your consent) choose to participate, he/she may withdraw at any time without any penalty.

After completion of the study, August 1983, you may obtain a brief summary of the study through your principal. If you have any questions regarding the study you may call Mrs. Hoover at 245-4673 during the week-end hours only.

Please sign the following and return to your child's teacher. Your child's participation and your cooperation are greatly appreciated.

I give my permission for _____
(child's name)

to participate in the above study.

signature _____
(parent or guardian)

Letter to be sent to the parents whose children will be involved in the final study:

Dear Parent,

Your child's class has been selected to participate in a study being conducted by Donna B. Hoover, a student at The University of Tennessee.

This study will be for the purpose of investigating the relationship of reading attitudes and achievement with the method by which they are taught. Your child's regular classroom teacher will administer the Metropolitan Achievement Test as usual during September. This test will again be administered during May of the school year. Mrs. Hoover will administer the Reading Attitude Survey to the class during September and again in May. No other instruction or change in classroom practices will take place.

The students will not be compared with each other as the investigator is only concerned with comparing the total and not the individual scores. No student's name will be used in the study. Your child is under no obligation to participate in the study and should your child (with your consent) choose to participate, he/she may withdraw at any time without any penalty.

After completion of the study, August 1983, you may obtain a brief summary of the study through your principal. If you have any questions regarding the study you may call Mrs. Hoover at 245-4673 during the week-end hours only.

Please sign the following and return to your child's teacher. Your child's participation and your cooperation are greatly appreciated.

I give my permission for _____
(child's name)

to participate in the above study.

signature _____
(parent or guardian)

APPENDIX B

HOOVER READING ATTITUDE INVENTORY

Directions to the Students

Today we are going to spend a few minutes talking about reading. I am interested in how boys and girls your age feel about reading and you can help. This activity will have nothing to do with your report card and you will not receive a grade on your answers. By being very honest with your answers, you can help me find out how boys and girls think and feel about reading and it will help me be a better teacher.

On your answer sheet you will see five boxes for each answer. Over each box are the letters SD which stands for super disagree, D for disagree, U for undecided or don't know, A for agree, and SA for super agree. Answer boxes for number 1 to number 13 go down the left-hand side of the page, and number 14 to number 25 go down the right-hand side of the page. I will read each statement to you and you are to make an "X" in the box which shows how you feel.

Look at the top of the page at sample A. If I said, "You enjoy play period at school," put an "X" in the box which shows how you feel. Now let's try another one. Look at sample B. If I said, "You like to eat the school lunch in the cafeteria," which box would you mark? Someone might like to eat the lunch cooked at school and would mark the SA or "super agree" box and someone else might think the school's lunch is terrible and would mark SD or "super disagree". Everyone will feel differently about each item I read. Remember to mark how you feel. Mark only one box for each number. Mark each

number as honestly as you can no matter how you feel. I'll read each item twice. Are there any questions before we begin? (The teacher will allow for questions, and as the inventory is being read to the children, it is permissable to take a minute and clear up any questions or misunderstandings. The teacher will read each item, saying the number of the item and the sentence which follows, repeating each item and allowing time for the students to mark their answers. Specific items may be repeated at the end of the inventory.)

HOOVER READING ATTITUDE INVENTORY

Grades 4 and 5

(-) 1. You usually do not bring a book home from school to read.

(-) 2. You wish reading class would not last so long.

(-) 3. You only act like you are reading a book by flipping through the pages or looking at the pictures.

(+) 4. You enjoy making book reports at school.

(+) 5. You think it is relaxing to read.

(-) 6. You often start a book but never finish it.

(+) 7. You like to go off by yourself where it is quiet and read.

(+) 8. You like to tell your friend about a good book you have just read.

(+) 9. You enjoy reading many different kinds of books or stories.

(-) 10. You don't like it when the teacher has you read silently.

(+) 11. You like to read in your bed at night before going to sleep.

(+) 12. You like to finish a book before doing something else.

(-) 13. You think reading a book is boring.

(-) 14. You think it is more fun to play than to read.

(+) 15. You wish you could have all the time you wanted to read.

(+) 16. You think it is fun to take a reading test when a unit or module is finished.

(+) 17. You like for it to be quiet when you read.

(-) 18. You would rather watch T.V. than read.

(-) 19. You don't like to read when a teacher calls on you.

(+) 20. You have lots of books at home that are yours.

(+) 21. You think that good habits in reading are important.

(-) 22. You think that reading a book is too hard.

(-) 23. You only read a book occasionally.

(+) 24. You take a book home from school for fun almost every day.

(-) 25. You often talk in class or disturb others instead of reading.

SAMPLE

	SD	D	U	A	SA
A.					
B.					

NAME_____

DATE_____

	SD	D	U	A	SA
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APPENDIX C

SUMMARY OF PRE AND POSTTEST RAW SCORE MEANS AND STANDARD DEVIATIONS FOR STUDENTS ENROLLED IN A DEVELOPMENTAL READING PROGRAM

Tests Administered	Sample Size	Mean	SD
Metropolitan Achievement Test Form JS, Reading Subtest Pretest	217	44.39	12.36
Metropolitan Achievement Test Form JS, Reading Subtest Posttest	217	47.98	10.41
Piers-Harris Children's Self-Concept Scale Pretest	217	56.96	13.06
Piers-Harris Children's Self-Concept Scale Posttest	217	58.62	12.80
Hoover Reading Attitude Inventory Pretest	217	82.25	14.99
Hoover Reading Attitude Inventory Posttest	217	77.29	18.02

SUMMARY OF PRE AND POSTTEST RAW SCORE MEANS AND STANDARD DEVIATIONS FOR STUDENTS ENROLLED IN A COMPUTER MANAGED READING PROGRAM

Tests Administered	Sample Size	Mean	SD
Metropolitan Achievement Test Form JS, Reading Subtest Pretest	383	38.67	14.76
Metropolitan Achievement Test Form JS, Reading Subtest Posttest	383	44.18	12.74
Piers-Harris Children's Self-Concept Scale Pretest	383	54.37	13.30
Piers-Harris Children's Self-Concept Scale Posttest	383	56.96	13.30
Hoover Reading Attitude Inventory Pretest	383	83.54	16.26
Hoover Reading Attitude Inventory Posttest	383	80.15	19.00

VITA

Donna Barnes Hoover was born on August 13, 1943 in Kingsport, Tennessee. She attended the public schools of Bay City, Michigan, receiving her high school diploma from T. R. Handy High School in 1961. After one year's attendance at Delta College in Saginaw, Michigan, she finished the Bachelor of Science degree in elementary education at East Tennessee State University in Johnson City, Tennessee in June 1967. She received her Master of Arts degree in elementary education from East Tennessee State University in August 1976. The Doctor of Education degree in curriculum and instruction was conferred in August 1985 at The University of Tennessee, Knoxville.

Employment was begun as a classroom teacher in Sullivan County, Tennessee, later transferring to the Kingsport, Tennessee City Schools where she has been employed for fourteen years. She has taught all grades one through six as an elementary classroom teacher, sixth grade social studies at the middle school level, and most recently has been a reading teacher at the elementary level. She also serves as a part-time instructor at East Tennessee State University.