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The Ohio State University, Ph.D., 1975
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ON SELECT GROUPS BASFD ON ACHIEVEMENT SCORFS WITHIN AN
INNER CITY SCHOOL DISTRICT
DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of the Ohio State University

By

Philip F. Lyon, A.B., M.Fd.

* * * * *

The Ohio State University
1975

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T M Stephens
Adviser
Faculty of Exceptional Children
TO

MY WIFE, KATHLEEN

MY DAUGHTERS, KATHLEEN AND MARTHA
ACKNOWLEDGMENTS

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To my wife, Kathleen, whose belief never wavered, whose inspiration and love was ever present, and whose patience was remarkable during the years that lead to the preparation of this manuscript, I offer my sincere thanks.
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CHAPTER I

INTRODUCTION

There has been, within this country, an historical trend wherein a great reliance has been placed upon education as the means through which social problems can be solved. In fact, the interrelationship between social problems and changes in educational technology, strategies, and curricula approaches is very significant. With the launching of Sputnik, there was a widespread belief that the public schools had been remiss in not emphasizing mathematics and science more than the humanities. As a response to the public demand for action, the Federal Government encouraged, initiated, and financed programs which emphasized mathematics and science.

As the public became more sensitive to the plight of the deprived in terms of academic achievement, there was a resulting clamor similar to that which followed Sputnik's launching. The Federal Government, spurred by the past awareness of the inadequacies of education in meeting the specific and permeating needs of this school population, became deeply involved in the education of deprived youngsters.
At the same time, educators were increasingly concerned with the global aspects of the deprived, and the need for understanding the constellation of factors and their interaction effects: urban policy, education, community, politics, and the various forces which spell out the dynamism of modern society (Passow, 1966). As a result of this concern, educators and education could no longer be merely content with the dissemination of information. Both had to transcend the classroom and take into consideration the sociological and psychological backgrounds of students. One of the first offshoots of the relationship between sociological concerns and education was the Head-Start program.

The intent of this program was to overcome experiential lags in the background of the culturally deprived. It was designed to take children immediately preceding school entry and through a broad-based program of educational, medical, and social services to better prepare them for primary school (Gordon and Jablonsky, 1968). Although there is some disagreement in regard to the efficacy of this program, a study conducted jointly by Westinghouse and Ohio University concluded that

...although this study indicates the full-year Head-Start appears to be a more effective compensatory educational program than summer Head-Start, its benefits cannot be described as satisfactory. Therefore we strongly recommend that large-scale
efforts and substantial resources continue to be devoted to the search for finding more effective programs, procedures, and techniques for remediating the effects of poverty in disadvantaged children. (Westinghouse and Ohio University, 1970, p. 201)

Programs developed with support from Titles I and II of the Elementary and Secondary Education Act were undertaken in practically all of the 50 states. A review of the data available in assessing these efforts is not encouraging and has not yet resulted in a major change in the schools' success pattern with children from disadvantaged homes (Gordon and Jablonsky, 1968).

Although these results are seemingly negativistic in tone, it must be remembered that the results are based on general group results. If an in-depth analysis of the efficacy of such programs were undertaken and each participant's individual gains assessed, the outlook for such programs might have to be reevaluated. In this way, the progress of each individual student who has participated in such programs can be more accurately assessed.

The significance of this study lies in the fact that individuals will be examined to see whether or not they respond differentially to remedial programs. More often than not, when programs for disadvantaged children are examined, comparisons are made not within the group as an entity but rather to national norms of non-culturally deprived groups. The information garnered will provide us
with data relative to individual differences within that group of students classified as culturally deprived. The implications for applying the same type of analysis to other programs are widespread and deserving to be examined. Previously negative results obtained from analysis of programs such as Head-Start might have to be reevaluated, especially when individual progress is assessed and in-group analysis is conducted.

The uniqueness of this study is rooted in the remedial programs which were employed by the school district wherein this study was conducted. The programs evolved from the needs of the community served and were designed by local school district personnel specifically to meet these needs. The program itself is described in more detail in the appendix.

**The Problem**

In school systems where the group achievement score on standardized tests of English and mathematics is lower than national norms, remediation programs are constantly employed. Although the rationale behind these programs is the remediation of gross deficiencies, little or no consideration is given to individual differences among the total number of students. These programs are initiated district wide and no real consideration is given to whether or not
existing factors of the student's environment have an effect upon his ability to profit from such programs (Elkins, 1968; Loretans and Umans, 1966).

Some studies indicated that factors related to administrative characteristics (Kiesling, 1971; Heim, 1973; Levine, 1966), teacher characteristics (Coleman, 1966; Alston, 1972; Levin, 1970), and total school and classroom climate (Leacock, 1969; Brookover, 1965; Weber, 1971) were as influential on students' learning as specific teaching technique. Most of these studies found that the following factors were not significantly related to the achievement level within schools: class size, a specific approach to teaching reading, or age and condition of the school building. From these studies it was found that the physical plant, the size of the class, and approach to teaching is not so influential as the environment or climate within the individual classroom or school in affecting achievement.

The remediation programs that are generally initiated on a district wide basis are funded by state or federal monies. In order to receive this assistance certain guidelines must be followed and certain criteria must be met. Since there is such a multitude of programs and they are so widespread geographically, the guidelines cannot take into consideration the diverse backgrounds and experiences of the students who will be participants in the remediation programs. The criteria for success for most of these pro-
grams is based upon the amount of group achievement change by the participants in the programs. If the group change is positive, the program generally is re-funded; if negative, the program is reviewed and reevaluated. If changes in the program are not instituted, its continuance in terms of funding might be jeopardized.

If a program is rated as effective as a result of an increase in group achievement, its continuance in a district would appear to be a logical step. If a program is not effective, continuance of same would not appear to be a logical step. In either instance, there are problems connected with following the logical operation. A program's effectiveness or noneffectiveness in terms of overall group data might have to be reevaluated when analysis of individual achievement is considered. Many students who did profit from such participation in such programs but whose gains were absorbed by overall deficiencies when reported, are deprived of an opportunity to continue their success pattern. There could also be an uneven skewness in scores that would indicate an overall achievement gain, but if more in-depth analysis were applied, the number of students profiting from such participation might not be great. These results might lead one to assume that the amount of growth attained by the small number of students was not a result of the treatment program. In this case, a seemingly effective program would be continued needlessly.
The large number of students involved in a district wide program presents a problem in analyzing data using gross group scores as criteria. The multiplicity of the variables involved make judgments based on the group success tenuous at best.

They (special programs) often lack research-ability in the sense that variables involved are often too gross and complex to yield interpretable results. For example, a set of proposals for re-shaping teacher education as that of Project Beacon at Yeshiva University seems to suffer from overcomplexibility as a research variable. We might well find that students trained under Project Beacon turned out to be better teachers of culturally deprived children. They might last longer on the job, they might teach their pupils more, and their pupils might be happier and better citizens. But we would never know from study Project Beacon as an experimental variable just what it was that brought these good results. Too much will have gone into such a treatment for us to know exactly just what parts of it did the trick. To yield meaningful results, we need to break up massive complex treatments into their various components and then study the effects of these as independently as possible of the others. (Gage, 1963)

In the same vein as the proposition discussed relative to Project Beacon, investigations into the effects of programs initiated district wide encounter similar problems. The number of variables involved is too gross and complex to allow for meaningful analysis; such analysis as is usually undertaken is based solely on group scores. Further we neglect to consider those facets of his personality which can effect his response to a remedial program employing this type of analysis.
Reading and mathematics are the core of the elementary curriculum in the United States. The most widely used achievement tests (Stanford Achievement Test, Metropolitan Achievement Test, Iowa Tests of Basic Skills, and California Achievement Tests) usually include two sections: Reading Achievement and Mathematics Achievement. Each of these tests is divided into various subtests. The common divisions are: reading comprehension, vocabulary, language, spelling, fundamentals of arithmetic, and arithmetic reasoning (Ahmann and Glock, 1966, p. 363). Most school districts periodically administer one type or another of these batteries to their students at one or more given times during the year. Usually these tests are administered at the beginning and/or end of the year. Generally, it is the result of these group testings that remedial programs are initiated.

This study will deal with students who are enrolled in a district wide remediation program. All the students in this study will be enrolled in a remedial program designed specifically for reading comprehension. Some of the students will also be in a remedial program in mathematics. This study addresses itself to analysis of programs which are remedial in nature and established primarily as a result of poor scores on standardized test of reading comprehension and mathematics.
The results of this study will accrue from an in-group analysis of achievement as determined by scores on the Stanford Achievement Tests of reading comprehension and mathematics. There will be no comparison made with any group of students who are not included in the sample. In this way, any cultural bias which might occur in using the Stanford Achievement Test with a culturally disadvantaged sample would be minimized in that all members of the sample would be classified as culturally deprived.

In addition, in the school and throughout his life the disadvantaged individual is expected to compete against national norms, which have been constructed to serve as evaluation tools according to carefully established and institutionalized psychometric procedures. In turn, these norms have created a set of expectations on the part of many persons in education that all children of any group should perform according to the "sample population" of a particular age. (Rowland & Frost, 1970, p. 420)

The test scores will serve only as criterion measures established by a standardized measure. The differences in the scores before and after treatment will be the main foci of this study with no reference to outside groups or pre-established national norms being made.

**Research Questions**

The major question can be stated as follows: Will select groups within an inner city school system respond differentially to a remedial program in reading comprehension? Specific subproblems of that question are:
1. Will sex be a significant factor in achievement in a remedial program of reading comprehension?

2. Will race be a significant factor in achievement in a remedial program of reading comprehension?

3. Will poverty level be a significant factor in achievement in a remedial program of reading comprehension?

4. Will the number of years in school beyond grade level be a significant factor in achievement in a remedial program of reading comprehension?

Teacher characteristics (Coleman, 1966; Alston, 1972; Levin, 1970) were found to be influential in students' learning. Since different teachers are involved in the instructional facet of this program, a second major question can be postulated: Will the teacher be a significant factor in student achievement in a remedial program of reading comprehension?

There have been statements made to the effect that the learning styles of culturally deprived children are such that these students should succeed more readily in mathematics programs than in reading programs since mathematics is posited to be more culturally free (Johntz, 1966; Passey, 1966). Therefore, a third question will be presented.
Will a remedial mathematics program produce more significant group gains than a remedial reading comprehension program?

**Hypotheses**

In order to determine an answer to these questions the following hypotheses will be tested.

*Ho₁:* There will be no statistically significant difference in achievement gains in a remedial reading comprehension program when the students are classified along the following variables:

  a. Male vs. Female
  b. Caucasian vs. Non-Caucasian
  c. Poverty vs. Non-Poverty
  d. Years in school beyond grade level vs. Years in school at grade level

*Ho₂:* There will be no statistically significant difference as a result of teacher effect upon the student's performance in a remedial reading comprehension program.

*Ho₃:* There will be no significant differences in group achievement gains in reading comprehension and mathematics for students who participated in remedial programs in both subjects.
Operational Definition of Terms

In order to alleviate any undue misunderstanding, the following terms are defined.

**Urban school district** refers to a school district located in the densely settled inner core of a larger standard metropolitan area as determined by the standard census procedure of 1970.

**Reading comprehension**: Reading comprehension is based on the reading comprehension score of the Stanford Achievement Test. Based on the results of this instrument, individual diagnostic teaching procedures are established for each student.

**Mathematics remediation**: Mathematics remediation is determined by the performance of the student on the mathematics battery of the Stanford Achievement Test. An individual program is established based on the results of this testing.

**Poverty level**: Poverty level consists of families whose income is at or below $3,000 per annum or who are eligible for assistance from the Department of Public Assistance.

**Years in school**: Years in school is determined by the grade level a student should have attained after initial enrollment in the first grade and based upon one year advancement for each year in school. A student is beyond
grade level if he has been in school more years than the corresponding grade in which he is enrolled.

**Teacher effects:** Teacher effects refer to those elements of a program which reflect the individual teacher characteristics.
CHAPTER II

REVIEW OF THE LITERATURE

For the purpose of this investigation studies will be reviewed which can be divided into three main categories. The first category to be considered is reading achievement. The various aspects of this category will be the relationship between sex, race, socioeconomic level, years in school and reading achievement. Most of the studies reviewed will have treated more than one of these variables in dealing with the data reported.

The second category which will be treated is the relationship between achievement in mathematics and reading achievement. The literature which clearly focuses on the urban child will be most pertinent to this study.

The third category to be reviewed deals with teacher effects. In this area extensive literature is available. Studies are included which deal with teacher expectations, reactions to students, and perceptions of teacher expectations by students. Although some of the studies reviewed may not have a direct one to one correspondence with the sample employed in this study (urban children), their inclusion is necessary if we are to reach a proper perspec-
tive in regard to the questions under investigation in this study.

**Literature on Reading Achievement**

The effects of sex, race, and economic status on reading achievement have been the focus of many articles, research studies, and popular discussions in the last twenty years. Jantz (1974) examined the effects of sex, race, socioeconomic status and intelligence upon the reading achievement test scores of sixth-grade pupils from an urban, midwestern school corporation. There were 3,188 students included in this study. Based on the 1963 National Opinion Research Center's occupational scale, the students were divided into two socioeconomic status groups (SES I and SES II). The SES I group (N = 299) represented the higher group; the SES II group (N = 2,889), the lower status. There were 1,574 females and 2,830 males. There were 2,830 White students and 358 Non-White.

Significant differences at the .01 level of confidence were found in the levels of reading performance for the factors of sex, race, socioeconomic status and intelligence in fifth and sixth-grade reading scores. There were, however, no significant gains in reading performance. He found, further, that with this population, the increment for one year's attendance in school is not equal to a one year gain in reading score. Jantz states that one cannot reasonably expect the level of performance at the end of a
grade to be constant for different types of students.

Deutsch (1967) found some evidence that sex may be a relevant variable in achievement level in reading and arithmetic on the Stanford Achievement Test. He studied 400 subjects in two northern urban schools as they progressed from fourth through sixth-grade. The socioeconomic levels of the subjects were similarly low. Black girls significantly outperformed Black boys in both reading and mathematics, whereas White girls performed better than White boys only in reading.

One of the schools (99% Black) was designated as the experimental school and the other, an almost all White school, as the control school. When the control and experimental group males are compared and when the females of the two groups are compared, the resulting pattern of significant differences found on all measures employed, are similar to those previously found in the other comparisons of the control and experimental groups. It was found that the Negro males' performance contributed the most to the differences between the experimental and control groups. One of the important factors that has to be remembered in considering this study is the fact that all of the four subgroups were behind the national norms in school achievement with the White girls being the least behind.

In order to study the homogenizing effect of segregation upon the achievement of elementary school children,
Wilson (1966) conducted a study with high-sixth-grade students \((N = 816)\) in Berkley, California. He cautions that

> While this is a limited, and in some ways a distinctive sample, the broad patterns which emerge are congruent with national data, and many of the details are supported by findings from other studies (p. 219).

There were 531 Whites, 65 Orientals, 197 Negroes, and 24 not availables. These four indices of achievement: reading and arithmetic scores from tests which had been administered that year by the schools, IQ scores from tests administered the year before (when the students were in the fifth-grade), the level of the reader to which they were assigned by their teachers, and marks assigned by their teachers in several subject areas, were used as criterion measures. The groups were also classified into socioeconomic levels based on the father's occupation. There was a distinct relationship between socioeconomic level, race, and achievement. The three schools, the Hills, the Foothills, and the Flats, consisted mainly of students in the following socioeconomic levels (SES): high, middle, and low. In the HSES group, virtually all the students were reading at grade level on in some additional enrichment text at the time of the survey. Only half the boys in the MSES group and 2/5 of the boys in the LSES group were at grade level.

In the schools in the Foothills and Flats, the girls generally achieved higher than the boys. Wilson, however,
found that the slight differences that occurred between sexes in achievement level within the Hills school favored the boys more often than the girls. In further analysis of his data, he found the differences in favor of girls over boys in academic performance in LSFS to be significant.

Sinks (1965), in a study of over 3,000 children in grades four through eight, found, contrarily, that no generalizations could be drawn on the basis of sex and reading achievement.

Using a Cloze Comprehension technique for the purpose of investigating the relationship of reading comprehension and comprehension of conjunctions, Stood (1972) employed a stratified random sampling technique with fourth-grade students from three socioeconomic levels in Mansfield, Ohio (N = 95). The Stanford Achievement Test was used to measure reading comprehension; mental ability was measured by the Pinter Mental Ability Test. She found that girls achieved higher on the measures of comprehension of conjunctions, with only one test, however, Cloze Comprehension of Conjunctions Test, written with a high number of conjunctions, being significant $p < .01$. There was a high positive correlation between socioeconomic level and all measures of comprehension of conjunctions. The probability on every measure was $p < .001$.

Gates (1961) conducted a national study of differences in reading in public schools in grades two through eight.
He tested on speed, vocabulary and comprehension. The mean raw scores for girls were higher on every subtest. On 21 measures of comprehension, girls were significantly superior on 17 of them. The researcher found it interesting that the lower mean scores of the boys were depressed by a large proportion obtaining the lowest scores but not with a corresponding amount achieving in the highest levels. He attributes this difference to an environmental rather than hereditary explanation of sex differences. Girls pursue a life wherein reading is more respected, has more incentive value, and the opportunity to do more reading is presented earlier and persists longer. Boys, on the other hand, have little or no early need for learning to read.

Gies et al. (1973), from a sixth-grade population of a large midwestern city, drew a random sample of 54 disadvantaged boys and girls. Using a two-way analysis of variance, he found no significant difference between boys and girls on language arts achievement and achievement scores at the .05 level of significance.

Preston (1962) compared the reading achievement of German and American children in fourth and sixth-grades. There were 604 girls and 449 boys (N = 1,053) from Weisbaden, Germany. There were 628 girls and 710 boys (N = 1,338) from Philadelphia and vicinity in the sample. Two tests of reading comprehension were employed: the Frankfurter Test, prepared and standardized in Germany, and
the comprehension subtest of the Gates Reading Survey. The subjects were tested in comprehension, speed and reading retardation.

He found, in reading comprehension, the mean scores of the American subjects in all but one of the four subgroups are higher than those of corresponding German pupils (sixth-grade boys). In both grades and on all tests, the means of American girls exceed those of American boys. In the German sample, the reverse is true with the exception of the mean speed score in grade four. Preston maintains that this difference might be attributed to a cultural factor in that reading and learning activities are normal activities for males whereas the converse appears to be the case in America.

In another cross-cultural study, Johnson (1973) studied reading achievement in England, Nigeria, Canada, and The United States of America. Using a sample of 1,000 students from grades two, four, and six, he found 18 statistically significant comparisons on 72 measures. In England and Nigeria the boys scored higher on most measures, whereas in the United States and Canada the opposite result obtained. The results indicate that sex differences in reading as measured may be related to cultural differences. The author feels, further, that his study supports the idea that sex differences are more cultural than physiological.
He further emphasizes the fact that in only one country did one sex score consistently higher on all measures employed. The country was the United States and the sex was female.

Callaway et al. (1974), using the reading and language subtests of the California Achievement Test as their criterion measures, investigated whether a relationship existed between achievement in reading and language and the following factors: chronological age at the time of school entrance, sex, race, a student's adjustment to the classroom situation, the amount of reading material in the home, the family income, whether the father worked, whether the mother worked, and the occupation of the principle wage earner. The sample consisted of 277 tenth-grade students from rural and small towns of Georgia. The reading and language factors were examined separately and intelligence, as measured by the California Test of Mental Maturity, was covaried out in comparisons based on age, sex, and race.

There was no significant difference in reading and language among the groups based on age at school entrance. When intelligence was used as a covariate, there was no significant difference in reading or language. White children scored significantly higher than Black in reading and language and these differences favoring Whites were still apparent when intelligence was used as a covariate. There was no significant difference between tenth-grade male and
female subjects in reading achievement. With intelligence as a covariate, there was still no significant difference in reading achievement. In language achievement, however, females scored significantly higher than males. With intelligence used as a covariate, females still scored significantly higher than males in language achievement.

In terms of the socioeconomic variables reported on in the study, the only significant difference between reading and language achievement was among the groups with "average" and "more than average" income and those with "less than average" and "very low" family incomes. The achievement scores of the upper socioeconomic group were significantly higher than the lower socioeconomic group.

Deutsch (1967), in his research on the "Cumulative Deficit hypothesis" studied a great number of language and reading variables in relation to social class. He found that:

Overall, of 42 measures for the first grade sample, 6 correlated significantly with race alone, 19 with SES alone, and 2 with both. Of 43 scores for the fifth-grade sample, 6 correlated with race alone, 10 with SES alone, and 12 with both. This result means that significant correlations with race were found in 8 comparisons for the first-grade sample. The number of significant comparisons on SES for each group was 22 (p. 366).

In his analysis of data, he indicates that being lower class, Negro or White, makes for lower language scores. Disproportionately lower language scores do not occur if one is both lower class and Negro.
Dwyer (1973) reviews the various theories which attempt to explain the reasons for sex differences occurring in reading achievement. He discusses maturation, reader content, specific negative teacher-pupil interactions and cultural pressures. In discussing maturation, he claims that there is some degree of validity but rejects it as a total argument because an alternative explanation could account for the differences. There exists, also, in his opinion, other data that cannot in any way be accounted for by maturation alone. In dismissing reader content as a causal factor, he states that there is little that emphasizes a sexist attitude. In relation to teacher-pupil interaction, his argument follows much the same line as that relative to the maturation theory. Dwyer finds it unlikely that negative treatment of boys by their teachers would produce negative effects in some subject matter areas and have a positive effect on others. He feels that the best explanation to account for sex differences in reading achievement is a social pressure hypothesis.

Girls, he feels, are expected to be better readers, encouraged to do more reading, and, in some ways, pushed to be better readers. There is imparted to them by adults the idea that it is natural and right, in a manner of speaking, for them to achieve in reading. Boys, however, are not the recipients of such pressure, and, in fact, are not admon-
ished for non-success in reading at an early age. They are expected and encouraged in general to engage in vigorous physical activity and not such a passive activity as reading.

In an earlier study, Dwyer (1972) found that boys who classified reading as a feministic activity read less ably than those who classified it as a masculine activity. The children's sex role standards about reading (their perception of reading as an appropriate activity for their own sex) accounted for a significant amount of the variance in their reading scores. For students of both sexes in grades one to twelve, reading was rated at all grade levels as an activity appropriate to girls by both sexes.

Samuels (1943), in an early study, drawing from a population of 216 boys and 237 girls in the first-grade in Phoenix, Arizona, matched 100 pairs with 2 months difference and 5 pairs with 3 months difference in mental age. She found sex differences in both prereading aptitude and reading achievement favoring the girls.

McNeil (1964) explored the use of programmed instruction to teach boys to read. He found that in a sample of 72 boys and 60 girls in kindergarten there was no difference in their ability to learn the material to be taught under the program to be employed. There were 93 of these students remaining in the first-grade (49 boys and 44 girls). At the end of the Kindergarten phase, the boys received
significantly higher scores than the girls on a word recognition test measuring familiarity with words taught in the programmed instruction. In the first-grade, after instruction by a female teacher, these same boys were inferior to girls on a similar test on teacher taught words. The author's explanation for this result will be treated in the teacher effects section of this review, but it is significant to note that he found a change in achievement with the introduction of a female teacher as a variable.

With a sample of 57 boys and 48 girls from four schools classified as urban middle class, Minuchin (1966) explored sex differences in children in an educational context. She found no average differences in ability to solve problems, systematically articulate, organize, and work out solutions to intellectual problems. Girls, however, were more concerned with achievement, more positively identified with school, and more apt to find the entire experience of school life comfortable, pleasant, and meaningful. "In many of the sex differences we see the shadow of roles and expectations as they are generally projected for boys and girls" (p. 47). Newman (1972) conducted a follow-up study of the U.S.O.E. First-Grade Reading Studies Project in Cedar Rapids, Iowa. The original design was to develop and assess methods and materials especially adapted to reading group pupils. The question asked in this study was, "How does differentiated
instruction for low-group pupils at the first-grade level affect later learning abilities?" There were 230 of the original sample left. She found no significant differences between control and treatment groups at the first or sixth-grade levels. Secondly, first-grade reading achievement was found to be a significantly strong prediction of sixth-grade levels of reading achievement and more reliable than first-grade readiness measures. Sex differences were important, but not a static measure with a great deal of fluidity and a wide range of disparity.

Sex differences in favor of girls in reading achievement were found in several other studies (Pauley, 1951; Balow, 1963; Feldhusen et al., 1974; Maccoby, 1972). On the other hand, Atkinson (1968), using computer assisted instruction with disadvantaged first-graders, found no significant sex differences in reading achievement. He found a greater improvement for boys than girls. Asbury (1973), with the Metropolitan Achievement Test Primary I battery as criterion, found no association between reading achievement, sex and socioeconomic level. His sample consisted of 98 Black and 127 White first-grade students (N = 225) from a small rural county in North Carolina. They were equally divided by sex. He did, however, find a significant association between reading achievement and race with the White subjects achieving at a higher level.
Peck (1971) examined patterns of sex differences and socioeconomic differences in aptitude and school achievement in a cross-cultural study. Stratified samples of 800 urban school children were drawn from each of six countries (Brazil, England, Italy, Japan, Mexico, and Yugoslavia) and in two parts of the United States (Metropolitan Chicago and Austin, Texas). The subjects were ages 10 and 14 and were drawn from the upper-lower and upper-middle socioeconomic levels. Measurements included the Raven Progressive Matrices, several standardized achievement tests in reading and mathematics, teacher-assigned grades, and peer ratings on work habits and relations with teachers. A four-way analysis of variance was performed to determine age, sex, class, and country effects. Universally, the higher-status subjects were higher than lower-class subjects in aptitude, achievement, school grades, and peer reputation. The investigator concluded that, "schools in all countries...have a common problem in capturing the interest, the sustained effort and therefore the performance of skilled working class children" (p. 1).

Moreover, there was a widespread tendency for teachers and peers to approve more of girls. "In school boys have to work harder and learn more to get the same grades as girls..." (p. 2).

Briggs (1972) attempted to determine the relative effectiveness of a programmed linguistically-based reading
approach with an eclectic approach in grades one and two in a rural county of southern Florida. She also attempted to determine if there would be any significant differences among sexes and races in using this approach. The subjects numbered 137, with 56 in the first and 81 in the second-grade. In the first-grade 29 received the treatment and in the second, 39. A linguistically-based reading program, The Sound Reading Program, was the treatment utilized in this study. This program uses programmed instruction as its teaching approach. The instruments used as measures in this study were The Gilmore Oral Reading Test, Sound Reading Test: Vocabulary, and Sound Reading Test: Graphemics Options.

An analysis of covariance was used with the pretest score on the Gilmore Oral Reading Test being the covariate. An analysis of variance was used with the other measures since no pretest was given. Each grade was investigated separately. The experimental treatment was significantly superior to the control treatment in producing (1.) gains in reading accuracy among the Black pupils compared to the White pupils, and (2.) higher comprehension and vocabulary scores among second-grade subjects. The treatment also was effective in producing reading achievement in the boys equal to the reading achievement that the girls attained. The investigator also noted that any race differences in
achievement that might have occurred in grade one may have been due to differences in ability prior to the experiment.

There have been a great many studies reviewed which have come to many differing conclusions relative to the effects of race, socioeconomic status, and sex on reading achievement. Chansky (1965), as a result of his studies, stated that there is no chance to make all or none statements relative to the relationship between sex, race, treatment and achievement. Several theories have been put forth that attempt to explain sex differences in achievement. Maccoby (1972) hypothesizes that "...strong social demands for sex-typed behavior, such as aggression in boys and confirmity-passivity in girls, play a role in producing some of the sex differences we have seen in intellectual performance" (p. 25). Garai et al. (1968) fairly well sum up the conflict that arises when explanations for sex differences are put forth.

Sex differences play an important role in all known human societies. Theories of sex differences range from those assuming an exclusively genetic determination of the specific sex roles and the traditional division of labor to those which postulate the universal sociocultural molding of these roles. Our review of the research findings indicate that certain sex differences in temperament, interests, abilities, and needs or drive appear to manifest themselves consistently throughout the world as confirmed by cross-cultural evidence. Such sex differences are found even in those societies in which most of the usual pressures of sex-typing are absent, as corroborated by the experiences of the egalitarian Kibbutzim in Israel which find themselves persistently confronted by a "woman's
problem". Apparently certain inherent sex differences may condition the members of each sex toward the learning of specific skills and the assumption of certain roles which become institutionalized in occupational roles and other cultural prescriptions. The latitude of these sex roles and their variations are, to some extent, determined by the norms and values of the society and the status accorded each sex within it. (p. 269)

Sears and Feldman (1966), Crandall et al. (1962), Askov and Fishbach (1973) all support a societal-cultural basis for sex differences in achievement. It is of interest that the sex differences either disappear, are minimized, or reversed when programmed instruction or instructional technology e.g., computers' replacing the teacher in the classroom (McNeil, 1964; Green, 1969; Atkinson, 1968; and Briggs, 1972-73). Further, in two of the cross-cultural studies reviewed, Johnson (1973) and Preston (1962) found different results in the direction of sex differences with reading achievement. In summary, in the United States there does seem to be a sex related factor in reading achievement, although it seems to be most prominent in the earlier grades (Gates, 1961). There is also evidence (Deutsch, 1967 and Wilson, 1966) that Black females achieve significantly higher than Black males in measures of reading and language achievement. Wilson (1962) and Peisach (1965) state that the relationship between socioeconomic level and sex clearly indicates: that the boys from low socioeconomic levels, whether White or Black, achieve signif-
Pauley (1951) found that age was not a significant variable for explaining differences in achievement levels. In this study, the boys were significantly older than the girls. The investigator found that maturation, if chronological age be a reliable index of same, cannot account for better achievement among girls than among boys.

When summarizing studies relating race to achievement, Jensen's (1969) contention that Blacks are genetically inferior to Whites must be acknowledged. His statement relative to the interaction of nature and nurture lessens somewhat the total impact and force of his bare belief regarding heredity.

The preponderance of the evidence is, in my opinion, less consistent with a strictly environmental hypothesis than with a genetic hypothesis, which, of course, does not exclude the influence of environment or its interaction with genetic factors. (p. 82)

A common explanation to account for poor performances on reading tasks refers to a "language deficit" (Deutsch, 1967). Hall and Turner (1974) conclude that Black children, although they may use non-standard English, have little difficulty in comprehending standard English. Peisach (1965), in a study with first and fifth-grade students where both race and socioeconomic level were balanced, found no differences between Negro and White children in ability to replace words that maintained the meaning of the passage or that
fulfilled the grammatical context of that passage. The Cloze technique was the instrument of measurement used in this study.

O'Reilly (1969) summarizes rather succinctly a much more relevant and realistic theory relative to race differences in achievement. After reviewing literature on socio-economic composition and scholastic achievement, he concluded that the social class composition of the school has been established as an educationally relevant dimension with substantial implications for the educational and social development of socially and economically disadvantaged students in general. Negro and Puerto Rican students are much more likely to attend schools consisting of predominantly lower class students at the elementary level, where it appears to make the most difference. White students are also likely to be affected by attendance in predominantly lower status schools, although to a lesser extent.

Gordon (1970) indicates that examination of isolated factors have often had a deleterious effect when discussing the achievement levels of the disadvantaged. "Too little attention is given to the multiple interactions and multiple relationships in the genesis of behavioral change" (p. 11). Feldman and Weiner (1962) and Brown (1964) agree that the lower class child is, on the average, inferior in his ability to acquire the skills of learning to read when compared to middle class children.
In summary, the research reported above indicates there are differences in reading achievement when the variables of sex, age, race, and socioeconomic status are considered. There is no universal agreement through the studies examined when sex, age, and race are related to reading achievement. There does, however, seem to be a consensus that socioeconomic status has a direct relationship to reading achievement with children from the lower socioeconomic classes being less proficient in reading achievement than those from the higher socioeconomic classes.

**Literature on Relationship between Reading and Mathematics**

Warncke and Callaway (1973) attempted to determine whether there is a relationship between arithmetical computational ability and reading ability for pupils with normal intelligence who have difficulty in reading. There were 25 second, 25 third, and 25 fourth-graders (N = 75) employed in this study. All of them had an IQ of at least 90 and had been referred to the University of Georgia Reading Clinic between October, 1969 and August, 1971 because of reading difficulties. All subjects were tested on the Informal Reading Inventory (IRI) used at the clinic and which yields grade levels for reading ability. The California Arithmetic Test form W (CATW) as well as the Wechsler Intelligence Scale for Children were used as criterion measures.
Pearson product moment correlations were computed to determine if a relationship existed between the subject's ability to read, as determined by the IRI, and his ability to do fundamental arithmetic computations necessary for arithmetic, as determined by the CATW. A second group of correlations were performed to determine the relationship between the actual grade placement of the subjects and their performance in arithmetic. At the second-grade level, the correlation between the IRI and arithmetic was .33. This indicated a nonsignificant relationship between the grade placement on reading and ability to compute arithmetic. The correlations between IRI and arithmetic at the third and fourth-grade levels were respectively .0018 and .0010. This indicates no appreciable relationship between the performance of these subjects on the IRI and the CATW. Correlations between actual grade placement and their arithmetic placement were .39 for the second-grade, .76 for the third-grade, and .68 for the fourth-grade.

The researchers infer that this investigation indicates that teachers who work with problem readers might expect that their pupils will work fairly close to grade level on computationally based arithmetic, even though they may be one or more grade levels below grade placement in reading.

Balow (1964) conducted a study designed to determine if level of general reading ability is significantly asso-
ciated with problem-solving ability, if level of computational skill is significantly associated with problem-solving ability, and if a high level of ability in one of these will compensate for a low level of ability in the other.

There were 1,500 sixth-grade children investigated in this study. The Stanford Achievement Test (SAT): reading and arithmetic subtests, and the Stanford Intelligence Test form K-M were the instruments used in this study. Grade placement in reading (the average of scores in the Word Meaning and Paragraph Meaning subtests of the SAT) was used as the criterion measure of reading ability. Grade placement on the SAT computation subtest was the criterion measure of computation skill, while the grade placement on the SAT reasoning subtest was the criterion measure of problem-solving ability.

The null hypothesis stated there are no significant differences in problem-solving ability associated with general reading ability, computation ability, or an interaction of these factors when intelligence is controlled. The hypothesis relating to reading ability was rejected, but the interaction hypothesis is accepted when an analysis of covariance was used. When intelligence was controlled, there were significant differences associated with computation ability—the higher levels of comprehension resulting in higher levels of problem-solving. Further, when intelli-
gence was controlled, higher levels of reading ability resulted in higher scores on problem-solving.

Cleland and Toussaint (1962) studied the various relationships between reading, arithmetic, and listening ability. Using 172 pupils from 9 intermediate classes in two schools in western Pennsylvania, the investigators used the following criterion measures: Gates Reading Survey Form, Stanford Reading Achievement Test, Stanford Binet Form L-M, Durrell-Sullivan Reading Capacity Test, and Sequential Test of Educational Progress—Listening. The measure which showed the lowest relationship with reading was arithmetic computation. The relationship of arithmetic to reading was approximately the same as that of arithmetic to listening. The investigator indicated

...that arithmetic computation per se offers little predictive value for reading but should be considered in combination with listening and intelligence when estimates of reading potential are to be made. (p. 230)

Rosner (1973) explored the correlates between auditory and visual perceptual skills, and primary grade reading and arithmetic achievement. The subjects were all of the first-grade (N = 215) and second-grade students (N = 219) in three public schools located in the suburbs of Pittsburgh, Pennsylvania. There were three sets of scores compared: Stanford Achievement Test (SAT), Visual Analysis Test (VAT), The Auditory Analysis Test (AAT). There are
five language art subtests on the SAT for both grades one and two. There is only one subtest in the SAT arithmetic (arithmetic) for grade one, but there are two subtests on the SAT arithmetic (arithmetic computations and arithmetic concepts) for grade two.

Partial correlations were calculated for the AAT and achievement, controlling on the VAT, and for the VAT and achievement, controlling on the AAT. The results indicated that the AAT scores account for significantly more of the variance in the language arts subtest scores than do the VAT: the reverse was true in accounting for the variance in arithmetic scores. The investigator suggested that learning to read depends heavily upon auditory skills, and that primary arithmetic achievement depends heavily on visual-motor skills.

Deutsch (1967), using the Stanford Achievement Test as the criterion measure, examined the interrelationship between reading and arithmetic scores. The study used two samples of elementary school children from fourth, fifth, and sixth-grades. Two whole classes at grade level from both of the schools were used, making a total of 12 classes with an N of approximately 400. The experimental school had an enrollment of over 99% Negro; the other school had a similar socioeconomic level with a White enrollment of 94%. The criterion measure was the Stanford Achievement Test (SAT).
The investigator states that

Since both arithmetic and reading levels are measured in terms of grade level achieved according to nationwide norms, the scores should parallel each other:... Therefore, the "average" ratio between the two would be 1.0, the ratio being defined as the arithmetic achievement score divided by reading achievement score. This ratio, which we call the "A/R ratio", was computed for each child,... (pp. 99-100)

The experimental group had a significantly higher A/R ratio than the control group at better than .05 level of confidence. This finding reflects the fact that the experimental group children had higher average scores on the arithmetic than in reading, while for the control the reverse was true on the SAT.

Aiken (1971) reviewed the literature relative to the relationship between arithmetic and reading achievement. There was the general finding of a moderate positive correlation (.45-.55) between arithmetic and reading achievement across all grade levels. Aiken (1972) cited Cottrell (1968) who interpreted the high relationships among the reading, psycholinguistic, mental, and related arithmetic factors emerging in his study as evidence for a general language ability rather than a distinct factor of mathematical ability. Cottrell states that is is logical that low achievers in reading typically achieve poorly in mathematics since mathematics problems have to be read and translated in order to be solved.
Fay (1965), Chase (1961), and Corle and Coulter (1964) conclude from their studies that a pupil's success in mathematics is directly related to his ability to read and interpret written material. Feeman (1973) sees a need for a relational aspect in teaching reading and mathematics. He feels that mathematics embodies a form of functional reading. The investigator states that a student must be able to read in order to effectively solve arithmetic problems. Collier and Redmond (1974) state their belief that in order to effectively teach mathematics a teacher must first teach reading.

In summarizing the literature reviewed, it appears that there does exist a relationship between mathematics and reading. Except for Deutsch's (1973) findings, it appears that if a student is deficient in reading achievement, that student will exhibit a corresponding deficit in arithmetic achievement.

**Literature on Teacher Effects**

In treating any review of literature the companion studies of Rosenthal and Fode (n.d.) and Rosenthal and Jacobson (1968) must be treated. In the first study 12 senior division graduate students in experimental psychology of the University of North Dakota were assigned a group of 5 albino rats for running through a maze 10 times a day for 5 days. The students were informed that the rats were
either "maze-bright" or "maze-dull" even though the rats had been randomly selected. Results indicated that the performance of "maze-bright" rats was significantly superior on 3 of the 5 days, as well as for the experiment as a whole.

"Comparing the degree of correlation between what each experimenter specifically expected to obtain from his subjects and what he actually did obtain from them for the "bright" and "dull" groups suggested that these groups were about equally biased although, of course, in opposite directions." (Margburger, 1963, p. 306)

As a consequence of this study, Rosenthal and Jacobson (1968) set out to test whether the students for whom the teacher expected greater intellectual growth would show greater growth. By testing elementary school children with a nonverbal intelligence test disguised as a test to predict academic "blooming" and then randomly selecting 20% of the students and informing the teachers of the various classes that test scores indicated that their students would show unusual intellectual gains during the year, the researchers were able to support their hypothesis. When the nonverbal intelligence test was administered 8 months later and test score gains were examined, it was found that the students whose teachers were told there would be noticeable gains did show more gain than the other students. The gains were highest for the first and second-grade students. Also the students who were predicted to "bloom"
showed greater improvement in reading than did the other students.

Mendels and Flanders (1973) performed a study in response to Rosenthal's work. Within each of 10 first-grade classes for educationally deprived students (N = 120), ½ of the pupils were pretested with the Cognitive Abilities Test (CAT) and then randomly assigned to an experimental and control group. Three weeks after the pretest the teachers were told the experimental group had hidden academic potential and might show gains during the school year. The students were retested with the CAT 6 months later.

There were significant experiment group gains on the CAT (p < .10) but no significant differences were found between the two groups on reading grade, arithmetic grade, social skills, or reading level. The investigators state that it is possible that with natural rather than contrived input (artificial manipulation) that differences between groups may be shown.

Davidson and Lang (1960) investigated the relationship between achievement and pupils' perception of their teachers' feeling toward them. A checklist was developed to reflect favorable or nonfavorable comments. A sample of the questions employed are: My teacher thinks I am, and I think I am. There were 89 boys and 114 girls (N = 203)
from fourth, fifth, and sixth-grades in New York City. Girls perceived teachers' feelings towards them more favorably than the boys. There were differences in achievement favoring the girls although they were not significant. The teachers consisted of 9 women and 1 man. The investigators felt there was a tendency among the teachers to reward children of their own sex. They claim their study shows that the more positively the children's perception of their teachers' feelings toward them, the greater their academic achievement and more desirable the rating by the teacher.

Brophy and Good (1970), in a study using four first-grade classes in rural Texas, drew a sample of 48 students based on a subjective evaluation by the respective teachers. There were three high achieving boys and girls, and three low achieving boys and girls from each class. There was a model assumed: The teacher forms differential expectations for student performance, treats the child so, the child responds in such a manner, the teacher's expectations are reinforced, and this interaction continues.

The experimenters observed only dyadic behavior. There was more quality interactions with those believed to be higher achievers. Teachers had more interactions with boys with their criticisms being directed at behavior, not academic achievement. In the general situation, the more disruptive behavior of the boys resulted in their being the
target of significantly more criticism than the girls, even though the boys offered more correct answers. In particular, the boys in the lowest achievement group were criticized 33% of their one to one contacts with the teacher; lower achievement girls, 16% of the time. Correspondingly and consistently, the higher achieving group of boys and girls were criticized 13% and 8% of the time respectively.

Meyer and Thompson (1956), among sixth-grade students in 3 classes taught by women, found that boys experienced more contact with the teacher and more disapproval in the contacts. The boys recognized this behavior on the part of the teacher. The researchers conclude that "teachers attempt to 'socialize' the male child by means of domi-native counter-aggressive behavior" (p. 396).

Smith (1972) feels that evidence of teacher fairness has not been shown on the basis of the literature that he has reviewed. Even if this is lacking, the important aspect of teacher behavior is its perception by the student. He postulates a belief that if the student perceives that the teacher is unfair to him or her, that with which the teacher is associated will become aversive to the student. If a student sees himself as relatively favored, the school situation becomes positive and the opposite result obtains.

Miller (1971), Samph (1974), and Wheat (1974) discuss whether or not the language of the child has any effect upon the teacher's attitude toward the student. Wheat
feels that teachers' attitudes to divergent dialects are reflected in the amount of reading being learned by the students. Samph's study indicated that students taught by teachers exhibiting indirect behavior had greater language skills development and more positive attitudes than those taught by direct teacher behavior. Miller states that disadvantaged children cannot understand the more elaborate language style used by their teachers who generally come from the middle class. This belief, coupled with generally poor performance on standardized tests of intelligence, leads the teacher to believe that the culturally deprived child cannot learn to read effectively and to not give him much challenge to do so. "Certainly a disadvantaged child only achieves as well as his teacher thinks he is going to achieve" (p. 165).

Emans and Fox (1973) did a review of literature concerning teacher behaviors and their effects on a child's learning language arts. They conclude that teachers need to be aware of the receptive categories used by children of different ages and backgrounds to understand the implications of their art as teachers. Continuing, they state that some teachers help children to learn better than other teachers because they show different teaching behaviors. They feel that the difference is observable and reflects the kinds of learning experiences the children have.
Khan (1969) found that the attitude of pupils toward teachers correlated significantly with achievement for males but has nonsignificant correlations for females. Schmuck and Van Fgmond (1965) found the teacher-pupil relationship to influence academic performance and to be particularly significant for boys who were more responsive to a good teacher than to the proddings of their parents. Lippitt and Gold (1959) found boys receive more critical and girls more supportive remarks from teachers. They found the sex differences more pronounced with low status groups, with teachers far more supportive and less critical of low status girls than of low status boys.

Grambs and Waetjen (1966) maintain that

The middle class female teacher in the urban centers of the city may be in for serious trouble—not just because such schools are difficult and her understanding of the culture of poverty is nil, but also because sex-typing of boy behavior occurs much earlier in this culture. (p. 64)

They feel, further, that this phenomenon carries over into their reaction to boys who reject mothering and are aggressive. The investigators state that one of the obvious indications of this interaction is the generally discovered low relationship between female teachers' assigned grades and boys' achievement aptitudes in elementary schools.

Comparing fifth-fifth grades, Leacock (1969) found that the children about whom the teachers felt positive or neutral had an average IQ score about 10 points less than
those about whom she felt negatively.

In talking about the Negro children in her classroom, the teacher in the low-income classroom revealed the tendency (common enough, unfortunately) to rely heavily on compliant, "cooperative" children and to tangle with those of greater ability whose frustration is presumable reaching to rebellion. (pp. 137-138)

Risk (1970) states that teachers sometimes differentiate between children's ability to learn not on the basis of performance but on the basis of appearances which only indicate economic and ethnic background.

McNeil (1964), in a study employing programmed instruction and described earlier, ascribes differences in achievement between boys and girls to teachers' failure to adjust their procedures as well to certain behavioral tendencies of boys as to girls.

From reviewing the literature reported herein it seems that during the learning process the teacher has an effect upon the student's performance. White (1973) sums up quite succinctly the relationship between teacher and learner.

The teacher, however, is still a critical variable in the learning process, however the classroom situation is modified by group composition or individual aptitudes. Learning can be facilitated by the transaction that takes place between teacher and student. The teacher, through his or her expectations, attitudes, and strategies, can influence student achievement and self-concept. (pp. 308-309)
CHAPTER III

SAMPLES AND PROCEDURES

Samples

The subjects for this study will be drawn from an urban school district in Central Pennsylvania. There are currently 11,144 pupils in the district (7,336 Negro, 1 Indian, 13 Oriental, 266 Spanish surnamed, 3,517 Caucasian except Spanish, and 11 other students). The sample in this study will be drawn from the fourth grade of this system. There are currently 785 students in the fourth grade (594 Negro, 0 Indian, 0 Oriental, 9 Spanish surnamed, 281 Caucasian except Spanish, and 1 other).

From this fourth grade population, the sample will consist of all students in the district who have participated for two consecutive school years in the remedial reading program (n = 98). There are no other students in the fourth grade population who would qualify for inclusion in the sample in terms of the two consecutive years of participation requirement.

In dealing with the relative efficacy of a remedial mathematics and remedial reading program, the sample will consist of all fourth grade students in this district who 47.
have participated for two consecutive school years in both a remedial reading and remedial mathematics program \((n = 34)\). There are no other students in the fourth grade population who have participated for two consecutive school years in the remedial reading and remedial mathematics program.

The sample of teachers which will be used will be drawn from a population of 15 teachers who were involved in the remedial reading program. The selection of a sample was based on the criterion that a teacher should have instructed at least ten students over two consecutive years. There were four teachers who met this criterion.

The following are the characteristics of the teachers in the sample:

**Teacher A** is a White, unmarried female. She is 24 years of age with a B.A. in Elementary Education. She has been employed by the district for two years. Her total years of experience as a certified elementary teacher is 2 years, both of which were as a remedial reading and mathematics teacher.

**Teacher B** is a White, married female with 4 children. She is 45 years of age with a B.A. in Elementary Education and 9 hours of graduate credit. She has been employed by the district for 7 years. Her total years of experience as a certified elementary teacher is 9 years, 3 years of which were as a remedial reading and mathematics teacher.
Teacher C is a White, married female with 1 child. She is 58 years of age with a B.A. in Elementary Education. She has been employed by the district for 18 years. Her total years of experience as a certified elementary teacher is 30 years, 7 years of which were as a remedial reading and mathematics teacher.

Teacher D is a White, divorced female with 2 children. She has a B.A. in Elementary Education with 20 hours of graduate credit. She is 39 years of age and has been employed by the district for 5 years. Her total years of experience as a certified elementary teacher is 10 years, 2 of which were as a remedial reading and mathematics teacher.

All of the teachers in this sample as well as those in the population have completed at least 1 hour of in-service training in the operation of a remedial reading and mathematics room.

The remediation program is held in the building where the student attends school during the school year. The setting is a classroom specifically designated as a remedial room.

There is a maximum number of 6 students in the room at any one time. Each student is given a battery of tests to evaluate his individual strengths and wearinesses. As a re-
sult of the assessment, an individual prescription is written for each student. The teacher, in accordance with the prescription, selects materials to meet the needs of each student. There are progress charts kept on each individual with changes in materials and approaches being made as they are deemed necessary. The basic philosophic approach of the remedial room would best be defined as eclectic. Each teacher is assisted by a teacher's aide.

The data to be used in this study will be collected from the information in the files of a Central Pennsylvania urban school district. This data is information relative to students' performance in a Title I, ESEA project. The permission of the Superintendent of Schools and Director of Federal Programs was obtained before access to this data in its raw form was granted. The pretest data was obtained in June, 1972 on the Stanford Achievement Test, the 1964 Edition, in terms of grade equivalents for the Paragraph Meaning and Arithmetic sections. The posttest data was obtained in June, 1974 on the Stanford Achievement Test, the 1973 Edition, in terms of grade equivalents for the Reading and Mathematics Concepts sections. The translation of grade equivalents of the 1964 Edition of the Stanford Achievement Test will be done in accordance with the directions and tables supplied in the Stanford Research Report #5, 1973 (Test Department, 1973). All data described above were
collected by trained psychometricians of the school district. The translation of grade equivalents will be done by this investigator.

**Statistical Analysis**

A fixed effects, single classification model of Analysis of Variance will be used to test hypotheses 1 and 2. To maintain consistency in the analysis, ANOVA was chosen because of the presence of more than two groups in the teacher effects hypothesis. The robustness of the F statistic is such that some discrepancy in the assumption of randomness and homogeneity of variance would not invalidate the procedure (Wert, Neidt, & Ahmann, 1954, p. 184). Of more serious concern is the variation in the number of subjects in the groups pertaining to Poverty vs. Non-Poverty, and Caucasian vs. Non-Caucasian. The discrepancy, however, reflects the actual distribution in the population and will be so used. Klugh (p. 263) indicates that unequal n's pose no real problem when using one-way analysis of variance, as it would in factorial designs.

The ANOVA analysis will be used at pretest time to determine the equivalency of the groups. Should significant differences at the .05 level occur between groups at the outset, analysis of covariance using the pretest scores as covariants will be utilized.
An analysis of the posttest scores using ANOVA, where indicated, will determine if any significant differences exist between groups along the dimensions listed below:

1. Poverty vs. Non-Poverty
2. Male vs. Female
3. Caucasian vs. Non-Caucasian
4. Years in school beyond grade level vs. Years in school at appropriate grade level

The use of these statistical procedures will enable us to determine if there are significant variations in performance as a consequence of the variables studied, thereby allowing us to fail to accept the null hypotheses.

In order to test \( H_0^3 \), the Chi-Square technique will be used in a 2x2 contingency table. This statistical procedure will assist us in determining whether or not an association exists between a subject's mathematics performance and reading comprehension performance.

A 2x2 contingency table will display the numbers of students at or above the mean score for the group against those below the mean through mathematics and reading comprehension performance. The sample is sufficiently large so that the observed frequencies in each cell will be greater than 5. The data to be analyzed can also be classified into mutually exclusive categories. If the value of the Chi-Square is significant at the .05 level, the null hypothesis will be rejected.
The .05 level of significance will be used. Because of the fixed effect design, all conclusions will relate solely to the levels of the groups tested. It is assumed that the dichotomy established will provide meaningful information as a consequence of maximal differences.
CHAPTER IV

RESULTS

This chapter deals with the results of the statistical analysis which were employed in this study. There are three main hypotheses in this study, each of which were subjected to pretreatment and posttreatment analysis. The results of those analyses are presented in the following format: The results of pretreatment analysis are given for each hypothesis with the results of posttreatment analysis following.

The criterion measures used in this study were achievement scores in the Reading Comprehension and Mathematics Concepts subtests of the Stanford Achievement Tests (1964 and 1973 Editions). The translation of grade equivalents of the 1964 Edition of the Stanford Achievement Test into grade equivalents on the 1973 Edition of the Stanford Achievement Test was done in accordance with the directions and tables supplied in the Stanford Research Report #5, 1973 (Test Department; 1973).
Pretreatment Analyses

Since a fixed effects, single classification model of Analysis of Variance (ANOVA) was chosen to analyze the results pertaining to \( H_{01} \) and \( H_{02} \), an examination of the pretest scores was necessary to determine the feasibility of ANOVA. If a significant difference at the .05 level would have obtained at pretest, an analysis of covariance would then have been employed to treat the data as indicated earlier.

Hypothesis 1 stated: There will be no significant difference in achievement gains in a remedial reading comprehension program when the students are classified along the following variables:

1. Male vs. Female
2. Caucasian vs. Non-Caucasian
3. Poverty vs. Non-Poverty
4. Years in school beyond grade level vs. Years in school at grade level

The sample consisted of all students in the district who had participated for 2 consecutive school years in the remedial reading program \( (n = 98) \).

Table 1 indicates the selected variables, the number of students, the means, standard deviations and the appropriate \( F \) ratio on the pretest data related to \( H_{01} \).
<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>56</td>
<td>1.27</td>
<td>0.32</td>
<td>10.62*</td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>1.50</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>25</td>
<td>1.37</td>
<td>0.36</td>
<td>.0015</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>73</td>
<td>1.37</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td><strong>Socioeconomic status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-poverty</td>
<td>12</td>
<td>1.37</td>
<td>0.36</td>
<td>.09</td>
</tr>
<tr>
<td>Poverty</td>
<td>86</td>
<td>1.34</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td><strong>Years in school</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beyond grade level</td>
<td>34</td>
<td>1.34</td>
<td>0.32</td>
<td>.42</td>
</tr>
<tr>
<td>At grade level</td>
<td>64</td>
<td>1.39</td>
<td>0.37</td>
<td></td>
</tr>
</tbody>
</table>

α .05, 1,96 df = 3.96
The significant F ratio regarding the sex variable required that Analysis of Covariance be used at posttest time. The groups within the remaining selected variables were not significantly different at pretest therefore ANOVA, as originally planned, was used for the posttest analysis.

An examination of the means and standard deviations for race, socioeconomic status, and years in school, as presented in Table 1, shows that they are quite comparable.

Tables 2,3,4, and 5 are analysis of variance tables for pretest scores along the selected variables relative to Ho1. As shown in these tables, sex was the only variable which was significant beyond the .05 level.

The results of the pretest regarding Ho1 indicate, therefore, that ANOVA can be employed in the analysis of posttest data relating to the variables of race, socioeconomic status, and years in school. The significant difference in achievement scores at pretest with relation to the sex variable indicates that analysis of covariance will be used at posttest time on the pertinent data.

Hypothesis 2 states: There will be no significant difference as a result of teacher effects upon the students' performance in a remedial reading comprehension program. The .05 level was chosen as the level of significance. The teachers employed in testing this hypothesis met the criterion of having instructed at least 10 students for 2 consecutive years (n = 4).
### Table 2

**Pretest Analysis of Variance for Sex**

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>123.44</td>
<td>123.4</td>
<td>10.62*</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>1124.98</td>
<td>11.72</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>1248.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* \( \alpha .05, \_\_ .05, 1,96 \text{ df} = 3.96 *

### Table 3

**Pretest Analysis of Variance for Race**

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>.02</td>
<td>.02</td>
<td>.0015</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>1248.40</td>
<td>13.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>1248.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* \( \alpha .05, 1,96 \text{ df} = 3.96 *

### Table 4

**Pretest Analysis of Variance for Socioeconomic Level**

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>1.13</td>
<td>1.13</td>
<td>.87</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>1247.29</td>
<td>12.99</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>1248.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* \( \alpha .05, 1,96 \text{ df} = 3.96 *
Table 5

Pretest Analysis of Variance for Years in School

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>5.38</td>
<td>5.38</td>
<td>.415</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>12.95</td>
<td>12.95</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \alpha .05, 1,96 \text{ df} = 3.96 \)
Table 6 indicates the number of subjects, means, standard deviations and F ratio for the variable of teacher effect. Since there was a nonsignificant F ratio at pretest time, ANOVA will be utilized at posttest analysis. There is a disparity between the SDs of teachers B and C, .85 and .12 respectively. Although this range appears relatively high, it has been indicated that the assumption of equal variance is not as critical as thought earlier. The F test has been proven a robust one even in this circumstance (Wert, 1954).

Table 7 presents the analysis of variance for pretest scores along the variable of teacher effect. Since the results of pretest analysis of teacher effects were nonsignificant, ANOVA was used at posttest.

In order to test H03 the Chi-Square technique was used in a 2x2 cell contingency table with the .05 level being set for significance. Hypothesis 3 states: There will be no significant differences in group achievement gains in reading comprehension and mathematics for students who participated in remedial programs in both subjects. The sample consisted of all fourth-grade students in this district who had participated for 2 consecutive years in both a remedial reading and remedial mathematics program (n = 34). Table 8 is the 2x2 contingency table for the pretest scores with the observed frequency table.
### Table 6

Number of Subjects, Means, Standard Deviations, and F Ratios for Selected Teachers in Ho2

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>1.49</td>
<td>.37</td>
<td>1.504</td>
</tr>
<tr>
<td>B</td>
<td>11</td>
<td>1.15</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>19</td>
<td>1.45</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>15</td>
<td>1.25</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>1.34</td>
<td>.55</td>
<td></td>
</tr>
</tbody>
</table>

$\alpha .05, 3,51 df = 2.79$

### Table 7

Pretest Analysis of Variance for Teacher Effect in Ho2

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>3</td>
<td>106.88</td>
<td>35.63</td>
<td>1.504</td>
</tr>
<tr>
<td>Within groups</td>
<td>51</td>
<td>1560.10</td>
<td>30.59</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>1666.98</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$\alpha .05, 3,51 df = 2.79$
### Table 8

Observed Frequencies in Reading and Mathematics at Pretest for $H_{03}$ ($n = 34$)

<table>
<thead>
<tr>
<th></th>
<th>Reading</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>At or above $M$</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Below $M$</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>34</td>
</tr>
</tbody>
</table>
Table 9 presents the Chi-Square analysis at pretest and it indicates that there was no significant difference at pretest time. It should be noted that, although non-significant results obtained at pretest time in regard to the relationship between reading comprehension achievement and mathematics achievement, the Chi-Square obtained was approaching significance.

In summary, the analyses presented relative to pretest data indicate that except for the sex variable in \( H_0^1 \) that all of the other variables could be treated by ANOVA at pretest time. The significant difference occurring at pretest indicates that analysis of covariance be applied at posttest time to the data relating to the sex variable. In the pretest analysis relative to teacher effects (\( H_0^2 \)), the employment of ANOVA at posttest is also indicated since non-significance was found. The Chi-Square at pretest for \( H_0^3 \) was nonsignificant, although it was approaching significance. The Chi-Square technique was employed to test \( H_0^3 \) at posttest time.

**Posttreatment Analyses**

The format for this section will parallel that used in the reporting of pretest data. The results of the analyses of the data obtaining at posttest time will be presented hypothesis by hypothesis.
Table 9

Chi-Square Analysis at Pretest for Ho3

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>34</td>
<td>1.32</td>
<td>.31</td>
<td>2.946</td>
</tr>
<tr>
<td>Math</td>
<td>34</td>
<td>1.45</td>
<td>.38</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>1.39</td>
<td>.35</td>
<td></td>
</tr>
</tbody>
</table>

$\chi^2.05, 1 \text{ df} = 3.841$
In the pretest analysis of data pertaining to Ho, it was ascertained that ANOVA would be employed in testing for the effects of race, socioeconomic status, and years in school. To test for the significance of the sex variable, it was found that a significant difference obtained at pretest time and in accordance with the statistical design an analysis of covariance was performed on the data relating to the sex variable.

Table 10 presents the analysis of covariance and it is nonsignificant; thereby it is not possible to reject that part of Ho, which uses sex as a differentiating variable. Although the analysis of covariance was the statistic whose use was indicated by the pretest finding of significance when ANOVA was utilized, an ANOVA was performed also on the posttest data with sex as a differentiating variable. Table 11 presents the posttest means, standard deviation, and F ratio for the variable of sex in Ho.

The F score on the sex variable is significant and if this were the only statistic employed, it would have been possible to reject Ho as it pertains to the sex variable. This, however, as shown in Table 10 was not the case when analysis of covariance was employed. It should be noted, however, that the size of the F at pretest and posttest utilizing ANOVA, 10.62 and 5.91 respectively, was greatly diminished.
Table 10
Covariance Test of Significance of the Sex Variable and Achievement in Reading Comprehension in Ho₁

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>95.18</td>
<td>95.18</td>
<td>1.426</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>6340.34</td>
<td>66.74</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>6435.52</td>
<td>67.0366</td>
<td></td>
</tr>
</tbody>
</table>

α.05, 1,96 df = 3.96

Table 11
Posttest Means, Standard Deviations, and F Ratios for the Sex Variable in Ho₁

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>56</td>
<td>2.85</td>
<td>.78</td>
<td>5.91*</td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>3.29</td>
<td>.99</td>
<td></td>
</tr>
</tbody>
</table>

*α.05
The remaining three differentiating variables of $H_{01}$—race, socioeconomic status, and years in school—had nonsignificant F scores at pretest time and in accordance with the statistical design of this study, the posttest scores were subjected to analysis by ANOVA. Table 12 presents the selected variables, the number of students, means, standard deviations, and the appropriate F ratio on the posttest data related to $H_{01}$.

Tables 13, 14, and 15 present the sources of variations for the variables of race, socioeconomic status, and years in school at posttest.

The results of the ANOVA analysis for the three variables of race, socioeconomic status, and years in school were all nonsignificant. The results indicate that it is not possible to reject $H_{01}$ at the .05 level of significance. The results of these analyses presented in Tables 13, 14, and 15 as well as the result of the analysis of covariance presented in Table 10 does not enable the rejection of $H_{01}$ and all its components.

The ANOVA conducted at pretest relative to $H_{02}$ was nonsignificant and in accordance with the design of this study an ANOVA was employed at posttest time to determine whether or not the teacher is a significant factor in student achievement in a remedial program of reading comprehension.
Table 12

Selected Variables, Means, Standard Deviations, and F Ratios for H₀₁ at Posttest

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>25</td>
<td>3.04</td>
<td>.91</td>
<td>.0013</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>73</td>
<td>3.04</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poverty</td>
<td>86</td>
<td>3.04</td>
<td>.81</td>
<td>.530</td>
</tr>
<tr>
<td>Non-poverty</td>
<td>12</td>
<td>3.22</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Years in school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beyond grade level</td>
<td>34</td>
<td>2.87</td>
<td>.73</td>
<td>1.507</td>
</tr>
<tr>
<td>At grade level</td>
<td>64</td>
<td>3.13</td>
<td>.97</td>
<td></td>
</tr>
</tbody>
</table>

α.05, 1,96 df = 3.96
Table 13

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>.01</td>
<td>.01</td>
<td>.0013</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>7941.02</td>
<td>82.72</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>7941.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

α .05, 1,96 df = 3.96

Table 14

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>43.77</td>
<td>43.77</td>
<td>.530</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>7897.26</td>
<td>82.26</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>7941.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

α .05, 1,96 df = 3.96

Table 15

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1</td>
<td>150.65</td>
<td>150.65</td>
<td>1.507</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>7790.38</td>
<td>81.15</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>7941.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

α .05, 1,96 df = 3.96
Table 16 presents the number of subjects, the means, standard deviations, and \( F \) ratios at posttest for the selected teachers employed in \( H_{02} \).

Table 17 presents the sources of variance for the teacher effects of \( H_{02} \). The ANOVA performed on the posttest data of \( H_{02} \) is nonsignificant at the .05 level. This result indicates that it is not possible at this time to reject the null hypothesis which stated there would be no statistically significant difference as a result of teacher effect upon the students' performance in a remedial reading comprehension program. The fact that the \( F \) ratio is approaching significance must be noted and its implications will be dealt with in the appropriate chapter of this study.

The Chi-Square technique was used in a 2x2 contingency table with the .05 level being set for significance to determine the relationship between achievement in a remedial reading comprehension and achievement in a remedial mathematics program. Table 18 is the 2x2 contingency table for the posttest scores with observed scores being reported.

Table 19 presents the Chi-Square analysis between achievement in remedial programs of reading comprehension and mathematics at posttest.

The nonsignificant result of the Chi-Square analysis does not permit the rejection of the \( H_{03} \): There are no sig-
Table 16

Number of Subjects, Means, Standard Deviations, and F Ratios for Selected Teachers at Posttest

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>3.41</td>
<td>.55</td>
<td>2.37</td>
</tr>
<tr>
<td>B</td>
<td>11</td>
<td>3.52</td>
<td>1.16</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>19</td>
<td>3.28</td>
<td>.68</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>15</td>
<td>2.75</td>
<td>.87</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>3.21</td>
<td>.89</td>
<td></td>
</tr>
</tbody>
</table>

\( \alpha .05, 3, 51 \text{ df} = 2.79 \)

Table 17

Posttest Analysis of Variance for Ho2

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>3</td>
<td>467.75</td>
<td>155.92</td>
<td>2.37</td>
</tr>
<tr>
<td>Within groups</td>
<td>51</td>
<td>3882.80</td>
<td>76.13</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>4350.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \alpha .05, 3, 51 \text{ df} = 2.79 \)
Table 18
Observed Frequencies in Reading and Mathematics at Posttest for H03 (n = 34)

<table>
<thead>
<tr>
<th></th>
<th>Reading</th>
<th>Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>At or above the mean</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Below the mean</td>
<td>21</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 19
Chi-Square Analysis at Posttest for H03

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>34</td>
<td>3.02</td>
<td>.86</td>
<td>1.482</td>
</tr>
<tr>
<td>Math</td>
<td>34</td>
<td>3.31</td>
<td>.79</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>3.24</td>
<td>.75</td>
<td></td>
</tr>
</tbody>
</table>

α.05, 1 df = 3.841
significant differences in group achievement gains in reading comprehension and mathematics for students who participated in remedial programs in both subjects.

Discussion

Hypothesis 1 had 4 components: sex, race, socioeconomic status, and years in school. They will be treated in that order.

Pauley (1951), Balow (1963), Feldhusen et al. (1974), and Maccoby (1972) found differences in reading achievement favoring girls. In this study, the pretest data found significant differences which would concur with the previously cited researchers. There was, however, no significant difference at posttest and this result runs contrary to the results of the research cited above. Sinks (1965), in a study of over 3,000 children in grades 4 through 8, found, contrarily, that no generalizations could be found on the basis of sex and reading achievement. The result of this experiment, therefore, has support in previous experiments, although the preponderance of previous research has found differences in reading achievement favoring girls.

There was found, however, a significant regression coefficient between the groups (F = 4.491) when analysis of covariance was performed. Elashoff (1969) indicates that this finding does not necessarily invalidate
the results. As reported in Table 11, at posttest an F ratio of 5.91 was found when ANOVA was applied. Although this is a questionable statistic to be utilized in light of the significant pretest ANOVA (F = 10.62), this finding leads to some speculation regarding this program especially when the diminishing size of the F ratio is considered.

An assumption can be made that when the diminishing F ratio of ANOVA as well as the significant group regression coefficient is considered that differences in performance consistency are occurring between sexes. That is, the boys in this sample appear to be performing more consistently throughout this program than girls. Since both groups made gains in reading achievement score, continuing the program over an extended period of time would seem likely to result in more consistency of gains by boys in reading achievement scores than for girls.

Callaway (1974) found race to be a significant factor with White children scoring significantly higher than Black children in reading and language. Chansky (1965) found, as a result of his studies, that there is no chance to make all or none statements relative to the relationship between sex, race, treatment, and achievement. Peisach (1965) and Deutsch (1967) found that when race and socioeconomic status were studied socioeconomic status appears to be the more significant variable when reading achievement is studied.
When examining the two analyses which were employed in this study regarding the variable of race, the results are so consistent (pretest $F = .0015$ and posttest $F = .0013$) that the only statement that can be made is that there are no significant differences in achievement gains in this remedial reading comprehension program among races. Failure to reject the hypothesis as stated in this study might be equivalent to accepting same for this sample.

Although there is a disparity of $ns$ in this sample, this fact is of little consequence because of the robustness of the $F$ technique in a single effect, classification model. It should be noted also that the size of the $ns$ are a reflection of the actual distribution in the population from which this sample was drawn.

In dealing with the variable of socioeconomic status, we are faced with a very distinct bias in sampling. This program, as funded, is designed specifically for poverty level students as defined in this study. There are, however, included in this program, upon the recommendation of a teacher or counselor, some students who do not meet the criterion of poverty level but who are in need of remedial help. The disparity in sample size is an error of bias in sampling in this study, although this error is not as gross as might be assumed when the socioeconomic status of the population from which this sample was drawn is considered.
Jantz (1974), Wilson (1966), O'Reilly (1969), and Brown (1964), in their investigations, found socioeconomic status to be a significant factor in differences in reading achievement scores with the higher socioeconomic groups being favored. The results of the analyses performed at pre- and posttest in this study do not confirm these findings. There is, however, a trend of an increasing F ratio (pre-.09 and post-.53) which indicates differentiating functioning in achievement score gains favoring the non-poverty group in this sample as a result of inclusion in this remedial reading comprehension program.

Pauley (1951) found that age was not a significant factor for explaining differences in achievement levels. The result of this study conform with Pauley but, as in the case of the socioeconomic status variable, there is an increasing F ratio (.42 and 1.507 respectively). This again indicates a trend of differentiating functioning as a result of years in school favoring those whose grade level corresponds to 1 year advancement for each year of school attendance after initial enrollment in the first-grade. The argument might be made that the existence of the increasing ratio is merely a result of preexisting differences in abilities. That is, the increasing F ratio is not a function of program participation but is related to another variable which could possibly explain the disparity between age and grade placement (e.g., intelligence).
In summarizing the results of the analyses of Ho1, the finding for the sex variable seems to indicate that there are no differences in achievement gains as a function of this remedial reading comprehension program along this variable. There is an indication, however, that boys perform more consistently than girls in this program. The race variable has shown no differentiating effects. The variables of socioeconomic status and years in school indicate a trend towards differentiation.

Hypothesis 2 deals with reading achievement and teacher effects. The literature on teacher effects as evidenced by Rosenthal and Jacobson (1968), Brophy and Good (1970), Miller (1971), Wheat (1974) and Emans and Fox (1973) all conclude that there is a definite relationship between teacher expectations, language, perceptions by students, awareness of students' life styles and achievement. White (1973) summarizes the literature on teacher effect by asserting that the teacher is still a critical variable in the learning process.

This investigation did not find the teacher variable to be a significant factor. There was, however, a trend towards significance as indicated by the increasing F ratios, 1.50 to 2.37 respectively (.05 F = 2.75). This trend would appear consistent with earlier studies. If this study were continued over a period of 1 or 2 additional
years and there were no changes in other variables, a finding of significant teacher effects would probably occur.

Johntz (1966) and Passey (1966) have posited that culturally deprived children succeed more readily in mathematics than in reading since mathematics is posited to be more culturally free. Deutsch (1967) found the same using the Stanford Achievement Test as the criterion measure. Cottrell (1968) states that is is logical that low achievers in reading typically achieve poorly in mathematics since mathematics problems have to be read and translated in order to be solved. Fay (1965), Chase (1961) and Corle and Coulter (1964) conclude from their studies that a pupil's success in mathematics is directly related to his ability to read and interpret written material. The studies cited indicate that there is some conflicting opinion regarding the relationship between reading and mathematics achievement.

The analysis conducted at pretest relative to H₀³, the relationship between reading achievement and mathematics achievement, does not reach the .05 level so rejection of the null hypothesis is not permitted. The obtained Chi-Square of 2.946 is approaching significance at the .05 level ($\alpha$.05, 1 $df = 3.841$). Although the Chi-Square is not statistically significant, there is clearly a trend at pretreatment for the sample in this study to achieve better in mathematics than in reading in accordance with the findings of Deutsch (1967), Passey (1966), and Johntz (1966).
The findings of this study, however, are opposed to those researchers who found a distinct relationship between reading and mathematics achievement. At posttest time the Chi-Square of 1.482 indicates a trend of decreasing differences in reading and mathematics achievement gains for this sample. This result would appear then, contrary to the findings of Fay (1965), Chase (1961), Collier and Redmond (1974), that in this program increasing proficiency in reading achievement has not resulted in a proportionate corresponding increase in mathematics achievement.

Conclusions

The findings in this study suggest that the remedial program employed does not differentiate between students' gain in achievement scores along the following variables: sex, race, poverty level, and years in school. The only significant difference that obtained was at pretest with the variable of sex. The significant difference favoring girls, however, was not present at posttest.

There was, however, a trend evident in regard to the sex variable which indicated that the boys in the sample made more consistent gains than the girls. The variable of race did not indicate any trend toward differentiation and the only conclusion that can be stated is that there is no significant difference between Caucasians' and non-
Caucasians' gains in achievement scores as a result of inclusion in this remedial reading program. A trend toward differentiation along the variables of socioeconomic status and years in school was evident.

The results obtained in dealing with the variable of teacher effects were nonsignificant. There was, however, a trend toward differentiation which indicates that if the study had been conducted over a longer period of time that a teacher effect would have obtained.

The relationship between reading achievement and mathematics yielded a nonsignificant result. The obtained Chi-Square at posttest indicates a trend of decreasing differences in reading and mathematics gains. This result indicates that in this program, therefore, increasing proficiency in reading achievement has not resulted in a proportionate corresponding increase in mathematics achievement.
CHAPTER V

SUMMARY AND IMPLICATIONS FOR FUTURE RESEARCH

Summary

There were three main hypotheses investigated in this study. The first hypothesis dealt with the differentiating effects of a remedial reading program among the following variables: sex, race, socioeconomic status, and years in school. The results of the analyses of data performed indicated no significant differences. The experimenter, thereby, was unable to reject $H_0$.

The second hypothesis tested dealt with the variable of teacher effects in a remedial reading program. The result of the analysis of data that was performed did not reach the significance level set for the rejection of the stated hypothesis.

The third hypothesis formulated examined the performance of students in remedial programs of mathematics and reading comprehension. Since the analysis of data did not yield significant differences, the hypothesis as stated could not be rejected.
Limitations

The sampling procedure employed in this study was not random. The subjects employed in this study were chosen for participation in an in situ remedial program in an inner city school system based mainly on the criterion of poverty level as defined in this study. Therefore, there will be a disparity of ns regarding the variables of socioeconomic status and race. The disproportionate number of ns does, however, reflect the population of this school district.

Generalizations from the findings of this study must be limited to the levels of the variables used as is the case of single effect, one-way analysis of variance. For example, the poverty level is a dichotomy based upon the operational definition set forth in this study. There is no consideration given to any intermediate level of poverty. The race variable is also dichotomized, as is number of years in school. These restrictions were, however, imposed by the size of the sample.

In the analysis of covariance regarding the sex variable, there was a significant group regression coefficient. Although this finding is considered non-critical by some (Elashoff, 1969), others would consider the results questionable.
Implications for Future Research

The following implications for future research evolve logically from the results obtained in this investigation:

1. The trends evidenced in this study indicate that a longitudinal investigation would be beneficial. An extended study would indicate whether or not the trends evident herein were significant. If the results obtained follow the trends as evidenced in this study, decisions regarding length of time, participants, and effectiveness of program for participants could be more logically made. This type of study could be conducted through an ongoing analysis of the program as it now exists. The records of the students who were the original subjects in this study and who continued in the remedial program could be analyzed at the end of their third, fourth, and fifth year of participation. The information as garnered could then be subjected to appropriate statistical analysis.

2. An investigation of interaction effects should be conducted provided that the size of the sample is sufficient to warrant same. Such a study would be extremely beneficial in truly assessing the effectiveness of the remedial programs studied. With such a study, no one criterion measure such as poverty would be the main determining factor for inclusion in a
remedial program. A more scientific selection proce­
dure could be implemented. This type of study would
not only more accurately identify those who might bene­
fit from inclusion in such a program but also would
identify those for whom inclusion in such a program
might be detrimental.

In order to conduct such a study, the program
would necessarily have to be expanded in order to in­
crease the numbers of participants who are non-poverty
and Caucasians. This would necessitate broadening the
base for selection of students or initiation of the
same program in a larger school district where in the
course of random selection of students the ns in these
categories would be increased.

3. With random sampling, a study would be conduc­
ted which would permit generalization of results. In
order to conduct such a study, a larger population
would be needed from which to draw a sample. More re­
finfed operational definitions of the terms race, socio­
economic status and years in school would be necessary.
If these two criteria were met our findings then could
be extended beyond the dichotomized variables as they
now exist in this study. The findings of the study
described above then could be more widely generalized,
especially if the size of the population under con­
sideration lent itself to random selection.
Sources of Error

In treating sources of error one is faced with the prospect of dealing with two types of validity: external and internal. Campbell and Stanley (1963) will serve as the guideline for the discussion to follow. There are basically six possible sources of error to be dealt with in this study: history, instrumentation, maturation, testing, regression, interaction of sampling and variable, and non-comparative study.

This study subsumed a 2 year period during which many historical events occurred. Since experimental isolation was not employed in the study the possibility of history's being a plausible rival hypothesis must be considered. The effects of history were minimized since the sample was also the population.

Instrumentation must be considered as a source of error with the study under consideration. There were different test administrators at pre- and posttest. Although all the examiners were trained psychometricians, the factor of individual differences in testing approach and procedure must be considered even though similar training was afforded to all the examiners. Since this error was distributed throughout the population, the effect of the error of instrumentation was minimized.
Maturation in terms of spontaneous remission as described by Campbell and Stanley (1963, p. 8) must be taken into account. It is possible that gains in achievement scores might have obtained for these students even if they had not participated in a remedial program and the gains as noted were not the result of the intervening variable. The effect of spontaneous remission was minimized by the specific nature of the remedial program as well as the systematic manner in which the program was administered.

Since equivalent tests were used and restandardization of norms occurred, the changes in performance as noted in this study might have been an artifact of both testing awareness and sophistication as well as a result of the restandardization of norms. The effects of this possible error were evenly distributed throughout the sample and therefore minimized.

The significant regression coefficient has already been discussed as a possible source of error. Elashoff (1969) does not find it to be of paramount importance in regard to the use of the analysis of covariance results.

The sixth possible source of error to be considered is the interaction of selection and the intervening variable--remedial programming. No generalizations can be made from the study except as they refer to the specific population employed. In as much as there was non-random sam-
pling employed herein, this constraint is all the more binding upon the researcher but if followed, interpretations of the results of this study can be made when applied to the specific population studied.

The final possible source of error to be considered is the fact that this study did not include a comparative group. This possible error was minimized since the study used the whole population as the sample.
APPENDIX

REMEDIAL READING AND MATHEMATICS PROGRAM
(BASIC SKILLS PROGRAM)
Overview of the Basic Skills

The Basic Skills Program places its primary emphasis on improving reading skills, mathematic skills, handwriting skills, speaking skills (communication skills). Testing is used to diagnose a child's strengths and weaknesses. The teacher selects appropriate materials to enhance the child's strengths and overcome his weaknesses. With the use of a prescription sheet, the teacher can prescribe the activities needed.

In addition to the prescribed activities, the child is led into wide diversified reading in order to use the skills he has developed. These skills include vocabulary development, comprehension, work attack, speaking skills, listening skills, library skills, and writing skills. The child is continually re-evaluated throughout the year to determine his development.

On teacher request, the basic skills teachers provide individualized materials for testing as well as a continuous flow of other basic skills materials to reinforce the child's effort after he returns to the classroom.
PRESCRIPTION WRITING

Prescription writing is a plan for an individual to improve and master a particular objective or skill on the learning level. The careful analysis of background data, placements and pre-test results has proved direction for the prescription. The placement test will identify the unit and level of work for each student and the pre-test will indicate the specific skill of the level. The background information will indicate the unique characteristics of the student. The initial prescription will indicate the level of work and the skills to be mastered. One skill at a time will be prescribed, making every attempt to raise the entering behavior score to a mastery level.

The prescription must indicate the kinds of instructional material to be used:

Self-instructional material, textbook assignment, workbook assignment, or manipulative devices.
OBJECTIVES: SPECIFIC

TEACHER BEHAVIOR

1.4.5 Given a maximum group of six students, the teacher will determine the students' basic skills strengths and weaknesses. (intensive diagnosis)

Through the use of a series of tests, which are listed below, the teacher determines the basic ability of the student.

TESTS

A. Write the alphabet (print and write)
B. Dolch List
C. Phonics Tests (one or more of the following)
   1. Phonics Survey
   2. Botel Phonics Test
   3. Bennett's Test for Phonics
   4. My Own Book for Word Building
   5. Hauserman's Test (H-J)
D. Weapman Auditory Discrimination Test
E. Gates Visual Discrimination Test
F. Horst Reversals
G. Van Wageman Assoc. Learning Test
H. W.I.S.C. Digit Span
I. Comprehension Test
   1. Sequencing
   2. Comprehension Questions
   3. De Hirsch Categories Task
   4. Detroit Verbal Opposite
J. Vocabulary
   1. Word Opposite (Botel)
K. Stanford Achievement Test

The test results of testing will be interpreted and given to the homeroom teacher. The objectives of the testing is to identify strengths and weaknesses of the students.

1.4.6 Given a group of six students, the teacher will select materials to enhance the students strengths and overcome his weaknesses.

1.4.7 Given a small group of students the teacher will provide each student with the opportunity to read aloud and silently.
1.4.8 Given a small group of students, the teacher can test and provide materials to teach comprehension, vocabulary and word attack skills.

1.4.9 Given a small group of students, the teacher will provide students with a wide variety of learning materials that can be used on an individualized basis in the area of mathematics.

1.4.10 Given a small group of students, the teacher will extend student interest in wide and diversified mathematics through the use of concrete learning materials.

**TEACHER COMMUNICATION BEHAVIOR**

1.4.11 Given the test results of each student, the classroom teacher can better reinforce the child's strengths and correct his weaknesses.

1.4.12 Given a student with a particular learning disability, the reading lab teacher can recommend, with classroom teacher approval, further selective testing by the school psychologist.

1.4.13 Given a student with a particular behavioral problem, the reading lab teacher can recommend with classroom teacher approval, counseling by the school guidance counselor.

1.4.14 The classroom teacher should be aware that the Basic Skills Lab is only a supplemental program for the child and he must receive reading instruction from his classroom teacher.

1.4.15 The classroom teachers have available to them, resource materials and equipment when they are not in use by the Basic Skills Teacher.

1.4.16 It is the responsibility of the classroom teacher and principal to visit and observe their children in the lab when it is in operation.

1.4.17 The Basic Skills Teacher is available to give teachers specific materials for a specific child.

1.4.18 The Basic Skills Teacher has available to the classroom teacher resource reading textbooks.
PUPIL BEHAVIOR

1.4.19 Given an opportunity to read selective materials on his instructional level, the student will work to overcome his weaknesses.

1.4.20 Given an opportunity to develop his writing skill, the student will work to overcome his weaknesses.

1.4.21 Given an opportunity to select his own books on his independent level, the student can use his strengths and practice his newly acquired skills:

1.4.22 Given an opportunity and selected materials, the student can develop listening skills in order to improve his basic skills.

1.4.23 Given an opportunity to develop his verbal skills, the student will improve his ability to communicate.

1.4.24 Given a prescription in mathematics or reading, the student will pace his basic skill learning to his own speed and ability without frustration.

1.4.25 Given an opportunity to extend his interest in mathematics through the use of concrete and manipulative learning materials, the student will work to overcome his mathematic problems.

1.4.26 Hopefully by the end of the program, the student will show an improvement in his attitude concerning his reading and mathematics.

1.4.27 At the end of the program, the student, after receiving intensive individual attention, will show an improvement in the lab behavior, hopefully to be carried over into the regular classroom.
CURRICULUM

TEST

A. Write alphabet (Write and print)
B. Dolch List
C. Phonics Test (One of the following
   1. Phonics Survey
   2. Botel
   3. Bennett's Phonics Test
   4. My Own Book for Word Building
   5. Hauserman's Test
D. Weapman Auditory Discrimination
E. Gates Visual Discrimination
F. Horst Reversals
G. Van Wageman Assoc. Learning Test
H. W.I.S.C. Digit Span
I. Comprehension Tests
   1. Sequencing
   2. Comprehension Questions
   3. De Hirsch Categories Task
   4. Detroit Verbal Opposite
J. Vocabulary
   1. Botel Word Opposite Test
K. Stanford Achievement Test

REMEDIATION ACTIVITIES: (Examples)

A. Alphabet
   1. Phonics We Use - A
   2. Hoffman - Phonetic Sounds
   3. Singer - Initial Consonants
   4. Writing Drill with alphabet
   5. Continental Press - Alphabet
   6. Alphabet Sorting Tray
   7. Alphabet Soup
   8. "I'm Thinking of a Letter Game"
   9. Categorical Sound System
10. Troll Alphabet
11. Buddy Puzzle - My Weekly Reader
12. Try It - Harcourt, Brace & World
13. Conquest in Reading
B. Dolch List (Plus other frequently used words)
   1. Divide list into groups for grades
   2. "Popping Words"
   3. Incomplete Sentence Form
   4. If the child doesn't know the word, have him give you a sentence with the word, write it, and underline the word.
5. Teach confusing words together
   Example: Teach want, then teach went and
   then teach them combined.
6. "I'm Thinking of a Word Game"
7. Concentration Game using Dolch Words.
8. Dolch Tapes with Cards
9. Grober Program
10. Look Game
11. Sentences where the child inserts the miss-
    ing Dolch Word.
12. Drill

C. Phonics
   1. Consonants
      a. Phonics We Use - Book A-B (Initial &
         final)
      b. Conquest in Reading (Initial & final)
      c. Record
         (1) Reading & Spelling with
         Phonics
         (2) Listen & Learn with Phonics
         (Initial & final)
      d. Spelling Learning Games Kit (Initial &
         final)
      e. Durrell - Murphy Phonics Practice
         Program (Initial & final)
      f. Reader's Digest Skill Pads #1 & #2
         (Medial, initial & final)
      g. Group Sounding Game (Initial & final)
      h. Sounds and Story Tapes
      i. Bibs - Nicky (Initial & final)
      j. Troll Sounds (Initial)
      k. Hoffman (Initial & final)
      l. Singer Initial Consonant Kit
      m. SRA Word Games (Initial & final)
      n. Phonetic Quizmo (Initial)
      o. Cross Country (Initial & final)
      p. Criss Cross (Initial & final)
      q. Fat Cat (Initial & final)
      r. Consonant Cards (Initial)
      s. Continental Press (Medial, initial &
         final)
      t. Jenn Workbook - Red (Medial, initial &
         final)
      u. Barnell-Loft - Working with Sounds A
         (Medial, initial, & final)
      v. SRA Reading Lab Ia. (Initial)
      w. Programmed Reading Book #1 (Initial,
         medial, & final)
      x. Study Scope (Initial, medial, & final)
2. Vowels (Teach long and short together)
   a. Phonics We Use - C-D
   b. Reader's Digest Practice Pad #1 & #2
   c. SRA Word Games
   d. Continental Press
   e. Troll Sound Tapes
   f. Sound Records
      (1) Listen & Learn with Phonics
      (2) Reading & Spelling with Phonics
   g. Hoffman
   h. Barnell-Loft - Working with Sounds B-C-D
   i. Drill
   j. Flash Cards
   k. Sounds & Story Tapes
   l. Spelling Learning Games A-B-C
   m. Conquest in Reading
   n. Vowel Rummy
   o. Teacher Made Games
   p. Phonetic Quizmo (Short vowel only)
   q. Group Teaching Games
   r. Durrell-Murphy Phonics Practice Program
   s. Group Sounding Games (Garrard Press)
   t. Scholastic Masters
   u. Vowel Dominoes

3. Blends - Digraphs
   a. Phonics We Use B-C
   b. Study Scope
   c. Blend Cards
   d. Nicky
   e. Sound Record - Reading & Spelling with Phonics
   f. Troll Sound Tapes
   g. Barnell-Loft - Working with Sounds B-C
   h. SRA Word Games
   i. SVE Filmstrips
   j. Hoffman - Digraphs
   k. Webster Word Wheels
   l. Sound & Story Tapes
   m. SRA Reading Lab Ia.
   n. Continental Press
   o. Listen & Learn with Phonics - Sound Record
   p. Listen & Do Record
   q. Scholastic Masters

4. Vowel Combinations
   a. Spelling Learning Games
   b. Drill
c. Phonics We Use C-D

d. Study Scope

e. Barnell-Loft Working with Sounds C-D

f. Continental Press

g. Scholastic Masters

h. Teacher Made Games

i. Group Sounding Game

j. Full-House

k. SRA Word Games

l. Spelling Learning Games Kit A-B-C

m. Sound Records
    (1) Listen & Learn with Phonics
    (2) Reading & Spelling with Phonics

n. Dr. Spello

o. Conquest in Reading

5. Syllabication

a. SRA Word Games

b. Conquest in Reading

c. Webster Word Wheels

d. Dr. Spello

e. Syllable Game

f. Study Scope

g. Barnell-Loft Working with Sounds A-B-C-D

h. Continental Press

i. Scholastic Masters

D. Memory Ability Task

1. Choral Reading

2. Memorizing

a. Poems

b. Months of the year

c. Days of the week

d. Addresses

e. Birth date

f. Phone Number

g. Capital, State, Country, etc.

h. Other general information
    (1) Parts of the body
    (2) Shapes
    (3) Animal & baby. names

3. Games

a. Example: "I'm Going to Paris"
The first person tells what he is taking to Paris, the second person repeats the previous object and adds his own, etc.

E. Comprehension

1. Sequence

a. Barnell-Loft Sequence
b. Read-Study-Think
c. Science Adventure
d. Continental Press
e. MacMillan Spectrum
f. Library Books - Ask sequence questions

2. Getting the Main Idea
   a. Barnell-Loft Getting the Main Idea
   b. Skill Pacer
c. Read-Study-Think
d. Science Adventure
e. SRA Kits
f. Webster Clinic Kit #10
g. Practice Readers
h. Library Books
i. Scholastic Action Series
j. Reader's Digest Books
k. Imperial Intermediate Reading

3. Using Context
   a. Reading for Understanding
   b. Imperial Intermediate Reading
c. We Are Black
d. Barnell-Loft Using the Context A-F
e. Continental Press Reading - Thinking Skills
f. Science Adventure
g. Skill Pacers
h. SRA Kits

4. Getting Facts
   a. Barnell-Loft Getting the Facts A-F
   b. Conquest in Reading
c. E.D.L. materials
d. SRA Kits
e. Science Adventures
f. Read-Study-Think
g. Skill Pacers
h. Continental Press
i. Webster Clinic Kit #10
j. We Are Black
k. Imperial Intermediate Reading
l. Hoffman

5. Drawing Conclusions
   a. Barnell-Loft: Drawing Conclusions A-F
   b. Continental Press
c. Reading for Understanding
d. Imperial Intermediate Reading
e. Skill Pacer
f. We Are Black
6. Locating the Answers
   a. Barnell-Loft Locating the Answers A-F
   b. Read-Study-Think
   c. Skill Pacer
   d. Imperial Intermediate Reading
   e. Dictionary Skills
   f. Reports

7. Following Directions (Gross to fine)
   a. Barnell-Loft Following Directions A-F
   b. Oral Drill
   c. Games
   d. Reading directions for materials like Science Adventure, Read-Study-Think, etc.
   e. Simon Says
   f. Making Something
   g. Home Kit Materials

F. General Comprehension
1. Grade Three
   a. Uncle Funny Bunny
   b. Scottie & His Friends
   c. Picnic Basket
   d. Basic Goals in Reading
   e. Practice Readers
   f. MacMillan Comprehension
   g. Read-Study-Think
   h. Science Adventure
   i. Reader's Digest
   j. Phonics Skill Text
   k. Hoffman

2. Grade Four
   a. Uncle Ben
   b. Hoffman
   c. Adventure Trails
   d. Science Adventure
   e. Read-Study-Think
   f. Phonics Skill Text
   g. Reader's Digest
   h. MacMillan Comprehension
   i. Blazing New Trails
   j. 3-in-1

G. Vocabulary
1. Reading Spectrum - MacMillan
2. SRA Reading Labs
3. Webster Clinic Kit #10
4. Book Reports
5. Practice Readers
6. Programmed Reading
7. Read-Study-Think
8. Process - Concept Series
   a. Like You Like Me
b. I See I See

c. Five Senses

d. Place & Space

e. Things Around Us

f. Word Analysis Practice Cards

g. Ready to Read

h. SRA Word Games

i. Workbooks

j. Study Scope

k. Jenn-Blue Green
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