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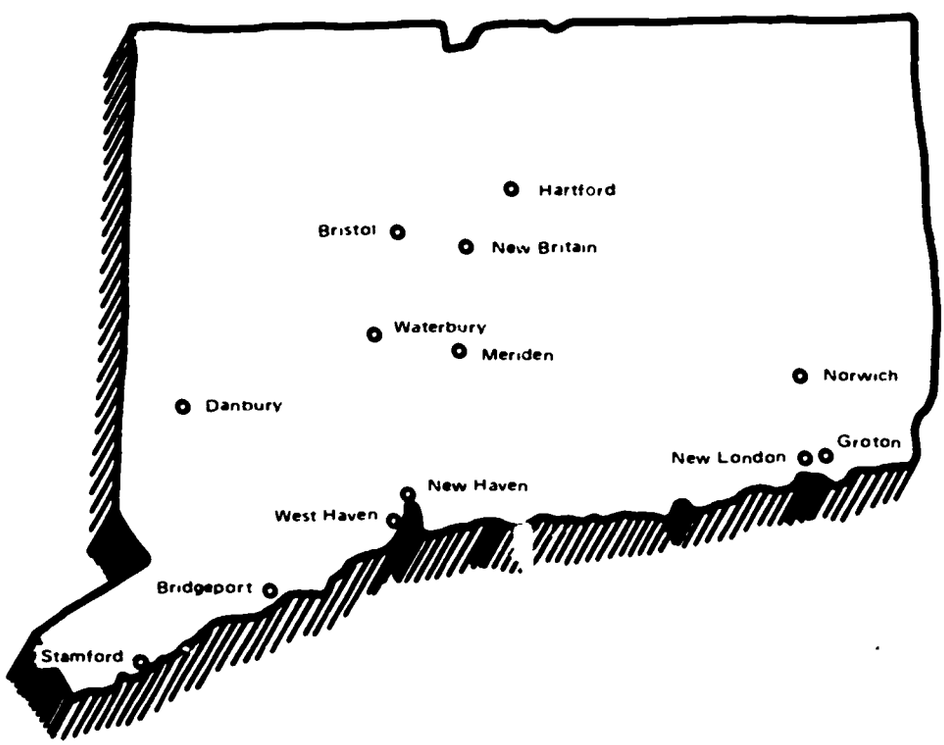
ABSTRACT

The purpose of this investigation was to study four questions concerning reading achievement and related variables in the largest cities of Connecticut. The four questions were: (1) Has there been a change in average fourth-grade achievement in Title I schools since 1965-1966?; (2) Has the difference between the mean reading achievement of fourth-grade children in Title I schools and the mean reading achievement of fourth-grade children in non-Title I schools changed since 1965-1966?; (3) Have the distributions of fourth-grade achievement in Title I schools been similar at the lower, middle, and upper quartiles for 1965-1966 and 1968-1969 school years?; and (4) What is the relationship between the 1965-1966 to 1968-1969 difference in achievement in Title I schools and the 1965-1966 to 1968-1969 differences in selected school related variables? The fourth-grade subjects in the study included 4,508 from 65 title schools during 1966, 5,067 from 86 non-title schools during 1966, 4,723 from 66 title schools in 1969, and 5,343 from 88 non-title schools in 1969. The results of reading subtests of The Iowa Test of Basic Skills, the Metropolitan Achievement Test, and the Stanford Achievement Test were compared. From the evaluation results, it was concluded that; (1) reading achievement in schools with large numbers of children from low-income families was approximately one year behind grade level; (2) reading achievement in large city schools is lower today than in 1965-66; (3) the factor related to achievement in schools with high concentrations of children from low income families is attendance; and (4) achievement decreased to the same amount in Title I and non-Title I schools. (DB)

Achievement and Related School Factors in the Largest Cities of Connecticut

APRIL 1970



A Cooperative Effort

of

The Educational Resources and Development Center

The School of Education, University of Connecticut

and

The Office of Program Development

The Connecticut State Department of Education

ACHIEVEMENT AND RELATED SCHOOL FACTORS IN THE LARGEST CITIES OF CONNECTICUT

April 1970

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INTRODUCTION

Two landmark education Acts of 1965 stimulated Connecticut elementary and secondary school educators to take a more intensive and extensive look at their efforts to educate disadvantaged children. Connecticut's State Act for Disadvantaged Children (SADC) and Title I of the Elementary and Secondary Education Act were both passed that year. The state and federal Acts provided grants for Connecticut school districts to develop programs aimed at improving the achievement of disadvantaged children. Disadvantaged children are defined by the guidelines of these Acts as children from families of the poor, children with language problems, and children judged disadvantaged because of the social circumstances from which they come.

The close of the 1968-1969 school year marked the fourth year that SADC and Title I programs had been in existence. However, there had been no study of achievement with a duration of more than one year in these schools. The purpose of the present evaluation was to ascertain whether achievement had changed over this four year period in the schools serving poverty areas in the largest cities of Connecticut. This evaluation is not confined only to the achievement of children receiving Title I and SADC program services, but focuses on the total population of children in these schools.

Rather than studying the achievement of children in the 160 school districts operating SADC and Title I programs in 1968-1969, this study concentrated on the large cities where the most serious disadvantagement existed. Cities asked to participate were mainly "core cities." This is a designation of the U.S. Bureau of the Budget based on the U.S. Census Bureau population statistics of 1960. Ten of Connecticut's eleven core cities accepted invitations to participate in the study. Three cities not designated as core cities were also included. These three cities ranked twelfth, sixteenth, and nineteenth among the state's largest school districts based on October 1969 public school enrollment figures.

The thirteen participating cities were the five largest cities in the state plus eight secondary cities. They included Bridgeport, Bristol, Danbury, Groton, Hartford, Meriden, New Britain, New Haven, New London, Norwich, Stamford, Waterbury, and West Haven.

There were 191,939 public school children in the thirteen cities. Although this represented only 29 percent of the public school enrollment, these cities contained 66 percent of the disadvantaged children in the state employing the 1968-1969 Title I entitlement criteria. These criteria were number of children in families with incomes less than $2000 according to the 1960 census, and the number of children

in families receiving Aid for Dependent Children according to 1967 Department of Welfare statistics.

Major Questions

The following major questions were developed in keeping with the purpose of this evaluation.

1. Has there been a change in average fourth grade achievement in Title I schools since 1965-1966?

2. Has the difference between the mean reading achievement of fourth grade children in Title I schools and the mean reading achievement of fourth grade children in non-Title I schools changed since 1965-1966?

3. Have the distributions of fourth grade achievement in Title I schools been similar at the lower, middle, and upper quartiles for the 1965-1966 and 1968-1969 school years?

4. What is the relationship between the 1965-1966 to 1968-1969 difference in achievement in Title I schools and the 1965-1966 to 1968-1969 differences in the following school related variables?

   A. Percent of school enrollment from low-income families (ADC)

   B. Concentration of minority groups

   C. Mobility of school population

   D. Percent of attendance

   E. Teacher-pupil ratio

   F. School enrollment

   G. Per pupil expenditure

   H. Percent of teacher turnover

   I. Percent promoted

J. Number of full time equivalent Title I and SADC instructional personnel[1]

K. Title I and SADC dollar investment

L. Total hours of Title I and SADC direct services for children annually per enrollment

This study is closely related to other evaluations of SADC and Title I efforts in the state. Every school district assesses the effectiveness of each SADC and Title I program at least annually. In addition, the State Department of Education reports a statewide analysis of results for each of these Acts yearly. In each instance, the evaluation is based on results from those children actually receiving program services in Title I schools. The present evaluation is based on results from all of the fourth grade children in Title I schools and all of the fourth grade children in non-Title I schools in the participating cities. The number of children from Title I schools included in the present study represents approximately twice the number of fourth grade children included in the 1968-1969 SADC and Title I evaluations from these cities. This study also spans a four year period while the SADC and Title I program evaluations are for the period of a school year or less.

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1 Variables J, K, and L pertain to Title I and SADC programs in grades one through four in Title I schools.

Definition of Terms

For purposes of clarification, important terms employed throughout this study are defined below. Items 7 through 18 are operational definitions of the twelve school related variables.

1. Achievement refers to fourth grade reading achievement.

2. The 1966 school year is the school year 1965-1966.

3. The 1969 school year is the school year 1968-1969.

4. Target cities are nine of the thirteen cities selected for study that had data available fitting the design of this evaluation.

5. Title schools are those schools in the nine target cities having the highest concentrations of children from low-income families.

6. Non-title schools are the remaining schools in the nine target cities with lower concentrations of children from low-income families.

7. Percent ADC for a given year and a given school is the number of children from families receiving Aid for Dependent Children / (divided by) the school's October enrollment figure X (multipled by) 100.

8. Percent minority. The 1966 value for a given school is the total number of "non-white" and "Spanish speaking" children / the "school enrollment" reported in the May 1966 Distribution of Non-whites in the Public Schools of Connecticut X 100. The 1969 value for a given school is "total minority" children / "enrollment" reported in the January 1969 Distribution of Minority Group Pupils and Staff in the Public Schools of Connecticut X 100.

9. Percent mobility. The 1966 value for a given school is the Connecticut School Register designation for "transfer withdrawals" (W1+W2+W3+W4+W10+W11) / the October enrollment X 100. The 1969 value for a given school is the Connecticut School Register designation for "transfer withdrawals" (T1+T2+T3+T4) / the October enrollment X 100.

10. Percent attendance for a given school and a given year is the total days pupils were in attendance / the total days pupils were in membership based on the Connecticut School Register X 100.

11. Teacher-pupil ratio is the number of full-time classroom teachers in a school at the beginning of a school year as indicated on the State Department of Education Form 4 Report on Classroom Teachers / the October enrollment X 100.

12. School enrollment for a given year and a given school is the October school enrollment figure for that school.

13. Per pupil expenditure for a given year is the total current expenditures for education in a city / the average daily membership (ADM) for that year and that city. This value was indicated for all of the title schools within a particular target city for a given year.

14. Percent teacher turnover is the number of new full-time teachers' names indicated on the State Department of Education Form 4 Report on Classroom Teachers for a given year and a given school compared to the Form 4 listing for the previous year / the total names listed for the given year X 100.

15. Percent promoted is the number of pupils of a school promoted to the next grade level at the end of a given school year / the number promoted plus the number not promoted X 100.

16. Personnel is the total number of Title I and SADC staff providing direct services to children in grades one through four for a given year. "Direct services" are services in which Title I and SADC staff work directly with children in a program.

17. Dollars is the total Title I and SADC dollar investment in a given school which provides direct services to children in grades one through four that is over and above the investment made by a school district for the education of all children in that school.

18. Hours is the total hours of direct services provided annually to all Title I and SADC program children in grades one through four of a given school.

PROCEDURE

Population

Fourth grade reading achievement results for the 1966 and 1969 school years were requested from the thirteen cities selected for the present investigation. Nine cities could provide this particular achievement information. Thus, the population of this report was made up of these nine target cities.

The subjects of this study consisted of the fourth grade students from the nine target cities for which achievement scores were available. The subjects included (a) 4508 fourth grade students from 65 title schools during the 1966 school year, (b) 5067 fourth grade students from 86 non-title schools of 1966, (c) 4723 fourth grade students from 66 title schools of 1969, and (d) 5343 fourth grade students from 88 non-title schools of 1969.

The fourth grade was selected for analysis in this investigation for a number of reasons. Since the 1969 school year was the fourth year for SADC and Title I programs, the fourth grade represented the most appropriate grade level for study. Findings based on an upper or lower grade level would not have been as meaningful as results based on a middle grade. Another advantage of the fourth grade is related to the achievement testing programs of the participating cities. These cities had measured achievement in the fourth

grade more than any other elementa · grade for both the 1966 and 1969 school years.

Data Collection

An instrument was developed to collect the required data from the schools (see Appendix A). The form, completed for each title school, requested the 1966 and 1969 values of the twelve school related variables. The instrument also requested the 1966 and 1969 mean reading achievement score for each non-title school. Reading achievement scores were collected for each fourth grade student in the title schools from the machine printouts of these schools for the 1966 and 1969 school years. The instruments were completed and returned with the printouts under the direction of the superintendent of each target city.

Achievement Data

Scores were requested from both title and non-title schools in the form of grade equivalents. Since the cities conducted achievement testing at various times during the school year, it was necessary to adjust the results to a common test date. To keep these adjustments to a minimum, January was selected as the test date. In adjusting the scores, the particular population of this evaluation was considered. Previous studies of the achievement of children in urban areas had shown that growth in achievement

does not progress at a one to one rate. That is, the average rate of achievement in such settings is somewhat less than one month of achievement for one month of schooling. Based on a consideration of the average rates found in such studies, a rate of seven tenths of a month was selected for the present evaluation. Employing this factor, the achievement data were adjusted to a January test date. For example, a grade equivalent of 4.5 obtained in October was adjusted to a grade equivalent of 4.71 [4.5 +(3 x .07)]. A grade equivalent of 4.5 obtained in April was adjusted to 4.29 [4.5 -(3 x .07)]. This adjustment was applied to both title and non-title school results.

Three achievement test batteries were employed in the nine target cities. These tests included The Iowa Test of Basic Skills (four cities), the Metropolitan Achievement Test (three cities), and the Stanford Achievement Test (two cities). The reading subtest of each battery was selected for study so that the results of these tests could be compared. This choice was also influenced by the fact that many Title I projects emphasized reading instruction. Additionally, the reading subtest offers one of the best predictors of academic success.

Design

The following procedures were employed to evaluate the four major questions of this evaluation.

Question One. The first question was evaluated by means of a fixed grade approach. That is, 1966 fourth grade mean reading achievement for the title schools was compared to the 1969 achievement mean in title schools.

Question Two. For this question the difference between the 1966 mean achievement of title and non-title schools was calculated and compared to the difference found between the title and non-title schools in 1969.

Question Three. The third question required converting the 1966 and 1969 reading grade equivalents from the title schools to percentile ranks. These calculations were then plotted as ogives to graphically represent the 1966 and 1969 distributions of achievement in title schools. Appendix B describes the construction and interpretation of the ogives and explains how the values were obtained for question three and certain related comparisons.

Question Four. The fourth question involved calculating the 1966 to 1969 difference for each of the school related variables. These differences were then correlated with the 1966 and 1969 difference in title school mean achievement.

RESULTS

This section consists of a consideration of the four major questions of the evaluation. The relevant data are presented and compared relative to each question. In addition to these major questions, certain related comparisons are presented.

Question One

The first question was, "Has there been a change in average fourth grade achievement in Title I schools since 1965-1966?" This comparison is shown in Table 1.

Table 1

Achievement in Title Schools

1966		1969		
$\bar{X}$ GE	N[1]	$\bar{X}$ GE	N	Difference
3.64	65	3.41	66	-.23

[1]N refers to the number of schools in each case.

The 1969 average achievement level was found to be lower by two months (two tenths of a grade equivalent unit) than the 1966 level in the title schools. The 1966 achievement was higher than the 1969 level in each of the nine target cities. The differences in grade equivalents ranged from -.03 to -.87 in the target cities.

In light of these findings, the answer to the first question must be that average 1969 achievement in the title schools did differ from the 1966 level. The average achievement level in 1969 was slightly lower than the achievement level of 1966.

Question Two

Question number two was, "Has the difference between the mean reading achievement of fourth grade children in Title I schools and mean reading achievement of fourth grade children in non-Title I schools changed since 1965-1966?" This comparison is shown in Table 2.

Table 2

Differences Between Mean Achievement in Title and Non-Title Schools in 1966 and 1969

	Title Schools		Non-Title Schools		
Year	$\bar{X}$ GE	N	$\bar{X}$ GE	N	Difference
1966	3.64	65	4.44	86	.80
1969	3.41	66	4.21	88	.80

Table 2 shows that the difference in achievement has not changed since 1965-1966. The title schools did not fall farther behind the non-title schools nor did they come closer. Although the achievement in title schools was lower in 1969

than in 1966, Table 2 indicates that the 1969 achievement of the non-title schools was also lower than the 1966 level by two months (4.44 - 4.21 = -.23).

Another point in Table 2 is of interest to this evaluation. The 1966 mean achievement level of the non-title schools equalled the level expected for average fourth grade achievement, i.e. 4.4. Although the 1969 level was slightly lower, it was still somewhat higher than might be expected for a school population drawn primarily from large cities.

Question Three

The third question was, "Have the distributions of fourth grade achievement in Title I schools been similar at the lower, middle, and upper quartiles for the 1965-1966 and 1968-1969 school years?" To represent the distributions graphically, ogives were constructed from the fourth grade 1966 and 1969 achievement scores submitted by the nine target cities. These two ogives are presented in Figure 1. The horizontal axis represents reading scores in grade equivalent units while the vertical axis represents relative comulative frequency or percentile ranks. An explanation of the way these ogives were employed to obtain values for this and related questions is contained in Appendix B.

Employing the ogives, the lower, middle, and upper quartiles were determined for the 1966 and 1969 distributions. These results are shown in Table 3.

Figure 1

Ogives of 1966 and 1969 Achievement Distributions in Title Schools

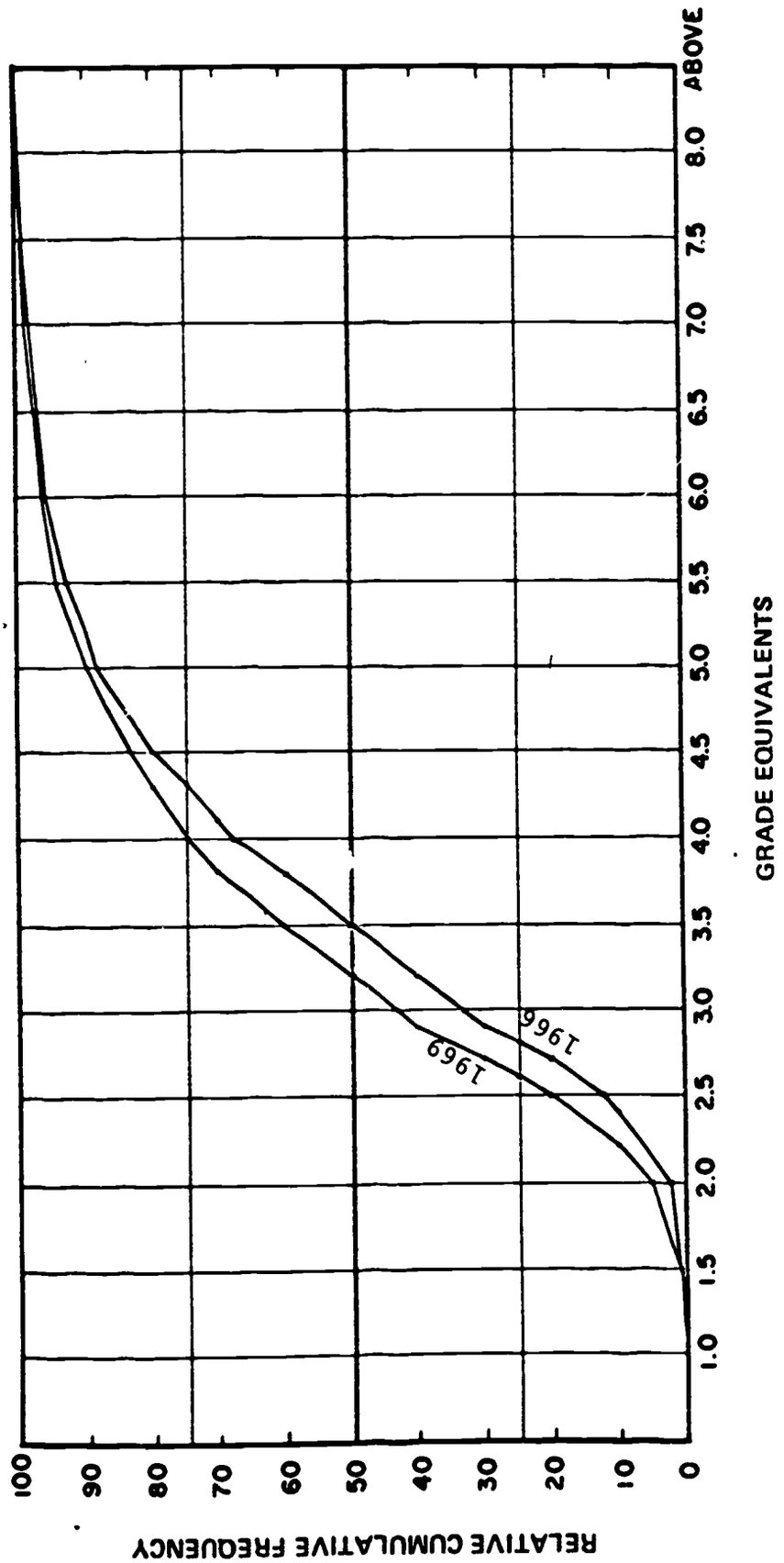

Table 3

Quartiles of 1966 and 1969 Achievement Distributions in Title Schools

Quartile	1966 GE	1969 GE	Difference
Lower	2.8	2.6	-.2
Middle (Median)	3.5	3.2	-.3
Upper	4.3	4.0	-.3

The differences in grade equivalents at the three quartiles were similar, with a two month difference for the lower quartile and a three month difference for the middle and upper quartiles. In order to study the differences between the two distributions more completely, each decile was estimated from the two ogives. These values are shown in Table 4.

As indicated in Table 4, the differences were greatest in the middle of the range between the fourth and seventh deciles. In this range the 1969 achievement levels were three months below the 1966 levels in terms of grade equivalents. The differences were less above and below this range.

Regarding the third question, the results indicate that the differences between the 1966 and 1969 achievement distributions were similar at the three quartiles. Further, the

1966 achievement levels were superior to the 1969 levels at every decile. There was a tendency for the differences to be slightly greater in the middle range of the distributions.

Table 4

Deciles of 1966 and 1969 Achievement Distributions in Title Schools

Decile[1]	1966 GE	1969 GE	Difference
1	2.4	2.2	-.2
2	2.7	2.5	-.2
3	2.9	2.7	-.2
4	3.2	2.9	-.3
5 (Median)	3.5	3.2	-.3
6	3.8	3.5	-.3
7	4.1	3.8	-.3
8	4.5	4.3	-.2
9	5.2	5.0	-.2

[1]The first decile is the tenth percentile, the second decile the twentieth percentile, etc.

The achievement ogives permitted certain related comparisons. One interesting comparison was the percentage of the 1966 and 1969 title school distributions that were below the level that test norms indicate as average achievement.

Since test scores were adjusted in January, average performance would be an expected grade equivalent of 4.4. Thus, 50 percent of the populations would be expected to score below 4.4. In addition to the percentile rank (the percentage of the population below) of 4.4, it was also of interest to determine the percentile rank of 3.4 (one year below the expected grade level) and 5.4 (one year above the expected grade level) for both distributions. The procedure employed to obtain these values from the ogives is explained in Appendix B. The results of this procedure are given in Table 5.

Table 5

Percentage of 1966 and 1969 Achievement Distributions Below Selected Grade Levels

Year	% Below GE 3.4	% Below GE 4.4	% Below GE 5.4
1966	47	77	92
1969	57	82	93

Table 5 indicates that 77 percent of the 1966 title school population and 82 percent of the 1969 title school population were below the expected grade level of 4.4. The percentage of both populations below the 3.4 level suggests that achievement in the title schools was more similar to average third than fourth grade achievement.

Another comparison of interest was the percentage of the 1969 title school achievement distribution that was below the lower, middle, and upper quartile values of the 1966 title school distribution. The procedure employed to obtain these values is shown in Appendix B. It was found that 25 percent of the 1966 title school population was below a grade equivalent of 2.8, but 34 percent of the 1969 population was below this point. Similarly, 50 percent of the 1966 population was below 3.5, while 60 percent of the 1969 population was below this level. Finally, 75 percent of the 1966 population was below 4.3, while 80 percent of the 1969 population was below this point.

Question Four

Question four concerned the relationship between the 1966 to 1969 difference in achievement in Title I schools and the 1966 to 1969 differences in selected school related variables. Although information was collected on the 12 school variables defined in chapter one, not all of these values could be employed in this analysis. An inspection of the values received for the Hours variable revealed such a markedly non-normal distribution that employing the variable in such an analysis was not justified.

The 1966 values obtained for the variables Percent ADC and Percent Mobility proved unreliable. Many of the cities could provide only a rough estimate of Percent ADC for 1966

and they reported Percent Mobility employing two different formulas for 1966. Although 1966 to 1969 differences could not be calculated for these two variables, the 1969 values were related to 1969 achievement in title schools later in this report.

The difference between the 1966 and 1969 values of the nine remaining school variables were calculated for each school. The nine differences were then correlated with the 1966 to 1969 achievement differences for these schools. The total number of title schools submitting complete data on all of the variables was 57. The mean difference for each variable and its correlation with the difference in achievement is shown in Table 6. Note that a minus value in the difference column indicates that the value of the variable was greater in 1966.

The relationship between School Enrollment differences and achievement differences was the only correlation to differ significantly from zero. When school enrollment increased over this period, achievement tended to decrease. An understanding of the coefficient of -.27 is provided by r^2 which indicates the variance common to both variables. Thus, seven percent $[(-.27)^2 = .07]$ of the variance in achievement differences was accounted for by School Enrollment differences. Although the relationship was statistically significant, a relationship of this order is not of practical significance.

Table 6

Differences in School Variables Related to Differences in Achievement

Variable	1966 $\bar{X}$	1969 $\bar{X}$	Difference	r
Achievement	3.65	3.38	-.27	
% Minority	48.92	61.01	12.09	.02
% Attendance	90.45	89.50	-.95	.04
Teacher-Pupil Ratio	28.65	24.91	-3.74	.19
School Enrollment	656.49	663.65	7.16	-.27*
Per Pupil Expense	$440.27	$673.45	$233.18	-.16
% Teacher Turnover	18.68	24.36	5.68	-.07
% Promoted	94.58	95.21	.63	-.15
Personnel	5.67	7.15	1.48	-.19
Dollars	$30321.51	$39946.31	$9624.80	.00

* Significant at .05 level in each case.

There are other ways to analyze the relationship between the school variables and achievement in title schools. Two of these procedures are presented below. The first analysis related the 1966 to 1969 differences in the school variables to 1969 achievement in the title schools. The second procedure related the 1969 values of the school variables to 1969 achievement in the title schools. This latter procedure is a more powerful approach for the particular data of this evaluation.

Correlating the differences in the school variables to 1969 achievement in title schools provides clues to the question, "How do differences that have occurred from 1966 to 1969 in the title schools relate to present achievement levels?" This comparison involved the same differences calculated earlier. The resulting correlations are contained in Table 7.

Table 7

Differences in School Variables Related to 1969 Achievement in Title Schools

Variable	r
Percent Minority	-.41*
Percent Attendance	.13
Teacher-Pupil Ratio	-.02
School Enrollment	-.08
Per Pupil Expenditure	-.23
Percent Teacher Turnover	-.03
Percent Promoted	-.38*
Personnel	-.23
Dollars	.16

Two of the school variable differences in Table 7 were related to 1969 achievement beyond a chance level. The differences in Percent Minority and Percent Promoted were

both negatively related to 1969 achievement. As Percent Minority increased in title schools from 1966 to 1969, achievement tended to decrease. Similarly, as Percent Promoted increased, achievement tended to decrease.

Computing r^2 for the strongest of these relationships resulted in a value of .17. Thus, although the relationship between Percent Minority differences and 1969 Achievement was significantly different from zero, only 17 percent of the variance in 1969 title school achievement was accounted for by differences in Percent Minority.

The final comparison related to question four involved the 1969 values of both the school variables and achievement in the title schools. This comparison is somewhat more meaningful than other possible comparisons. The values collected on the 1969 school variables were more reliable than the older 1966 values. Additionally, it was possible to include the variables Percent ADC and Percent Mobility for this comparison. The results are shown in Table 8.

Table 8

School Variables of 1969 Related

to 1969 Achievement

Variable	1969 $\bar{X}$	r
Achievement	3.38	
Percent ADC	36.32	-.73*
Percent Minority	61.01	-.79*
Percent Mobility	18.28	-.36*
Percent Attendance	89.50	.65*
Teacher-Pupil Ratio	24.91	-.05
School Enrollment	663.65	-.29*
Per Pupil Expenditures	$673.45	-.20
Percent Teacher Turnover	24.36	-.25
Percent Promoted	95.21	.16
Personnel	7.15	-.28*
Dollars	$39946.31	-.43*

As can be seen in Table 8, this final comparison revealed a number of significant relationships. The intercorrelations of these eleven variables are contained in Appendix C. Applying the r^2 rational, 62 percent of the variance in 1969 achievement can be accounted for by Percent Minority. The

Percent ADC variable can account for 53 percent of the variance in achievement. Similarly, if one employed the Percent Attendance variable, it accounted for 42 percent of the variance in achievement. Clearly these three relationships are the only ones of practical significance.

Table 8 reveals other relationships of interest. For example, Teacher-Pupil Ratio and Per Pupil Expenditures were not found to be related to achievement. Although the Personnel and Dollars variables might be expected to exhibit a positive relationship with achievement, negative correlations were obtained for both in this study.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this investigation was to study four questions concerning reading achievement and related variables in the largest cities of Connecticut.

1. Has there been a change in average fourth grade achievement in Title I schools since 1965-1966?

2. Has the difference between the mean reading achievement of fourth grade children in Title I schools and the mean reading achievement of fourth grade children in non-Title I schools changed since 1965-1966?

3. Have the distributions of fourth grade achievement in Title I schools been similar at the lower, middle, and upper quartiles for the 1965-1966 and 1968-1969 school years?

4. What is the relationship between the 1965-1966 to 1968-1969 difference in achievement in Title I schools and the 1965-1966 to 1968-1969 differences in selected school related variables?

Thirteen cities were asked to participate by submitting (a) fourth grade reading achievement test results for all fourth graders in their schools for the 1965-1966 and 1968-1969 school years, and (b) values for 12 school related variables from their Title I schools for the 1965-1966 and 1968-1969 school years. This report is based on information obtained from nine of the thirteen cities that could provide data fitting these requirements. This study focuses on the

total population of these schools rather than being confined to the achievement of children receiving Title I and SADC services. Achievement scores were received for 9,575 fourth grade students for the 1965-1966 school year and 10,066 fourth grade students for the 1968-1969 school year.

The first question was investigated by comparing 1966 mean reading achievement to 1969 mean reading achievement in the title schools. Mean reading achievement in 1969 was found to be two months (two tenths of a grade equivalent unit) lower than the 1966 mean.

The second question was studied by comparing the reading achievement difference between title and non-title schools in 1966 to the difference for 1969. Title school achievement was found to be eight months below non-title achievement in both the 1966 and 1969 school years. Also, achievement in the non-title schools was lower in 1969 by the same amount found for the title schools.

The third question was investigated by comparing the title schools' distribution of achievement for 1966 to the 1969 distributions at the lower, middle, and upper quartiles. The differences were found to be similar with a two month difference in favor of the 1966 distribution at the lower quartile and a three month difference at the middle and upper quartiles. Comparing the deciles of both distributions gave evidence of the slight superiority of the 1966 results over the 1969 results throughout the distributions. A further

comparison revealed that 77 percent of the 1966 and 82 percent of the 1969 title school fourth grade population was below the expected grade level of 4.4.

The final question of interest was investigated by correlating the 1966 to 1969 achievement difference in title schools with the 1966 to 1969 differences in selected school related variables. The School Enrollment differences were the only ones significantly related to the achievement differences. Although this negative relationship was significantly different from zero, it was of low practical significance. A further analysis related 1966 to 1969 school variable differences to 1969 achievement levels in the title schools. The differences in Percent Minority and Percent Promoted were the only variables significantly related to 1969 achievement. As in the analysis above, these two negative relationships were of low practical importance. A final analysis related 1969 values of the school variables to 1969 achievement in title schools. Relationships of practical significance were found between 1969 achievement and Percent Minority, Percent ADC, and Percent Attendance.

Conclusions

The following conclusions were reached concerning the information obtained from the schools included in this investigation.

1. Fourth grade reading achievement in schools with high concentrations of children from low-income families is approximately one year behind grade level.

2. The reading achievement studied in large city schools is lower today than during the 1965-1966 school year.

3. Schools having the highest concentrations of children from low-income families and minority groups reflect the lowest levels of reading achievement. It should be noted that this conclusion concerns high concentrations of poor children and minority group children and not the achievement of these pupils where concentration levels are of lower magnitude.

4. The factor most positively related to achievement in schools with a high concentration of children from low-income families is attendance. The best attendance records are associated with the highest achievement results.

5. It was found that achievement in Title I schools decreased by the same amount as in the non-Title I schools over the period of this study. However, the effect of successful Title I programs may have been masked by the fact that the above findings are based on school-wide achievement.

Recommendations

In attempting to improve the educational patterns for children in large cities, it is recommended that concern be directed toward such major factors as high concentrations of poor children and minority group children and attendance rates. The greatest attention must be devoted to these areas rather than relying on such measures as lowering the teacher-pupil

ratio, increasing per pupil expenditure, or increasing the number of personnel.

It is further recommended that the state take steps to assure the continued assessment of achievement in large cities. This must include direction in developing a more systematic approach to collecting, analyzing, and recording information on students, schools, and programs. Additionally, more uniform achievement testing patterns should be encouraged in the large cities of Connecticut.

APPENDICES

APPENDIX A

Instrument

1969 STUDY OF FACTORS RELATED TO THE ACHIEVEMENT OF CHILDREN IN SCHOOLS OF THE LARGEST TOWNS OF CONNECTICUT RECEIVING THE RESOURCES OF TITLE I ESEA AND SADC

A Study Undertaken Cooperatively by Selected Connecticut School Districts, The University of Connecticut, and the Connecticut State Department of Education.

School_____ Address _____ Town_____

Principal _____

Person completing this Form:_____ Tel.No. _____

Date this Form completed and forwarded to The Educational Resources and Development Center, University of Connecticut, Storrs 06268_____

1a Initial enrollment of school, October 1965 _____

1b Initial enrollment of school, October 1968 _____

2a Total days pupils were in attendance, 1965-66 (Monthly Summaries of the Connecticut School Register) _____

2b Total days pupils were in membership 1965-66 (Monthly Summaries of the Connecticut School Register) _____

2c Total days pupils were in attendance, 1968-69 (Monthly Summaries of the Connecticut School Register) _____

2d Total days pupils were in membership, 1968-69 (Monthly Summaries of the Connecticut School Register) _____

3a Transfer withdrawals from Regular Day Program and Special Education Programs, 1965-66 (W1+W2+W3+W4+W10+W11 from the Teachers Annual Report in the Connecticut School Register) _____

3b Transfers from the Regular Day Program and Special Education Programs, 1968-69 (T1+T2+T3+T4 from the Teachers Annual Report in the Connecticut School Register) _____

and Spanish speaking children

4a Number of non-whites in this school as indicated on Stat-70 (3-66), Race Survey of Connecticut Schools of May 1966. _____

4b Total enrollment of this school as indicated on Stat-70 (3-66), Race Survey of Connecticut Schools of May 1966. _____

4c Number of minority-group pupils in this school as indicated by January 1969 Distribution of Minority-Group Pupils and Staff in the Public Schools of Connecticut. _____

4d Total enrollment of this school as indicated on the January 1969 Distribution of Minority-Group Pupils and Staff in the Public Schools of Connecticut. _____

5a Number of full-time classroom teachers in this school at the beginning of the 1965-66 school year as indicated on the Form 4 Report on classroom teachers. _____

5b Number of full-time classroom teachers in this school at the beginning of the 1968-69 school year as indicated on the Form 4 Report on classroom teachers. _____

6a Classroom teacher replacements at the beginning of school year 1965-66 compared to previous year Form 4 Report on classroom teachers. _____

6b Classroom teacher replacements at the beginning of school year 1968-69 compared to previous year Form 4 Report on classroom teachers. _____

7a Number of pupils on ADC in this school in 1965-66. _____

7b Number of pupils on ADC in this school in 1968-69. _____

8a Number of pupils promoted to the next grade level in this school at the end of the 1965-66 school year. _____

8b Number of pupils not promoted to the next grade level in this school at the end of the 1965-66 school year. _____

8c Number of promotions as indicated in the Monthly Summaries of the 1968-69 Connecticut School Register. _____

8d Number of nonpromotions as indicated in the Monthly Summaries of the 1968-69 Connecticut School Register. _____

9a Indicate the reading achievement of grade 4 children in this school as indicated on standardized tests administered during school year 1965-66.

Name of Test, Form, and exact title of reading subsection. _____

Date Tested. _____

Number of children Tested	Mean Grade Equivalent	Standard Deviation

9b Indicate the reading achievement of grade 4 children in this school as indicated on standardized tests administered during school year 1968-69.

Name of Test, Form, and exact title of reading subsection. _____

Date Tested _____

Number of children Tested	Mean Grade Equivalent	Standard Deviation

9c Provide the individual reading achievement raw scores in terms of grade equivalents for each 4th grade child in this school for school year 1965 and also for school year 1968-69. If raw scores in terms of grade equivalents are not available, second preference would be to provide individual standard scores.

If possible, provide the above test information in the form of machine printouts provided by the testing service used by your town.

10a Number of children from low-income families in this school in 1968-69 as indicated in Item 8 of the FY 1969 Application for Title I, ESEA _____

10b Total number of children enrolled in this school as indicated on FY 1969 Application for Title I, ESEA _____

10c Criteria used to designate children from low-income families in above survey. _____

10d The year in which the above figures were determined. _____

11a List below the Title I - SADC programs that were direct services* to children in grades 1 thru 4 of this school:

1965-66

Name of Program	Type	Dollar Investmt in this school	Hrs/Wk	No. of Weeks	Grade Levels Served	No. of Children Particip	Instruct Pers. Assgnmt (f.t.e.)		
							Teacher	Aide/ Asst.	Other Instruct.
1.									
2.									
3.									
4.									
5.									

* "direct services" are defined as those services where Title I - SADC staff work directly with children in a program.

1966-67

Name of Program	Type	Dollar Investmt in this school	Hrs/ Wk	No.of Weeks	Grade Levels Served	No.of Children Particip	Instruct Pers. Assgmt (f.t.e.) Teacher	Aide/ Asst	Other Instruct.
1.									
2.									
3.									
..									
..									

1967-68

Name of Program	Type	Dollar Investmt in this school	Hrs/ Wk	No.of Weeks	Grade Levels Served	No. of Children Particip	Instruct Pers.Assgmt. (f.t.e.) Teacher	Aide/ Asst.	Other Instruct.
1.									
2.									
3.									
4.									
5/									

11a (cont.)

1968-69

Name of Program	Type	Dollar Investmt in this school	Hrs/Wk	No.of Weeks	Grade Levels Served	No. of Children Particip	Instruct Pers.Assgnmt. (f.t.e.)		
							Teacher	Aide/ Asst.	Other Instruct.
1.									
2.									
3.									
4/									
5.									

11b List below the Title I - SADC programs that were <u>indirect services* to children</u> in this school.

1965-66

Name of Program	Description of Program	Dollar Investmt.	No. of Weeks
1.			
2.			
3.			
4.			
5.			

1966-67

Name of Program	DEscription of Program	Dollar Investmt.	No. of Weeks
1.			
2.			
3.			
4.			
5.			

* "indirect services" are services aimed at teachers, parents, or the school environment.

11b (cont)

1967-68

Name of Program	Description of Program	Dollar Investmt.	No. of Weeks
1.			
2.			
3.			
4.			
5.			

1968-69

Name of Program	Description of Program	Dollar Investmt.	No. of Weeks
1.			
2.			
3.			
4			
5.			

12a (School Principal Response) In this study, the relationship between achievement of pupils and the following factors will be analyzed.

Attendance

Pupil Mobility

Minority group concentration

Teacher - pupil ratio

Teacher turnover

Grade promotion practices

Concentration of children from low-income families

Number of Title I ESEA-SADC staff providing direct services to children in grades 1 - 4.

Title I ESEA-SADC dollar investment for direct services to children in grades 1-4

Total hours of Title I, ESEA-SADC direct services to children in grades 1-4

As principal of this school, would you indicate below any other factor(s) that you feel had an important effect on the achievement of fourth grade children in this school in 1965-66 as compared to the achievement of fourth grade children in this school in 1968-69?

12b How long have you, the principal, held a staff position in this school?_____

Town_____

13a Provide the reading achievement of grade 4 children in all other public schools not eligible for Title I services as indicated by the standardized tests used in Title I schools during school year 1965-66.

_____

(Name of Test, Form, and exact title of reading subsection)

Date Tested _____

1965-66

School	No. of Grade 4 Children Tested	Mean grade Equivalent for Grade 4 Children	Standard Deviation

Town_____

13b Provide the reading achievement of grade 4 children in all other public schools not eligible for Title I services as indicated by the standardized tests used in Title I schools during school year 1968-69.

_____

(Name of Test, Form, and exact title of reading subsection)

Date Tested _____

1968-69

School	No. of Grade 4 Children Tested	Mean grade Equivalent for Grade 4 children	Standard Deviation

APPENDIX B

Interpretation of Achievement Ogives

The third question required the construction of achievement ogives based on the fourth grade 1966 and 1969 achievement scores received from the nine target cities submitting these data. The interpretation of an ogive and some of its possible uses are contained in this appendix. For a more complete treatment of the subject, the reader is referred to Blommers, P., & Lindquist, E. F. Elementary statistical methods. Boston: Houghton Mifflin, 1960.

The ogives depicting the 1966 and 1969 fourth grade reading achievement distributions are contained in Figure A. The horizontal axis represents reading scores in grade equivalent units while the vertical axis represents relative cumulative frequency. It is possible to employ these ogives to estimate percentile ranks and percentiles. To estimate the lower quartile (25th percentile) of the 1966 and 1969 distributions, first locate the point on the ogives opposite the point 25 on the relative cumulative frequency scale (see line A in Figure A). Then locate the two points on the grade equivalent scale directly below these points on the ogives (see lines B and C in Figure A). The value of these points on the grade equivalent scale (i.e., 2.6 and 2.8) are the estimated lower quartiles of the 1969 and 1966 distributions respectively.

Employing the procedure outlined above, the middle quartile (median) and the upper quartile (75th percentile) of

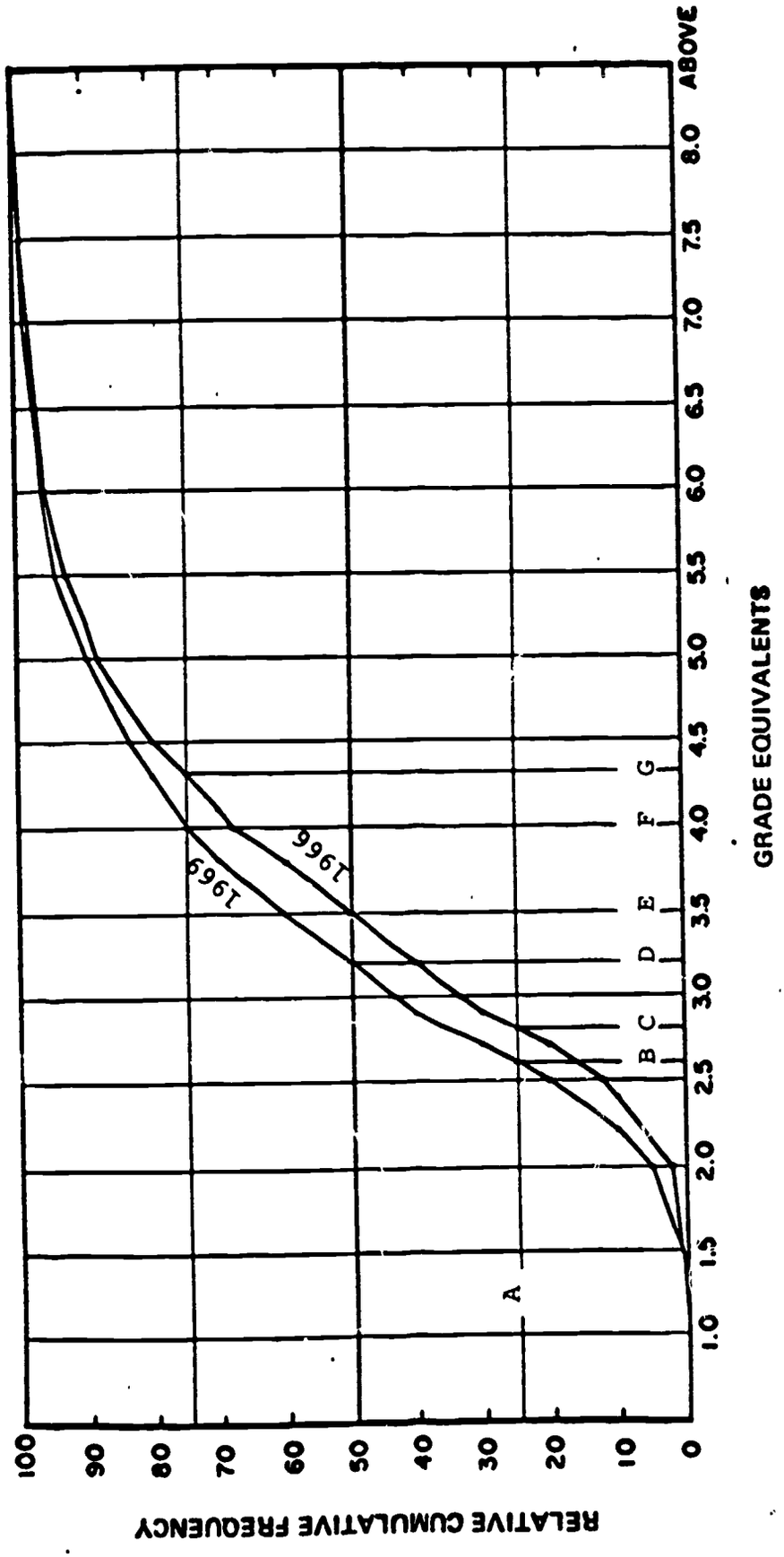
RELATIVE CUMULATIVE FREQUENCY
100
90
80
70
60
50
40
30
20
10
0
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
ABOVE
GRADE EQUIVALENTS
A
B
C
D
E
F
G
1966
1969

Figure A

the two ogives were also determined (see lines D,E,F, and G in Figure A). These results are contained in Table 3 of this report.

Another comparison made possible by the ogives is the percentage of the title schools' population below selected grade levels. One comparison of this type is the percentage of the 1966 and 1969 populations below the level that test norms indicate to be average achievement, i.e. 4.4.

To estimate the percentile rank of (the percentage of the population below) the grade equivalent of 4.4, first locate the points on the ogives above the grade equivalent of 4.4 (see line A in Figure B). Then locate the points on the relative cumulative frequency scale that correspond to these points on the ogives (see lines B and C in Figure B). The values of these points on the relative cumulative frequency scale (i.e., 81 and 77) are the estimated percentile ranks of a grade equivalent of 4.4 for the two ogives. That is, 77 percent of the 1966 title schools population and 81 percent of the 1969 population scored grade equivalents below 4.4.

Employing this same technique, the percentile rank of a grade equivalent of 3.4 (one year below 4.4) and the percentile rank of 5.4 (one year above 4.4) were determined for each distribution (see lines D and E in Figure B). The results are contained in Table 5 of this report.

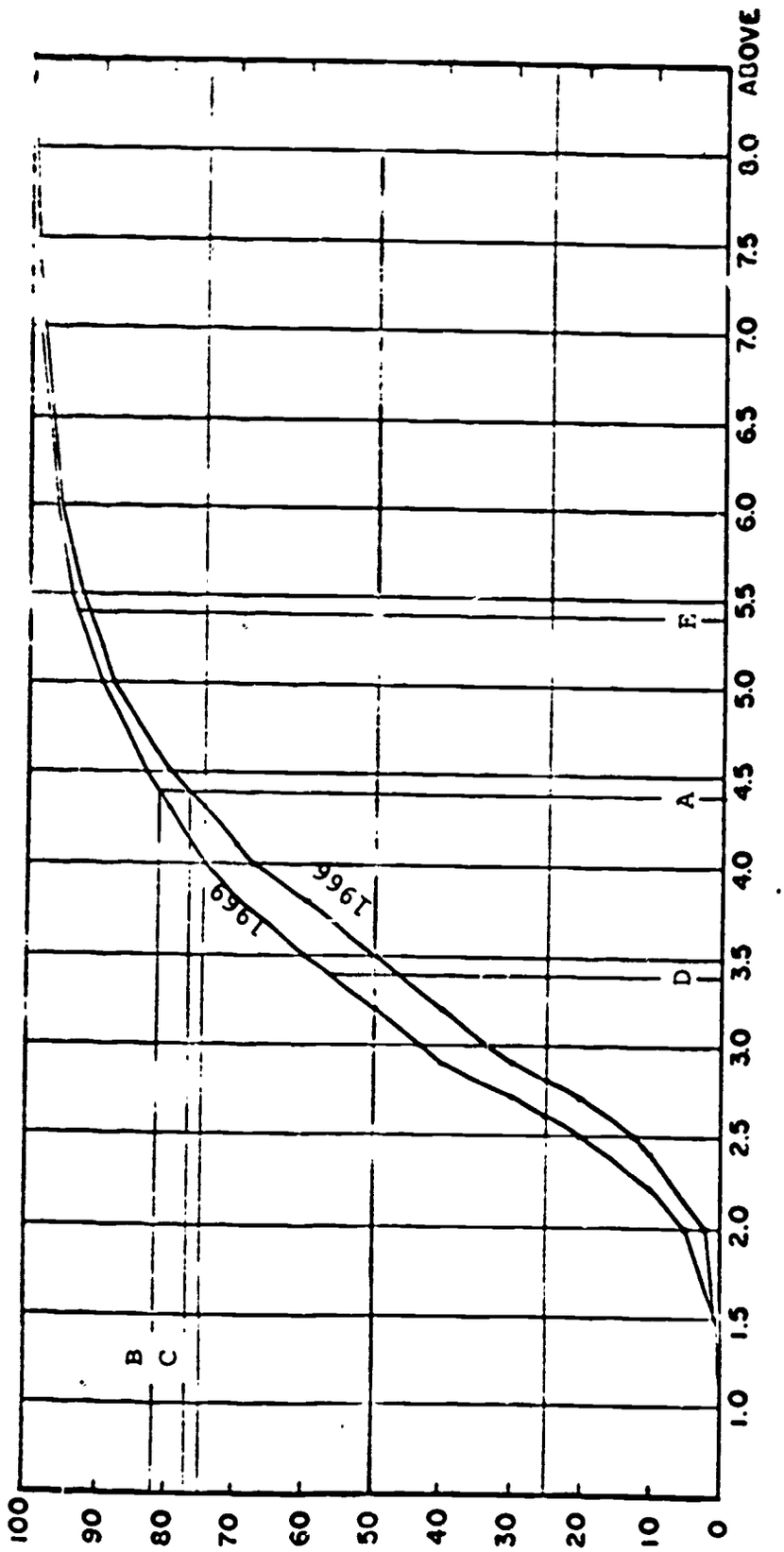
RELATIVE CUMULATIVE FREQUENCY
100
90
80
70
60
50
40
30
20
10
0
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0 ABOVE
GRADE EQUIVALENTS
B
C
A
D
E
1966
1969

Figure B

Another comparison of interest is the percentage of the 1969 title school population below the lower, middle, and upper quartiles of the 1966 population. These values can be found by locating the points on the 1969 ogive corresponding to the lower, middle, and upper quartiles of the 1966 ogive. The value of these points on the relative cumulative frequency scale are the estimated percentages in question (see lines A, B, and C in figure C). These results are presented on page 18 of this evaluation.

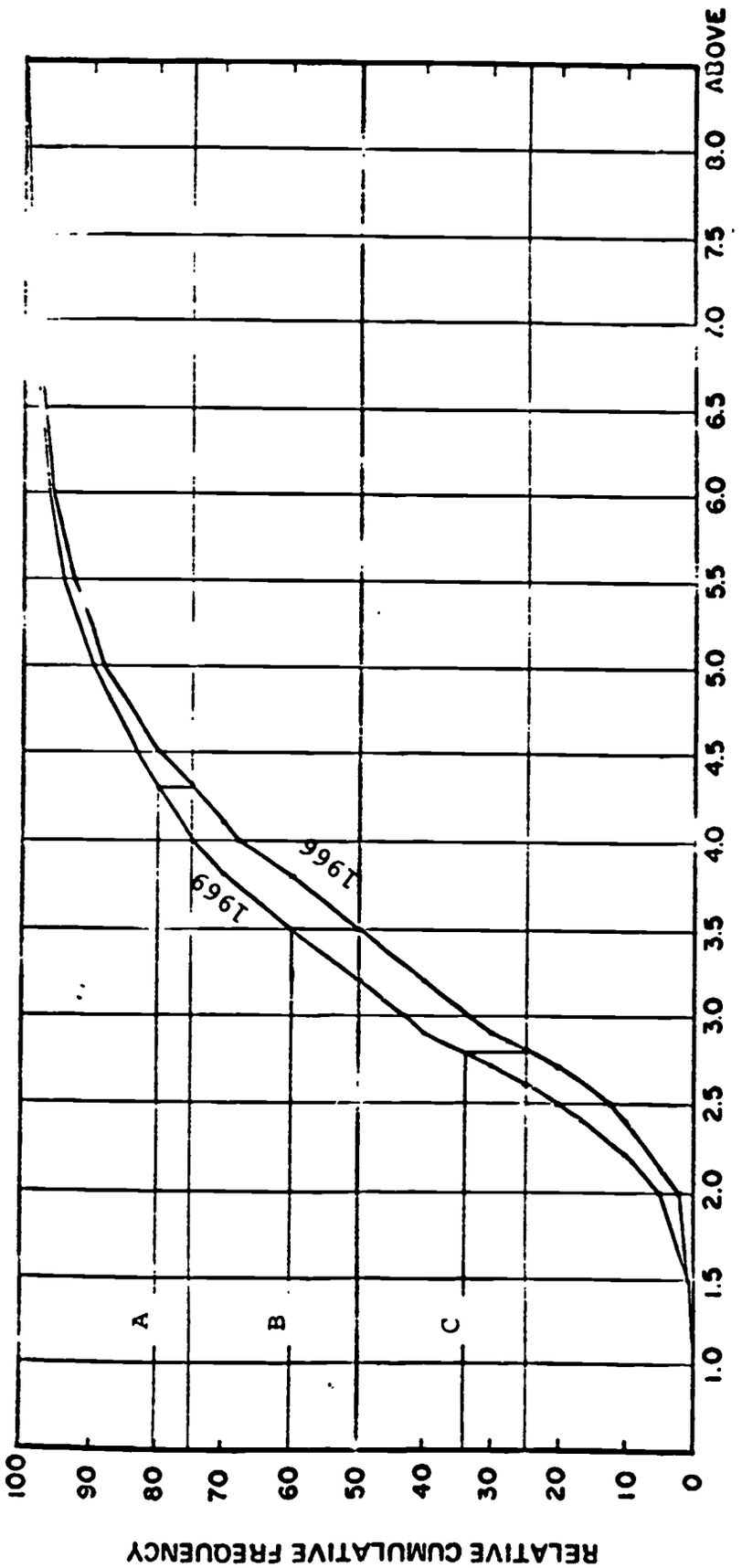
RELATIVE CUMULATIVE FREQUENCY
100
90
80
70
60
50
40
30
20
10
0
A
B
C
1966
1969
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
ABOVE
GRADE EQUIVALENTS

Figure C

APPENDIX C

Intercorrelations of 1969 School Variables

Intercorrelations of 1969 School Variables

	% ADC	% Min	% Mob	% Att	T-P R	S E	P P E	% T T	% Pro	Pers	Dol
% ADC		.79	.51	-.62	.24	.43	.17	.14	-.07	.15	.31
% Min.	.79		.38	-.58	-.14	.19	.41	.23	-.12	.20	.57
% Mob.	.51	.38		-.47	.22	.44	.23	.20	-.06	.08	.27
% Atten.	-.62	-.58	-.47		-.12	-.41	-.11	-.16	.09	-.01	-.32
T-P Ratio	.24	-.14	.22	-.12		.18	-.33	.13	-.07	-.07	-.33
Sch. Enr.	.43	.19	.44	-.41	.18		.05	.07	.14	-.04	.02
P P Exp.	.17	.41	.23	-.11	-.33	.05		-.07	-.07	.03	.42
% T T	.14	.23	.20	-.16	.13	.07	-.07		-.10	.14	.26
% Pro.	-.07	-.12	-.06	.09	-.07	.14	-.07	-.10		-.20	-.23
Pers.	.15	.20	.08	-.01	-.07	-.04	.03	.14	-.20		.38
Dollars	.31	.57	.27	-.32	-.33	.02	.42	.26	-.23	.38	