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UNIVERSITY OF LOUISVILLE

A SURVEY OF THE INTELLIGENCE AND
ACHIEVEMENT SCORES OF WHITE AND NEGRO
CHILDREN ENTERING THE JUNIOR HIGH SCHOOLS
OF LOUISVILLE IN SEPTEMBER, 1938

A Dissertation

Submitted to the Faculty

Of the Graduate School of the University of Louisville

In Partial Fulfillment of the

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Of Master of Arts

Department of Education

by

Arthur J. Ries

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SEPTEMBER, 1938

APPROVED BY READING COMMITTEE COMPOSED OF THE
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DATE: May 11, 1940

A SURVEY OF THE INTELLIGENCE AND
ACHIEVEMENT SCORES OF WHITE AND NEGRO
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INTRODUCTION

INTRODUCTION

The universal interest in racial differences is a logical one since the very color of the skin manifests a dissimilarity between the races. The Negro and the white are undeniably different, but is this difference one which makes the white superior? Socially and economically, the Negro has not been the white's equal. Consequently, we as a race, have assumed that equality does not exist in any sense. We have considered the Negro inferior in intelligence and believed that his achievement will not be comparable to that of the white. However, during the last twenty years, since the World War, many scientific investigators have questioned this assumption.

Are Negroes intellectually inferior to whites? How do Negroes compare with whites' in achievement? Are these differences of any consequence in the city of Louisville? What is the relation between these two races with

respect to achievement in general and in separate school subjects in particular, as measured by standard tests? Is there a considerable amount of overageness among Negro school children in Louisville? Is there a difference in achievement of the Negro and white with relation to sections of the city in which he lives?

These questions were interesting because several surveys, which had been made in various parts of the country, had been studied. Therefore, it is the purpose of this thesis to discover what differences existed between the Negro and white child of Louisville, in both intelligence and achievement, and to what extent these differences are present.

Purpose:

The purpose of this survey is to see what intellectual and achievement levels were reached by both the Negro and white children entering the junior high schools of Louisville, September, 1938; to find if differences in

achievement, intelligence and chronological age exist between the Negro and the white and to what extent these differences do exist; and to discover if sex is a determining factor in intelligence and achievement.

Procedure:

Results of the Otis Self-Administering Intelligence Test (Form B) and the New Stanford Achievement Test (Form V, 6 parts) were secured from the office of the Board of Education in Louisville, for all children entering the seventh grade, September, 1938.

These achievement and intelligence results were tabulated as a whole, and then were divided into nine white and two Negro junior high school districts in order to see if differences exist among the various districts of the city.

CHAPTER I

**PERTINENT FINDINGS IN
PREVIOUS INVESTIGATIONS**

CHAPTER I

PERTINENT FINDINGS IN PREVIOUS INVESTIGATIONS

Questions relating to the differences in Intelligence and Achievement between Negro and white children necessarily are of grave importance to the educator and have found their way into many investigations made in various sections of our country. What do psychologists and educators who have tried to answer some of the questions, stated in the introduction to this thesis, find after scientific research and what are their conclusions? Do previous investigations show white persons superior to Negroes? Do white children achieve more than Negroes? Have studies shown a greater over-ageness among Negro children? Have others found a difference in achievement and intelligence among the sexes? Some authorities think these questions are pertinent in studying problems of administration and in providing a suitable curricula.

Since the days of the army intelligence testing program, everyone has been more actively

interested in both intelligence and achievement. So many writers have collected data and written summaries of their findings that the comparison in achievement and intelligence between the Negro and the white has become an issue.

The summaries of Garth,¹ Pintner,² and Witty and Lehman³ and many others have found that Negroes rank below whites in almost all studies made. According to Pintner's findings, Negroes in general appear to do poorly on intelligence tests. He estimates that in the various studies of Negro children, by means of the Binet, the I.Q. ranges from 83 to 99 with the average around 90. With group tests Negroes rank still lower, with a range of I.Q. from 58 to 92 and an average of only 76. Northern Negroes do very much better than Negroes of the South, and approximate much more closely the scores made by whites with whom they are compared.

Although Northern Negroes still rank below

1. Garth, T. R., "Race Psychology," Journal of Negro Education, 3:319-27 (July, 1934).
2. Pintner, R., Intelligence Testing: Methods and Results, New York: Henry Holt and Co., 1931, Chapter XX, 432-45.
3. Witty, P. A. and Lehman, H. C., "Racial Differences: The Dogma of Superiority," Journal of Social Psychology, 1:394-491 (1930).

the whites, they are clearly superior to the larger groups of Negroes from the South (Army Tests). Negro soldiers during the World War were definitely inferior; their mental age was calculated to be 10.4 as compared with 13.4 for the white draft. However, "Negroes in certain Northern States exceeded the median scores obtained by white recruits from a number of Southern States."⁴ Numerous researches based on present intelligence tests show whites with higher I.Q.'s but many investigators attempt to exhibit the inadequacy of, and the constant error in, our present measurement of the intelligence of the Negro.

Charles Thompson⁵ and Robert P. Daniel,⁶ however, have done much testing in this particular field and criticize severely using such tests as a basis for measurement of intelligence. Realizing all discrepancies, leading investigators

4. Klineberg, O., Negro Intelligence and Selective Migration, Columbia University Press, 1935, p. 1.
5. Thompson C., "The Educational Achievement of Negro Children," Journal of Negro Education, 3:424 (1934).
6. Daniel, R. P., "Basic Considerations for a Valid Interpretation of Experimental Studies Pertaining to Racial Differences," Journal of Educational Psychology, 23:15-27 (1932).

find the following results.

L. J. Martell, who in 1915 used the 1911 revision of the Binet tests with eighty whites, forty Indians, and forty Negroes, concludes that, "According to intelligence as measured by Simon Binet, the races rank: White, Indian, and Negro."⁷

A. M. Jordon⁸ tested with the National Intelligence Test in 1921, 1502 whites and 247 Negro children attending grades 1-8 inclusive at Fort Smith, Arkansas, and found that "Negroes, as a group, rank below whites in intelligence."

In 1932, M. B. Bousefield⁹ made a study of 222 Negro children in grades 5-8 who had been in Chicago schools at least three years. In studying these children three group intelligence tests were used and two achievement tests. On the Otis test the middle 50 per cent of a normal

7. Martell, L. J., "A Comparative Study of White, Indian and Negro Races and the Binet-Simon Method of Measuring the Development of Young Children," Journal of Negro Education, 3:428 (1934).
8. Jordon, A. M., "Notes on Racial Differences," School and Society, 16:503-4 (1922).
9. Bousefield, M. B., "Intelligence and School Achievement of Negro Children," Journal of Negro Education, 1:388-95 (1932).

distribution usually falls between 92 and 108. The results of this test showed, however, 68 per cent of the Negro children fell between 74 and 100. The mean I.Q. was 87.15. The second test given was the Pintner Non-Language Mental Test. On this test the middle 50 per cent should obtain scores from 40 to 59. Sixty-eight per cent of the Negro children scored between 36 and 63.4. The mean for the group was three below the normal of 50. The third Test Bousefield used was the McCall Multi-Mental Scale. The mean of this particular test was 45.1 or 4.9 below the normal of 50. The results of the three intelligence tests seem to indicate that if the group had been measured by the Pintner test above, the children would be considered of normal intelligence, if they had been measured by the Otis test alone, they would be considered decidedly below normal in intelligence, and if by the McCall test, they would be considered somewhat below normal but still within the range of the middle fifty per cent of a normal distribution.

J. Peterson and L. H. Lanier¹⁰

suggested that

A useful check upon reliability of a given race difference obtained in any locality and under any specific set of circumstances is to take what seems to be fairly representative samplings from widely different environments and to compare the various results as checks upon one another with a view of determining just which factors persistently yield differences in favor of one or the other race.

With this in mind these investigators gave a number of tests including a Binet Group test, and the Myers Mental Measure, five of the International Group Rotator Tests, and three Ingenuity Tests devised by Peterson, to twelve year old white and Negro boys in Nashville, Chicago and New York. In general, the results stated that the whites in Nashville definitely and reliably surpassed the scores by the Negroes, the difference in favor

10. Peterson, J. and Lanier, L. H., Studies in Comparative Abilities of Whites and Negroes, 1929, report by Klinebert, op. cit., p. 3.

of whites in Chicago was not nearly so marked, and in New York none of the differences between whites and Negroes was reliable. The results of this finding give definite indication, therefore, of a marked difference between Northern and Southern Negroes as well as a clear tendency for Northern Negroes - at least in New York - to approach very closely the results obtained by whites.

This investigation seemed to prove to Klineberg¹¹ that "there could be no basis for the assumption of white superiority of Intelligence." A series of studies were recently completed at Columbia University under his direction. In this testing program, supervised by Klineberg, 3000 Negro school children in Harlem were tested, the measures including a number of linguistic and performance tests - the Stanford-Binet, the National Intelligence, Otis Intermediate, Pintner-Patterson, and Minnesota Form Board. In each study the children examined were of the same sex, same

11. Klineberg, op. cit., p. 4.

age, attended the same or similar schools in Harlem, were all Southern born and approximately of the same economic status. They differed, only as far as could be ascertained, in one important respect - namely, the number of years they had been living in New York. In each case they were compared with the New York born group which was taken as the standard. Results vary slightly in different studies, but almost without exception, they agree in showing that the lowest scores obtained are made by the groups most recently arrived from the South. There is a close, but by no means perfect, relationship between test score and length of residence in New York.

On the Binet Test the intelligence was seen to range from 81.4 for one year's residence to 87.4 for more than four years' residence when testing ten year old Negro boys and girls. The average I.Q. of ten year old Negro children born in New York was 87.3. The intelligence quotients show that the sex difference is in favor of the boys. They are superior throughout the study although not reliably so. The correspondence

between test score and residence in New York seems to be due to better environment. These results are in agreement with findings obtained by Long¹² and McAlpin.¹³

Long's study of third and fifth grade Negro migrant children in the city of Washington found a similar rise in proportion to length of residence. McAlpin used Kuhlmann-Anderson test on Negro school children in Washington and found a difference of about 6 I.Q. points (92.1-98.1) between those born in the city and those born in the South.

Davenport made an interesting study about the island of Jamaica, British West Indies, where the environment of the Negro and white is more nearly alike. He found in 1928 that the average score made on each part of the Army Alpha Test of 100 blacks and 100 whites was 9.64 and 10.23 respectively, a difference which is not statistically significant. "It is safe to believe,

12. Long, H. H., "Intelligence of Colored Elementary Pupils in Washington D. C.," Journal of Negro Education, 3:205-222 (1934).
13. McAlpin, A. S., "Changes in Intelligence Quotients of Negro Children," Journal of Negro Education, 3:44-48(1932).

then, that as the environment of the Negro approximates more and more closely that of the white, his inferiority tends to disappear."¹⁴

Klineberg¹⁵ concludes that the I.Q. remains constant only when there is a relative constancy in environment. He believes that the direct comparison between Negroes and whites will always remain a doubtful procedure because of the impossibility of controlling various factors which may influence results. Intelligence tests, may, therefore, not be used as measures of group differences in native ability, though they may be used most profitably as measures of accomplishment.

The relative scholastic achievement of Negro and white elementary school pupils has been reported by numerous investigators. Wilkerson¹⁶ gives data from four segregated school systems of the South. The school systems studied, the test used, the grades examined, the

14. Davenport, C. B., "Race Crossing in Jamaica," Scientific Monthly, 18:225-238 (1928).

15. Klineberg, op. cit., p. 41.

16. Wilkerson, Doxley A., "Racial Differences in School Children," Journal of Negro Education, 3:453-477 (July 1934).

total number of children involved are summarized as follows:

(a) Baltimore, Maryland, in 1920-21, gave the Thorndike-McCall Silent Reading Tests to grades 4-8, Curtis Research Tests Form I - Series B (arithmetic) grades 4-8 and the Naussau-Hillegas Composition Scale, grades 4-7 and found the following results. The percentage that the median scores of Negro children in various subjects are of the median scores of white children in the same grade are: reading 85.9 per cent, arithmetic 29.5 per cent, spelling 80.0 per cent, composition 80.0 per cent. The general achievement of Negroes in all subjects measured, is 70 per cent of the achievement of the white children in the same grade. The achievement scores of Negro children in Baltimore most nearly approximate those of white children in reading; next in order come spelling, composition and arithmetic.

(b) The testing program given in Virginia 1918-19 used the Thorndike Scale Alpha 2 Silent Reading, Grades 3-7, and tested 3,768 whites as compared with 1,029 Negroes in the city schools

and 3,038 whites, 1,000 Negroes in the rural schools. Virginia authorities also administered the Woody Arithmetic Scales, Series B, Grades 3-7 to 2,557 white and 372 Negro children in rural schools; the Starch Handwriting Scale in grades 3-7 in the city and grades 3-6 in the rural communities; a modified form of the Ayres Spelling Scale to city school children in grades 3-7 inclusive and rural schools Grades 3 through 6. This testing program showed the following results:

The percentages that the median score of the Negro children is of the median score of the white children in the same grade are recorded according to subjects. In reading the percentage was 89.8 in the city and 100.4 in the rural districts; arithmetic (addition only) 94.6 in the city, 97.8 per cent in the rural districts; spelling 91.3 per cent in the city and 95.2 per cent in the rural districts; and handwriting 107.6 per cent in the city and 98.2 per cent in the rural districts. The achievement scores of Negro children in Virginia most nearly approximate those of white children in

the cities in the following order: Handwriting, Addition and Reading and in the rural districts in Reading, Handwriting, Addition, and Spelling. In this state the scores of Negro children approximate those of white children far more closely in the rural schools than in the city schools. This is true in nine of the ten comparisons quoted above.

(c) The study made in West Virginia 1927-28 using six subjects of the Stanford Achievement Tests over the entire state for Grades 5, 7 and 9 in the city and for Grades 6 and 8 in one or two room rural schools showed a close approximation of scores made between white children in rural schools and Negro children. L. V. Cavins, director of West Virginia's School Survey, explains this condition for his state by suggesting that in one and two room schools the races "are both subjected to common handicaps of school environment which neither is able to surmount.

The median achievement scores of Negro children in silent reading approximate those by white children by 82.1 per cent in the state

and 98.5 per cent in rural sections; spelling 79.8 per cent in the state and 93.4 per cent in rural sections; language usage 79.9 per cent in the state and 100.57 per cent in the rural sections; history and literature 75.3 per cent in the state and 100.57 in the rural sections; nature study and science 77.27 per cent in the state and 96.8 per cent in the rural sections. The percentage of general achievement of Negro children in all subjects measured with achievement of the white children was 81 per cent in the state and 96.7 per cent in the rural sections.

(d) Richmond, Virginia, made a similar investigation in 1928-1929 testing 137 whites and 302 Negroes in grade 7H using eight subjects of the New Standard Achievement Tests. Their findings, too, are of real interest. They found that the median achievement scores of Negro children approximate the whites in reading by 78.8 per cent, arithmetic 82.6 per cent, spelling 93.6 per cent, language usage 88.3 per cent, history and civics 84.7 per cent, literature 80.9 per cent. On the average for all subjects

in this grade, the Negro scored 84 per cent of the achievement of the white.

The outstanding fact shown by these studies is that the general achievement level of Negro children is lower than the achievement level of white children in each school system. The extent of variation in achievement is shown by the range from 70 per cent in the schools of Baltimore to 96 per cent in the rural schools of Virginia and West Virginia.

All four of the preceding studies were made in segregated schools. It is well, therefore, to consider Clark's¹⁷ findings in an unsegregated school system. He made this study in 1922-23. Clark compared the intelligence and accomplishment of 510 Negro pupils in Grades 3-8 of five Los Angeles schools with that of an unspecified number of unselected white pupils in fifteen schools. The Negro group he states "is fairly representative of the Negro elementary school population of Los Angeles"

17. Clark, W. W., "Los Angeles Negro Children," Journal of Negro Education, 3:460-61 (1934).

and the pupils with whom they are compared "are undoubtedly representative of the group." The investigators used the following tests in making their experiments: Thorndike-McCall Reading, Woody-McCall Arithmetic, and a sixty word list from the modified Ayres Spelling Scale. Clark reports that "there is no significant difference shown in the intelligence level of Negro children in the fifteen schools taken as a whole and that the average accomplishment and the range of accomplishment for Negro children is practically the same as the total population of the fifteen schools."

Cincinnati's recent study included mixed and segregated school children's achievements. This particular study is of definite interest to all Louisvillians because of Cincinnati's relatively short distance from our own city. These findings as reported by Mary R. Crawley¹⁸ show these results.

Fifty-five pupils were taken from each

18. Crawley, Mary R., "A Comparative Study of the Segregated and Mixed Schools of Cincinnati," Journal of Negro Education, 1:25-38 (January 1932).

type of schools. They were equated in grade, age, mental age and intelligence quotients obtained in the Binet tests. The experimental groups were identical with a mean difference in age of less than one month and in intelligence quotients the difference was less than one point. Their chronological ages ranged about a mean of eleven years, their mental ages about a mean of ten years five months, and their mean intelligence quotients was 95.

After the groups were equated, the mean educational attainments of the segregated and mixed school pupils as shown by their scores in the total Stanford Achievement Test and in individual tests, were compared. The results point to the following conclusions: In the tool subjects of spelling and writing, and in oral reading only, there are considerable differences in the achievements of mixed and segregated pupils in favor of the mixed schools. In subjects which rank high in content matter, they are practically identical. On the whole, the achievements of Cincinnati's Negroes educated in the two types of schools are very similar.

The difference amounts to only two months in educational age and grade achievement and does not indicate a reliable difference.

In a recent Doctor's Thesis compiled by Meece¹⁹ comparing 265 white and 101 Negro children of Grade 6B in a Kentucky city school system, he found that the median grade placement score was 6.5 for whites and 5.4 for Negroes when the Progressive Test was given. Again, when he used 172 whites and 82 Negroes in Grade 6A, he found the median for whites to be 6.7 and for the Negroes 5.5. This shows clearly that whites have achieved more than Negroes in the system referred to by Meece.

The age at which a child arrives at a given grade may be considered a rough measure of scholastic achievement. Other things being equal - i.e. - age of entering school, regularity of attendance, scholastic ability, instructional efficiency etc., one should expect children to arrive at the various grades at the

19. Meece, Leonard Ephraim, "A Comparative Study of White and Negro Education on the Elementary and Secondary School Levels," unpublished Doctor's thesis, University of Kentucky, 1938.

same age. Variations from the norm in age - grade placement, the total time spent in school being constant, denote acceleration or retardation in scholastic progress. In three school system's reports summarized by Wilkerson²⁰ the following is found.

C. D. Strayer was director of the studies made for over-ageness in the Baltimore schools 1920-21. His findings showed that in Grade Six, 60 per cent of the Negro children were over age. The largest member of Negro children who were over age was found to be in Grade Four. In 1928 M. V. O'Shea, who was director of Public Education in Virginia, found in his survey of this state that 77 per cent of all children in Grade Six and 55 per cent of all children in Grade Seven were over age. Similar statistics were compiled by L. V. Cavins, director of the State Board of Education in West Virginia. His results show 77 per cent over-age in Grade Six and 77 per cent over-age in Grade Seven. The excess of

20. Wilkerson, op. cit., p. 455.

Negro percentage over white in over-ageness
was found to be:

Baltimore	Grade 6	18%
	7	20%
Virginia	Grade 6	29%
	7	16%
West Virginia	Grade 6	8% (rural schools)
	7	19% (rural schools)

All of these systems maintain segregated schools. In every grade of these three school systems Negro children exceed white children in proportion of over-ageness. Though the percentage varies among different systems the difference between the two races is for the most part fairly constant. In elementary grades, in terms of grade status and related to age, approximately 20 per cent more Negro children than white children are over age for their grades.

Several other studies find the Negro to be over age when compared with the white children in grade placement. Alden Hewitt²¹ reports that "the median age of ninety Negro Seventh Graders in a southern school system exceeds that of eighty-five similarly classified white children

21. Hewitt, Alden, "A Comparative Study of White and Colored Pupils in a Southern School System," Elementary School Journal, 31:111-119 (1930).

by one year and five months. The median ages of the two groups are reported as 14-10, that is, fourteen years and ten months, and 13-5. The ranges in age for Negroes and whites are respectively 10-6 to 19-2 and 11-6 to 16-11.

Lapidus,²² under the direction of Otto Klineberg, made a study in 1931 of twelve year old Negro boys. He studied 517 Negro boys and found that the length of residence in New York has a real effect upon the scholastic level. "Since 7A is the normal grade for twelve year old white pupils, it can be seen that the Northern born group of Negroes is only slightly more than three-fourths of a year retarded and that the retardation is far more marked in the case of recent arrivals from the South." The boys who have been in New York for only one year were found to be 2.07 years retarded and those who had resided there for five years were found to be 1.31 years retarded. The longer they had been residing in the city,

22. Klineberg, Otto, op. cit., p. 28.

the more nearly they approached the New York born group.

Yates,²³ who also worked under the supervision of Klineberg, made a study of 619 twelve year old Negro girls in Harlem from February to May, 1932. She found a definite decrease in retardation in proportion to residence in New York city. The retardation is appreciable only for those who have been in New York city less than six years. There was found to be practically no retardation for twelve year old Negro girls who had all their schooling in New York city.

Busby²⁴ found in 1929, when he studied the achievement and ability of 7H students in Richmond, Virginia using the new Stanford Achievement Test, that in terms of C. A. norm the median Negro pupil in grade 7H is five months over age; whereas the median white pupil is one month under age. When compared with the norm of 163 months for that grade, the median C. A. is found to be 162 months

23. Klineberg, op. cit., p. 32.

24. Busby, Clyde, 7H Achievement and Ability Study, Richmond Public Schools Bulletin, 1929, p. 1.

for white children and 168 months for Negro children.

One of the most intensive researches on this over-ageness in the grades was done by Garth, Lovelady, and Smith in 1930.²⁵ This survey tested 2,006 Negro children in grades 4 to 9; 1019 of these were found in Dallas, Texas public schools and 987 in the urban Oklahoma schools. Nine hundred of these 2006 were boys and 1106, girls. The test administered was the Otis Classification Test. Results showed 61.1 per cent of the children were over age. "It can be readily seen that the Southern Negro children who were studied are much retarded educationally. The chronological age for the grade is considerably above that of the average white child in the United States. If a curve of mental growth is plotted, it is found that the negro child starts at practically the

25. Garth, T. R., Lovelady, B. E., and Smith, H. W., "The Intelligence and Achievement of Southern Negro Children," School and Society, 32:431-35 (1930).

same point as the white but steadily lags behind with increasing years." For instance, the average chronological age for the Negro in Grade 7 is 14.6 years.

Bousefield's study in Chicago²⁶ verifies these facts. In her testing of 222 Negro children in grades 5-8, she found 73 per cent of the children were average for their grades. The largest proportion of over-ageness was found to be in 8A. Garth and Bousefield did not report comparable over-age figures for white children in communities studied.

Previous investigations seem to indicate that whites are superior to Negroes in intelligence and achievement when measured by standard tests. The question then naturally arises concerning sex differences. Is there a difference between the intelligence and achievement of boys and girls as well as a difference between races?

26. Bousefield, M. B., "The Intelligence and School Achievement of Negro Children," Journal Negro Education, 1:388-395 (1932).

Thorndike,²⁷ Pressey,²⁸ Lincoln,²⁹ Burnham,³⁰ and Wreschner,³¹ have agreed that if there is a difference in intellect between boys and girls that this difference is not great enough to be important. That girls between the ages of nine and fifteen should tend on the average to surpass boys may be due to the fact that they mature earlier than boys.

How do boys and girls compare in achievement? Some scientific work has been done to determine whether girls do better school work than boys. Bassett³² studied sex differences in the retention of history. Her data show that in the sixth and seventh

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27. Thorndike, E. L., "Sex Differences in Mental Ability," Journal Educational Psychology, 3:64.
28. Pressey, L. W., "Sex Differences Shown by 2544 School Children on a Scale of Intelligence," Journal of Applied Psychology, 2:224 (November, 1918).
29. Lincoln, E. A., Sex Differences in the Growth of American School Children, Warwick and York, p. 48.
30. Burnham, W. H., "Sex Differences in Mental Ability," Educational Review, 52:280 (November, 1921).
31. Wreschner, A., "New Studies and Mental Differences Between Boys and Girls," Review of Reviews, 63:104 (July, 1923).
32. Bassett, S. J., "Sex Differences in History Retention," School and Society, 39:397-98 (March 1929).

grades boys were slightly superior to girls in the retention of historical facts. Commins³³ studied the scores made on the Stanford Achievement Test by eighty-five boys and ninety girls in the fifth grade. He found that boys were slightly superior in arithmetic, nature study, history and literature. The girls were superior in language usage and dictation.

Miller³⁴ studied the relative achievement of 541 boys and 497 girls of the same chronological ages in grades 2-8 on the Stanford Achievement Test during the year 1931. At the twelve year old age level the medians on the test were, boys 84.3 and girls 82.5, and at the thirteen year old age level the medians were the same, 83.0 for boys and girls. He concludes that "the scores of boys more often have a wider range than the scores of girls. Comparisons made between the sexes when all the boys and girls of one yearly age are considered

33. Commins, W. D., "More About Sex Differences," School and Society, 28:599-600 (November, 1928).

34. Miller, William A., "Achievement Scores of Boys and Girls of the Same Chronological Ages," Elementary School Journal, 32:676-80 (May, 1932).

as a unit shows the median scores of the boys to be higher more often than those of the girls. Comparisons of the means of the same groups shows that girls rank higher than boys. This study shows no marked superiority in achievement on the part of either sex."

Heilman³⁵ studied the results obtained from giving the Stanford Achievement Test to 482 ten year old girls and 464 ten year old boys of Denver, Colorado. He concludes that "it is practically certain that the true sex difference in spelling lies above zero and it is in favor of the girls. For language usage, reasoning in arithmetic, and nature study and science, the chances that the true differences are above zero are high but not sufficiently so to guarantee practical certainty. Moreover, except spelling, no true sex difference has been found for the tenth and ninetieth percentile points."

35. Heilman, J. D., "Sex Differences in Intellectual Abilities," Journal of Educational Psychology, 24:47-62 (1933).

Caldwell and Mowry³⁶ in studying 340 Spanish-American and 283 Anglo-American children in New Mexico found that Anglo-American girls earn slightly higher scores on essay tests in history and English and that on the same tests, Spanish-American boys earn slightly higher scores than Spanish-American girls. These differences are, however, slight and no critical ratio is high enough to be significant.

Several other investigators indicate that there is no reliable difference between the sexes. Book,³⁷ Lehman,³⁸ and Patterson,³⁹ indicate that girls are superior in scholarship. Patterson points out, however, that this superiority is evident on old type tests

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36. Caldwell, F. F. and Mowry, M. D., "Sex Differences in Achievement Among Spanish-American and Anglo-American Children." Journal of Educational Sociology, 8:168-73 (1934).
37. Book, Williams, and Meadows, J. L., "Sex Differences in 5925 High School Seniors in Ten Psychological Tests," Journal of Applied Psychology, February, 1928, p. 72.
38. Lehman, H. C. and Witty, P. A., "Some Suggestive Results Regarding Sex Differences in Attitude Toward School Work," Education, 49:452.
39. Patterson, D. G., "Influence of Sex on Scholarship Rating," Education Administration and Supervision, 12:460 (December, 1926).

where personalities are taken into consideration. He indicates that where the new achievement tests were given, the superiority was no longer very evident. Patterson's study was made in connection with the freshman class of the University of Minnesota. The boys and girls were given a general test which covered the entire work of their high school course. This might reveal entirely different results if the study had been made with younger boys and girls. However, the individual differences within one sex so enormously outweigh the differences between the sexes that for practical purposes the sex difference may be disregarded.

Summarizing all the findings in these investigations on intelligence, achievement, and over-ageness, it has been found:

Conclusions

1. Negro school children usually, as a group, rate lower than whites on intelligence as measured by intelligence tests.

2. I.Q.'s vary as children move from one environment to another, therefore this is one reason they should not be taken as a measure of native intelligence but used as a measure of accomplishment.

3. Negroes, as a group, achieve less in school subjects than white children in the same grades and school systems.

4. The achievement of Negro children in elementary school subjects is, in general and in most, though not all, grades and subjects, below that of white children in the same school system.

5. The studies reported show that more Negro children than white children are over age for their respective grades.

6. There is relatively no difference in intelligence between the sexes.

7. There is no significant difference in achievement between boys and girls.

CHAPTER II

THE INTELLIGENCE OF WHITE AND NEGRO
BOYS AND GIRLS ENTERING THE
SEVENTH B GRADE IN
SEPTEMBER 1938

CHAPTER II

THE INTELLIGENCE OF WHITE AND NEGRO BOYS AND GIRLS ENTERING THE SEVENTH B GRADE IN SEPTEMBER 1938

Education in the city of Louisville, as in sixteen Southern States and the District of Columbia, is provided by means of a dual system for the white and Negro races.

The distribution and trends in Negro population have an important bearing upon the problems of Negro education in Kentucky. During the last twenty years the trend is toward urbanization of the Negro population here and in other parts of the country.

Since 1830, Kentucky has dropped from fifth to seventeenth in rank of states according to Negro population.¹ During the ten year period from 1920 to 1930 the proportion of Negro population in Kentucky has dropped from 9.8 per cent to 8.6 per cent.² That part of this loss has been due to migration is indicated in the

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1. Negroes in the United States, 1920-1932, United States Department of Commerce, Bureau of Census, p. 6.
 2. Ibid., p. 430.

statements of Klineberg³ in Chapter I of this study and by the Bureau of Census to the effect that "most of the Negroes living in the East North Central states, but born in other states migrated from Alabama, Georgia, Kentucky, Mississippi and Tennessee."⁴

In addition to the migration of Negroes out of the state there has been a shifting of the Negro population within the state from rural to urban communities. In 1910 approximately two-fifths or 40.8 per cent of the Negro population in Kentucky was urban. In 1920 the percentage of urban population had increased to 44.7 per cent and by 1930 to 51.6 per cent or more than one-half the total. Although Kentucky, as a state, has seen a decrease in Negro population, Louisville as a city, has seen a considerable increase in the number of Negroes living here; therefore the problem of Negro education has necessarily

3. Klineberg, *op. cit.*

4. *Ibid.*, p. 17.

been one of vital concern.

The range in fifty-two cities in Kentucky is from four in Belleview and Dayton to 47,357 in Louisville. Lexington with 12,759 Negroes is second, and Paducah with 6,744 is third in size. In eight cities the range is from 2,000 to 10,000 and in only two cities does the Negro population exceed 10,000.⁵

Table I shows the Negro population of seven leading cities of Kentucky and the percentage of the 1930 total population.

Already in Kentucky Negro education has ceased to be primarily a rural problem and is becoming more and more an urban one. Since Louisville is the leading urban center of Kentucky and has increased 15.4 per cent in Negro population from 1920 to 1930, it is important to discover what type of Negro child we have in our midst and how he ranks with the white child. Are these Negro children in

5. Negroes in the United States, 1920-1932, United States Department of Commerce, Bureau of Census, pp.730-740.

TABLE I

NEGRO POPULATION OF SEVEN KENTUCKY
CITIES, THE GAIN OR LOSS IN NEGROES,
AND THE PERCENTAGE OF THE TOTAL
POPULATION IN 1930

	Population 1930	Negro 1930	Negro 1920	Gain or Loss	Percent Negro of 1930 Total
Ashland	29,074	936	489	447	3.2
Covington	6,729	1,798	1,357	441	26.7
Danville	65,252	3,466	3,040	426	5.3
Frankfort	11,626	2,205	2,246	-41	19.0
Lexington	45,736	12,759	12,450	309	27.9
Louisville	307,745	47,357	40,087	7,270	15.4
Paducah	33,541	6,744	5,585	1,158	20.1

Louisville inferior to the white children in intelligence?

To try to give some answer to this question will be the purpose of this chapter. The children selected for this study were those boys and girls who entered the junior high schools of Louisville from forty-four white and thirteen Negro schools of the city in September 1938. In February of this year, each child had been given an intelligence test. The test used was the "Otis Self Administering Test of Mental Ability for Intermediate and Higher Grades, Form B" by Arthur S. Otis, formerly Development Specialist with the Advisory Board General Staff, War Department. This test was given by the 6A elementary school teachers previous to the time students entered junior high school. The chronological ages and mental ages of all children tested at this time (February 1938) were recorded and sent to the Bureau of Research, Board of Education in Louisville. This information was secured from the Bureau of Research and the I.Q.'s were

found from the key furnished with the Otis tests.

The I.Q.'s were tabulated in five point intervals of all white 7B children and the same procedure was followed with the Negroes. The percentage of pupils falling in each step interval was found. Table II shows the results of this tabulation.

In examining Table II, we find the range of I.Q.'s for the white children to run from 50 to 149 while those of Negroes range from 50 to 139. Upon closer examination, we find that 70.39 per cent of the white children have I.Q.'s above 90 while only 38.41% of the Negroes have I.Q.'s above 90.

It might be interesting to note Terman's I.Q. classification:⁶

Above 140	Genius or near genius
120-140	Very superior
110-120	Superior
90-110	Average
80-90	Dull normal
70-80	Dull
Below 70	Feeble minded

and to interpret some of the findings of Table I

6. Terman, Lewis, "Measurement of Intelligence," New York: Houghton Mifflin Co., 1916, p. 79.

TABLE II
 INTELLIGENCE TEST RESULTS OF WHITE
 AND NEGRO CHILDREN ENTERING THE 7B
 IN SEPTEMBER 1938

I.Q.	White		Negro	
	Cases	Per cent	Cases	Per cent
145-149	1	.05		
140-144	6	.32		
135-139	53	2.83	1	.26
130-134	28	1.49	1	.26
125-129	71	3.79	1	.26
120-124	79	4.22	3	.79
115-119	144	7.70	6	1.58
110-114	169	9.04	7	1.84
105-109	177	9.46	16	4.21
100-104	186	9.95	27	7.11
95-99	212	11.33	39	10.26
90-94	191	10.21	45	11.84
85-89	170	9.09	53	13.95
80-84	123	6.58	55	14.48
75-79	102	5.45	43	11.32
70-74	84	4.49	30	7.90
65-69	45	2.40	23	6.05
60-64	20	1.07	20	5.26
55-59	9	.48	9	2.37
50-54	1	.05	1	.26
Total	1871	100.00	380	100.00

in groupings used by him. When we use Terman's grouping, we find, according to Table I, that seven white children or .37 per cent had I.Q.'s above 140 and no Negro child fell in this genius grouping. In the very superior section, 231 white children or 12.33 per cent and only six Negroes, or 1.57 per cent fell into this range. Further study of Table I shows 313 whites or 16.74 per cent and thirteen Negroes or 3.42 per cent had I.Q.'s between 110 and 120. Using these three sections of Terman's classification as a basis of grouping, we find that there is a greater percentage of white children in this group falling above average than there are of Negro children. In other words, 29.44 per cent of the whites and 4.99 per cent of the Negroes fell into this "above average" grouping-- or a difference of 24.45 per cent.

In the Average groups, those with I.Q.'s from 90 to 110, there are 776 or 40.95 per cent white, and 127 or 33.42 per cent Negroes; in the Dull Normal group, those with I.Q.'s from

80 to 90, 293 whites or 15.67 per cent and 108 Negroes or 28.43 per cent fall; and in the Dull group, those with I.Q.'s from 70 to 80, 186 whites or 9.94 per cent and 73 Negroes or 19.22 per cent appeared. Thus, it is found that there is a greater discrepancy between Negroes and whites in the Superior group than elsewhere, and that the Negro is inferior to the white in each of the groupings used; but he more nearly equals the percentage of whites falling in the Average grouping range.

Terman states that children with an I.Q. below 70 are in a group termed "feeble minded" and if his classification were used with Otis Test results, we would find seventy-five or 4 per cent of the whites fall into this group and fifty-three or 13.94 per cent of the Negroes. Otis⁷ in his manual says that "I.Q.'s derived from mental ability tests other than the Binet Tests have an appreciably wider range than those obtained from the Binet Test and are therefore not comparable with the latter."

7. Otis, Arthur S., "Otis Self-Administering Tests of Mental Ability," Manual of Directions, p. 5.

However, it is not the purpose of this study to state whether a boy or girl is a genius, average, or feeble-minded, but to compare both numbers and percentages of Negroes and whites falling in these I.Q. ranges using results from the Otis Tests.

To simplify the picture somewhat, let us consider the median, lower quartile, and upper quartile for each race.

Intelligence Scores

	White	Negro
Median	99.0	85.3
Q_1	87.0	75.9
Q_3	112.0	95.3

From this we see that the median for the whites exceeds the median for the Negroes by 13.7 I.Q. points.

The semi inter-quartile range, the probable error of the median, probable error of the difference of the median, and the critical ratio are:

CHART I

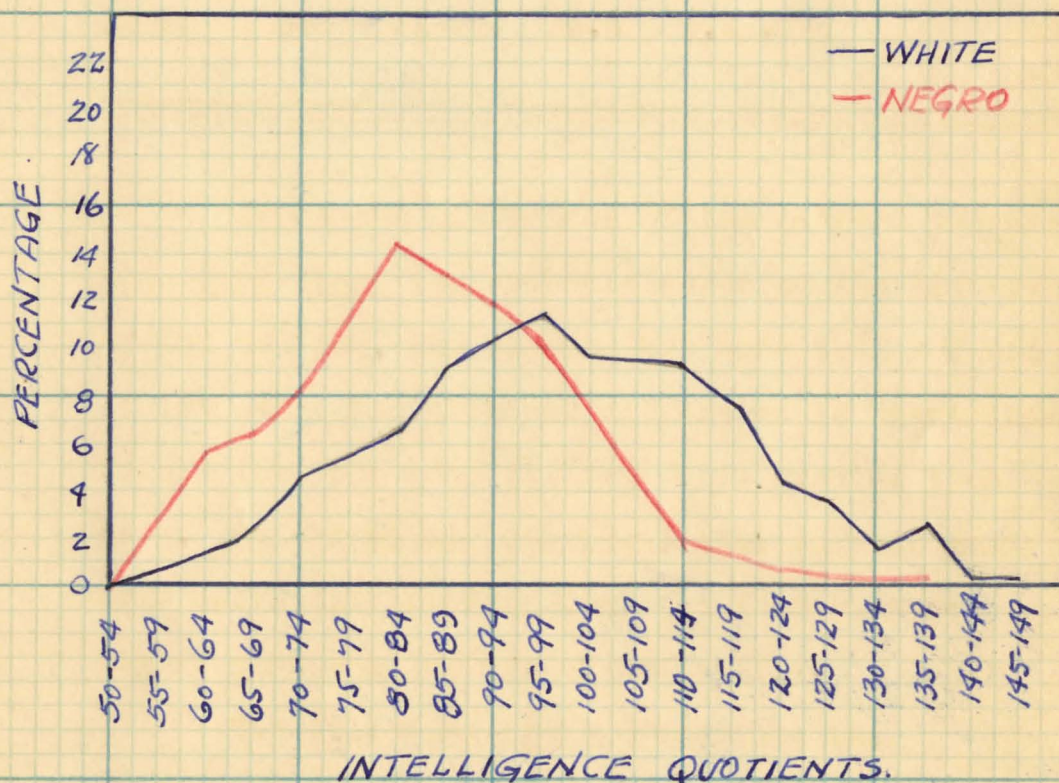
	Number	Range	Median	Q.	P.E. MDN	P.E. D	Critical Ratio $\frac{D}{P.E.D}$
White	1871	52-146	99	12.5	.362		.721
Negro	380	51-137	85.3	9.5	.624		19.0

Since the difference of the medians is more than four times the probable error of the difference of the medians, the chances are more than 997 out of 1000 that the obtained difference is significant, namely that the true difference is greater than zero. We can safely say then, that on this group Otis Self-Administering Test the whites score higher than the Negroes of Louisville.

The following graph shows that the distribution of the scores of the white children nears the normal curve while the distribution of scores of the Negro children is concentrated near the lower end. We see that the scores of more white pupils fall in the higher I.Q. ranges,

GRAPH I.

INTELLIGENCE QUOTIENTS OF WHITE
AND NEGRO GA CHILDREN, FEBRUARY 1938.



and that the scores of white children seem to be more variable than the scores of Negroes. From Chart I we find the quartile deviation of the white children is 12.5 or three points more than the quartile deviation of the Negroes which is 9.5. The probable error of the white quartile deviation is .227 and the probable error of the Negro quartile deviation is .453. We know from statistics that if the critical ratio or the difference of the quartile deviation divided by the probable error of the difference is found to be four or more probable errors, the true difference in variability between the two groups is greater than zero. The critical ratio here is 6.6 probable errors, hence we may say that the distribution of the scores of the white children on the Otis test is more variable than the distribution of the scores of the Negroes. The white children are more heterogeneous.

The preceding figures show that there is a difference between the intelligence quotients of the Negro and the white in the city as a whole. Now let us see if there are any great

differences in the white race when the children are grouped according to the junior high school districts in which they live.

The city of Louisville is divided into nine white junior high school districts. These districts afforded a convenient grouping which could be used to compare the intelligence of white children in the various sections of the city. It is a well known fact that in a city the size of Louisville some districts are better residential areas than others. In a section where rents are higher and living conditions seemingly superior, are the intelligence quotients higher than in districts where the rents are lower and living conditions not quite so favorable?

In order to determine if the district in which a white child lived seemed to throw any light upon this subject of intelligence, a copy of the "Real Property Survey and Low Income Housing Area Survey"⁸ of Louisville, Kentucky, was secured from the city Planning and Zoning

8. Walte, Charles, Real Property Survey and Low Income Housing Area Survey of Louisville, Kentucky, 1938-1939, Louisville, Ky., 38 pp.

Commission and the average rental map for the city of Louisville was subdivided into nine white junior high school districts. The districts were ranked according to the monthly rental values in order to see if the I.Q.'s of the white children living within higher rental districts were superior to those I.Q.'s of white children living in a district where rents were lower.

The records of these children were secured from the Board of Education for their first semester in junior high school. From these records each child was placed in the proper district.

Table III shows the number of children in each district and the percentage falling in each interval of five I.Q. points.

From this table the percentages of children with I.Q.'s of 90⁵⁰ and above were tabulated and are shown in the following chart.

TABLE III

THE INTELLIGENCE QUOTIENTS OF 6A CHILDREN IN THE
VARIOUS JUNIOR HIGH SCHOOL DISTRICTS - THE
PERCENTAGE IN EACH STEP INTERVAL OF FIVE POINTS

White									
	B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N
145-149							.57		
140-144		.39	2.44				.57		
135-139	8.17	.39	7.32	1.99	1.64	2.16	5.08	1.17	1.19
130-134	1.26	1.18	4.27	1.66	2.46	.54	1.13	1.17	.80
125-129	6.92	.78	10.97	3.32	5.74	2.16	2.26	2.34	3.58
120-124	6.29	1.96	11.58	3.00	2.46	1.62	7.91	3.11	3.19
115-119	8.17	7.45	13.41	7.64	4.92	7.57	7.34	7.39	5.99
110-114	8.17	5.10	12.80	9.30	8.20	8.65	11.30	12.07	6.78
105-109	10.70	6.28	8.54	6.64	10.65	14.06	11.87	9.35	10.36
100-104	6.29	6.67	7.32	13.29	15.57	9.19	14.12	8.57	9.56
95-99	10.06	10.97	7.93	8.97	11.47	15.68	11.86	10.84	14.34
90-94	10.70	12.16	5.49	11.96	11.47	10.81	3.96	11.67	10.76
85-89	6.92	11.37	3.66	8.31	9.02	9.73	8.47	9.35	12.35
80-84	6.29	9.81	3.05	7.31	5.74	5.95	3.95	7.39	6.77
75-79	3.14	10.20		6.31	4.92	5.40	5.08	5.84	4.78
70-74	3.14	9.02	.61	4.98	4.10	2.70	3.96	5.45	3.58
65-69	2.52	4.71	.61	2.33	.82	2.16	.57	2.34	3.58
60-64	1.26	.78		2.66		1.62		1.17	.80
55-59		.78		.33	.82			.39	1.59
50-54								.39	
Total Cases	159	255	164	301	122	185	177	257	251

TABLE III (continued)

THE INTELLIGENCE QUOTIENTS OF 6A CHILDREN IN
THE VARIOUS JUNIOR HIGH SCHOOL DISTRICTS - THE
PERCENTAGE IN EACH STEP INTERVAL OF FIVE POINTS

Negro			
	J A C K S O N	M A D I S O N	Total N E G R O
145-149			
140-144			
135-139		.38	.26
130-134		.38	.26
125-129		.38	.26
120-124		1.15	.79
115-119	.85	1.91	1.58
110-114		2.67	1.84
105-109	5.08	3.82	4.21
100-104	3.39	8.78	7.11
95-99	11.02	9.92	10.26
90-94	13.56	11.07	11.84
85-89	11.87	14.88	13.95
80-84	15.25	14.12	14.48
75-79	16.10	9.16	11.32
70-74	2.54	10.31	7.90
65-69	6.78	5.73	6.05
60-64	9.32	3.43	5.26
55-59	3.39	1.91	2.37
50-54	.85		.26
Total Cases	118	262	380

CHART II

PERCENTAGE OF CHILDREN WITH I.Q.'S
ABOVE NORMAL IN EACH WHITE DISTRICT

District	Percentage of white children with I.Q. 90 or above
Barrett	76.73
Eastern	53.33
Highland	92.07
Halleck	67.77
Monsarratt	74.58
Parkland	72.44
Shawnee	77.97
Southern	67.68
Western	66.55

Table IV shows the median, first quartile, third quartile, and the semi-quartile range.

From these totals we see that the median I.Q.'s range from 91.0 in the Eastern district to 114.5 in the Highland district. This is a difference of 23.5 -- a wider spread than occurs between the two races.

In four districts the median I.Q. is 100 or above and in five districts the median is below 100. However, in all nine districts the white medians exceed the Negro medians and even the lowest white district (Eastern) is

TABLE IV

THE CASES, MEDIANS, QUARTILES, AND THE SEMI-
INTERQUARTILE RANGE OF THE I.Q.'S OF CHILDREN
GROUPED IN THE JUNIOR HIGH SCHOOL DISTRICTS

White										
	B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N	
No. Cases	159	255	164	301	122	185	177	257	251	
Md	104.5	91.0	114.5	98.5	100.0	99.2	103.9	97.3	96.5	
Q ₁	90.4	79.3	102.0	85.3	89.5	88.2	93.1	85.6	86.1	
Q ₃	118.0	103.0	124.5	110.4	109.5	108.7	114.5	110.4	107.8	
Q	13.8	11.85	11.25	12.55	10.0	10.25	10.7	12.4	10.85	
Negro										
	J A C K S O N	M A D I S O N	Total							
No. Cases	118	262	380							
Md	83.1	86.3	85.3							
Q ₁	75.2	76.5	75.9							
Q ₃	92.8	96.8	95.3							
Q	8.8	10.15	9.7							

5.7 points above the median of the Negroes.

From the Average Rental map of the city of Louisville,⁹ the nine white junior high school districts were ranked according to the rental values in each district. These rents vary in each district but the ranking was on the basis of average rent for the district. These districts are given in order, from highest to lowest, with the median I.Q. of children living in each district, in Table V.

The Median I.Q. in all but one district becomes less as the rents become lower. The Monsarratt district is an exception, but this is a downtown district in which children live either in boarding houses or over stores on the fringe of the central shopping area. This may account for this district's being out of place on the chart.

The Eastern district has the lowest median I.Q., 91, the fewest children with I.Q. above 90 (53.33 per cent) and the lowest average

9. Walte, op. cit.

TABLE V

THE JUNIOR HIGH SCHOOL DISTRICTS
RANKED ACCORDING TO RENTAL VALUES
AND THE MEDIAN I.Q. IN EACH DISTRICT

District	Average rental (approximate)	Median I.Q.
Highland	\$50	114.5
Barret	45	104.5
Shawnee	35	103.9
Halleck	30	98.5
Parkland	25	99.2
Southern	25	97.3
Monsarrat	25	100.0
Western	20	96.5
Eastern	15	91.0

rental.

The living conditions in most parts of this district would more nearly approximate those of the Negro. Let us then compare the results obtained in this district with that of the Negroes. Since there are only 118 Negroes (7B) in the Jackson Junior High School district and 262 (7B) in the Madison Junior High School district, all will be used in the comparison with the Eastern Junior High School district.

From Table III the percentages of white children falling in each step interval in the Eastern district and the Negro group were used to make the following graph. We see that the curve for Negroes is skewed to the upper end a little more than the whites in this district and that there is not as large a percentage falling above 104 I.Q. points.

The following chart shows the range, the lower quartile, median, and upper quartile for the white children in this district and the Negroes.

GRAPH 2.

INTELLIGENCE QUOTIENTS OF WHITE
6A CHILDREN IN THE EASTERN JUNIOR HIGH
SCHOOL DISTRICT AND ALL 6A NEGRO
CHILDREN, FEBRUARY 1938.

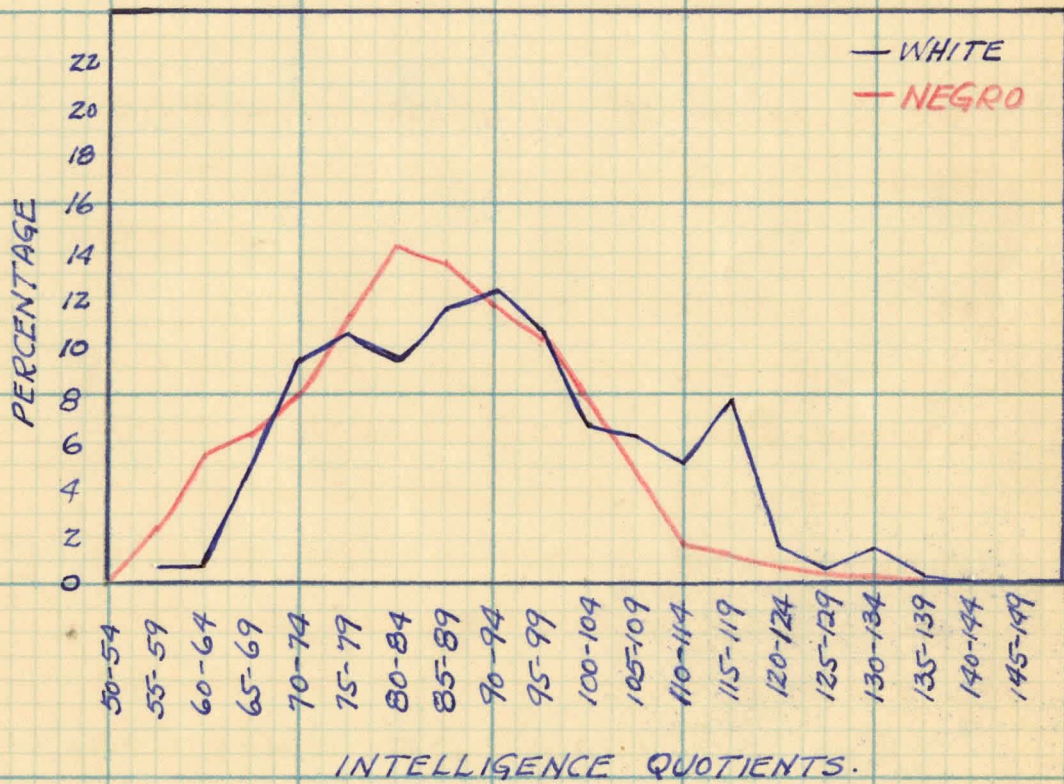
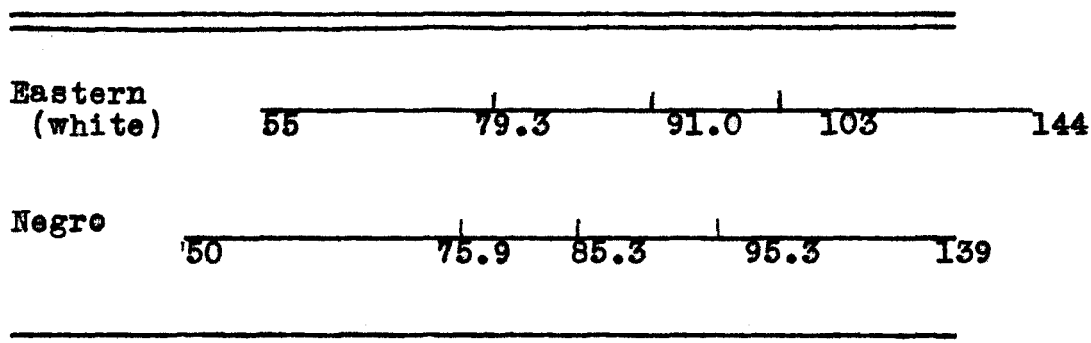


CHART III

THE RANGE OF SCORES, MEDIAN AND PER-
CENTILES OF WHITE PUPILS (6A) IN THE
EASTERN JUNIOR HIGH SCHOOL DISTRICT AND
ALL NEGRO (6A) PUPILS



One may observe from this that the median of the white pupils in the Eastern district is 5.7 points higher than the Negro group. This seems to indicate that the median white child, even if he is from the group whose median is lowest and in whose district rents are cheaper, still scores somewhat higher than the median Negro child of Louisville.

The probable error of the medians, the probable error of the difference and the critical ratio were found to see if this difference is significant.

	Cases	Median	P.E. MDM	P.E. D	$\frac{D}{P.E. D}$
Eastern	255	91	.930		
				1.119	
Negro	380	85.3	.624		5.09

Since the difference of the medians is more than four times the probable error of the difference, we see that the difference is significant. Therefore, we can say that there is a difference of intelligence in favor of the whites in Louisville even if those whites are chosen from the district whose scores are the lowest of the white districts and the Negroes are taken from the city at large.

In a study of this kind the question always arises whether there is a difference in intelligence between boys and girls. Table VI shows the distribution of I.Q.'s of white and Negro children when recorded separately for Boys and Girls.

From this table we find that 65.28 per cent of the white boys and 75.72 per cent of the white girls are above normal (90). This study shows

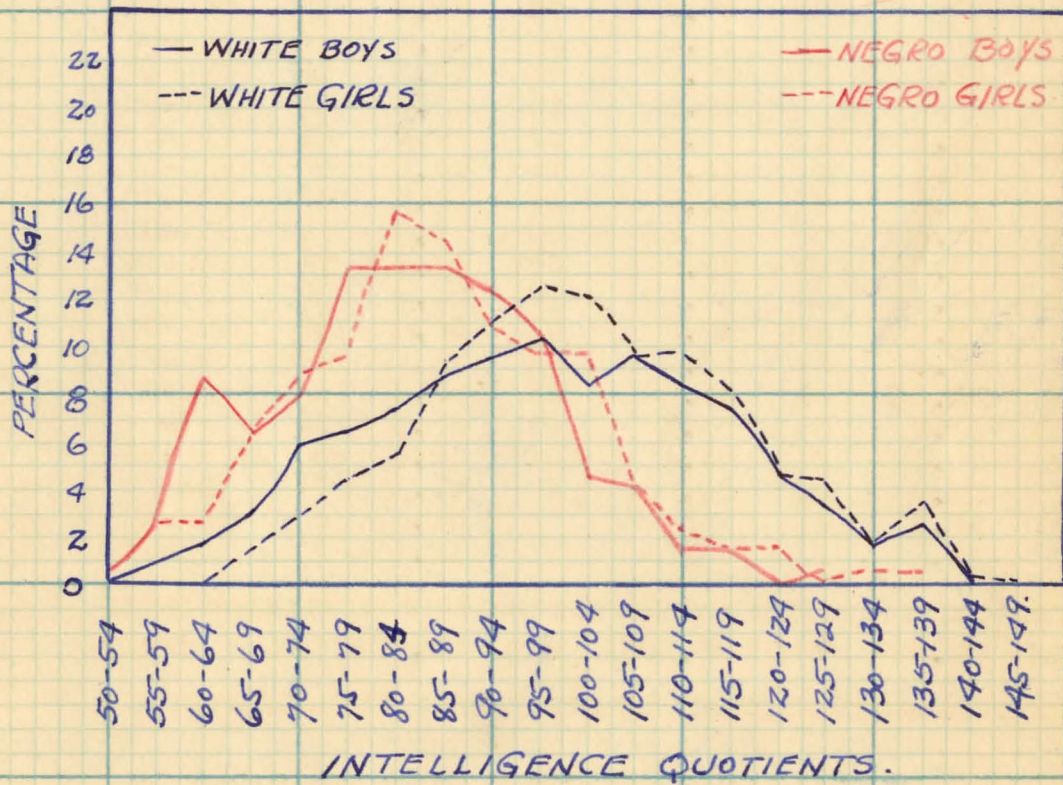
TABLE VI

THE INTELLIGENCE QUOTIENTS OF WHITE
AND NEGRO BOYS AND GIRLS

I.Q.	White				Negro			
	Number boys	% boys	Number girls	% girls	Number boys	% boys	Number girls	% girls
145-149			1	.11				
140-144	4	.42	2	.22				
135-139	23	2.42	30	3.26			1	.55
130-134	15	1.58	13	1.41			1	.55
125-129	32	3.37	39	4.23	1	.51		
120-124	40	4.22	39	4.23			3	1.64
115-119	70	7.38	74	8.03	3	1.52	3	1.64
110-114	80	8.43	89	9.65	3	1.52	4	2.19
105-109	91	9.59	86	9.33	8	4.06	8	4.37
100-104	77	8.17	109	11.82	9	4.57	18	9.84
95-99	97	10.22	115	12.47	21	10.66	18	9.84
90-94	90	9.48	101	10.96	25	12.69	20	10.93
85-89	85	8.96	85	9.22	26	13.20	27	14.75
80-84	70	7.38	53	5.74	26	13.20	29	15.85
75-79	61	6.43	41	4.45	26	13.20	17	9.29
70-74	57	6.00	27	2.92	15	7.61	15	8.20
65-69	30	3.16	15	1.63	12	6.09	11	6.01
60-64	17	1.79	3	.32	16	8.12	4	2.19
55-59	9	.95			5	2.54	4	2.19
50-54	1	.11			1	.51		
Total	949	100.00	922	100.00	197	100.00	183	100.00

GRAPH 3.

INTELLIGENCE QUOTIENTS OF WHITE AND NEGRO
BOYS AND GIRLS, 6A GRADE, FEBRUARY 1938.



that 10.44 per cent more 6A white girls ranked above normal than 6A white boys. In considering the Negro children, we find 35.53 per cent of the Negro boys ranked above 90, and 41.55 per cent of the Negro girls, or 6.02 per cent more Negro girls were above normal than Negro boys.

The median, inter-quartile range, probable error of the median, and the critical ratio were found separately for boys and girls of both races.

CHART IV

THE NUMBER, THE RANGE, THE MEDIAN,
INTER-QUARTILE RANGE, PROBABLE ERROR
OF THE MEDIAN AND THE CRITICAL RATIO
OF WHITE AND NEGRO BOYS AND GIRLS

Intelligence Test Results							
	Number	Range	Median	Q.	P.E. MDN	P.E. D	$\frac{D}{P.E. \cdot D}$
White Boys	949	52-144	97.3	13.6	.553	.726	4.3
White Girls	922	60-146	100.4	11.4	.471		
Negro Boys	197	51-129	84.1	9.35	.835	1.22	1.1
Negro Girls	183	55-137	86.7	9.6	.889		

The median I.Q.'s of white girls exceeds the median I.Q. of white boys by 3.1 I.Q. points and the median I.Q. of Negro girls exceeds that of Negro boys 2.6 I.Q. points. The difference between these median I.Q.'s shows the girls ranking higher than the boys in both races. The difference between the medians of white boys and white girls is 4.3 times the probable error of the difference and therefore shows that this difference is significant. However, when we consider the difference of 2.6 I.Q. points between Negro boys and Negro girls, we find that the number of cases tested was much smaller and that the difference is only 1.1 times the probable error of the difference, and does not show significant difference.

That girls between the ages of 9-15 should tend on the average to surpass boys may be due to the fact that girls mature earlier than boys. This is in agreement with the

findings of Thorndike,¹⁰ Pressey,¹¹
Lincoln,¹² Burnham,¹³ and Wreschner.¹⁴

We have compared the I.Q.'s for the white and the Negro for the city and have shown that the whites as a whole have higher intelligence quotients as measured by the Otis test. Not only is the I.Q. of grave importance in a study of this nature, but it is necessary to compare the stage of maturity at which each race enters the junior high school, for this factor has a real bearing upon the child's intelligence quotient. Previous testing programs, devised by Binet, have given us the term M.A. -- or Mental Age, which is really a statement of a child's mental maturity at the time the testing program was given, and implies that the general mental ability grows or matures.

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10. Thorndike, E. L., "Sex Differences in Mental Ability," Journal Educational Psychology, 3:64.
 11. Pressey, L. W., "Sex Differences Shown by 2544 School Children on a Scale of Intelligence," Journal of Applied Psychology, 2:224 (November, 1918).
 12. Lincoln, E. A., Sex Differences in the Growth of American School Children, Warwick and York, p. 48.
 13. Burnham, W. H., "Sex Differences in Mental Ability," Educational Review, 52:280 (November, 1921).
 14. Wreschner, A., "New Studies and Mental Differences Between Boys and Girls," Review of Reviews, 63:104 (July, 1923).

The Mental Age of the average child in the 6A grade is 12⁴.¹⁵ Now, if his chronological age is 12⁴, his I.Q. will be an even 100, but if his chronological age is lower, his I.Q. will become greater. Some white and Negro children tested in this study may have I.Q.'s below 100 because of chronological over-ageness and yet may have the mental maturity of the average child in the 6A grade. That is, if a child fourteen years old scores only 12⁴ on the test, mentally his I.Q. will be below average, but his mental maturity for the 6A grade is on the average with that maturity expected to be found in this particular grade.

It is the purpose here to show the number of children both white and Negro in the 6A grade, who regardless of I.Q. points have surpassed, attained, or fallen below the 12⁴ year old 6A maturity level. We would like to answer the question, how many children in this grade are actually mature enough for the grade?

15. Otis, Arthur S., "Otis Self-Administering Tests of Mental Ability," Manual of Directions, p. 7.

GRAPH 4.

THE MENTAL AGES OF WHITE AND NEGRO
6A PUPILS.



Table VII shows the distribution of M.A. of white and Negro children and the percentage of children whose mental ages fall within each step interval of six months.

From this table we find that 41.46 per cent of the white children, or less than one-half of the whites have mental ages over twelve years of age, and that 13.30 per cent of the Negroes, or less than one-seventh have mental ages equivalent to the mental age recorded for their grade. There are 18.30 per cent or a little more than one-sixth of the white children who have mental ages less than ten years and 48.05 per cent of the Negroes, or nearly one-half who have Mental ages less than ten years. The median mental age of the white child is found to be 11⁸ while the median for the Negro is 10⁰ -- a difference of one year and eight months in favor of the white children. We find the whites very nearly approach the standard mental age for this grade, but the Negroes are nearly two years behind the standard. In both groups, however, mental maturity regardless of I.Q. points is below 6A level.

TABLE VII

THE MENTAL AGES OF WHITE AND NEGRO 6A
PUPILS, FEBRUARY 1938

Mental age	White		Negro	
	Number of cases	Percentage of cases	Number of cases	Percentage of cases
18 ⁰ -up	59	3.14	2	.52
17 ⁶ -17 ¹¹	3	.16		
17 ⁰ -17 ⁵	10	.53		
16 ⁶ -16 ¹¹	7	.37		
16 ⁰ -16 ⁵	29	1.55		
15 ⁶ -15 ¹¹	33	1.76	1	.26
15 ⁰ -15 ⁵	53	1.82	2	.52
14 ⁶ -14 ¹¹	59	1.14		
14 ⁰ -14 ⁵	90	4.80	3	.78
13 ⁶ -13 ¹¹	91	4.85	3	.78
13 ⁰ -13 ⁵	96	5.13	6	1.57
12 ⁶ -12 ¹¹	127	6.78	11	2.87
12 ⁰ -12 ⁵	177	9.44	23	6.00
11 ⁶ -11 ¹¹	175	9.34	13	3.39
11 ⁰ -11 ⁵	191	10.18	42	10.97
10 ⁶ -10 ¹¹	181	9.66	45	11.76
10 ⁰ -10 ⁵	151	8.05	48	12.53
9 ⁶ -9 ¹¹	111	5.92	50	13.06
9 ⁰ -9 ⁵	99	5.29	56	14.62
8 ⁶ -8 ¹¹	71	3.78	35	9.14
8 ⁰ -8 ⁵	54	2.88	37	9.66
7 ⁶ -7 ¹¹	5	.27		
7 ⁰ -7 ⁵	3	.16	6	1.57
Total	1875	100.00	383	100.00
Median	118		109	
Q ₁	104		91	
Q ₃	134		112	
Q	16		105	

GRAPH 5.

THE MENTAL AGES OF WHITE BOYS AND GIRLS
AND NEGRO BOYS AND GIRLS, FEBRUARY 1938.

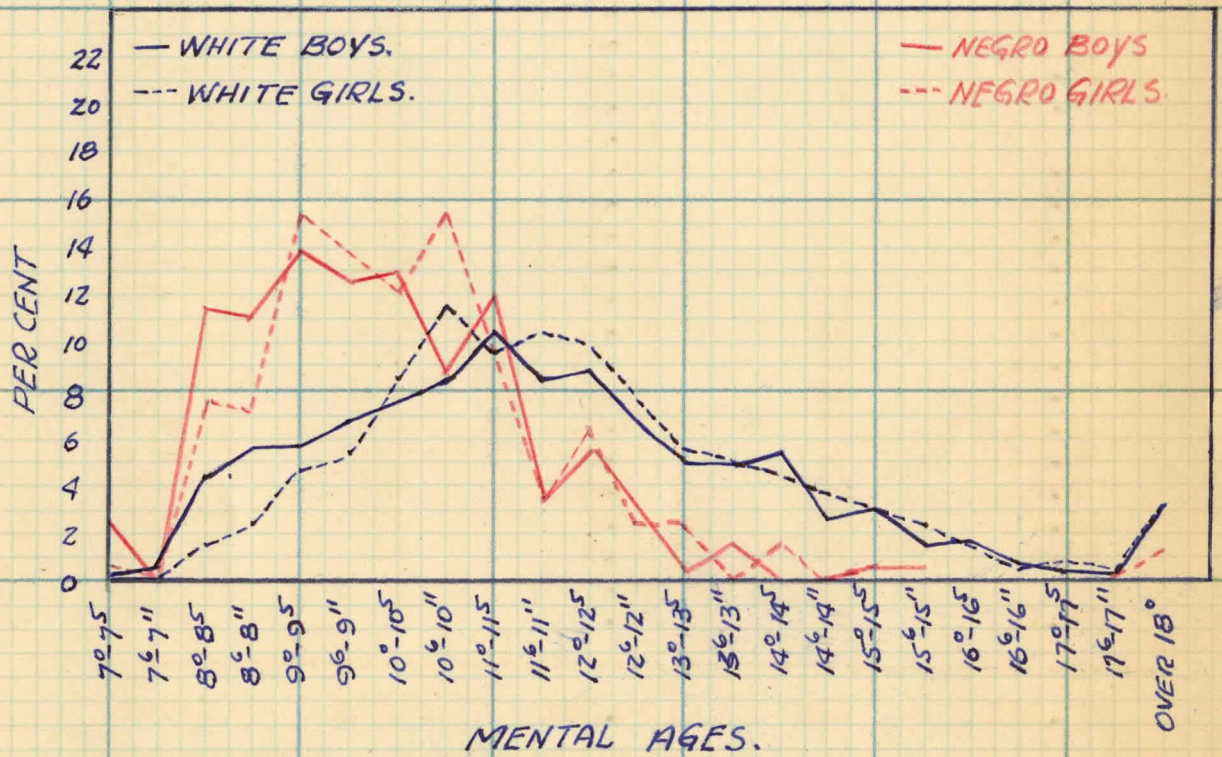
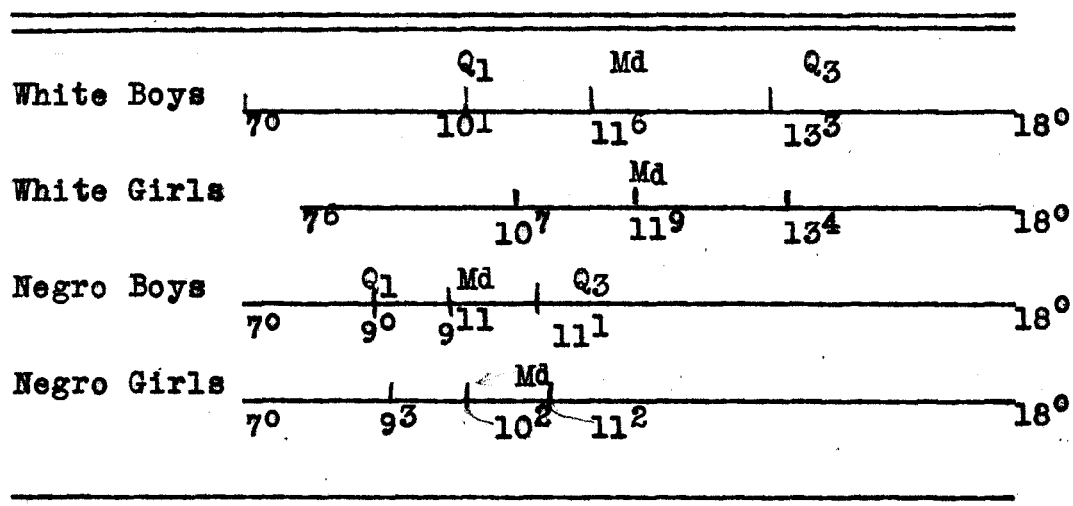


Table VIII shows the distribution of mental ages of boys and girls in each race and the percentage falling in each step interval of six months. From this table we find mental ages of girls in each race are slightly higher than the mental ages for the boys.

The following chart shows these medians and the upper and lower quartiles.

CHART V

MENTAL AGES OF BOYS AND GIRLS; THE LENGTH OF BAR SHOWS THE RANGE. THE CROSS MARKS SHOW THE MEDIANS AND THE QUARTILES



We find here that girls rank higher than boys in each race although the difference in the medians

TABLE VIII

THE MENTAL AGES OF WHITE BOYS AND GIRLS
AND NEGRO BOYS AND GIRLS IN PERCENTAGES
FEBRUARY 1938

Mental age	White				Negro			
	Number boys	% boys	Number girls	% girls	Number boys	% boys	Number girls	% girls
18 ⁰ -up	30	3.15	29	3.14			2	1.09
17 ⁶ -17 ¹¹	2	.21	1	.11				
17 ⁰ -17 ⁵	2	.21	8	.87				
16 ⁶ -16 ¹¹	4	.42	3	.33				
16 ⁰ -16 ⁵	17	1.79	12	1.30				
15 ⁶ -15 ¹¹	14	1.47	19	2.06	1	.5		
15 ⁰ -15 ⁵	28	2.94	25	2.71	1	.5	1	.55
14 ⁶ -14 ¹¹	26	2.73	33	3.57				
14 ⁰ -14 ⁵	48	5.04	42	4.55			3	1.64
13 ⁶ -13 ¹¹	45	4.73	46	4.98	3	1.5		
13 ⁰ -13 ⁵	45	4.73	51	5.52	1	.5	5	2.73
12 ⁶ -12 ¹¹	62	6.51	65	7.05	6	3.0	5	2.73
12 ⁰ -12 ⁵	85	8.92	92	9.96	11	5.5	12	6.56
11 ⁶ -11 ¹¹	79	8.30	96	10.40	7	3.5	6	3.28
11 ⁰ -11 ⁵	99	10.40	92	9.96	24	12.0	18	9.84
10 ⁶ -10 ¹¹	79	8.30	102	11.06	17	8.5	28	15.30
10 ⁰ -10 ⁵	72	7.56	79	8.56	26	13.0	22	12.02
9 ⁶ -9 ¹¹	64	6.72	47	5.09	25	12.5	25	13.66
9 ⁰ -9 ⁵	53	5.57	46	4.98	28	14.0	28	15.30
8 ⁶ -8 ¹¹	51	5.36	20	2.17	22	11.0	13	7.10
8 ⁰ -8 ⁵	40	4.20	14	1.52	23	11.5	14	7.65
7 ⁶ -7 ¹¹	4	.42	1	.11				
7 ⁰ -7 ⁵	3	.32			5	2.5	1	.55
Number cases	952	100.00	923	100.00	200	100.00	183	100.00
Md	116		119		91		102	
Q ₁	101		107		90		93	
Q ₃	133		134		111		112	

in each race is found to be only three months. The fact that this difference between boys and girls of both races is the same is in all probability coincidental but it is interesting to note such a similarity of differences.

In every phase of this intelligence study whether it be a comparison of the Negro and the whites as a whole or a comparison in various sections of the city, we find that since the white children have a higher median mental age and a higher median I.Q. they should have a greater ability to master the work which will be given them when they enter junior high school.

SUMMARY

1. There is a difference in the median I.Q. of white and Negro children in favor of the white children.
2. In Louisville in September 1938 the median I.Q. for white 6A classes was 99.0 and for Negro 6A classes 85.3.
3. The number of white children having I.Q.'s above 90 is 70.39 per cent while only 38.14 per cent of the Negro children scored above 90.

4. The scores of white children on the Otis test are more variable than those of the Negro children.

5. The median of I.Q. scores vary from 91 to 114.5 in the different junior high school districts. The median scores in each district are, Highland 114.5, Barrett 104.5, Shawnee 103.9, Monsarrat 100.0, Parkland 99.2, Halleck Hall 98.5, Southern 97.3, Western 96.5, and Eastern 91.0.

6. The I.Q. seems to become lower as the rents become lower.

7. The median score of the lowest white junior high school district was 5.7 points higher than the median of the Negroes. In this white district rents more nearly approach those of the Negroes.

8. There is a difference in general intelligence between white boys and girls in favor of the girls. The median for girls is 100.4 and for boys is 97.3. This difference is found to be significant, but leading writers tell us that this may be found in children of this age because girls mature more rapidly than boys.

9. The median I.Q. for 6A Negro girls is 86.7 and for boys is 84.1, but this difference was found not to be significant.

10. The median mental age of 6A white pupils is 11⁸ and that of 6A Negroes is 10⁰. This difference of 1⁸ was found to be significant.

11. The median mental age of girls in each race is three months higher than that of boys.

CHAPTER III

THE ACHIEVEMENT SCORES
OF WHITE AND NEGRO BOYS AND GIRLS

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THE ACHIEVEMENT SCORES OF WHITE AND NEGRO BOYS AND GIRLS

At the conclusion of the preceding chapter we found that intelligence tests could be employed to increase the fairness and usefulness of appraisals of the ability of a group of individuals. By the use of intelligence tests we may obtain information concerning the ability of children to master work taught to them at school, for these tests give us a key to the child's general intelligence. For such an appraisal to be just and valuable, however, it is necessary also to use fair and useful measures of achievement. An achievement test shows, then, how much work children have mastered and to what degree actual accomplishment has been made. Chapter II compares the intelligence of the Negro and the white children entering the junior high school in September 1938. In this chapter we shall compare their mastery of school subjects, in other words, their achievement in school subjects.

To test achievement, we shall use a

standardized test rather than tests devised by the teacher, for teacher's tests are conspicuous for their unreliability and their variations in grading. A standard test, then, is the best and soundest measure of subject mastery and is not only a valuable means of evaluating achievement but is also a valuable means of improving instruction and pupil achievement.

The same group of children who were given the Otis Intelligence test, as described in Chapter II, were given The New Stanford Achievement Test (Form V) at approximately the same time they were given the Intelligence test. This Stanford Achievement Test first appeared in 1923 at which time Forms A and B were constructed. These forms were standardized and equated to each other on the basis of their application to 1500 pupils. In 1925 the test was revised with a sampling representing 2000 elementary school children from twenty-four districts of the United States. Again in 1929 a thorough revising of the test was completed giving the new series V, W, X, Y, Z.

The Stanford Achievement Test, Form V, is divided into ten parts; however, only six parts: Paragraph Meaning, Word Meaning, Language Usage, Dictation, Arithmetic Reasoning, and Arithmetic Computation were used. The 6A elementary teacher gave this test to the pupils who would enter junior high school in September 1938, recorded the scores for each section of the test separately and then sent the results to the Bureau of Research in Louisville. These results were secured from the Bureau of Research.

Each section of the test is treated separately as if it were unrelated to the whole. The comparison of the achievement between the Negroes and the whites on the six parts of this test is then given. The same procedure is followed here as that used in tabulating the results of the intelligence test.

The first two tests of the battery were reading tests -- Paragraph Meaning and Word Meaning. The paragraph meaning test consists of paragraphs in which one or two words are omitted, and the child is to fill in the omitted words after careful reading of the paragraph. These, of course, range

from the simple to the more complex.

Example:

- a. Dick and Tom were playing ball in the field. Dick was throwing the ball and _____ was trying to catch it.
- b. A grizzly bear had a home in the high peaks of the mountains. Four flocks of bighorn sheep occupied the same area but there never was any trouble between the _____ and the _____.

There are eighty such items in the Paragraph Meaning test.

The educational ages of these children were tabulated in school grade intervals. On the profile chart of the Stanford Achievement Test, the educational ages that fall within each school grade are given. The lowest grade is 2A and has within its range children whose educational ages are 7⁵ to 8⁴ and the highest contains children whose educational ages are 15¹¹ or over. These children would fall in Grade 10B or above.

Table IX shows these grade intervals and the number and percentage of white and Negro children

TABLE IX
 THE PERCENTAGES OF WHITE AND NEGRO
 PUPILS IN INTERVALS OF ONE-HALF SCHOOL YEAR
 ON PARAGRAPH MEANING TEST

Grade	Educational Age	White		Negro	
		Cases	Percent	Cases	Percent
10B	15 ¹¹ or over	80	4.27	4	1.04
9A	15 ⁶ -15 ¹⁰	54	2.88		
9B	15 ⁰ -15 ⁵	56	2.99	3	.78
8A	14 ⁶ -14 ¹¹	59	3.15	2	.52
8B	13 ¹⁰ -14 ⁵	100	5.34	5	1.31
7A	13 ³ -13 ⁹	135	7.20	14	3.66
7B	12 ⁸ -13 ²	156	8.33	8	2.09
6A	12 ⁴ -12 ⁷	116	6.19	10	2.61
6B	11 ¹⁰ -12 ³	257	13.72	28	7.31
5A	11 ⁵ -11 ⁹	315	16.82	57	14.88
5B	10 ¹¹ -11 ⁴	181	9.66	68	17.75
4A	10 ⁶ -10 ¹⁰	144	7.69	76	19.85
4B	9 ¹⁰ -10 ⁵	90	4.81	47	12.27
3A	9 ⁴ -9 ⁹	50	2.67	13	3.39
3B	8 ⁵ -9 ³	40	2.14	23	6.01
2A	7 ⁵ -8 ⁴	29	1.55	20	5.22
	below 7 ⁵	11	.59	5	1.31
Total		1873	100.00	383	100.00
Median		11 ¹¹		10 ¹¹	
Q ₁		11 ¹		10 ³	
Q ₃		13 ³		11 ⁷	

falling in each interval.

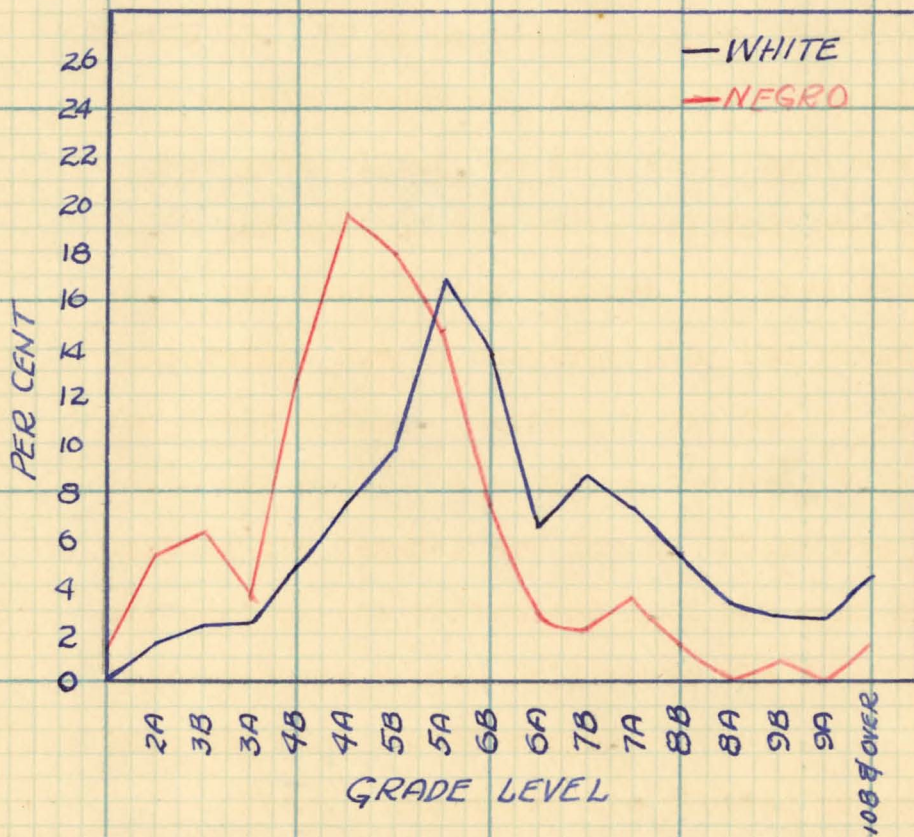
On examination of the table we find that 2.14 per cent of the whites and 6.53 per cent of the Negroes fall below Grade 3B. There are 45.93 per cent of the white children and 80.68 per cent of the Negro children below Grade 6B. If we consider children whose scores fall within Grades 6B, 6A, and 7B to be at their proper grade level, we find that there are 28.24 per cent of the white children and only 12.01 per cent of the Negroes who have attained achievement scores comparable to the standard for their grades. Scoring above the 7B level, 25.83 per cent of the whites and only 7.31 per cent of the Negroes are found. There are 10.14 per cent of the whites and 1.82 per cent of the Negroes whose scores fall above the 9B grade or into the high school range.

These percentages are plotted on graph 6 and will probably give the reader a better picture of the difference in achievement of the two races on this Paragraph Meaning test.

We see that the area under the curve for white children in the higher grades is much

GRAPH 6.

THE GRADE LEVELS OF WHITE
AND NEGRO PUPILS ON THE PARAGRAPH
MEANING TEST.

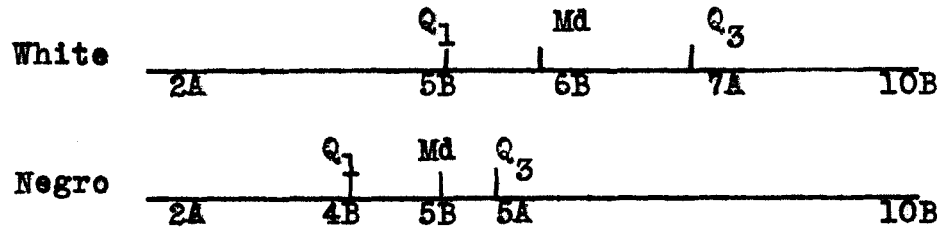


greater than that of the Negroes. The quartile deviation for the white children is thirteen months with a probable error of .239 and is five months greater than the quartile deviation of the Negroes which is eight months with a probable error of .320. The critical ratio or the difference of the quartile deviations divided by the probable error of the difference is 12.5 probable errors. This is much greater than is necessary to show significantly that there is greater variability on this test among the scores of white pupils than among the scores of the Negroes.

The median for the white children is eleven years and eleven months and falls in Grade 6B. The median for the Negroes is ten years and eleven months and falls in Grade 5B. We see on this test that the white children score one year higher and are one year more advanced on grade level.

Chart VI shows by the vertical lines the range, the quartiles, and medians for each race.

CHART VI



The semi-interquartile range, the probable error of the median, the probable error of the difference of the median and the critical ratio are:

Cases	Range	Med	Q	PE MDN	PE D	Critical Ratio
White 1873	7 ⁵ -15 ¹¹ or over 2A-10B	11 ¹¹	13 mo	.38		$\frac{D}{PE_D}$
					.636	
Negro 383	7 ⁵ -15 ¹¹ or over 2A-10B	10 ¹¹	8 mo	.51		$\frac{12}{.636} = 18$

Since the difference of the medians is more than four times the probable error of the difference of the medians the chances are 997 out of 1000 that the difference is significant.

How will the children in the white junior high school district which has the lowest median on the Intelligence test compare with the Negroes as a whole on this Paragraph Meaning test? Table X shows the percentages of children falling in each grade interval when the city is divided into the nine white junior high school districts.

From this table we can easily compare the lowest white district (Eastern) with the Negroes as a group to see if there is a marked difference between the achievement in Paragraph Meaning of the lowest white district and the Negroes. We find that 8.63 per cent of the white children of Eastern score below Grade 3B on this test and 6.53 per cent of the Negroes as a group score below Grade 3B. There are 57.63 per cent of the white children of this district who score below 6B level and we find 80.68 per cent of all the Negroes score below this grade. At the grade level (6B, 6A, 7B) there are 27.46 per cent of the scores of the whites and 12.01 per cent of the scores of the Negroes. Above the grade level on this test we find 14.91 per cent of the whites

and only 7.31 per cent of the Negroes. The median for the Eastern Junior High School district is 11-7 and the median for all Negroes is 10-11 -- a difference of eight months in favor of the whites of this district. Hence we find that the Negroes are below the whites even when we compare the lowest white district with the Negro race as a whole. It is also worthy to note that this Eastern district, whose median intelligence scores were the lowest in the city for the white districts, also had the lowest scores on this Paragraph Meaning test. This fact makes our comparison doubly significant.

This table shows, too, that there is a range from eleven years and seven months to thirteen years and three months in the various white junior high school districts. This difference is one year and eight months which is more than the difference between the two races.

The second of the battery of tests was the Word Meaning Test containing eighty items. This test is made up of a phrase with a critical

TABLE X
 PERCENTAGES OF PUPILS IN THE JUNIOR
 HIGH SCHOOL DISTRICTS -- GROUPED IN
 INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE PARAGRAPH MEANING TEST

Grade	Educa- tional Age	White					Total Negro				
		B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E	S O U T H E R N	W E S T E R N	N E G R O
10B	15 ¹¹ or over	11.18	1.57	13.41	1.66	4.80	1.62	5.29	3.49	1.57	1.04
9A	15 ⁶ -15 ¹⁰	3.73	1.18	9.75	1.32	2.40	3.24	2.94	1.94	2.36	
9B	15 ⁰ -15 ⁵	4.97	1.18	6.71	2.65	4.00	2.16	2.94	3.49	1.18	.78
8A	14 ⁶ -14 ¹¹	4.35	2.75	5.49	2.98	.80	2.70	5.88	2.13	1.97	.52
8B	13 ¹⁰ -14 ⁵	6.83	3.92	7.93	7.28	3.20	4.86	5.88	3.89	4.33	1.31
7A	13 ³ -13 ⁹	8.07	4.31	7.32	7.28	8.00	8.65	10.00	7.78	5.51	3.66
7B	12 ⁸ -13 ²	7.45	7.06	11.58	10.27	4.80	8.11	6.47	9.33	7.87	2.09
6A	12 ⁴ -12 ⁷	6.21	5.10	4.27	3.64	7.20	12.98	4.71	8.17	5.12	2.61
6B	11 ¹⁰ -12 ³	11.18	15.30	8.54	14.57	18.40	12.43	14.72	10.88	16.94	7.31
5A	11 ⁵ -11 ⁹	13.67	15.68	12.80	17.89	20.80	14.06	14.12	21.40	18.51	14.88
5B	10 ¹¹ -11 ⁴	5.59	12.54	7.32	8.28	9.60	12.43	9.41	7.39	12.99	17.75
4A	10 ⁶ -10 ¹⁰	7.45	8.24	3.66	9.60	7.20	5.95	6.47	6.13	11.81	19.85
4B	9 ¹⁰ -10 ⁵	3.73	10.98	.61	3.97	4.80	5.41	2.94	4.28	4.33	12.27
3A	9 ⁴ -9 ⁹	2.49	4.31		4.97	2.40		2.35	3.11	1.97	3.39
3B	8 ⁵ -9 ³		2.75		2.32	.80	3.24	2.35	4.66	1.18	6.01
2A	7 ⁵ -8 ⁴	1.24	2.35	.61	1.32	.80	2.16	3.53	1.55	.39	5.22
	below 7 ⁵	1.86	.78						.38	1.97	1.31
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Median		12 ⁵	11 ⁷	13 ³	11 ¹⁰	11 ¹¹	12 ¹	12 ¹	11 ¹⁰	11 ⁸	10 ¹¹
Q1		11 ⁵	10 ⁸	11 ⁹	11 ⁰	11 ³	11 ²	11 ²	11 ²	11 ⁰	10 ³
Q3		14 ⁴	12 ⁵	15 ⁴	13 ¹	12 ¹¹	13 ¹	13 ⁸	13 ¹	12 ⁷	11 ⁷

GRAPH 7.

PERCENTAGE OF WHITE CHILDREN (EASTERN DISTRICT) AND NEGROES IN EACH GRADE INTERVAL ON THE PARAGRAPH MEANING TEST.



word given and five response words under the phrase, one of which has the same meaning as the critical word. This test is devised so that in some instances the critical word is the harder and in some instances the response words are the more difficult.

Examples:

- a. A worshiper is
domestic, fearful, gracious, religious, steady
- b. Quiescent means
inactive, angry, perfect, quick, troublesome

Both the Paragraph Meaning and Word Meaning tests make up the reading section of the battery and it is interesting to note the results found in this second part of reading tests.

Table XI shows the distribution of pupils and percentages falling in each grade interval.

Here we find .85 per cent of the scores of the whites and 2.9 per cent of the scores of the Negroes fall below the 3B grade level. There are 49.68 per cent of the whites and 78.34 per cent of the Negroes who score below the 6B level. At the level of Grades 6B, 6A, and 7B combined we find

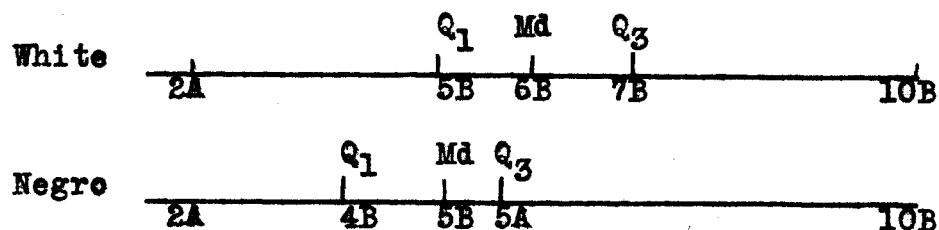
TABLE XI
 THE PERCENTAGES OF WHITE AND NEGRO
 PUPILS IN INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE WORD MEANING TEST

Grade	Educational Age	White		Negro	
		Cases	Percent	Cases	Percent
10B	15 ¹¹ or over	77	4.10	2	.52
9A	15 ⁶ -15 ¹⁰	39	2.07		
9B	15 ⁰ -15 ⁵	42	2.23	1	.26
8A	14 ⁶ -14 ¹¹	84	4.47	4	1.04
8B	13 ¹⁰ -14 ⁵	65	3.46		
7A	13 ³ -13 ⁹	124	6.60	11	2.87
7B	12 ⁸ -13 ²	201	10.69	17	4.44
6A	12 ⁴ -12 ⁷	98	5.21	18	4.70
6B	11 ¹⁰ -12 ³	216	11.49	30	7.83
5A	11 ⁵ -11 ⁹	364	19.36	66	17.23
5B	10 ¹¹ -11 ⁴	167	8.88	60	15.67
4A	10 ⁶ -10 ¹⁰	173	9.20	61	15.93
4B	9 ¹⁰ -10 ⁵	134	7.13	71	18.54
3A	9 ⁴ -9 ⁹	49	2.61	20	5.22
3B	8 ⁵ -9 ³	31	1.65	14	3.66
2A	7 ⁵ -8 ⁴	14	.74	6	1.57
	below 7 ⁵	2	.11	2	.52
Total		1880	100.00	383	100.00
Median		11 ¹⁰		11 ⁰	
Q ₁		11 ⁰		10 ⁴	
Q ₃		13 ¹		11 ⁸	

27.39 per cent of the whites and 16.97 per cent of the Negroes. Above the 7B level there are 22.93 per cent of the whites and 4.69 per cent of the Negroes. On this test we find 8.30 per cent of the whites fall into a level above 9B and only .78 per cent of the Negroes. We see that slightly more than one half of the whites and only slightly more than one fifth of the Negroes score high enough to be in grade 6B or above. The median for the whites on this Word Meaning test is 11¹⁰ and the median for the Negroes is 11⁰, a difference of only ten months.

Chart VII shows by the vertical line the range, the quartiles, and the medians for each race in school grades.

CHART VII



The semi-interquartile range, the probable error of the median and the critical ratio are:

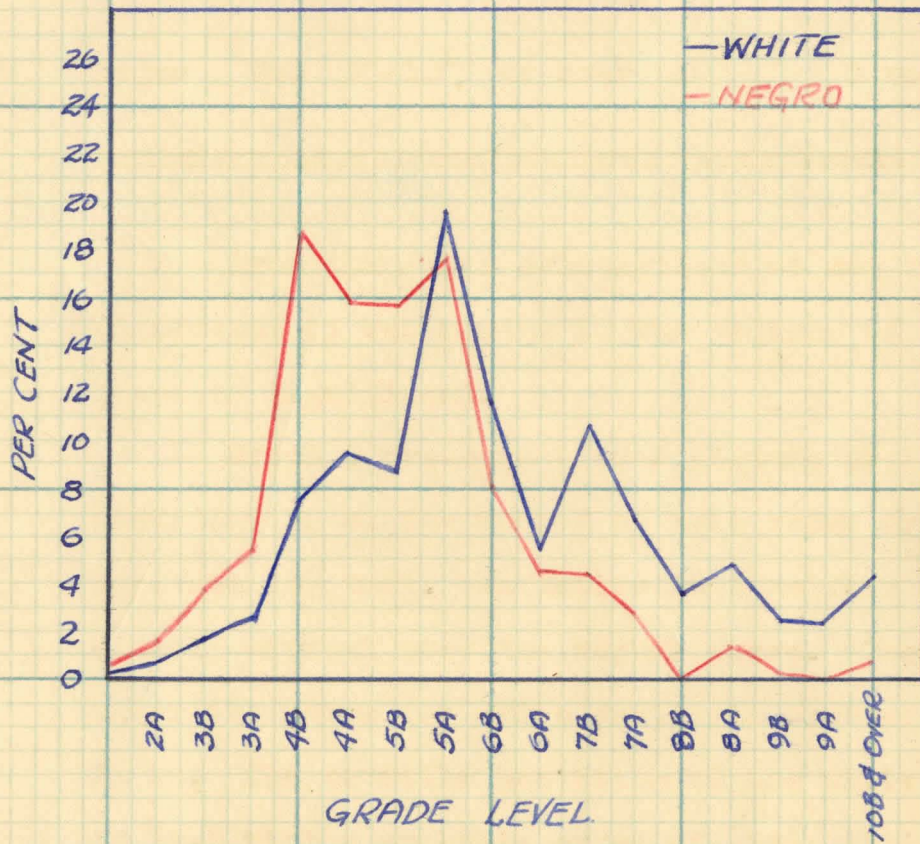
	Cases	Range	Median	Q	PE MDN	PE D	Criti- cal Ratio
White	1880	7 ⁵ -15 ¹¹ or over	11 ¹⁰	12.5 mo	.36		
						.624	16
Negro	383	7 ⁵ -15 ¹¹ or over	10 ⁰	8 mo	.51		

From the above calculations we see that the difference of ten months in the medians of the two races is significant.

Graph 8 presents a good picture of the distribution of the scores of both races on this word meaning test. We notice that neither race closely approximates the normal curve. The area under the curve for white pupils is greater from 5A up. The quartile deviation of the white children is 12.5 with a probable error of .226. This is 4.5 points higher than the Negro quartile deviation which is 8.0 with a probable error of .32. The critical ratio or the difference divided by the probable error of the difference is 11.4 P.E. On this test, too, we see that there is a significant

GRAPH 8.

THE GRADE LEVELS OF WHITE AND
-NEGRO 6A PUPILS ON THE WORD
- MEANING TEST.



difference in the variability of the two groups and we find the white children to be more heterogeneous.

Again we have a table showing the results of the junior high school districts. When we consider the Eastern district, the lowest white district on the intelligence test, and compare its Word Meaning scores with the Negroes as a whole, we find that .78 per cent of the whites in this district and 2.09 per cent of all the Negroes of this grade fall below Grade 3B. Scoring below 6B there are 64.72 per cent of whites and 78.34 per cent of the Negroes. At the grade level (6B, 6A, 7B) there are 23.13 per cent of the whites and 16.97 per cent of the Negroes. Above the 7B grade level we find 12.15 per cent and only 4.69 per cent of the Negroes. When this Eastern district is compared this way with the Negroes we see that here on this Word Meaning Test that the whites from this Eastern district score higher than all of the Negroes of this grade in Louisville.

Table XII shows the medians for the white junior high school districts range from 11⁶ to 13³ --

TABLE XII
 PERCENTAGES OF PUPILS IN THE JUNIOR
 HIGH SCHOOL DISTRICTS -- GROUPED IN
 INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE WORD MEANING TEST

Grade	Educa- tional Age	White					Total Negro				
		B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N	N E G R O
10B	15 ¹¹ or over	9.32	1.18	12.81	1.32	6.40	2.16	3.96	4.28	1.57	.52
9A	15 ⁶ -15 ¹⁰	3.11	.78	10.97	1.32	2.40	.54	1.13	.78	.79	
9B	15 ⁰ -15 ⁵	4.97	.78	5.49	2.32	2.40	1.62	3.39	.78	.79	.26
8A	14 ⁶ -14 ¹¹	8.08	1.57	7.32	3.97	4.80	3.78	6.78	3.89	3.15	1.04
8B	13 ¹⁰ -14 ⁵	1.24	2.35	7.92	2.98	4.80	2.70	3.96	2.72	3.94	
7A	13 ³ -13 ⁹	6.83	5.49	6.10	8.61	10.40	5.95	8.47	6.61	2.76	2.87
7B	12 ⁸ -13 ²	10.56	5.88	11.58	13.25	7.20	8.11	14.12	11.67	12.20	4.44
6A	12 ⁴ -12 ⁷	5.59	4.31	4.88	6.29	4.80	5.41	3.39	6.23	5.12	4.70
6B	11 ¹⁰ -12 ³	9.94	12.94	6.71	9.27	13.60	11.35	14.68	12.06	12.99	7.83
5A	11 ⁵ -11 ⁹	16.15	23.15	11.58	16.23	23.20	25.41	13.56	18.29	25.20	17.23
5B	10 ¹¹ -11 ⁴	4.35	12.55	5.49	10.27	9.60	13.51	5.09	8.57	7.87	15.67
4A	10 ⁶ -10 ¹⁰	8.69	11.77	4.88	8.94	5.60	9.73	10.73	8.57	11.02	15.93
4B	9 ¹⁰ -10 ⁵	3.10	11.37	3.05	8.94	3.20	7.03	6.27	8.57	7.09	18.54
3A	9 ⁴ -9 ⁹	3.73	1.96		4.64		1.62	2.82	3.12	3.15	5.22
3B	8 ⁵ -9 ³	2.48	3.14	.61	.99	1.60	1.08	1.13	2.72	.79	3.66
2A	7 ⁵ -8 ⁴	.62	.78	.61	.66			.57	1.17	1.57	1.57
	below 7 ⁵	1.24									.52
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Median		12 ³	11 ⁶	13 ³	11 ⁹	12 ¹	11 ⁸	12 ²	11 ⁹	11 ⁸	11 ⁰
Q ₁		11 ⁴	10 ⁹	11 ⁹	10 ¹¹	11 ⁵	11 ⁰	11 ²	10 ¹¹	10 ¹¹	10 ⁴
Q ₃		14 ⁶	12 ²	15 ⁹	13 ⁰	13 ⁶	12 ⁸	13 ⁴	12 ¹¹	12 ⁸	11 ⁸

Eastern's median being the lowest 11⁶ and falling one year and five months behind the highest white district. On both of these reading tests the Negroes were below the whites and the difference was approximately the same. The medians on each part of the reading test were very close. The median of the white children on Paragraph Meaning was 11¹¹ and on Word Meaning 11¹⁰, a difference of only one month. The Negroes' median on Paragraph Meaning was 10¹¹ and on Word Meaning 11⁰, a difference of one month. On both of these reading tests the white children and Negro children fell below the standard median of 12⁴. On both tests, however, we find a close relationship between the word meaning or vocabulary and paragraph meaning.

The third test on the Stanford Achievement battery was a Dictation test. This test makes use of dictation exercises instead of having a column of unrelated spelling words. Every sentence contains at least three critical spelling words and sentences become more complex as they follow each other. The words used in this test were taken from the Ayers, Buckingham, Horn, Ashbaugh, and "7 S" spelling lists.

Examples:

- a. Get your hat.
- b. The armistice and plebiscite ended the dissension.

Will the spelling for Negroes and whites compare similarly to reading tests? Will the whites be superior in spelling scores? Will the Eastern district which is the lowest white district on intelligence still rank above the Negroes?

Table XIII gives the answer to one of these questions for here we find that below Grade 3B the scores of .69 per cent of the whites and .79 per cent of the Negroes are found. Below 6B the scores of 55.57 per cent of the whites and 82.20 per cent of the Negroes fall. At the grade level (6B, 6A, 7B) 30.40 per cent of the whites and 15.45 per cent of the Negroes fall, and above 7B are 14.03 per cent of the whites and 2.35 per cent of the Negroes. If we see how many score above the 9B level, we find that 1.38 per cent of the whites and .26 per cent of the Negroes fall in this group. The median for the Negroes on this Dictation test was 10^9 and for the white children

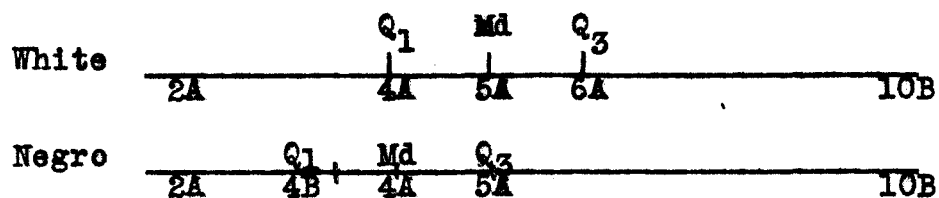
TABLE XIII
 THE PERCENTAGES OF WHITE AND NEGRO
 PUPILS IN INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE DICTATION TEST

Grade	Educational Age	White		Negro	
		Cases	Percent	Cases	Percent
10B	15 ¹¹ or over	2	.11	1	.26
9A	15 ⁶ -15 ¹⁰	13	.69		
9B	15 ⁰ -15 ⁵	11	.59		
8A	14 ⁶ -14 ¹¹	46	2.46		
8B	13 ¹⁰ -14 ⁵	42	2.24		
7A	13 ³ -13 ⁹	149	7.94	8	2.09
7B	12 ⁸ -13 ²	184	9.79	20	5.24
6A	12 ⁴ -12 ⁷	163	8.68	15	3.93
6B	11 ¹⁰ -12 ³	224	11.93	24	6.28
5A	11 ⁵ -11 ⁹	286	15.23	49	12.83
5B	10 ¹¹ -11 ⁴	231	12.30	47	12.30
4A	10 ⁶ -10 ¹⁰	253	13.46	97	25.38
4B	9 ¹⁰ -10 ⁵	181	9.63	64	16.76
3A	9 ⁴ -9 ⁹	66	3.52	34	8.90
3B	8 ⁵ -9 ³	14	.74	20	5.24
2A	7 ⁵ -8 ⁴	7	.37	3	.79
	below 7 ⁵	6	.32		
Total		1878	100.00	383	100.00
Median		118		109	
Q ₁		109		102	
Q ₃		127		116	

11⁸, a difference of 11 months. This difference closely approximates the difference of the medians of the two reading tests.

Chart VIII shows by vertical lines the range, quartiles, and medians for each race on this test.

CHART VIII



The semi-interquartile range, the probable error of the median, and the probable error of the difference of the median, and the critical ratio are:

Cases	Range	Median	Q	PE MDN	PE D	Critical Ratio
White 1878	7 ⁵ -15 ¹¹ or over	11 ⁸	11 mo	.32	.602	16
Negro 382	7 ⁵ -13 ⁹	10 ⁹	8 mo	.51		

Again we find the difference to be significant and can conclude that the white children are superior in spelling.

On Graph 10 we see that the distribution of scores on this test for white children follows closely the normal curve, while the scores of Negro children are concentrated near the lower end of the graph. A greater percentage of white children score above 5A than do Negro children. The quartile deviation for white children is eleven months with a probable error of .201. This is three months greater than the quartile deviation of Negroes which is eight months with a probable error of .201. The critical ratio of the difference in variability is 7.93 P.E. Hence the white children are more variable than Negroes. This is safe to say for the true difference in variability is greater than zero.

Table XIV shows the distribution of scores of the various junior high school districts on this test. The medians for junior high school districts range from 11¹ to 12⁴, a difference of one year and three months. Again Eastern is the lowest white district. If we compare the scores

GRAPH 10.

THE GRADE LEVELS OF WHITE AND NEGRO PUPILS ON THE DICTATION TEST

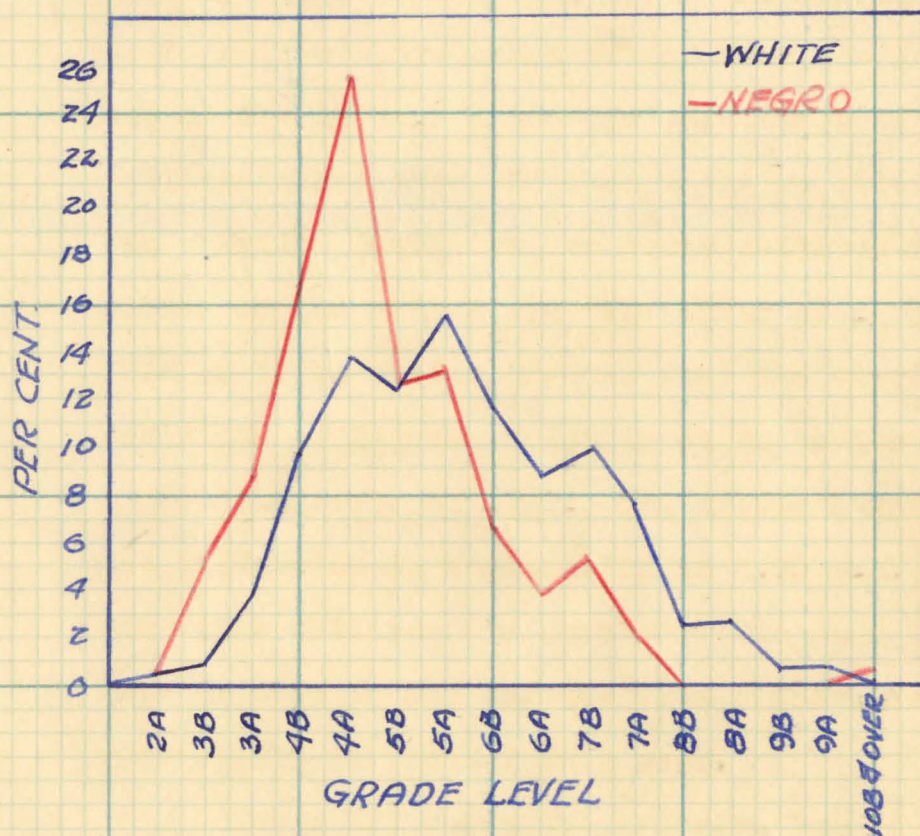
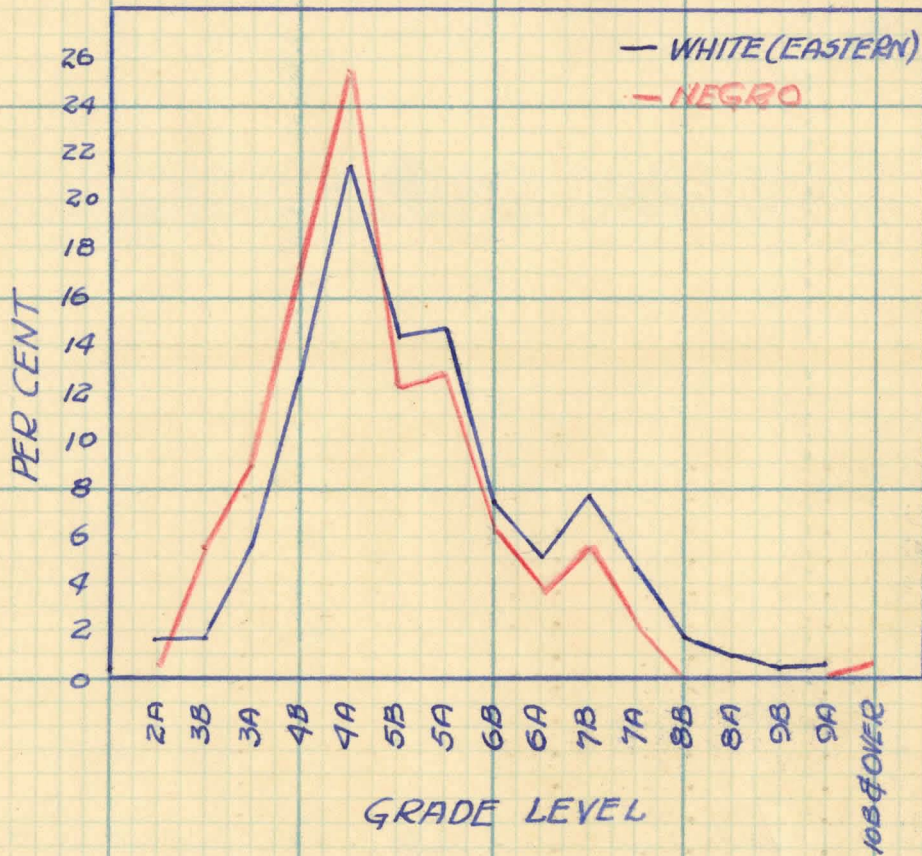


TABLE XIV
 PERCENTAGES OF PUPILS IN THE JUNIOR
 HIGH SCHOOL DISTRICTS -- GROUPED IN
 INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE DICTATION TEST

Grade	Educa- tional Age	White					Total Negro				
		B A R R E T	E A S T E R N	H I G H L A N D	H A L L E N C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N	N E G R O
10B	15 ¹¹ or over	.62						.39		.26	
9A	15 ⁶ -15 ¹⁰	1.87	.39	1.83	.33	3.20		.39			
9B	15 ⁰ -15 ⁵		.39	1.83		2.40	.54	.57	.39		
8A	14 ⁶ -14 ¹¹	5.59	1.18	2.44	1.33	4.00	1.08	1.70	3.52	2.76	
8B	13 ¹⁰ -14 ⁵	1.87	1.96	4.88	1.66	4.00	2.16	2.82	1.95	.79	
7A	13 ³ -13 ⁹	10.55	4.31	14.64	5.65	15.20	5.95	7.35	7.81	6.69	
7B	12 ⁸ -13 ²	10.55	7.84	9.75	8.97	11.20	8.65	7.90	9.37	14.17	
6A	12 ⁴ -12 ⁷	8.70	4.71	11.58	9.97	10.40	7.57	12.43	8.20	7.09	
6B	11 ¹⁰ -12 ³	13.04	7.45	12.81	10.96	12.80	10.81	13.56	14.07	13.39	
5A	11 ⁵ -11 ⁹	13.67	14.51	11.58	17.28	12.00	18.76	19.20	14.85	14.96	
5B	10 ¹¹ -11 ⁴	17.39	14.12	8.54	13.96	10.40	15.67	10.17	10.94	9.06	
4A	10 ⁶ -10 ¹⁰	6.83	21.57	11.58	11.96	10.40	18.76	10.17	11.33	16.13	
4B	9 ¹⁰ -10 ⁵	6.21	12.94	6.71	10.96	.80	10.81	11.30	11.72	9.06	
3A	9 ⁴ -9 ⁹	1.24	5.49	1.22	4.65	1.60	2.70	1.70	5.07	4.33	
3B	8 ⁵ -9 ³		1.57	.61	1.66			1.13		.79	
2A	7 ⁵ -8 ⁴		1.18		.33	1.60				.39	
	below 7 ⁵	1.87	.39		.33		.54			.79	
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
Median		11 ¹¹	11 ¹	12 ²	11 ⁶	12 ⁴	11 ⁵	11 ⁸	11 ⁸	11 ⁸	10 ⁹
Q1		11 ¹	10 ⁶	11 ¹	10 ⁹	11 ⁴	10 ⁹	10 ¹¹	10 ⁹	10 ⁹	10 ²
Q3		12 ¹¹	12 ⁰	13 ³	12 ⁵	13 ⁴	12 ⁴	12 ⁶	12 ⁷	12 ⁷	11 ⁶

GRAPH II.

THE PERCENTAGE OF WHITE CHILDREN (EASTERN DISTRICT) AND NEGRO CHILDREN IN EACH GRADE INTERVAL ON THE DICTATION TEST.



in this district with the scores of all Negroes we find that 1.57 per cent of the whites of Eastern and .79 per cent of the Negroes are below Grade 3B. We find 71.77 per cent of the scores of whites and 82.20 per cent of the scores of Negroes fall below Grade 6B. At the grade level (6B, 6A, 7B) the scores of 20 per cent of the whites and 15.45 per cent of the Negroes fall. Above the 7B grade 8.23 per cent of the whites and 2.35 per cent of the Negroes are found. Eastern's median in Dictation is 11¹ and the median for all the Negroes is 10⁹. Although the Negroes more closely approximate the scores made by the Eastern children on this test than on the two previous reading tests, we find that here, too, the lowest white district is superior in dictation to the Negroes.

The Language Usage Test is the fourth on this battery and is designed to measure two aspects of correct language usage: viz., the choice of correct grammatical construction and the discriminatory choice of correct words for clearly expressing an idea. There are seventy-four items on this test.

Examples:

- a. Jane is prettier
 more prettier than Helen.
 spectators
- b. The audience praised the auto show.

Table XV shows the results of white and Negro children when tabulated according to grade levels.

We see from examining the table that 7.05 per cent of the scores of white children and 14.58 per cent of the scores of Negro children are classified in grades below 3B. When we consider the percentage of scores below Grade 6B, we find over one-half of the scores of white children, 52.51 per cent, and over three-fourths of the scores of Negro children or 77.62 per cent. If we consider the children whose scores would place them in grades 6B, 6A, and 7B to be at grade level, we find 21.82 per cent of the white children and 13.80 per cent of the Negro children. Above Grade 7B, 25.67 per cent of the white children and 8.58 per cent of the Negro children would be placed and above 9B we would find 11.58 per cent

TABLE XV
 THE PERCENTAGES OF WHITE AND NEGRO
 PUPILS IN INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE LANGUAGE USAGE TEST

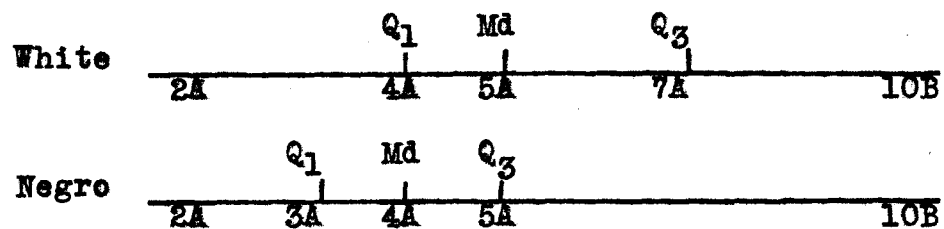
Grade	Educational Age	White		Negro	
		Cases	Percent	Cases	Percent
10B	15 ¹¹ or over	101	5.39	7	1.82
9A	15 ⁶ -15 ¹⁰	60	3.20	1	.26
9B	15 ⁰ -15 ⁵	56	2.99	2	.52
8A	14 ⁶ -14 ¹¹	77	4.11	7	1.82
8B	13 ¹⁰ -14 ⁵	74	3.95	9	2.34
7A	13 ³ -13 ⁹	113	6.03	7	1.82
7B	12 ⁸ -13 ²	110	5.87	8	2.08
6A	12 ⁴ -12 ⁷	176	9.39	20	5.21
6B	11 ¹⁰ -12 ³	123	6.56	25	6.51
5A	11 ⁵ -11 ⁹	228	12.16	41	10.69
5B	10 ¹¹ -11 ⁴	112	5.98	24	6.25
4A	10 ⁶ -10 ¹⁰	202	10.78	58	15.10
4B	9 ¹⁰ -10 ⁵	155	8.27	59	15.37
3A	9 ⁴ -9 ⁹	105	5.60	35	9.12
3B	8 ⁵ -9 ³	50	2.67	25	6.51
2A	7 ⁵ -8 ⁴	106	5.66	56	14.58
	below 7 ⁵	26	1.39		
Total		1874	100.00	384	100.00
Median		11 ⁸		10 ⁷	
Q ₁		10 ⁶		9 ⁶	
Q ₃		13 ³		11 ⁸	

of the white children and only 2.60 per cent of the Negro children.

The median for the whites is eleven years and eight months and for the Negroes it is ten years and seven months, a difference of one year and one month, or one whole school grade in favor of the whites.

The range, quartiles, and medians are shown by the vertical lines on the following chart.

CHART IX



The semi-interquartile range, the probable error of the median, and the probable error of the difference of the median and the critical ratio are:

Cases	Range	Median	Q	PE MDN	PE D	Critical Ratio
White 1874	7 ⁵ -15 ¹¹ or over	11 ⁸	16.5	.477		
Negro 384	7 ⁵ -15 ¹¹ or over	10 ⁷	13	.83	.957	13

There is a difference between the two groups and this difference is large enough to be significant. We may conclude therefore that white children are better on this test than Negro children.

Graph 12 will probably give the reader a good picture of the distribution of the scores of the two groups. The scores of Negroes are again concentrated at the lower end of the scale while the scores of the white children are distributed nearer a normal curve. The quartile deviation of the white group is 16.5 with a probable error of .300. This is 3.5 months higher than the quartile deviation of the Negroes which is 13.0 with a probable error of .521. The critical ratio of the difference in variability is 5.82 P.E. which is higher than needed to show that the Negro scores are more homogeneous on this test than the scores of the white children.

If the white children are divided into the junior high school districts and tabulated, we find the distribution shown in Table XVI.

The medians of the various white districts

GRAPH 12.

THE GRADE LEVELS OF WHITE
AND NEGRO PUPILS ON THE LANGUAGE
USAGE TEST.

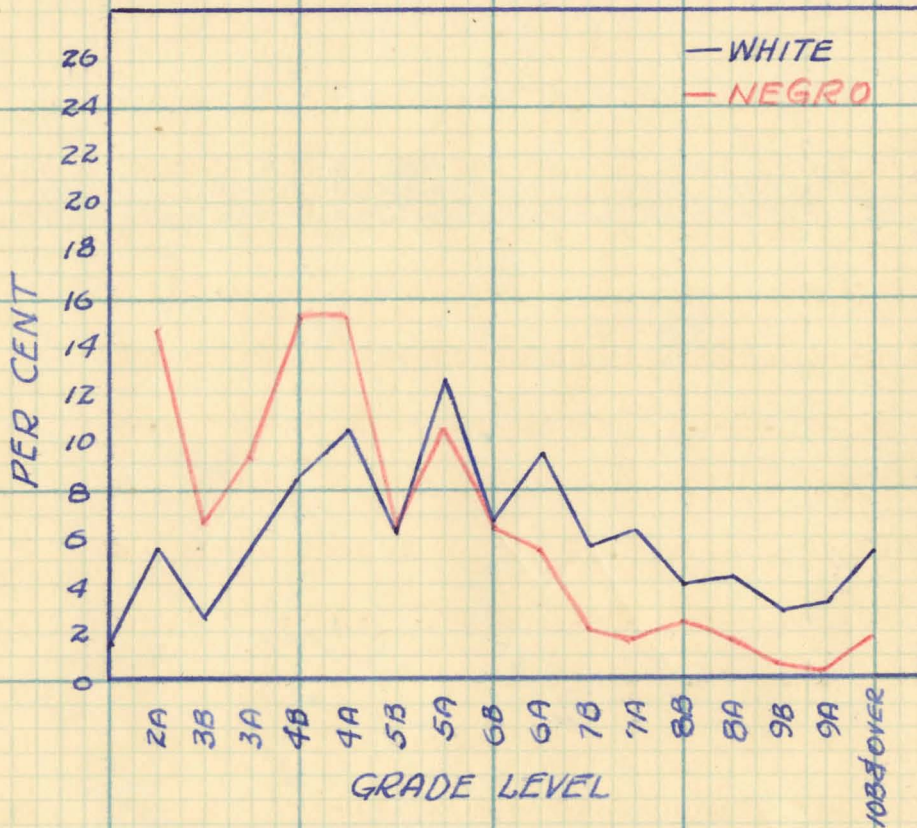
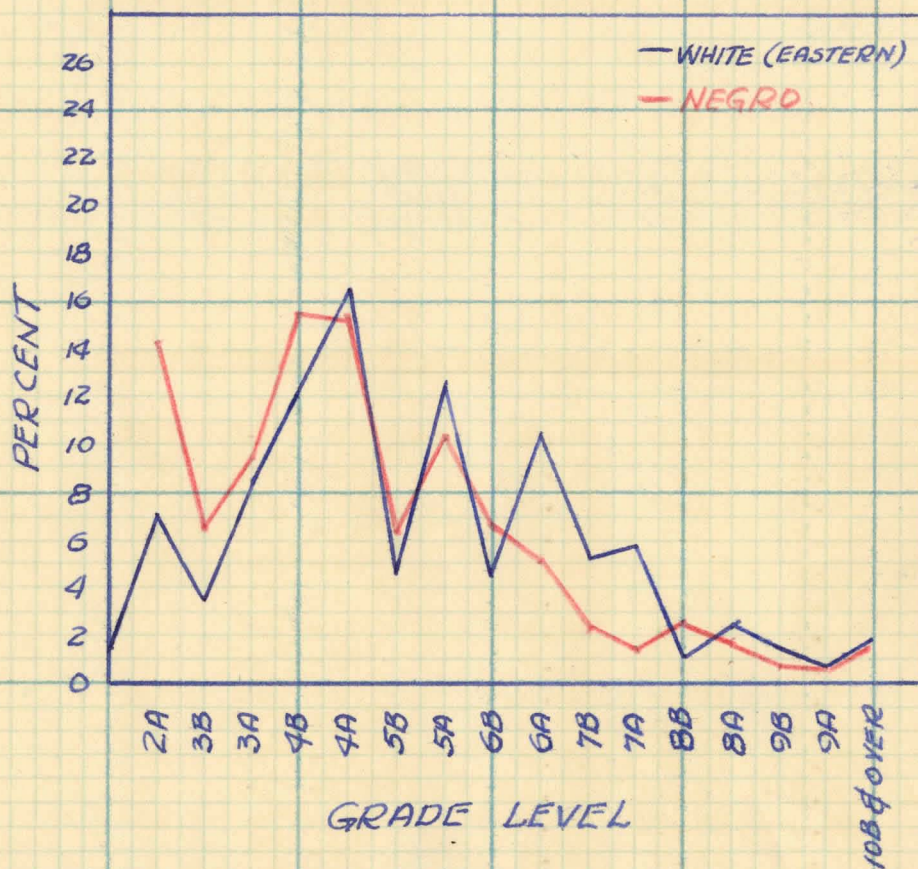


TABLE XVI
 PERCENTAGES OF PUPILS IN THE JUNIOR
 HIGH SCHOOL DISTRICTS -- GROUPED IN
 INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE LANGUAGE USAGE TEST

Grade	Educa- tional Age	White					Total Negro				
		B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N	N E G R O
10B	15 ¹¹ or over	15.00	1.96	16.46	1.68	12.00	3.24	5.65	1.56	1.97	1.82
9A	15 ⁶ - 15 ¹⁰	5.00	.78	9.75	2.35	4.00	2.70	2.83	3.91	.79	.26
9B	15 ⁶ - 15 ⁵	3.75	1.18	8.53	2.01	4.80	3.24	4.51	.78	1.97	.52
8A	14 ¹ - 14 ¹¹	3.75	2.35	7.93	4.02	6.40	2.70	4.51	3.91	3.54	1.82
8B	13 ¹⁰ - 14 ⁵	2.50	1.18	9.15	4.02	4.80	4.86	1.70	4.69	3.94	2.34
7A	13 ³ - 13 ⁹	5.00	5.88	4.88	5.37	6.40	3.24	5.65	10.55	5.91	1.82
7B	12 ⁸ - 13 ²	4.38	5.49	4.88	4.70	7.20	7.03	6.78	7.03	5.91	2.08
6A	12 ⁴ - 12 ⁷	9.37	10.98	8.53	7.38	9.60	10.27	11.30	10.16	7.87	5.21
6B	11 ¹⁰ - 12 ³	6.87	4.71	6.71	7.05	6.40	6.49	8.47	6.25	6.69	6.51
5A	11 ⁵ - 11 ⁹	8.75	12.15	7.32	9.73	14.40	10.82	13.56	14.06	17.32	10.69
5B	10 ¹¹ - 11 ⁴	8.75	4.31	.61	7.05	5.10	6.49	7.35	5.47	7.48	6.25
4A	10 ⁶ - 10 ¹⁰	11.25	16.47	5.49	15.77	4.80	14.06	3.39	7.81	11.02	15.10
4B	9 ¹⁰ - 10 ⁵	4.38	11.77	4.88	7.72	5.60	8.65	8.47	8.20	11.02	15.37
3A	9 ⁴ - 9 ⁹	5.00	8.24	1.83	7.72	4.00	5.95	5.09	5.47	4.33	9.12
3B	8 ⁵ - 9 ³	1.25	3.92		3.36	.80	2.16	5.65	2.34	2.76	6.51
2A	7 ⁵ - 8 ⁴	5.00	7.06		7.05	3.20	3.78	5.09	7.81	7.48	14.58
	below 7 ⁵		1.57	3.05	3.02		4.32				
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Median		12 ²	11 ⁰	13 ¹¹	11 ²	12 ⁶	11 ⁶	11 ¹¹	11 ⁹	11 ⁶	10 ⁷
Q ₁		10 ¹⁰	10 ⁰	12 ⁰	10 ²	11 ⁴	10 ⁶	10 ⁷	10 ⁶	10 ⁵	9 ⁶
Q ₃		14 ¹⁰	12 ⁵	15 ⁶	12 ⁷	14 ⁷	12 ⁹	13 ²	13 ³	12 ⁷	11 ⁸

GRAPH 13.

THE PERCENTAGE OF WHITE CHILDREN (EASTERN DISTRICT) AND NEGROES IN EACH GRADE INTERVAL ON THE LANGUAGE USAGE TEST.



range from 11⁰ in the Eastern district to 13¹¹ in the Highland district. Eastern's median score on the Language Usage test is five months above that of the median score of all the Negroes, for the Negro median is 10⁷. Below the 3B level, we find the scores of 8.63 per cent of the white children of the Eastern Junior High School district and 14.58 per cent of all Negroes. Below the 6B grade, we find over three fifths of the white children of this district (65.49 per cent) and over three-fourths of the Negroes (77.62 per cent). The percentage of white children of Eastern attaining the grade level (6B, 6A, 7B) is 21.18 per cent and the percentage of Negroes at the grade level is 13.80 per cent. Those exceeding the grade level at Eastern total 13.33 per cent and the Negroes exceeding the grade level total 8.58 per cent. On this test, too, we find a larger percentage of the white children of Eastern fall in the higher brackets than the percentage of Negroes. A smaller percentage of white children score in the lower brackets. Again we find, however, that

there is a much wider range between the white districts when compared with each other than between all the Negroes and the whites of Eastern, the lowest white district on this test. This lowest white district is still superior to the Negroes as a whole.

The last two tests in this battery measured arithmetic ability. The fifth test was an Arithmetic Reasoning test. This test is devised to give the child a chance to prove his interpretative ability to problems which are not made difficult through mere computation and are so stated that the test measures the ability to think in quantitative terms. The problems are arranged so far as possible to go from problems involving but a single arithmetic operation and a single discrimination of method by the pupil to those that involve several successive steps in their solution.

Examples:

- a. A hen had nine chicks but three of them died. How many were left?
- b. A man lent a friend \$300. In a year and eight months the money was repaid with \$30 interest. What rate of interest was paid?

There are forty such problems on this test with a space for the answer at the side of the problem. There is space at the margin of the page to work the problem if the child so desires.

On this test there are 1.21 per cent of the whites and 4.17 per cent of the Negroes who score below Grade 3B. There are about one-third or 35.69 per cent of the whites below 6B level. Over three-fourths of the Negroes or 76.30 per cent made scores which were below scores of the average 6B child. More white children attained the grade level on this test than any of the previous tests in the battery, for nearly one half of them, or 44.69 per cent, scored at Grades 6B, 6A, and 7B. This fact is also true of the Negroes, but not to as great extent. On this test 19.80 per cent of the Negroes score at the grade level. There were 19.35 per cent of the whites and 3.90 per cent of the Negroes who scored above the norms of 7B. Above the norm for 9B, 5.67 per cent of the whites and 1.04 per cent of the Negroes fall. Summarizing this, we may say that approximately three-fifths of the whites were

TABLE XVII

THE PERCENTAGES OF WHITE AND NEGRO
PUPILS IN INTERVALS OF ONE-HALF SCHOOL YEAR
ON THE ARITHMETIC REASONING TEST

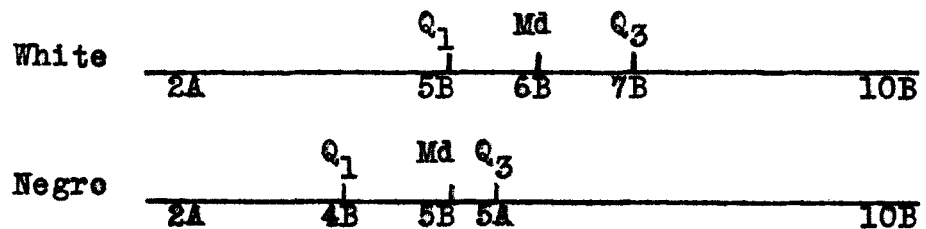
Grade	Educational Age	White		Negro	
		Cases	Percent	Cases	Percent
10B	15 ¹¹ or over	34	1.82	1	.26
9A	15 ⁶ -15 ¹⁰	23	1.23		
9B	15 ⁰ -15 ⁵	49	2.62	3	.78
8A	14 ⁶ -14 ¹¹	61	3.26	3	.78
8B	13 ¹⁰ -14 ⁵	87	4.65	4	1.04
7A	13 ³ -13 ⁹	108	5.77	4	1.04
7B	12 ⁸ -13 ²	301	16.09	14	3.65
6A	12 ⁴ -12 ⁷	162	8.66	12	3.13
6B	11 ¹⁰ -12 ³	373	19.94	50	13.02
5A	11 ⁵ -11 ⁹	144	7.70	35	9.11
5B	10 ¹¹ -11 ⁴	225	12.03	68	17.71
4A	10 ⁶ -10 ¹⁰	153	8.18	70	18.23
4B	9 ¹⁰ -10 ⁵	70	3.74	46	11.98
3A	9 ⁴ -9 ⁹	27	1.44	21	5.47
3B	8 ⁵ -9 ³	31	1.65	37	9.63
2A	7 ⁵ -8 ⁴	19	1.01	14	3.65
	below 7 ⁵	4	.21	2	.52
Total		1871	100.00	384	100.00
	Median	12 ²		10 ¹¹	
	Q ₁	11 ²		10 ¹	
	Q ₃	13 ⁰		11 ⁹	

at grade level or above and a little less than one-fourth of the Negroes.

The median for the white children on this Arithmetic Reasoning test is 12² which is closer to the norm than on any of the previous tests; and the Negro median is 10¹¹, a difference of one year and three months below the white median.

The range, the quartiles and medians are shown by the vertical lines on the following chart. They are given in grade levels.

CHART X



. The semi-interquartile range, the probable error of the median, the probable error of the difference of the median and the critical ratio are:

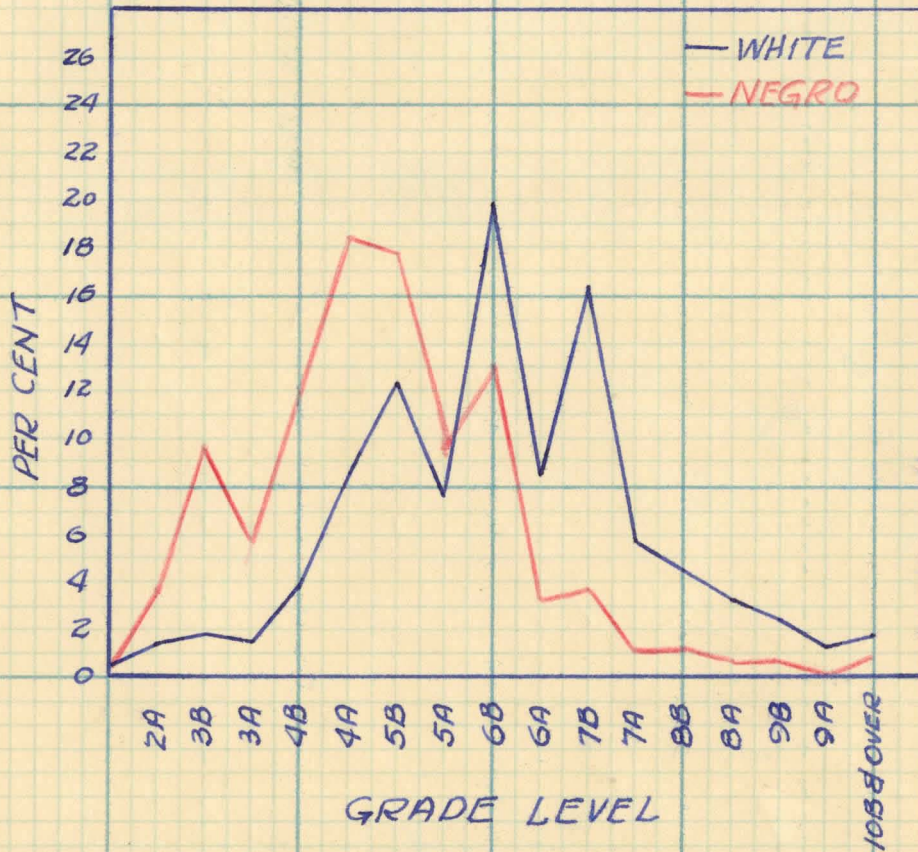
Cases	Range	Med	Q	PE MDN	PE _D	Critical Ratio
White 1871	7 ⁵ -15 ¹¹ or over	12 ²	11 mo..32		.715	20
Negro 384	7 ⁵ -15 ⁵	10 ¹¹	10 mo..64			

The critical ratio or the difference of the medians divided by the probable error of the difference is over twenty. This is certainly high enough to make the difference significant. The whites again are superior on this test to the Negroes.

The distribution of the scores of each race on the Arithmetic Reasoning Test is shown on Graph 14. The curves for both Negroes and whites are rather irregular but more white scores are concentrated near the upper end of the graph. The quartile deviation of the scores of white children is eleven months with a probable error of .201. The quartile deviation of the scores of the Negroes is ten months with a probable error of .402. The critical ratio of the difference in variability is only two. This ratio

GRAPH 14.

THE GRADE LEVELS OF WHITE
AND NEGRO PUPILS ON THE ARITHMETIC
REASONING TEST.



shows the whites are more variable in ninety-one cases out of a hundred but is not high enough to be absolutely significant.

On this Arithmetic Reasoning test the medians for the nine white junior high school districts range from 11¹¹ to 12⁹. We find them grouped closer together on this test than on any of the others clustering around 12². The median for the Eastern Junior High School district is 11¹¹, a full year above the median for the Negroes.

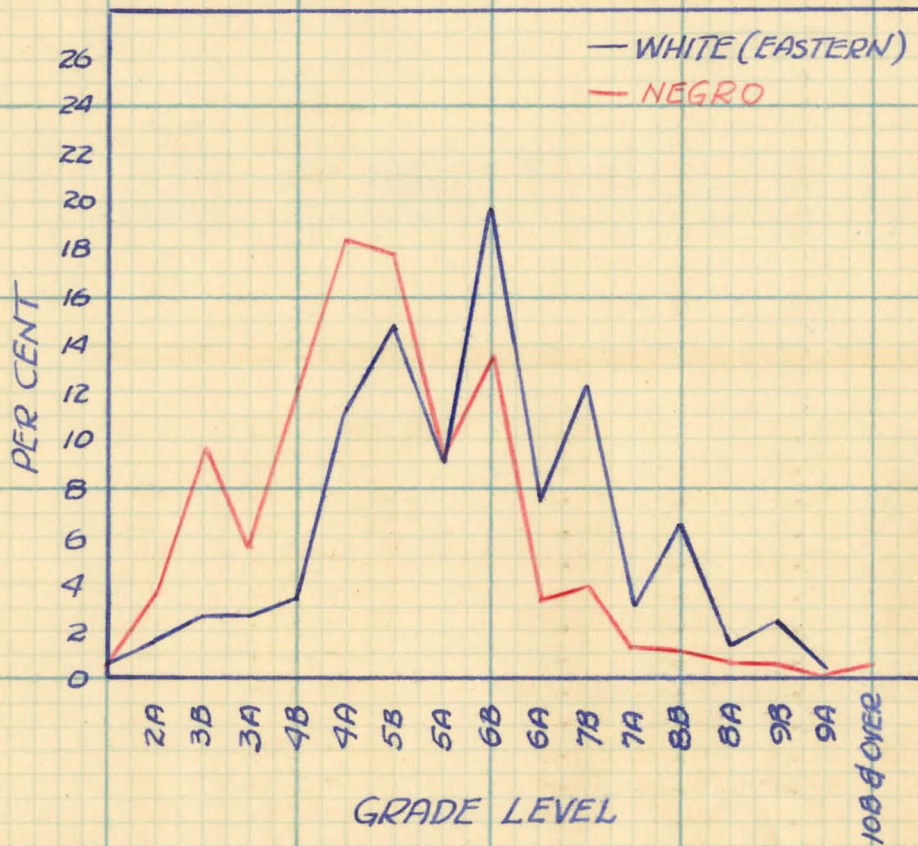
Table XVIII shows that there are 1.96 per cent of the white children in Eastern district and 4.17 per cent of the Negroes below Grade 3B. There are 46.28 per cent of the white children of Eastern below Grade 6B and 76.30 per cent of all the Negroes. Falling at grade level (6B, 6A, 7B) there are 39.60 per cent of the white children and 19.80 per cent of the Negroes, and above 7B there are 14.12 per cent of the whites and only 3.90 per cent of the Negroes. On this particular test, the white children score higher than on any in the

TABLE XVIII
 PERCENTAGES OF PUPILS IN THE JUNIOR
 HIGH SCHOOL DISTRICTS -- GROUPED IN
 INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE ARITHMETIC REASONING TEST

Grade	Educa- tional Age	White					Total Negro				
		B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N	N E G R O
10B	15 ¹¹ or over	5.58		5.49	.99	3.20	1.08	2.35	1.18		.26
9A	15 ⁶ -15 ¹⁰	1.24	.39	1.22	.99	.80	1.62	1.18	3.14	.39	
9B	15 ⁰ -15 ⁵	2.48	2.35	4.88	1.09	3.20	3.24	1.76	1.96	2.76	.78
8A	14 ⁶ -14 ¹¹	1.86	1.57	6.71	2.98	4.00	2.70	2.35	5.10	2.76	.78
8B	13 ¹⁰ -14 ⁵	6.21	6.67	10.36	4.64	4.80	5.41	1.76	1.57	2.36	1.04
7A	13 ³ -13 ⁹	7.44	3.14	9.15	6.29	6.40	4.86	7.65	3.14	6.30	1.04
7B	12 ⁸ -13 ²	13.04	12.16	15.85	21.20	19.20	16.21	19.42	14.90	13.39	3.65
6A	12 ⁴ -12 ⁷	11.18	7.84	10.36	7.60	6.40	11.35	5.88	9.80	7.87	3.13
6B	11 ¹⁰ -12 ³	20.57	19.60	10.97	17.23	21.60	20.57	23.54	20.77	24.40	13.02
5A	11 ⁵ -11 ⁹	7.44	9.41	6.10	6.29	8.80	6.49	7.65	9.02	7.87	9.11
5B	10 ¹¹ -11 ⁴	9.94	14.90	6.71	12.25	13.60	14.04	8.82	12.16	13.39	17.71
4A	10 ⁶ -10 ¹⁰	6.82	11.37	5.49	8.28	2.40	5.95	9.41	10.20	9.06	18.23
4B	9 ¹⁰ -10 ⁵	3.10	3.14	3.05	4.97	5.60	3.24	3.53	2.75	4.33	11.98
3A	9 ⁴ -9 ⁹		2.75	1.83	2.32		1.08	1.76	1.18	.79	5.47
3B	8 ⁵ -9 ³	2.48	2.75	1.22	1.32		1.08	.59	2.35	1.97	9.63
2A	7 ⁵ -8 ⁴		1.57	.61	.66		1.08	1.76	.39	2.36	3.65
	below 7 ⁵	.62	.39					.59	.39		.52
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Median		12 ³	11 ¹¹	12 ⁹	12 ²	12 ³	12 ²	12 ¹	12 ¹	12 ⁰	10 ¹¹
Q ₁		11 ⁵	11 ⁰	11 ⁹	11 ²	11 ⁶	11 ³	11 ³	11 ²	11 ¹	9 ⁶
Q ₃		13 ²	12 ⁸	14 ⁰	13 ⁰	13 ¹	13 ⁰	13 ⁰	12 ¹⁰	12 ⁹	11 ⁹

GRAPH 15.

THE PERCENTAGE OF WHITE CHILDREN (EASTERN DISTRICT) AND NEGROES IN EACH GRADE LEVEL ON THE ARITHMETIC REASONING TEST.



battery and the median for the Negroes is exceeded only by the median of the Word Meaning test which might involve an element of guessing.

The last and sixth of this series of tests is the Arithmetic Computation. "The selection of examples for this test was based chiefly upon analyses of the leading textbooks and tests for the purpose of discovering all the possible types of examples."¹ The results of these analyses were arranged in the form of an outline showing the major types of examples in each operation together with the sub-types. The test ranges in every form of the battery from simple primary combinations through successive degrees of complexity to the type of mathematics usually taught in the ninth grade. Sixty such problems are on this test to be worked by the pupils. There is room for the student to figure on the margin of the page.

Examples:

a. add
 26890
 58475
 43261

1. Manual of Directions, p. 7.

$$b. \text{ If } V = \frac{\pi r^2 h}{3}$$

$$H = ?$$

On every one of the previous tests, we found that the whites were superior to the Negroes, and it will not be surprising if we find that this last test on the Stanford Achievement Test discloses similar results. Here we find that .59 per cent of the whites and 2.08 per cent of the Negroes scored below the 3B level; 43.59 per cent of the whites and 81.77 per cent of the Negroes were below 6B level; 21.71 per cent of the whites and 11.72 per cent of the Negroes were at grade level (6B, 6A, 7B); 34.70 per cent of the whites and 6.51 per cent of the Negroes were above 7B; and 11.97 per cent of the whites and 1.56 per cent of the Negroes scored above the 9B level. All through this test, as in the others, the percentage of white children below grade level is smaller than the percentage of Negro children, and the percentage of white children at grade level and above is greater than that of the Negro children. There is not

TABLE XIX

THE PERCENTAGES OF WHITE AND NEGRO
PUPILS IN INTERVALS OF ONE-HALF SCHOOL YEAR
ON THE ARITHMETIC COMPUTATION TEST

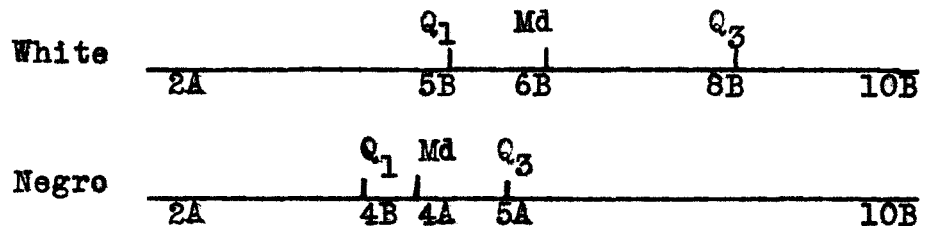
Grade	Educational Age	White		Negro	
		Cases	Percent	Cases	Percent
10B	15 ¹¹ or over	103	5.48	1	.26
9A	15 ⁶ -15 ¹⁰	38	2.02	2	.52
9B	15 ⁰ -15 ⁵	84	4.47	3	.78
8A	14 ⁶ -14 ¹¹	140	7.45	1	.26
8B	13 ¹⁰ -14 ⁵	126	6.71	7	1.82
7A	13 ³ -13 ⁹	161	8.57	11	2.87
7B	12 ⁸ -13 ²	79	4.20	6	1.56
6A	12 ⁴ -12 ⁷	84	4.47	11	2.87
6B	11 ¹⁰ -12 ³	245	13.04	28	7.29
5A	11 ⁵ -11 ⁹	264	14.05	51	13.28
5B	10 ¹¹ -11 ⁴	196	10.43	55	14.32
4A	10 ⁶ -10 ¹⁰	188	10.01	76	19.79
4B	9 ¹⁰ -10 ⁵	85	4.52	72	18.75
3A	9 ⁴ -9 ⁹	48	2.55	31	8.08
3B	8 ⁵ -9 ³	27	1.44	21	5.47
2A	7 ⁵ -8 ⁴	9	.48	5	1.30
	below 7 ⁵	2	.11	3	.78
Total		1879	100.00	384	100.00
Median		12 ¹		10 ⁹	
Q ₁		11 ²		10 ¹	
Q ₃		13 ¹¹		11 ⁶	

a single instance when this fact does not remain constant. On this test 56.41 per cent of the white children and only 18.23 per cent of the Negro children had either attained or surpassed their grade level. In other words, more than three times as many whites were at the grade level or above than were Negroes.

Likewise, the median for the white children is higher than the median for the Negroes, for the white median is 12¹ and that of the Negro is 10⁹, a difference of one year and four months.

The range, the quartiles, and the medians are shown by vertical lines on the following chart.

CHART XI



The semi-interquartile range, the probable error of the median, the probable error of the difference of the median, and the critical ratio are:

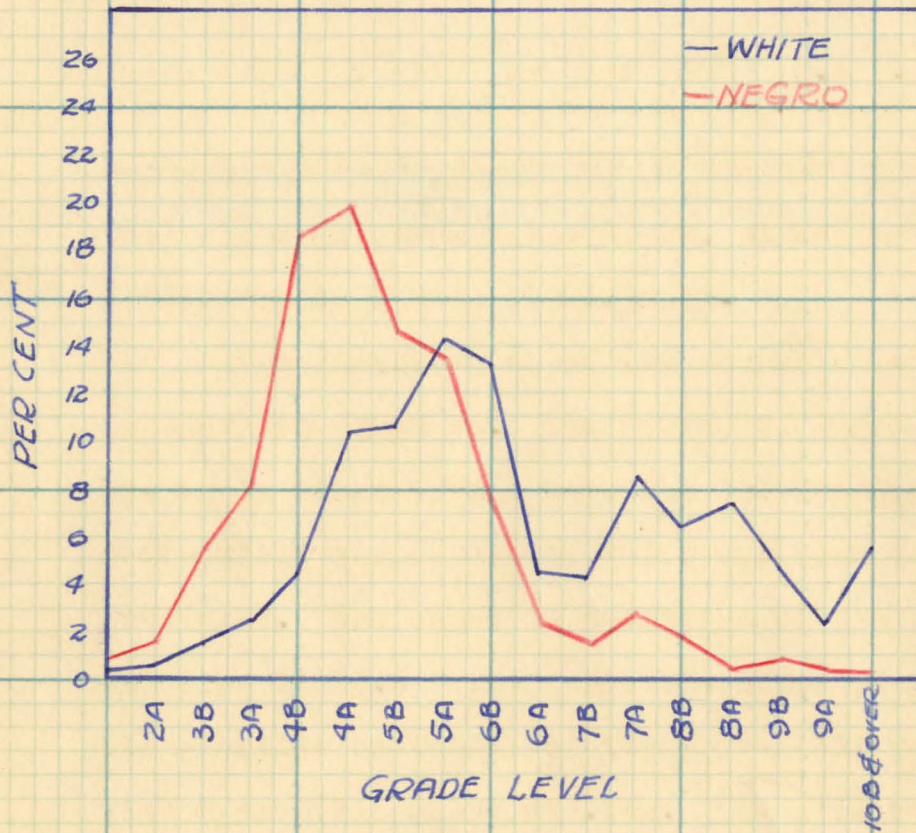
Cases	Range	Med	Q	PE MDN	PE D	Criti- cal Ratio
White	1879	7 ⁵ -15 ¹¹ or over	12 ¹	16.5	.477	
						.723 22
Negro	384	7 ⁵ -15 ¹¹ or over	10 ⁹	8.5	.544	

The critical ratio is 22, consequently the difference is indeed significant.

The distribution of the scores of both races is shown on Graph 16. The scores of Negro children are again concentrated near the lower end of the scale while the scores of white children are widely scattered. The quartile deviation of the white children is 16.5 with a probable error of .300. The quartile deviation of the Negro children is 8.5 with a probable error of .342. The critical ratio of the difference in variability between the two races is 17.5 times the probable error of the difference. To be significant the difference must only be four times the probable error of the difference. Certainly the white children are more

GRAPH 16.

THE GRADE LEVELS OF WHITE
AND NEGRO PUPILS ON THE ARITHMETIC
COMPUTATION TEST



variable, that is, more heterogeneous on this test.

When we compare the medians of the Arithmetic Computation test of the nine white junior high school districts, we find that they range from 11⁶ to 13¹. On this test the medians range a little higher, four months, than the highest median on the reasoning section of the arithmetic test, but Eastern still has the lowest median with 11⁶. We have already stated that the Negro median on this test was 10⁹, therefore Eastern has a nine months advantage even here.

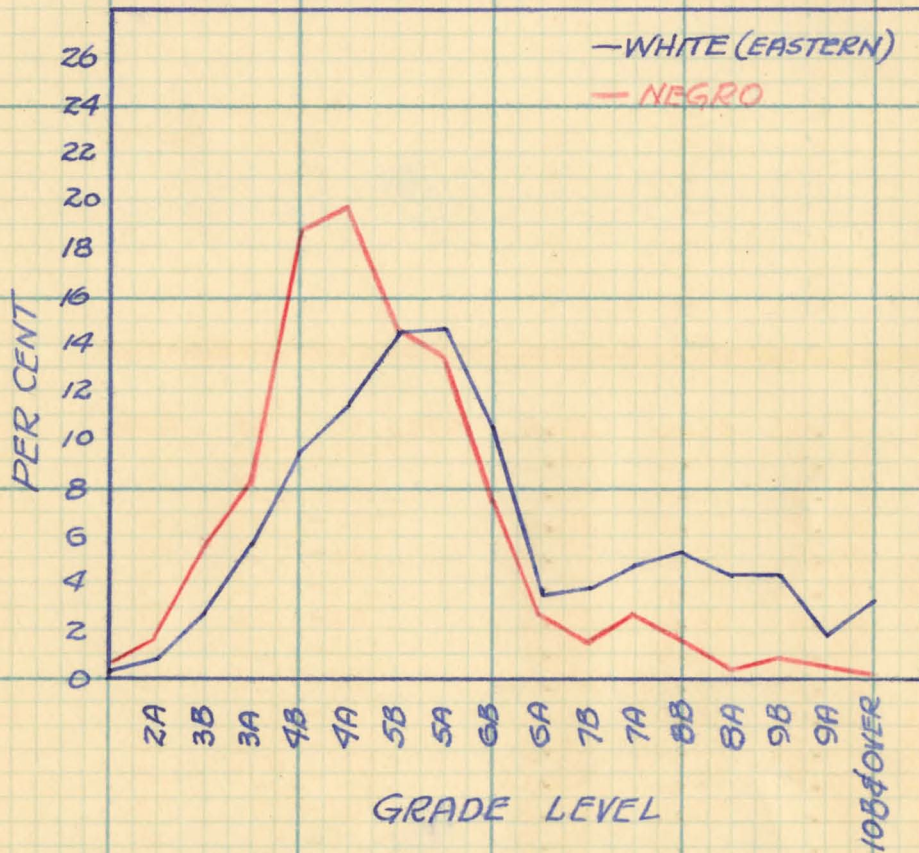
Table XX shows that 1.17 per cent of the white children from Eastern and 2.08 per cent of the Negroes are below Grade 3B; 59.21 per cent of these white children and 81.77 per cent of the Negroes are below 6B; 17.26 per cent of Eastern's children are at grade level and 11.72 per cent of the Negroes; 23.53 per cent of the white children from this district and 6.51 per cent of the Negroes score above 7B; and 9.41 per cent of these whites and 1.56 per cent of

TABLE XX
 PERCENTAGES OF PUPILS IN THE JUNIOR
 HIGH SCHOOL DISTRICTS -- GROUPED IN
 INTERVALS OF ONE-HALF SCHOOL YEAR
 ON THE ARITHMETIC COMPUTATION TEST

Grade	Educa- tional Age	White					Total Negro				
		B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N	N E G R O
10B	15 ¹¹ or over	6.21	3.14	10.97	5.63	5.60	3.78	6.78	5.08	4.33	.26
9A	15 ⁶ -15 ¹⁰	1.86	1.96	4.27	1.66	4.00	.54	1.70	1.56	1.97	.52
9B	15 ⁰ -15 ⁵	.62	4.31	6.71	3.31	7.20	5.95	7.91	3.12	3.54	.78
8A	14 ⁶ -14 ¹¹	9.32	4.31	8.54	8.61	10.40	5.41	5.09	8.20	8.27	.26
8B	13 ¹⁰ -14 ⁵	8.70	5.10	7.32	5.96	5.60	6.49	8.47	8.20	5.51	1.82
7A	13 ³ -13 ⁹	8.70	4.71	10.97	10.93	8.80	9.19	8.47	6.64	9.45	2.87
7B	12 ⁸ -13 ²	1.86	3.92	4.88	4.31	3.20	4.86	5.65	2.73	5.91	1.56
6A	12 ⁴ -12 ⁷	5.59	3.14	3.66	5.96	4.80	4.32	3.96	4.69	3.94	2.87
6B	11 ¹⁰ -12 ³	15.53	10.20	11.59	9.94	22.40	19.47	10.73	10.94	13.38	7.29
5A	11 ⁵ -11 ⁹	13.04	14.51	10.97	12.92	12.00	12.97	19.20	17.20	12.60	13.28
5B	10 ¹¹ -11 ⁴	6.83	14.51	10.36	11.92	8.80	12.43	7.35	10.16	8.66	14.32
4A	10 ⁶ -10 ¹⁰	11.18	11.37	7.93	11.92	3.20	10.27	8.47	10.94	10.24	19.79
4B	9 ¹⁰ -10 ⁵	4.35	9.02	.61	3.98	3.20	2.70	2.26	3.12	8.27	18.75
3A	9 ⁴ -9 ⁹	2.49	5.88	.61	1.99		1.08	3.39	4.30	1.18	8.08
3B	8 ⁵ -9 ³	1.86	2.75	.61	.99	.80	.54		2.73	1.57	5.47
2A	7 ⁵ -8 ⁴	1.86	.78					.57	.39	.79	1.30
	below 7 ⁵		.39						.39		.78
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Median		12 ¹	11 ⁶	13 ¹	12 ¹	12 ³	12 ¹	12 ³	11 ¹⁰	12 ⁰	10 ⁹
Q ₁		11 ¹	10 ⁸	11 ⁶	11 ¹	11 ⁸	11 ²	11 ⁵	11 ⁰	11 ⁰	10 ¹
Q ₃		13 ¹¹	13 ⁰	14 ⁹	13 ¹⁰	14 ⁶	13 ⁷	14 ²	13 ¹¹	13 ⁸	11 ⁶

GRAPH 17.

THE PERCENTAGE OF WHITE CHILDREN (EASTERN DISTRICT) AND NEGROES IN EACH GRADE LEVEL ON THE ARITHMETIC COMPUTATION TEST



the Negroes score in the group above 9B. From the comparison we see that the Negroes' percentage most nearly approximates the Eastern white children at grade level and the greatest discrepancy is below the 6B grade. From these figures, as in other tests, we see that there are some individual Negro children who attain scores as high as individual whites, but as a whole the scores are lower. Just as there are several Eastern children whose test scores range as high as the test scores made by children in other white districts whose medians are much higher than Eastern's, but as a whole when scores are averaged Eastern's children form the lowest white bracket on every single test of the battery.

Now a study of this kind is not complete until we compare the scores made by boys and girls on this battery of achievement tests. The number of white boys and of white girls who took this test is so nearly equal that these numbers lend themselves to a fair comparison. On only one test, the Arithmetic Reasoning, do

the girls score lower than the boys, and this difference is only that of one month, in favor of the boys. However, the medians on five tests show that the girls range from one to five months higher than the boys.

There were 948 boys and 925 girls who took the Language Usage test and the median for the boys was 11^{10} and for the girls 12^0 . On the Word Meaning test the medians for 955 boys and 925 girls were 11^9 and 11^{10} respectively. The medians for the Dictation test were the lowest of all six tests, for here 954 boys and 924 girls had medians of 11^5 and 11^9 . There were 949 boys and 925 girls who took the Language Usage test and the median for the boys was 11^6 and for the girls 11^{11} . The highest medians on this battery were made on the Arithmetic Reasoning, for here 949 boys had a median of 12^2 and 922 girls a median of 12^1 . We see that on this test and on this one test alone, do the medians most nearly meet the norm given for Grade 6A. Boys fell below the girls again on the Arithmetic Computation, for 954 boys had a median of 11^{10} and 925 girls

TABLE XXI

PERCENTAGES OF WHITE BOYS AND GIRLS
GROUPED IN INTERVALS OF ONE-HALF SCHOOL YEAR
ON SIX PARTS OF THE STANFORD ACHIEVEMENT TEST

Grade	Educa- tional Age	Paragraph Meaning		Word Meaning		Dictation	
		Boys	Girls	Boys	Girls	Boys	Girls
10B	15 ¹¹ or over	4.22	4.32	4.92	3.24	.21	
9A	15 ⁶ -15 ¹⁰	3.06	2.70	2.30	1.84	.63	.76
9B	15 ⁰ -15 ⁵	2.64	3.35	2.83	1.63	.42	.76
8A	14 ⁶ -14 ¹¹	3.06	3.24	4.29	4.66	2.51	2.38
8B	13 ¹⁰ -14 ⁵	3.97	6.70	3.14	3.78	2.20	2.27
7A	13 ³ -13 ⁹	7.79	6.59	6.60	6.60	6.71	9.20
7B	12 ⁸ -13 ²	7.49	9.19	9.32	12.10	8.07	11.58
6A	12 ⁴ -12 ⁷	5.81	6.59	5.24	5.19	7.13	10.28
6B	11 ¹⁰ -12 ³	12.98	14.49	10.47	12.54	11.85	12.01
5A	11 ⁵ -11 ⁹	16.05	17.63	16.96	21.83	12.89	17.64
5B	10 ¹¹ -11 ⁴	8.65	10.71	7.96	9.84	13.10	11.47
4A	10 ⁶ -10 ¹⁰	7.61	7.78	10.37	8.00	14.67	12.23
4B	9 ¹⁰ -10 ⁵	5.71	3.89	8.17	6.05	11.74	7.47
3A	9 ⁴ -9 ⁹	4.12	1.19	3.66	1.51	5.56	1.41
3B	8 ⁵ -9 ³	3.28	1.97	2.51	.76	1.26	.22
2A	7 ⁵ -8 ⁴	2.71	.33	1.05	.43	.42	.32
	below 7 ⁵	.84	.33	.21		.63	
	Number Cases	948	925	955	925	954	924
	Median	11 ¹⁰	12 ⁰	11 ⁸	11 ¹⁰	11 ⁵	11 ⁹
	Q ₁	10 ¹¹	11 ³	10 ¹⁰	11 ³	10 ⁷	11 ⁰
	Q ₃	13 ²	13 ⁵	13 ²	13 ¹	12 ⁵	12 ⁹

TABLE XXI (continued)

PERCENTAGES OF WHITE BOYS AND GIRLS
GROUPED IN INTERVALS OF ONE-HALF SCHOOL YEAR
ON SIX PARTS OF THE STANFORD ACHIEVEMENT TEST

Grade	Educa- tional Age	Language Usage		Arithmetic Reasoning		Arithmetic Computation	
		Boys	Girls	Boys	Girls	Boys	Girls
10B	15 ¹¹ or over	4.53	6.27	2.52	1.09	5.24	5.73
9A	15 ⁶ -15 ¹⁰	2.74	3.68	1.57	.86	1.36	2.70
9B	15 ⁰ -15 ⁵	2.42	3.57	2.96	2.27	4.51	4.43
8A	14 ⁶ -14 ¹¹	3.90	4.32	2.64	3.91	6.71	8.22
8B	13 ¹⁰ -14 ⁵	2.84	5.08	4.85	4.44	5.14	8.32
7A	13 ³ -13 ⁹	4.85	7.24	7.06	4.45	7.02	10.16
7B	12 ⁸ -13 ²	5.59	6.16	16.23	15.95	3.56	4.62
6A	12 ⁴ -12 ⁷	10.43	8.32	7.80	9.55	5.14	4.08
6B	11 ¹⁰ -12 ³	6.75	6.38	17.92	22.03	11.95	14.16
5A	11 ⁵ -11 ⁹	10.96	13.40	8.64	6.73	14.99	13.08
5B	10 ¹¹ -11 ⁴	4.74	7.25	12.33	11.72	11.22	9.62
4A	10 ⁶ -10 ¹⁰	12.23	9.30	7.48	8.89	12.37	7.56
4B	9 ¹⁰ -10 ⁵	9.06	7.46	3.16	4.34	4.93	4.10
3A	9 ⁴ -9 ⁹	5.90	5.30	1.58	1.30	2.93	2.15
3B	8 ⁵ -9 ³	3.26	2.05	2.00	1.30	1.99	.85
2A	7 ⁵ -8 ⁴	7.69	3.57	1.05	.98	.73	.22
	below 7 ⁵	2.11	.65	.21	.22	.21	
Number Cases		949	925	949	922	954	925
Median		11 ⁶	11 ¹¹	12 ²	12 ¹	11 ¹⁰	12 ²
Q ₁		10 ³	10 ⁹	11 ¹	11 ¹	10 ¹¹	11 ⁴
Q ₃		12 ¹⁰	13 ⁸	13 ¹	12 ¹¹	13 ⁷	14 ²

a median of 12². In other words, girls scored on the average of three months higher than the boys when we average the medians of the two sexes on the six tests and the boys excelled in only one test, Arithmetic Reasoning. This difference was a difference of only one month.

The slightest difference between the boys and girls on tests where girls ranked superior to boys was found on the Word Meaning test, for here the girls were only one month ahead of the boys. On Paragraph Meaning there was only a two months difference in favor of the girls; therefore on the Reading part of the test the difference between the sexes was not as great as on three of the other tests. The greatest difference was found in Language Usage, for here the girls made a score five months higher than boys and on the Dictation and Arithmetic Computation the girls' median was four months higher than the boys'. In five tests out of six, the girls ranked higher than the boys. Therefore, we can say that in

Language Usage, Dictation, and Arithmetic Computation there is a significant difference between boys and girls. In Arithmetic Computation the critical ratio is 4.18, in Dictation 6.4, and in Language Usage 5.2. Since on these three tests the difference is over 4 P.E. these differences can be said to be significant. On Paragraph Meaning and Word Meaning where girls were slightly higher and on Arithmetic Reasoning where boys excelled, the differences were not found to be significant.

When we consider the differences between Negro boys and Negro girls on these six tests, girls excel in five of the six tests and on the other test the medians are the same. In the following table the medians for both sexes are given. (Table XXII) We see that at no time are the medians of the Negro boys and Negro girls over three months apart. There were approximately 200 Negro boys and 184 Negro girls tested on this battery and there was not a significant difference between the medians of Negro boys and Negro girls on any one of

TABLE XXII

PERCENTAGES OF NEGRO BOYS AND GIRLS
GROUPED IN INTERVALS OF ONE-HALF SCHOOL YEAR
ON SIX PARTS OF THE STANFORD ACHIEVEMENT TEST

Grade	Educa- tional Age	Paragraph Meaning		Word Meaning		Dictation	
		Boys	Girls	Boys	Girls	Boys	Girls
10B	15 ¹¹ or over	1.51	.54	.50	.54		.54
9A	15 ⁶ -15 ¹⁰						
9B	15 ⁰ -15 ⁵	1.01	.54	.50			
8A	14 ⁶ -14 ¹¹		1.09	1.01	1.09		
8B	13 ¹⁰ -14 ⁵	2.51					
7A	13 ³ -13 ⁹	4.02	3.26	3.52	2.17	1.52	2.72
7B	12 ⁸ -13 ²	2.01	2.17	5.53	3.26	4.04	6.52
6A	12 ⁴ -12 ⁷	1.51	3.80	5.03	4.35	3.53	4.35
6B	11 ¹⁰ -12 ³	6.03	8.70	6.03	9.78	5.55	7.07
5A	11 ⁵ -11 ⁹	11.56	18.48	15.57	19.02	11.11	14.67
5B	10 ¹¹ -11 ⁴	17.08	18.48	11.56	20.11	10.60	14.13
4A	10 ⁶ -10 ¹⁰	21.10	18.48	15.58	16.32	28.29	22.28
4B	9 ¹⁰ -10 ⁵	12.56	11.97	22.11	14.67	15.66	17.93
3A	9 ⁴ -9 ⁹	3.02	3.80	6.53	3.80	12.12	5.44
3B	8 ⁵ -9 ³	7.04	4.89	4.02	3.26	7.07	3.26
2A	7 ⁵ -8 ⁴	6.53	3.80	2.51	.54	.51	1.09
	below 7 ⁵	2.51			1.09		
	Number Cases	199	184	199	184	198	184
	Median	10 ¹⁰	11 ⁰	10 ¹⁰	11 ¹	10 ⁸	10 ¹⁰
	Q ₁	10 ¹	10 ⁶	10 ¹	10 ⁶	10 ⁰	10 ⁴
	Q ₃	11 ⁶	11 ⁸	11 ⁸	11 ⁸	11 ⁴	11 ⁸

TABLE XXII (continued)

PERCENTAGES OF NEGRO BOYS AND GIRLS
GROUPED IN INTERVALS OF ONE HALF SCHOOL YEAR
ON SIX PARTS OF THE STANFORD ACHIEVEMENT TEST

Grade	Educa- tional Age	Language Usage		Arithmetic Reasoning		Arithmetic Computation	
		Boys	Girls	Boys	Girls	Boys	Girls
10B	15 ¹¹ or over	1.00	2.72		.54	.50	
9A	15 ⁶ -15 ¹⁰	.50					1.09
9B	15 ⁰ -15 ⁵	.50	.54	1.00	.54	.50	1.09
8A	14 ⁶ -14 ¹¹	2.00	1.63	1.00	.54		.54
8B	13 ¹⁰ -14 ⁵	2.00	2.72	1.50	.54	1.00	2.72
7A	13 ³ -13 ⁹	1.50	2.17	.50	1.63	3.50	2.17
7B	12 ⁸ -13 ²	1.00	3.26	4.00	3.26	2.00	1.09
6A	12 ⁴ -12 ⁷	4.50	5.98	4.50	1.63	3.00	2.72
6B	11 ¹⁰ -12 ³	6.50	6.52	14.00	11.97	6.50	8.15
5A	11 ⁵ -11 ⁹	9.50	11.96	7.50	10.87	12.00	14.67
5B	10 ¹¹ -11 ⁴	5.50	7.07	16.50	19.02	12.50	16.31
4A	10 ⁶ -10 ¹⁰	18.50	11.41	20.00	16.31	19.00	20.65
4B	9 ¹⁰ -10 ⁵	16.00	14.67	9.00	15.22	21.00	16.30
3A	9 ⁴ -9 ⁹	8.50	9.78	6.50	4.35	8.00	8.15
3B	8 ⁵ -9 ³	7.50	5.44	8.50	10.87	8.00	2.72
2A	7 ⁵ -8 ⁴	15.00	14.13	4.50	2.72	1.50	1.09
	below 7 ⁵			1.00		1.00	.54
Number Cases		200	184	200	184	200	184
Median		10 ⁶	10 ⁸	10 ¹¹	10 ¹¹	10 ⁸	10 ¹¹
Q ₁		9 ⁵	9 ⁷	10 ¹	10 ¹	10 ⁰	10 ⁴
Q ₃		11 ⁶	11 ¹⁰	11 ¹⁰	11 ⁷	11 ⁶	11 ⁷

the six tests.

SUMMARY

1. There is a difference in achievement in white and Negro children--in favor of the white--as measured by the six tests on the Stanford Achievement Test.

2. When the scores are given in terms of educational age the median scores on the six parts of the Stanford Achievement Test are:

	White	Negro	Difference In Favor of Whites
Paragraph Meaning	11 ¹¹	10 ¹¹	1 year
Word Meaning	11 ¹⁰	11 ⁰	10 months
Dictation	11 ⁸	10 ⁹	11 months
Language Usage	11 ⁸	10 ⁷	1 ¹
Arithmetic Reasoning	12 ²	10 ¹¹	1 ³
Arithmetic Computation	12 ¹	10 ⁹	1 ⁴

3. When Louisville is divided into the nine junior high school districts, even the lowest white district is superior in achievement to the Negroes as a whole.

4. The medians on the Stanford Achievement

Test for the lowest white junior high school district and the Negroes are:

	Eastern (Lowest White)	Negro	Difference
Paragraph Meaning	11 ⁷	10 ¹¹	8 months
Word Meaning	11 ⁶	11 ⁰	6 "
Dictation	11 ¹	10 ⁹	4 "
Language Usage	11 ⁰	10 ⁷	5 "
Arithmetic Reasoning	11 ¹¹	10 ¹¹	1 year
Arithmetic Computation	11 ⁶	10 ⁹	9 months

5. There is a greater difference in range among the medians of nine white junior high school districts than there is between the median of the whites as a whole and the median of the Negroes. The range of the medians of the white districts on each part of the test are as follows:

	Range of White Districts	White Median	Negro Median
Paragraph Meaning	11 ⁷ - 13 ³	11 ¹¹	10 ¹¹
Word Meaning	11 ⁶ - 13 ³	11 ¹⁰	11 ⁰
Dictation	11 ¹ - 12 ⁴	11 ⁸	10 ⁹
Language Usage	11 ⁰ - 13 ¹¹	11 ⁸	10 ⁷
Arithmetic Reasoning	11 ¹¹ - 12 ⁹	12 ²	10 ¹¹
Arithmetic Computation	11 ⁶ - 13 ¹	12 ¹	10 ⁹

6. The whites and Negroes fall below the standard grade norm on all tests. The white children most nearly approximate the standard score on the two arithmetic tests.

7. Throughout the six tests there is a wide overlapping among the achievement scores of the two races. There are individual Negro children who have scores just as high as individual white children.

8. The percentage of white and Negro children who attained grade level or above are as follows:

	Percentage White	Percentage Negro
Paragraph Meaning	54.07	19.32
Word Meaning	50.32	21.66
Dictation	44.43	17.80
Language Usage	47.49	22.38
Arithmetic Reasoning	64.04	23.70
Arithmetic Computation	56.41	18.23

9. The white children are more variable than the Negro children on all six parts of the Stanford Test. The difference in variability is significant on all tests except Arithmetic Reasoning.

On this test the chances are ninety-one out of a hundred that a true difference in variability exists.

10. There is not a significant difference between white boys and white girls on the Paragraph Meaning and Word Meaning test although the girls ranked slightly higher than the boys.

11. White boys ranked higher than white girls on the Arithmetic Reasoning test, but the difference is not significant.

12. There is a significant difference in the scores made by the white girls and white boys on the Dictation, Language Usage, and Arithmetic Computation tests. Girls ranked higher on these three tests.

13. Negro girls' scores were about two months higher than the scores for Negro boys on all six tests, but these differences were not great enough to be significant.

CHAPTER IV

THE RELATION BETWEEN THE
CHRONOLOGICAL AGES OF THE ACHIEVEMENT
SCORES OF PUPILS USED IN THIS STUDY

CHAPTER IV

THE RELATION BETWEEN THE CHRONOLOGICAL AGES OF THE ACHIEVEMENT SCORES OF PUPILS USED IN THIS STUDY

The age at which a child arrives at a given grade may be considered a rough measure of scholastic achievement, for a great number of overaged pupils in a given grade proves retardation due to some cause. Other things being equal, that is, the age of entering school, regularity of attendance, scholastic ability, instructional efficiency, etc., one should expect children to arrive at the given grades at the same age. Variations from the norm in grade placement, the total time spent in school being constant, denote acceleration or retardation in scholastic progress.

In this study we have found that the median score of the white child taking the Stanford Achievement Test September 1938, is higher than the median score of the Negro child in every one of the six tests given, but that the median score of both the Louisville white and the Louisville negro falls below the score given as the standard

norm for a child in the 6A grade. This conclusion, however, does not give the entire picture unless we study more extensively the ages of these children to whom this standardized test was given.

The chronological age of a child taking this standard test necessarily acts as a measure to determine his intelligence and achievement scores. It also shows us whether he is overage for his grade or whether he is below the chronological age accepted as the standard norm for his grade. If he is overage chronologically, and falls below the standard norm educationally, that is one picture; if he is under age chronologically, and falls below the standard norm for the tests, his educational age might still show that his achievement is equal to his chronological age and the picture be entirely different.

It is the purpose of this chapter to present the chronological age of both the Negro and the white child tested and to see if the Louisville child's rate of progress shows the amount of retardation as seemingly indicated when we gave the results of his achievement tests.

The median chronological age of 6A children on whom these achievement tests were standardized is 12⁴, while the median chronological age of all white pupils in Louisville taking the test in 6A in February 1938, was only 11⁹, a deviation of seven months from the standard. The lower quartile of these 1885 white pupils was 11⁴ and the upper quartile was 12⁴, the exact median chronological age of the children who were used in standardizing the test. Since the median chronological age is only 11⁹, this fact is significant in interpreting achievement scores, for on only two achievement tests did the median score for white pupils descend as low as 11⁹; the lowest median score was in Dictation and was 11⁸, one month below the median chronological age. Thus, these white children tested were younger than the average white child in 6A. Consequently, when the median achievement scores of Louisville white children are compared with their median chronological ages, we find that in four cases out of six their median educational age is greater than their median chronological age, and averaging

the median scores on the six achievement tests, their median educational age is slightly more than one month higher than their median chronological age.

The following chart shows the median chronological age, the median educational age on each part of the Stanford test, and the ratio of the median educational age divided by the median chronological age of 6A white children.

CHART XII

	Median Educa- tional Age	Median Chrono- logical Age	<u>Median E.A.</u> Median C.A.
Paragraph Meaning	11 ¹¹	11 ⁹	1.014
Word Meaning	11 ¹⁰	11 ⁹	1.007
Dictation	11 ⁸	11 ⁹	.993
Language Usage	11 ⁸	11 ⁹	.993
Arithmetic Reasoning	12 ²	11 ⁹	1.035
Arithmetic Computation	12 ¹	11 ⁹	1.028

Of the four hundred Negro pupils tested, the median chronological age was found to be 12^0 , only three months below the median chronological age of the white child but four months below the standard norm given for the age of the average child in 6A (12^4). The lower quartile for the chronological age was 11^6 , two months higher than that of the white, and the upper quartile of the chronological age was 13^1 , nine months more than that of the white child. We see, therefore, that the Negro is slightly older when entering junior high school than the white child, and that the differences between the Negroes' median chronological age and the median scores he made on each achievement test do not show as high a ratio as is indicated when we compare the median chronological age of the white and his median achievement scores. The Negro still falls below the 12^0 , median chronological age, on every test given in this battery.

Chart XIII shows the median chronological age, the median educational age on each part of the Stanford test, and the ratio of the median

educational age divided by the median chronological age of 6A Negro children.

CHART XIII

	Median Educa- tional Age	Median Chrono- logical Age	<u>Median E.A.</u> Median C.A.
Paragraph Meaning	10 ¹¹	12 ⁰	.91
Word Meaning	11 ⁰	12 ⁰	.917
Dictation	10 ⁹	12 ⁰	.896
Language Usage	10 ⁷	12 ⁰	.882
Arithmetic Reasoning	10 ¹¹	12 ⁰	.91
Arithmetic Computation	10 ⁹	12 ⁰	.89

Table XXIII shows the chronological ages and the percentages of cases of both Negroes and whites in step intervals of six months.

This table shows, then, that approximately 1472 of the white pupils who took this test were younger than the standard median 12⁴ and only 313 were over the 12⁴ age norm. That means, then, that approximately 78.11 per cent or over three-

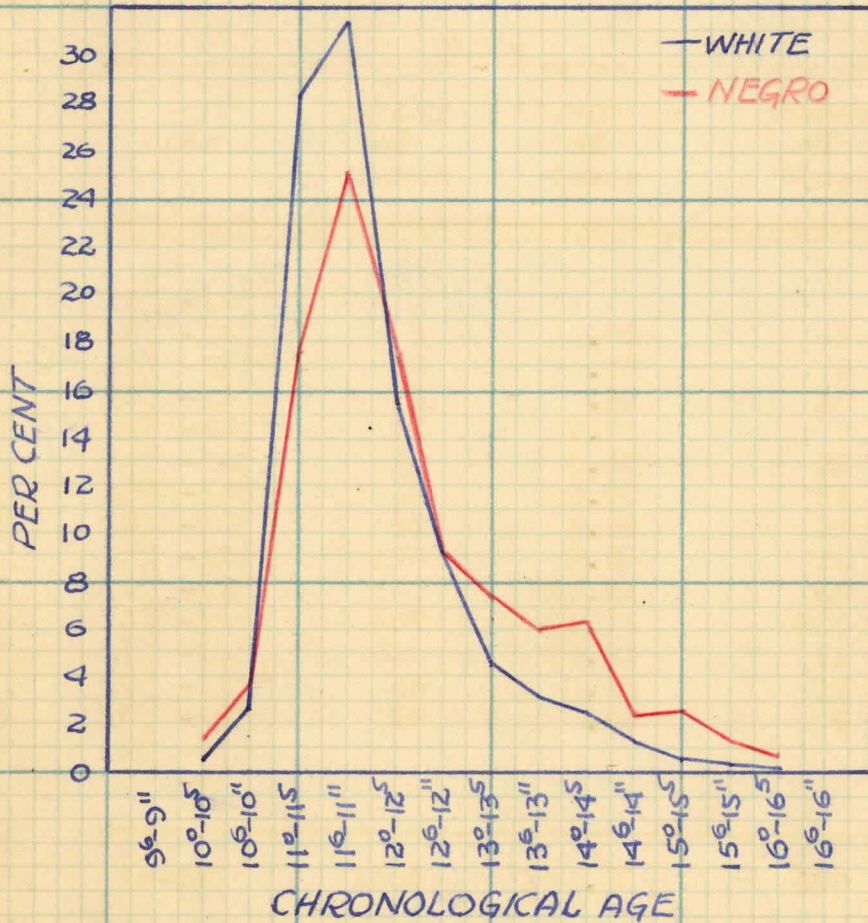
TABLE XXIII

THE CHRONOLOGICAL AGES OF WHITE AND
NEGRO CHILDREN IN GRADE 6A IN
FEBRUARY 1938

Ages	White		Negro	
	Number of Cases	Percentage of Cases	Number of Cases	Percentage of Cases
16 ⁶ -16 ¹¹				
16 ⁰ -16 ⁵	1	.05	2	.50
15 ⁶ -15 ¹¹	6	.32	6	1.50
15 ⁰ -15 ⁵	11	.58	10	2.50
14 ⁶ -14 ¹¹	20	1.06	9	2.25
14 ⁰ -14 ⁵	49	2.60	25	6.25
13 ⁶ -13 ¹¹	58	3.07	24	6.00
13 ⁰ -13 ⁵	92	4.88	29	7.25
12 ⁶ -12 ¹¹	176	9.33	36	9.00
12 ⁰ -12 ⁵	287	15.21	69	17.25
11 ⁶ -11 ¹¹	597	31.74	100	25.00
11 ⁰ -11 ⁵	533	28.25	71	17.75
10 ⁶ -10 ¹¹	45	2.38	13	3.25
10 ⁰ -10 ⁵	10	.53	6	1.50
9 ⁶ -9 ¹¹				
9 ⁰ -9 ⁵				
Cases	1885	100.00	400	100.00
Median	11 ⁹		12 ⁰	
Q ₁	11 ⁴		11 ⁶	
Q ₃	12 ⁴		13 ¹	
Q	6		9.5	

GRAPH 18.

THE CHRONOLOGICAL AGES OF WHITE
AND NEGRO PUPILS IN GRADE 6A
FEBRUARY 1938.



fourths of the white students were under the standard median age. There were approximately 259 Negroes, or 64.75 per cent, below the age level for grade and 141, or 35.25 per cent, over-age for the grade.

The distribution of the ages of the white children and the Negroes is shown on Graph 18. We notice that most of the children in both races have chronological ages between 10^6 and 12^{11} . The area under the curve is greater for Negroes when we consider ages above 12^{11} . The quartile deviation of the white children is six months with a probable error of .107. The quartile deviation of the Negroes is 9.5 with a probable error of .377. The quartile deviation of the Negroes is 3.5 greater than that of the whites. The critical ratio of the difference in variability is 8.9. Thus the chronological ages of the white children in this grade are less variable than the ages of the Negro children.

The fact that the median chronological age for white and Negro children in Louisville is under the norm is interesting, but even in this comparison the white must be said to do better

than the Negro in that he reaches the grade younger and achieves more for his chronological age than does the Negro.

All through other parts of the study of achievement and intelligence, we have compared the Negro group as a whole with the lowest white junior high school district and have found that the Negro's median scores are below the median scores of the lowest white district. The median chronological age for this white district (Eastern) is 12⁰, the very same as the median chronological age of the Negroes, but still four months below the norm. However, approximately 67.46 per cent of Eastern's children were under 12⁶ as compared to 64.75 per cent of the Negroes. The pupils in this lowest white district, like the Negro, did not attain the same median on any one of the six achievement tests as the median of their chronological age, but more nearly approximated their chronological age medians on every test than did the Negroes.

It is interesting to note here when comparing chronological ages of the nine white junior high schools that the highest median chronological

age is not found at Eastern but at Monsarrat where the median chronological age is 12². This probably can be understood when we remember again that the children at Monsarrat are children living in the downtown district of the city and that this school has a large number of transients. The fact that they have not remained in the same school may cause them to have a slightly higher age level.

The span between the median chronological ages of the various white districts is greater than the span between the medians of the whites and the Negroes, for the median chronological age at Highland is 11⁶ as compared with Monsarrat's 12², a difference of eight months. The difference between the median chronological ages of the Negroes and the whites is only three months. This big difference between the various white districts has been shown in previous chapters and is found again here.

Table XXIV shows the chronological ages of the various white junior high school districts and the percentage of children falling in step intervals of six months.

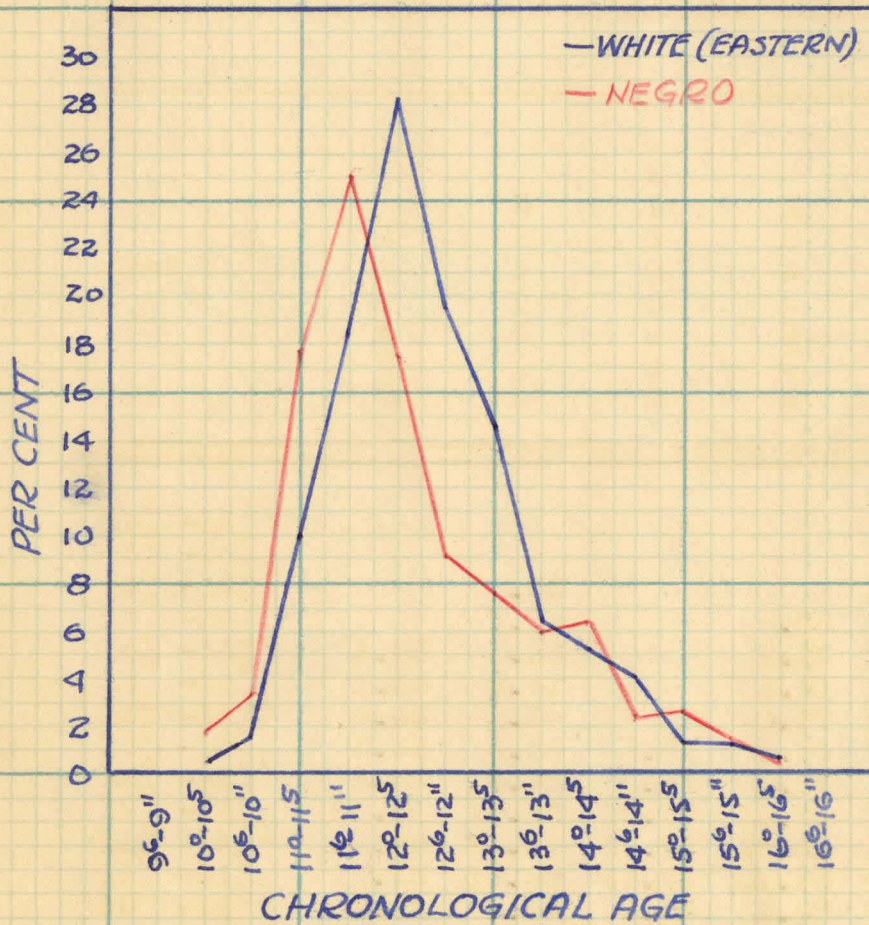
TABLE XXIV

THE CHRONOLOGICAL AGES OF 6A CHILDREN
IN THE VARIOUS JUNIOR HIGH SCHOOL
DISTRICTS WITH THE PERCENTAGE
IN EACH INTERVAL OF SIX MONTHS

Ages	White						Total Negro			
	B A R R E T	E A S T E R N	H I G H L A N D	H A L L E C K	M O N S A R R A T	P A R K L A N D	S H A W N E E	S O U T H E R N	W E S T E R N	N E G R O
16 ⁶ -16 ¹¹										
16 ⁰ -16 ⁵					.81					.50
15 ⁶ -15 ¹¹		.78					1.15	.39		1.50
15 ⁰ -15 ⁵		1.18		.66		.54	.38	1.57		2.50
14 ⁶ -14 ¹¹	1.23	1.18		1.32	1.63		2.31	1.18		2.25
14 ⁰ -14 ⁵	1.23	3.51		4.31	3.25	1.07	1.69	1.54	4.72	6.25
13 ⁶ -13 ¹¹	2.45	5.10		3.97	3.25	3.23	1.69	2.31	3.94	6.00
13 ⁰ -13 ⁵	3.68	6.28	.61	6.29	5.69	4.84	1.12	5.00	7.48	7.25
12 ⁶ -12 ¹¹	5.52	14.51	.61	8.94	25.21	4.30	7.30	9.24	10.24	9.00
12 ⁰ -12 ⁵	11.04	19.22	10.37	13.25	19.51	12.37	12.92	16.15	20.09	17.25
11 ⁶ -11 ¹¹	35.58	28.24	41.46	28.81	21.95	31.72	38.20	38.46	22.84	25.00
11 ⁰ -11 ⁵	33.13	18.43	43.29	31.13	15.45	38.17	33.70	20.00	25.59	17.75
10 ⁶ -10 ¹¹	4.91	1.18	3.05	1.32	3.25	3.76	1.69	2.69	1.57	3.25
10 ⁰ -10 ⁵	1.23	.39	.61				1.69	.77	.39	1.50
9 ⁶ -9 ¹¹										
9 ⁰ -9 ⁵										
Cases	163	255	164	302	123	186	178	260	254	400
Median	117	120	116	119	122	117	118	1110	1111	120
Q ₁	113	116	112	114	117	113	113	116	115	116
Q ₃	120	129	1110	126	129	120	1111	124	128	131

GRAPH 19.

THE CHRONOLOGICAL AGES OF GA WHITE PUPILS IN THE EASTERN DISTRICT AND ALL GA NEGROES OF LOUISVILLE IN FEBRUARY 1938.



We shall see now if there is a difference between the ages of boys and girls in the 6A grade. This study shows that the median chronological age of white boys is 11⁹ and for white girls 11⁸, a difference of one month in favor of the girls. Approximately, 82.93 per cent of the white girls are below 12⁶ and 73.31 per cent of the white boys are below 12⁶.

When we compare the Negro girls' median chronological age with that of the Negro boys, again we find boys having a 12² median and girls 11¹¹, or a difference of three months. There are approximately 71.36 per cent of the Negro girls who reach 6A below the 12⁴ age standard and 58.65 per cent of the Negro boys. Here again, we find that there is a greater percentage of white girls than Negro girls under age for the grade and a greater percentage of white boys than Negro boys under age for the grade.

Table XXV shows the chronological age percentages of white and Negro boys and girls falling in step intervals of six months.

The difference between the chronological age for Negro boys and Negro girls is two months

TABLE XXV

THE CHRONOLOGICAL AGES OF WHITE AND
NEGRO BOYS AND GIRLS GROUPED IN
INTERVALS OF SIX MONTHS

Ages	White		Negro	
	Percent Boys	Percent Girls	Percent Boys	Percent Girls
16 ⁶ -16 ¹¹				
16 ⁰ -16 ⁵	.11		.48	.52
15 ⁶ -15 ¹¹	.32	.32	.96	2.08
15 ⁰ -15 ⁵	.84	.32	4.33	.52
14 ⁶ -14 ¹¹	1.68	.43	4.33	
14 ⁰ -14 ⁵	3.15	2.04	7.21	5.21
13 ⁶ -13 ¹¹	3.57	2.58	7.69	4.17
13 ⁰ -13 ⁵	5.99	3.78	6.73	7.81
12 ⁶ -12 ¹¹	11.03	7.62	9.62	8.33
12 ⁰ -12 ⁵	16.28	14.16	15.39	19.27
11 ⁶ -11 ¹¹	28.67	34.75	21.15	29.17
11 ⁰ -11 ⁵	25.84	30.69	18.27	17.19
10 ⁶ -10 ¹¹	2.00	2.79	2.88	3.65
10 ⁰ -10 ⁵	.52	.54	.96	2.08
9 ⁶ -9 ¹¹				
9 ⁰ -9 ⁵				
Cases	953	932	208	192
Median	11 ⁹	11 ⁸	12 ²	11 ¹¹
Q ₁	11 ⁵	11 ⁴	11 ⁶	11 ⁵
Q ₃	12 ⁶	12 ²	13 ⁶	12 ⁸

greater than the difference between the chronological age medians for white boys and white girls; but in both races the girls enter junior high school slightly younger and, as we have seen, score slightly higher on their achievement tests.

SUMMARY

1. Louisville children in 6A grade, both Negro and white, are younger than those used in standardizing the Stanford Achievement Tests. (6A grade)
2. Negro 6A pupils are slightly older than white pupils in the same grade.
3. There is a greater difference between the medians of white pupils in the various junior high school districts of Louisville than there is between the white pupils as a whole and the Negroes.
4. The median chronological age for white 6A pupils is 11⁹ and for Negro pupils is 12⁰.
5. White girls in 6A are one month younger than the white boys, a difference which is not significant. (Girls 11⁸ -- boys 11⁹)
6. The median chronological age of Negro

girls (11¹¹) is three months lower than the median age for Negro boys (12²).

7. The median educational age of white children of Louisville was higher on four of the six achievement tests taken than the median of their chronological age and only one month lower on the other two tests taken.

8. The median chronological age of Negro children, even though under the age given as a norm for 6A, was higher than their medians on any of the achievement tests taken.

9. There is greater variability among the chronological ages of the Negro children of this grade than among the white children.

CHAPTER V

SUMMARY

CHAPTER V

SUMMARY

The preceding chapters of this study of the intelligence and achievement of Negro and white children entering the 7B grade in Louisville, September 1938, revealed a difference between the two races and differences between white children who lived in various sections of the city. These differences were based on the Otis Self-Administering Test of Mental Ability and the New Stanford Achievement Test, Form V. Both of these tests have been used in previous and similar studies in various parts of the country and have been found to be reliable; therefore, conclusions based on these tests given to about 1875 white children and 383 negro children should be worthy of consideration.

However, it is well to remember that whatever may be the status of the controversy concerning the average ability of the two races, one generally acknowledged fact is that the different degrees of ability and scholastic achievement all find representation among individual members of both races. No test or battery of tests has been devised which

can segregate racial groups on the basis of mental ability, for too many factors enter into this testing of intelligence.

Such things as environmental opportunities, expenditures for schooling, extra curricular activities, cultural experiences of parents, and the chance to acquire an education in the wider sense, all contribute to the final results of any test whether it be within one race or between the two races.

This study made of Louisville pupils shows the white child to have a higher intelligence score as measured by the Otis Test than the Negro. Klineberg¹ states: "The only studies to the knowledge of the writer which show the Negroes to be the equals of the whites is that by Peterson and Lanier and that by Graham in Georgia. Practically all other investigations agree in placing the Northern Negro definitely above the Negro from the South, and still somewhat below the Northern white." He also states that "since in the North the Negro scores, as in Peterson and Lanier's study, approach

1. Klineberg, Otto, Negro Intelligence and Selective Migration, Columbia University Press, 1935, p. 44.

very closely those obtained by the whites, there will be no basis for the assumption of any thorough going or fundamental white superiority in intelligence." This study agrees with Klineberg that the "I.Q." remains constant only when there is a relative constancy in environment and that a direct comparison between Negroes and whites will always remain a doubtful procedure because of the impossibility of controlling factors which influence results. Intelligence tests, therefore, are most profitably used as measures of educational accomplishment rather than used as measures of group differences in native ability.

Since so many factors enter into a pupils' performance on an intelligence test, it must be clearly understood that when the conclusions made in this study refer to the superiority of the white child in intelligence, we are aware of the many conditions influencing the scores and are not taking into consideration the many social and economic factors so intermingled when we speak broadly of intelligence. This study limits the term "Intelligence" to the results found after the

Otis Test had been given to both Negroes and whites before entering junior high school in September 1938.

When the children of these two races were tested and the results tabulated in step intervals of six points, we found a great overlapping of intelligence scores of the Negro and the white. The median I.Q. for white pupils was 99.0 as compared with the I.Q. of 85.3 for the Negro, a difference of 13.7 points. It is interesting to note here that when M. B. Bousefield used this same test in 1932, and made a study of 222 Negro children in grades 5-8, who had been in Chicago schools at least three years, she found their median I.Q. to be 87.15, only 1.85 points higher than the I.Q. found for the Louisville Negro pupil used in this study. Using Terman's classification on intelligence, this study shows seven white children tested with I.Q.'s above 140, or in the genius grouping and shows that no Negroes had scores this high.

The difference between the median I.Q. of the white and the Negro was found to be 13.7, but the differences between the median I.Q.'s of the

white children living in various sections of the city ranged from 91.0 to 114.5 or a difference of 23.5. This shows, then, that there is 9.8 points greater range between the various white children living in the several districts than there is between the Negro and the white race. This is a significant conclusion and one which tends to show that intelligence superiority is something which cannot find its basis in the color of the skin.

The median mental age of the 6A white pupils used in this study was found to be 11.8 and that of the 6A Negro pupils tested 10.0, a difference of one year and eight months which was found to be significant.

That housing conditions are an index to intelligence scores seems apparent since the median I.Q.'s of children become lower as rents become lower--that is, children living in the cheaper rental districts with fewer advantages were found to have lower I.Q.'s than children who lived in better neighborhoods where rents were higher and social advantages greater.

The conclusions from this thesis show a

difference in general intelligence between white boys and white girls in favor of the girls. This finding is in accordance with similar studies made by Thorndike, Pressey, Lincoln, Burham, and Wreschner. They have agreed that if there is a difference in intelligence between boys and girls it is not enough to be important, but is sometimes found in children between the ages of nine and fifteen because girls mature younger and in some instances tend to surpass boys.

The median I.Q. for white girls was found to be 100.4 and for white boys 97.3, a difference of 3.1 points. The median I.Q. for negro girls was 86.7 and for boys 84.1, a difference of 2.6 points.

The results obtained on this particular part of the survey, intelligence, show that the median I.Q. of white children is superior to the median I.Q. of Negroes, but that there is a greater discrepancy between the median I.Q.'s of the white children in the various districts, than there is between the Negro and the white. From the standpoint of teaching, then, we might conclude that the instruction to both groups necessarily involves one dealing with individual differences rather than

instruction for particular races. Since we find differences between the various white districts of the city, it may be that the teacher in one school will have to supply a more cultural background for her pupils than a teacher in another white district and that the Negro teacher has the greatest task of all.

The value of this intelligence testing lies in the conception of the relative intelligence of the groups and is needed for a better understanding of the achievement of the pupils under the instruction of teachers. Furthermore, whatever it is that is measured by the application of intelligence tests shows a substantial relationship with scores made on achievement tests.

What then were the results indicated when the New Stanford Achievement Tests (Form V) were employed as measuring instruments of achievement? These same children were tested on the six separate tests of this particular battery and their scores tabulated in step intervals of each half school year. This test has been standardized and is one used often in such a testing program and is considered reliable; therefore, results obtained here should be considered

reliable.

Results showed a difference in achievement between the white and Negro children--in favor of the white. Each test in this group was treated separately as if it were an individual test and the median educational age found for each of the six tests. In every instance, the median white child scored higher than did the median Negro--without a single exception and the difference in favor of the white child ranged from one year and four months in Arithmetic Computation to a ten months difference in Word Meaning, the test on which the Negro most closely approximated the score made by the white pupil. The median educational age for white pupils ranked from 12², Arithmetic Reasoning which was the highest, to 12¹ for Arithmetic Computation, 11¹¹ for Paragraph Meaning, 11¹⁰ for Word Meaning and 11⁸ for both Dictation and Language Usage. On all six tests, it will be noticed that Louisville children's achievement scores fell below 12⁴, the standard age given for 6A pupils and a fact to be further discussed in this summary. The Negroes' median educational ages ranked from 110 which was the highest (Word Meaning)

to 10^{11} on both Paragraph Meaning and Arithmetic Reasoning, 10^9 for both Dictation and Arithmetic Computation, and the lowest was 10^7 for Language Usage. These findings tend to prove that Louisville children, both white and Negro, have achieved less in Language Usage than any one of the other tests of this battery, since that score was the lowest made by children of both races. Likewise spelling, or Dictation, as the test is termed on the Stanford Achievement series, showed next lowest in rank. On Dictation, white children's median educational age was 11^8 the same as Language Usage and the lowest score made on the tests, and the median educational age for Negroes was 10^9 the second lowest score made by Negroes on this group of tests. However, the fact that both races compared similarly on the two tests where median ages were lowest, does not prove that they compared similarly on tests where median educational ages were found to be the highest, for white children ranked highest on Arithmetic Reasoning 12^2 and here most nearly approximated the standard norm, while Negroes scored highest on the Word Meaning test which was second lowest for the white pupils. These results are interesting and

are similar to findings made in other investigations.

In 1928-1929 a study was made in Richmond, Virginia, testing 137 whites and 302 Negroes in Grade 7H using eight subjects of the New Stanford Achievement Test. They found that the white children scored higher on all tests than did the Negro, the same finding made on this particular study. In Richmond, however, slightly different parts of the Stanford Achievement Tests were used but findings are somewhat comparable. The survey made in Richmond, Virginia, 1928-1929, showed that the median achievement scores of Negro children approximate the median achievement scores of the whites in reading by 78.8 per cent, arithmetic 82.6 per cent, spelling 93.6 per cent, language usage 88.3 per cent, history and civics 84.7 per cent and literature 80.9 per cent. On the average, for all subjects in this grade, the median Negro scored 84 per cent of the achievement of the median white.²

On this Louisville study, we find that the Negro

2. Wilkerson, Doxley A., "Racial Differences in School Children," Journal of Negro Education, 3:453-477 (July 1934).

children's median achievement scores approximate the median achievement scores of the whites most closely on the Word Meaning Test. Here the Negroes' median achievement score approximates the median achievement score of the white by 86.5 per cent, and we find the median Negro approaches the median achievement score of the white in Dictation by 84.7 per cent, in Paragraph Meaning by 84 per cent, in Arithmetic Reasoning and Language Usage by 82 per cent and in Arithmetic Computation, 80 per cent. On the average for all subjects in this battery of tests the median Negro scored 83.2 per cent of the achievement of the median white. There is only a difference of .8 per cent (84-83.2) between the average score of the median Negro and the median white in Richmond, Virginia and the average score of the median Negro and the median white in Louisville, Kentucky although the various subjects show differences in achievement between the two districts where tests were given.

Results showed, too, that when Louisville is divided into the nine junior high school districts, even the lowest white district is superior in achievement to the Negroes as a whole. This fact is

significant, but more significant is the fact that the range between the highest white junior high school district and the lowest white district is greater than the range between the Negro and the white, thus showing that many factors other than race enter into achievement scores. However, when the median achievement scores of the lowest white district were compared with the median achievement scores of the Negroes, the Negroes most nearly approximated the scores of the whites in Dictation where the difference was only four months; for this test was the one where both the Negroes as a whole and pupils from the lowest white district made the lowest achievement median score. Here the whites scored 11^1 and the Negroes 10^9 . The greatest difference was found in Arithmetic Reasoning where the median achievement scores made by whites in the lowest district was 11^{11} and for the Negroes 10^{11} , a difference of one year.

When we consider the wide range of median achievement scores made on this test by the various white districts, we find on one, Language Usage, the range between white districts is from 11^0 to 13^{11} ,

a difference of three years and eleven months as compared with the biggest difference of one year four months when the Negroes as a race are compared with the whites as a race. On every test given these big variations among the white districts when compared with each other, are greater than the variations found when the Negroes are compared with the lowest white district and when the Negro is compared with the white as a race. Consequently, these findings make one conclude that other factors such as environment, social status, etc., play a role as great or greater than this racial question.

Throughout the six tests both Negroes and whites fall below the standard grade level of 12⁴, but there are individual Negroes who have scores just as high as individual whites and whites with scores as low as the lowest Negro. The percentage of white children who attained grade level or above was greater than the percentage of Negro children who attained grade level in every instance. In fact, the percentage of white children who attained grade level or above was approximately three times as great on three of the tests,

Paragraph Meaning, Arithmetic Reasoning and Arithmetic Computation as compared with the Negroes and twice as great on each of the other three tests. There is no question, therefore, that on this Stanford Achievement Test the whites were superior to the Negroes regardless from what angle the comparison was made.

The question of sex differences was not found to be significant between Negro girls and Negro boys although the Negro girls' scores were about two months higher than the scores for Negro boys. White girls ranked higher than white boys on five out of the six tests, however, the difference was not significant on the Paragraph Meaning and Word Meaning but was significant on Dictation, Language Usage and Arithmetic Computation. White boys ranked higher than white girls on one test, Arithmetic Reasoning, but the difference was not significant. On various other tests given throughout the country, girls have been found to achieve slightly more than boys between the ages nine to fifteen, probably because they mature earlier.

And now to clarify the results made in this study concerning the achievement of Louisville children

with relation to the standard age 12^4 given for children in 6A. It would seem that Louisville children are far below average achievement since they scored below the 12^4 norm on every achievement test, but conclusions here show that the chronological age is a factor in interpreting this achievement.

If Louisville children in the first month of 6A were 12^4 chronologically and their educational ages were below 12^4 on every one of the six achievement tests, that fact would be most discouraging, but these findings show different results.

The median chronological age for all white pupils in Louisville taking this Stanford test was only 11^9 , or seven months below the 12^4 norm given as the standard age of children in the grade for this test. On four out of the six tests the median educational age is greater than their median chronological age, and averaging all the educational ages on the six tests, we find the median educational age of 6A white children of Louisville in February 1938 exceeds their median chronological age by a little more than one month. In other words, even though

these children fall slightly below the standard norm for educational ages made on achievement tests, their median educational ages are higher than their median chronological ages. Thus, their achievement is actually superior to their chronological age.

The median chronological age of 6A Negroes in Louisville in February 1938, was found to be 12^0 , four months below the standard age. Even though their average median educational age is only 10^{10} as compared with the median educational age 11^{10} of the white, the fact that they are younger than the 12^4 average makes the picture somewhat better. Instead of being one year and six months behind the average age norm, the Negro is only one year and two months behind his own median chronological age. Unlike the white, there is a big discrepancy between the Negroes' median educational age and median chronological age. However, the fact that approximately three-fourths of the white pupils and three-fifths of the Negroes were below the standard age level for the grade is significant in interpreting these results.

The children from the lowest white district

have a median chronological age of 12⁰, the exact median chronological age of the Negroes, but the average median educational age of the white children in the lowest white district is 11⁵ as compared to the 10¹⁰ for the Negroes, or a difference of seven months in favor of the whites from the lowest district.

Data presented above indicate that white children used in this study entered the junior high school younger than the Negro. For the white, the average median educational age was superior to his median chronological age, but the average median educational age for the Negro was below his median chronological age. The median chronological age of the white district was the same as the median chronological age of the Negro, but his median educational age was seven months greater than that of the Negro. Therefore, these data indicate that white children achieve more for their chronological age than do Negroes.

These facts show that there is a greater difference between the median chronological age of children from the nine white junior high school districts than there is between the Negroes and the whites as a whole. The span for white districts is

from 11⁶ to 12² and for Negroes and whites as a whole is from 11⁹ to 12⁰. Therefore, we find a five months greater difference between the median chronological ages of white children living in various districts than between Negroes and whites when compared racially.

The data used in this thesis again show that many factors other than race are indicative for achievement and over-ageness.

White boys enter junior high school one month older than white girls. The median chronological age for white boys in 6A is 11⁹ and for white girls 11⁸. Negro boys enter three months older than negro girls. The median chronological age of negro boys in 6A is 12² and for negro girls 11¹¹. In both races boys enter junior high school slightly older than girls.

All the foregoing conclusions show white children scoring higher on the intelligence test given, achieving more for their chronological ages, and entering junior high school at an earlier age than Negroes. These conclusions also show the lowest white district to be superior to the Negroes as a whole but show a greater degree of difference between children in the nine white districts than between

Negroes and whites as a whole. Therefore, the findings do not present themselves as an instructional problem to be solved between races, but rather a problem whose solution must be found in studying individual differences.

These intelligence and achievement tests which were administered can be used as a guide for remedial instruction. A teacher, who has such a record for a child, is better adapted to prepare instruction to meet the pupil's individual needs; for in a city as large as Louisville each district represents a different community and these data would tend to show that the Negro district is just another of the diversified communities of the city.

The problem before the teacher is to understand all that is possible about the child she is teaching and to approach him from the point she finds him when he comes under her instruction. Any test or set of tests which can act as a guide for her is most helpful; for, at the best, this teaching of individuals and increasing their cultural background, reading ability, and social experiences, which all make for intelligence and achievement, is a difficult

one. This dynamic problem of the enrichment of individuals is the task before the public school teacher, rather than the task of solving the causes for racial differences.

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