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I hereby recommend that the thesis prepared under my supervision by Mary Roberts Crowley entitled A Comparison of the Academic Achievement of Cincinnati Negroes in Segregated and Mixed Schools be accepted as fulfilling this part of the requirements for the degree of Doctor of Philosophy in Education

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A COMPARISON OF THE ACADEMIC ACHIEVEMENTS
OF CINCINNATI NEGROES IN SEGREGATED AND MIXED SCHOOLS

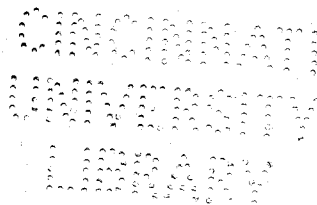
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by

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MATERIALS USED IN THE STUDY

A. Intelligence Tests

1. Record Booklet for the Stanford Revision of the Binet Simon Tests, as described in Terman's, "The Measurement of Intelligence," Boston, Houghton Mifflin Company, 1916 and 1922. Obtained from The World Book Company, Yonkers-on-Hudson.
2. Terman, Lewis M. The Measurement of Intelligence. Boston: Houghton Mifflin Company, 1916, 1922.
3. The Dearborn Group Tests of Intelligence Series II, General Examinations, C and D for Grades IV-XII (Revised edition) by Walter F. Dearborn. Published by J. B. Lippincott Company, Philadelphia, 1922.
4. Manual of Directions for Giving and Scoring the Dearborn Group Tests of Intelligence, Series II, Revised Edition. General Examinations C and D for Grades IV to XII.
5. Scoring Card for General Examinations C and D, Series II, Revised Edition, of Dearborn Group Tests of Intelligence.

B. Academic Tests

1. New Stanford Achievement Test by Truman L. Kelley, Giles M. Ruch, and Lewis M. Terman. Advanced Examination: Form X for Grades IV to IX. Published by World Book Company, Yonkers-on-Hudson, 1930.
2. Guide for Interpreting (Revised) New Stanford Achievement Test, Forms V, W, X, Y, Z, Op. Cit, 1929.
3. Standardized Oral Reading Paragraphs by William S. Gray. Published by the Public School Publishing Company, Bloomington, Illinois.
4. Directions for Scoring Test Papers (Gray's Oral Reading Test), op. cit.

5. B. Score or Basal Tables of Grades for which Attainment Test Scores are Standard (Gray Oral Reading Test), op. cit.
6. Morrison-McCall Spelling Scale for Grades II to VIII, by J. Cayce Morrison and William A. McCall (including Spelling lists, General Directions and Interpretation), published by the World Book Company, Yonkers-on-Hudson, 1923.

C. Rating Scales

1. Chart for Diagnosing Faults in Handwriting by Frank N. Freeman, The Riverside Press, Cambridge, Mass., 1914.
2. Norms for the Handwriting Scale, found in "The History of Handwriting," by Frank N. Freeman, Riverside Educational Monographs, Boston, Houghton Mifflin Company, 1914, p. 150.
3. Rating Scale for School Habits, by E. L. Cornell, W. W. Coxe, and J. S. Orleans. Published by World Book Company, Yonkers-on-Hudson, 1927.
4. Rating Scale for School Habits, Manual of Directions, by E. L. Cornell, W. W. Coxe, and J. S. Orleans. Published by World Book Company, Yonkers-on-Hudson, 1927.

CHAPTER I

THE PROBLEM AND ITS SETTING

A. Introduction

Many studies have been made of school buildings, equipment, administration, curriculum, the academic and professional training of teachers, the enrollment and attendance of pupils in primary, elementary, secondary and higher schools. These have in no wise lost their importance but such subjects are more and more being related to the child, whom educational psychology has pushed to the fore in recent years. Plans, policies, ideals and objectives take shape in reference to the child. Free opportunity for the development and expression of every child to the extent of his ability is universally recognized to be society's obligation to him. This principle presumes a careful study of every child in the community. The best growth of the child becomes the goal of school procedure. What environment, what equipment, what method, what teaching, what learning, what pupil association will help him to develop his latent capacities and to contribute his best to society? With these questions in mind the educator and interested layman should approach present conditions and suggested changes.

A native-born American, the Negro child challenges attention. Under what conditions may his native inheritance be nurtured to the highest

good of himself, of his race, and of society? What form of society is conducive to the full development of the colored child? What school conditions encourage his growth and creative expression? Do present conditions promote his finest development?

Segregation has long been imposed upon the Negro in the social, economic and industrial world of the south and of most of the north. Is it justifiable in education? Does the segregated school offer the best conditions for the Negro child's full growth and expression? These questions open up a field for investigation, but before pursuing them it is well to pause and to ask: What is growth, that it is the test of conditions surrounding the child?

Educators of today define growth in terms of broader personality, firmer character, finer attitudes, larger interests, richer thought life, more practiced skills. These objectives have always been regarded as important but the responsibility of realizing most of them has been delegated to the church and the home. Recent school literature places this responsibility in the hands of the school and the progressive teacher includes them all in her program. Character and personality traits, attitudes and interests are found listed on school cumulative record cards. Report cards call the attention of parents to their children's habits and seek their cooperation in nurturing their proper growth. Everywhere social qualities are being recognized as objects of training in the school, but as yet there is no generally accepted terminology and there are no uniform methods of teaching them.

Some effort has been made to measure them, notably in a recent study by Wright, "Effectiveness of the Activity Program and the Traditional Program as Methods of Primary School Procedure."¹ In it she developed a "Scale for Attitude and Habits for Primary Grades."

Other scales have been devised and have been found helpful, but so far their usefulness has been largely limited to the field of abnormal rather than normal psychology and applied to problem pupils rather than to normal school children.

On the other hand, the thought lore and skills which civilization has accumulated and tested in the past have been organized into a curriculum of academic subject matter. History, literature, geography, ability to read, write, spell and perform arithmetic processes, are expected of every child and the school is traditionally responsible for teaching them. Methods may change and curricula may be reorganized, but in general "academic subjects" are a fairly constant body of ideational matter and skills. Standards of accomplishment and instruments of measurement have been devised for these and have been widely accepted and used by schools in carrying out their academic program.

Of the many phases of pupil growth suggested above, that of academic progress has been selected for this study of the Negro child.

Does he make normal progress in the segregated school and does he make

¹ Pearl Wright, "Effectiveness of the Activity Program and the Traditional Program as Methods of Primary School Procedure." Unpublished Master's Thesis, Teachers College, University of Cincinnati, 1922.

better progress in it than he would if educated with white children? No experimental evidence has been produced hitherto on this question but many claims have been made for and against the segregated school which will be canvassed during the course of the following survey. First will be discussed current opinion regarding the segregation of Negro school children. After that, a critical analysis of studies of the segregated Negro school will be made.

B. Background of Opinion and Thought

Segregation has been a topic of discussion in the United States since the institution of slavery was established. Many whites have opposed free mixing of the races. Negroes and a few whites consider the Negro a free and independent individual who should be given rights and privileges equal to those of Aryan citizens.

Within a few decades something of a compromise in the two positions has been attained. Negroes remain in segregated quarters but a few of them have modern and convenient homes. Many Negroes find only menial tasks open to them but a small percentage of their number have entered professions and industry. In large areas they have inferior schools and are refused contact with white educators, but in most quarters of the south and north schools are provided for them. This is an advance over their condition at the time of the Civil War.

Miller observed in 1908:

Forty years of Negro education have accomplished certain definite results, and suggest certain definite needs. In the first

place it has settled for all time the negro's capacity to comprehend the rudiments, as well as the higher reaches of knowledge and apply them to the tasks of life. The race which was once denied the possession of an educationable mind is thus proved to be responsive to the same intellectual stimulus as the great Aryan race. ²

Wood wrote from a first-hand study of the Negro in Chicago:

A frequent contention is that colored pupils and white pupils would progress faster if they had separate classes and different methods of teaching. This view is disputed.

"In scholarship, ability to learn and application and class work, the colored pupils average up with the white pupils," said a principal who has had experience with thousands of both races in the last ten years. ³

Some people admit the Negro's educability, while others doubt it. Still others are interested in racial differences. Some students hold that the mentality of the Negroes is inferior to that of whites, and the army tests seem to point in that direction. Other students disagree with this. Reuter says, after a careful inspection of the results of the army tests:

A little critical examination of the tests and their results seem to show that the findings are somewhat less conclusive than is commonly believed and that the differences found are not inevitably to be accounted for in terms of the innate inferiority of the Negro people. ⁴

He shows that "the difference in schooling is strikingly parallel with the scores made by the different types of recruits," and points out that:

² Kelly Miller, "Forty Years of Negro Education," Educational Review, XXXVI (December, 1908), 494-495. Kelly Miller (Negro) was formerly Dean of Howard University, Washington, D. C.

³ Junius B. Wood, The Negro in Chicago. A First-hand Study. Reprinted from the Chicago Daily News, issues of December 11 to 27, 1916, p. 21. Junius B. Wood (white) is a reporter on the Daily News staff. He is now in Russia.

⁴ Edward Byron Reuter, The American Race Problem, p. 86. Philadelphia: Thomas Y. Crowell Company, 1927. Edward Byron Reuter (white) is Professor of Sociology, Iowa University, Iowa City, Iowa.

In all cases the literate members of every race made a better showing than the illiterates. Irrespective of the section of the country the literate Negroes ranked higher than the illiterate whites. The northern Negroes very greatly surpassed the Italians in America. In the Alpha tests the New York Negroes made approximately the same ranking as the Alabama whites, while in the Beta tests the New York Negroes ranked approximately nine points superior to the Alabama whites. That is, the New York Negroes, on the basis of the tests, in whatever the tests measure, are equal to or slightly superior to the whites of Alabama. . . . It is evident that the better ratios of the northern compared with the southern Negroes are due to increased education, greater freedom, and social contact, greater incentive, higher economic status and to other elements of the social environment. One of two things is clear: either the Army tests were a measure of educational and social opportunity rather than a measure of innate and unalterable racial traits, or educational opportunity is so clearly a determining factor in the case that the tests mean little or nothing as an indication of relative racial mentality. . . . What has been done is to demonstrate that the customary proofs of racial inequality are scientifically worthless. 5

Pintner arrives at conclusions somewhat different but equally to the point when he says, after a survey of many psychological studies:

At any rate such differences as exist are not great enough to call for any differential educational treatment of the two racial groups. The overlapping is so great that there is no psychological justification for different schools. If such are thought desirable they must be defended on other grounds than those of intellectual differences between the two races. 6

With^a a relatively short time schools have been provided for the Negro child in both the north and south, and whereas it was generally

5

Edward Byron Reuter, op cit., pp. 86, 90, 91.

6

Rudolf Pintner, "The Individual in School: I. General Ability." The Foundations of Experimental Psychology, Chapter XVII, p. 683. Edited by Carl Murchison, Worcester, Massachusetts, Clark University Press, 1929. Rudolf Pintner (white), Professor of Education, Teachers College, Columbia University.

granted that Negro mentality was inferior the assurance that it is is now questioned and a widely accepted aim of education is to provide equal educational opportunities to all races. Can equal educational opportunities be offered? Are separate schools advisable? Cubberley answers in the affirmative. In his ideal educational state he has separate elementary and high schools in cities of sufficient Negro population. He says:

Any county or city school-district may also establish separate schools for children of the Negro race, when there are enough of such to make such separate instruction advantageous, though when such separate schools are established, the negro children shall be given equal advantages in term and course of instruction with children of the white race in the same city school-district or county subdistrict, though the course of instruction need not be the same for the two races. A special secondary school for the instruction of children of the Negro race may be established by any county or city school-district authority, acting separately or in cooperation, when there are enough secondary-school pupils of such a race to make such instruction possible and desirable; or either district may contract with the other to provide secondary-school facilities for any or all of its Negro children.

Thus Cubberley would provide equal educational facilities to the Negro race and he considered the segregated elementary and secondary school ideal means of doing so. As to the ultimate question regarding the exact influence of the segregated and the mixed schools upon both the white and the Negro child there has been little study. Many opinions have been expressed which may be classified under three schools of thought.

Three Schools of Thought Regarding School Segregation.-

At present society may be divided roughly into three groups in its thinking
Ellwood P. Cubberley, State and County Educational Reorganization, pp. 83-84. New York: Macmillan Company, 1914.

on this question. (1) Some white educators and many laymen accept segregation as a social necessity for the white race, opposing change. (2) Some white and some Negro thinkers consider segregation undemocratic in principle and oppose it. (3) Some Negroes, while regarding segregation as undemocratic, positively desire school segregation as a valuable means of Negro pupil development. The first and third groups should be recognized as distinct, since they are prompted by racially opposite motives. The former has been moved by the customary consideration of the white school child, the latter by a new race-conscious interest in the Negro child.

The first school adheres to the principle of segregation. It is largely negative in its stand, opposing change in the existing social order. It appears to derive its attitudes from those of the slave days. Socially, school segregation, along with segregation in living quarters and other forms of segregation, was supposed to teach the Negro "his place" in relation to the white man. Expression of this is so commonly encountered as to need no evidence here. This was supplemented by economic and political factors which have not been so well recognized. Alexander discusses this phase of the relationship when he says:

A popular misconception is that the old South was exclusively or at least by a large majority, of the slaveholding class. The facts are that only one-fourth of the white population in 1860 were of this class. However, the political, social and economic life of the ante-bellum South was in the control of the slaveholding minority. Students of southern life have never given sufficient attention to this fact. The institution of slavery had kept this white majority from wealth, culture, or political experience. "Poor whites" they were called, and, while conditions among them varied, the non-slaveholding white southerner was as

a class, backward and unprivileged. The outcome of the Civil War brought as great a change to him as to the slaveholder and the slave. At last, this white man might enter free competition for economic and cultural opportunities. He soon came into political power. By industry he now could lift himself out of the submerged class. Southern life today is largely in the control of the descendants of this non-slaveholding white group. This has a distinct bearing on race relations, for the struggles under the old system gave these whites a distinct dislike for the Negroes. They understood that slavery was responsible for their hopeless economic condition. Not infrequently the slaves were better fed and better housed. The lack of any adequate school system kept the non-slaveholding whites in ignorance. In most instances, slaves took from them the chance to do skilled labor and the presence of a slave labor kept all wages at the starvation point. Their hatred of "Niggers" grew out of a hopeless economic struggle and their lack of education made them the easy victim of unreasoned fear. Slavery left to the south two backward groups of people, constituting a large majority - freedmen and poor whites. The task of their development has been a slow and difficult one, the progress of the whites always keeping a little ahead of the Negroes.

With the passage of slavery, this white man began to rise into new political and economic power. In this is the explanation of the most difficult aspects of the southern political and educational backwardness. The fear of Negro political domination is the old economic fear manifesting itself in a new form, and the reluctance to provide Negro schools, due in some degree to poverty, sprang more largely from the same old antagonism. There is, therefore, a new south in the sense that a hitherto politically unimportant section of the white population is in control. This has an important bearing on race relations because of the traditional antagonism of this present controlling class for Negroes.⁸

Here we have a picture of some members of this school who are dominated by fears and hatreds because of the lack of opportunity which they and their children have suffered. Others of this school have known the Negro in a more friendly way, as nurse or cook or helper. They would not consider mixing the races in school but they are frequently

8

Will W. Alexander, "The Negro in the New South," The Annals of the American Academy of Political and Social Science, CXXX (November, 1928), 146-147. Will W. Alexander (white) is Director of the Commission on Interracial Cooperation, Atlanta, Georgia.

concerned with Negro education and are making efforts to improve it. To all of the members of this group the segregated school is the only satisfactory one for Negro children.

A second group of thinkers, composed of both Negro and white students, is opposed to segregation in every form, in school as elsewhere. Keen personal interest and feeling have been expressed by a number of them on the matter. The recency of the institution of slavery with its deadening superior-inferior psychology makes it to them the one important problem before the Negro race today. They know the difficulty of escape from the old order, they fear a return to it, they attack any move which resembles it or sounds like it. Segregated schools are to them only a repetition of evils too lately outgrown and so have no value. Porter has discussed this group and from her thesis the following arguments are taken:

Pickens ⁹ says, "The race problem is not now solely a problem of the South. We must seek other methods - in some cases the opposite methods. . . . This system has solved no problems and can never solve any problem. We must assimilate the Negro. Blood assimilation is not necessary. But there must be free assimilation in civil processes; in industry, in economics, in education, in politics. Segregation in public and industrial estates is indefensible, politically and economically." ¹⁰

⁹ William Pickens, "The Negro and the Community," Opportunity Magazine (August, 1924), 229. William Pickens (Negro), former Dean of Talladega College, now with National Association for Advancement of Colored People.

¹⁰ Jennie D. Porter, "The Problem of Negro Education in Northern and Border Cities." Unpublished Doctor's Thesis, Teachers College, University of Cincinnati, 1928. Jennie D. Porter (Negro), Principal Harriett Beecher Stowe School, Cincinnati, Ohio.

Calverton ¹¹, Eleazer ¹², and Dubois ¹³, writing in Negro periodicals, note the trend toward educational segregation with apprehension. They fear a return of the "Jim Crow Car" and other forms of segregation. They consider the institution undemocratic and resent having it forced upon the Negro. The Chicago Defender ¹⁴ holds ambitious race leaders responsible for separate schools in the north and criticises their lack of foresight in encouraging segregation. The Union ¹⁵ fears that segregation on cars, in residential districts and in public places will follow separate schools and argues that tax-supported institutions have no right to draw the "color line." Harry Smith ¹⁶

¹¹ V. F. Calverton, Opportunity Magazine, Vol. V, (January, 1927), 23. V. F. Calverton (white) contributes to the Opportunity Magazine, a Negro monthly.

¹² Robert B. Eleazer, "Trends in Race Relations in 1926," Opportunity Magazine, Vol. V, (January, 1927), 26. Robert B. Eleazer (white), contributes to the Opportunity Magazine.

¹³ W. E. B. Dubois, "The Tragedy of Jim Crow," The Crisis, (August, 1923). W. E. B. Dubois (Negro) is a writer and contributor to The Crisis, a Negro weekly.

¹⁴ Chicago Defender, "These Jim Crow Schools," (February 12, 1927). R. S. Abbott (Negro) is editor of The Chicago Defender, a Negro weekly.

¹⁵ The Union, "Separate Schools," Vol. XX (October 14, 1926). W. P. Dabney (Negro) is editor of The Union, a Negro weekly, published in Cincinnati, Ohio.

¹⁶ Harry Smith, "Separate Schools," The Cleveland Gazette (October 14, 1926). Harry Smith (Negro) is editor of The Cleveland Gazette, a Negro weekly.

holds segregated schools responsible for racial troubles in Cincinnati schools and notes that segregated schools are illegal in Ohio.

A number of these thinkers are studying segregation in terms of the harm it may be to both white and colored people. They oppose enforced segregation as an undemocratic and narrowing form of social organization detrimental to both. They posit free relations among groups as a fundamental principle to the greatest and fullest growth of all individuals and of society. Segregation of the Negro is to them one of the many social problems confronting the world, which requires the cooperation of all for its solution.

Reuter says:

Any degree of exclusion results in cultural retardation, since no group however talented may hope to produce a galaxy of genius that would enable it to progress at a rate comparable with others not limited to copy from their own inventive genius. The cause or type of isolation does not alter the end result. Illiteracy is not less significant than physical isolation. . . .

The existence of a race conscious attitude operates to retard racial development by stimulating the growth of separate institutions and by centering attention upon inferior models. The institutions developed by the Negroes are more or less faithful copies of white institutions but, in the nature of the social process, they will be inferior to the originals. . . . Separate Negro schools provide a livelihood for teachers who otherwise would be forced into less congenial occupations but they also mean inferior school facilities for Negro children. Separate institutions are inferior institutions. They are manned by persons incompletely assimilated to modern culture and in the present development of the race they cannot be adequately supported. 17

17 Edward Byron Reuter, *The American Race Problem*, pp. 411-412. Philadelphia: Thomas Y. Crowell, 1930. *Assistant Professor of Sociology, University of Iowa, Iowa City, Iowa.*

Cools argues: "The best results are obtained with a mixed faculty. To resort to any of the two extremes is a bad policy. The child needs contact with both groups if he is to become a broad-minded citizen." 18

Again he says:

In Ohio, Pennsylvania and Indiana there is a demand for black teachers in schools attended by black children. The state of Pennsylvania recently took over Cheyney, a Negro normal school to make it a state's training school for black teachers. In Ohio, the far sighted black people, through legal procedure, have blocked the attempt to establish separate schools in Springfield and other communities. The school board of Indianapolis has given the colored people of that city a "colored" high school. News comes from Philadelphia that segregated schools have been established. In every instance the agitation for the establishment of segregated schools has been traced to ambitious blacks who are looking for jobs as principals and teachers.

If one were to sift this movement for the establishment of segregated schools in northern communities, one would find that the leading spirits responsible for it are southern blacks and whites who have drifted north. The whites with their acquired aversion to mixing legitimately with black people, lose no time when they reach the north in creating sentiment favorable to segregated schools. Their sinister propaganda finds fertile soil in the minds of the blacks who for three generations have been nurtured on the segregated school system. With little persuasion they are persuaded to take the initiative. It is then made to appear that the demand for separate schools comes from the black people themselves. There are two inherent evils in segregated schools. In the first place, it has been proved that the establishment of negro schools brings about a lowering of the standard of the schools in regard to: (1) discipline, mental and physical, (2) teacher's efficiency, (3) physical equipment. One will find the reason for the southern black man's advocacy of segregated

18

Gordon Victor Cools, "New Tendencies in Negro Education," School and Society, Vol. XX (April 17, 1926), 485-486. Gordon Victor Cools is a graduate of the University of Illinois and Iowa, member of the Cooperative League of America, American Academy of Political and Social Science, American Economics Association, Fellow of the Royal Economic Society. He has taught five years in Negro colleges and universities.

schools in the fact of the lowering of the efficiency of the teachers. Few, if any, black teachers from the south are qualified to teach in northern public schools. In order to qualify they must subject themselves to a long period of training in northern universities. This additional training is not required of them in order to teach in a segregated school. In order to secure for themselves a soft berth at a minimum cost in training they consciously become the tools of the propagandists, who are opposed to mixed schools. . . .

The new tendencies in Negro education, that is, the concerted attempt to drive white executives and teachers from the so-called Negro schools, and the establishment of segregated schools in northern communities, are the most disastrous in the field of Negro education since its inception. They are the greatest menace which confronts those who are interested unselfishly in that branch of education. To deprive the black youth, especially of the south, of the only opportunity to come into contact on a plane of equality with white men and women of culture and refinement, in order to furnish jobs for semi-illiterate presidents, principals and teachers, is a dangerous and costly experiment. 19

The arguments of the entire second school are aimed primarily at the older order of segregation which gave an inferior school building, shorter school year, poorly trained teacher, limited or no equipment, and, in short, less opportunity for the Negro child to progress than for the white child. Dewey refers to the old type of segregated school in his discussion of "Our Illiteracy Problem:"

. . . . It is a shock to read in the census reports that native born illiterates outnumber the foreign born. The explanation of course is found in the large group of native born negroes who have not enjoyed the facilities of schooling.

Negro illiteracy is only one part of the whole problem in this country. Unless there was a general negro question, social, economic and political, there would be no such excess of negro illiterates as now exist. Racial prejudice, fear of racial equality, dread lest education would render the black population "upstarts" who would clamor for the use of the vote, and make them less tractable as cheap labor, are definite factors in maintaining a large illiteracy in our black population.

¹⁹ Gordon Victor Cools, op. cit., pp. 485-486.

Educational facilities in the South for negroes are increasing; some states have made notable advances.

There are seventeen states that maintain separate schools for negroes. The illiteracy of negroes in these states ranges from $12\frac{1}{2}\%$ to 38%, much larger in every case than that of the whites.

The average cost of schooling of the blacks in these states is \$10.00 per capita while almost three times that sum (\$29.00) is spent on each white pupil. There are forty-four negro children to the teacher as against a little more than thirty among the whites. The school year for the latter averages thirty days longer than for the former. About two-thirds of the negro pupils are in the first three grades, as against less than one-half of the white pupils.

Less school time, more pupils to a teacher, poorer buildings and equipment, more poorly paid and therefore less well equipped teachers, children leaving school when they have received only the rudiments of teaching - these are the factors that control the present situation and that make for greater illiteracy among the blacks. ²⁰

The second group of thinkers find in the conditions described by Dewey their evidence for ending existing segregation and for preventing its rebirth in any form. They point to the mixed school which they believe will have better trained teachers and which offers the stimulation of interracial contacts which they deem necessary to the best contribution of both races.

The third group consists largely of a body of practical and moderate Negroes who agree with the second group that segregation of the order pictured by Dewey should not be tolerated and that the first group is wrong in perpetuating it. They further agree that in a model democracy, segregation should not exist. As society is organized at present, however, they find certain values which commend the separate

²⁰ John Dewey, "Our Illiteracy Problem," Pictorial Review, Vol. XXXI, No. 11 (August, 1930), 28. John Dewey (white) is Professor of Philosophy, Columbia University.

school. Even in the older order of segregation, they see opportunity of developing in the Negro child love and respect for race, ambition to train for tasks open to him, and to prove his merit. In this way, they argue, will he secure the confidence of the white race and win equal opportunities in the end. Their movement began with Hampton and Tuskegee Institutes and some of their hopes have been realized. Segregation is not all of the kind described by Dewey. In a number of the northern and border cities, equal opportunity for Negro children under intelligent and well-trained teachers is one of the principles of the school system. This, it is claimed by the group, can best be given in the separate school.

One of the followers of this movement, Charles Campbell, points out the benefits of segregation in Catholic schools, in Jewish, Polish, and Italian neighborhoods and of smaller groups within these.²¹ He says that segregation here results in growth, power, culture. He thinks it the best known means of handling the problems of disorganization and readjustment, which attend the present transition period of Negro life.

Kelly Miller compares Washington Negroes with those of New York, Philadelphia and Chicago who are much more numerous and yet have less recognition as racial groups. He thinks that social segregation has gained a recognition for the Washington Negro which the others

²¹ Charles Campbell, "Segregation and World Groups." Detroit Peoples News, January 29, 1927. Charles Campbell (Negro) is an attorney in Detroit, Michigan.

have not. Illustrating his point, he describes the school system in the capital as follows:

The Washington Negro has the only complete school system in the country practically under his own control. Three of the nine members of the Board of Education are assigned to the colored race, who are supposed to see that the colored branch of the system suffers no disadvantage in comparison with the whites. The schools are divided into two grand divisions - white and colored in harmony with the understood and accepted policy of the community. The Superintendent is a white man under whose supervision both colored and white schools are operated on equal footing and along parallel lines. The first colored Assistant Superintendent is in charge of all colored schools and has complete jurisdiction in appointment, promotion and assignment of eight hundred teachers and officials. The colored teachers have the same rank and pay as the whites of corresponding grade and rank. The courses of study and standards of instruction are uniform throughout. In providing for school buildings there is no discrimination. Fifteen thousand negro children sit at the feet of these eight hundred teachers. The Washington Public School System is justly famous throughout the country.

The colored high and normal schools enroll over three thousand pupils above the eighth grade level. This number of secondary pupils cannot be approximated in any other city - not even in New York, Philadelphia or Chicago with a much larger total negro population. The faculties of these high schools have graduates from Harvard, Yale, Columbia and from every college and university in the North and West which does not limit the opportunity for an education and culture to consideration of race and color. There are four women Doctors of Philosophy from Yale, Harvard, Chicago and from the Sorbonne of Paris, France.

Howard University, the largest and best equipped institution for higher and professional education of the colored race is located at Washington. This institution has more than two thousand students from all over the United States and from foreign lands, pursuing courses that will fit them to stand in the high places of leadership and authority. The faculty of this institution comprises one hundred fifty professors and instructors. Howard University and the public schools together center about the city of Washington the cream of the intelligentsia of the negro race. 22

22

Kelly Miller, "Where is Negro Heaven?", Opportunity Magazine, December, 1926.

These references show what the third group is thinking and how it is working at the practical problem of Negro betterment in education. Fears of the limitations resulting from the old order of segregation are replaced by a constructive faith in a better future order and an eagerness for racial expression through the means at hand. Contrasted with Dewey's description of many segregated schools of the old order, they point to the Washington schools which offer equal opportunity to Negroes and Aryans alike, recognizing and following both Negro and white leaders. In them many of the ideals of modern segregation are realized.

A criticism of the Washington schools for Negroes which has been made by some members of this group is that they are undemocratic in principle. The Negro child attends his separate school, not because he or his parents so choose but because he is a Negro. These critics hold that this is contrary to the American spirit which evaluates an institution on the basis of the quality of its results, not its race or color. In view of the thought that has been given to the advantages and disadvantages of segregation, a number of studies of school segregation are of great interest.

C. Previous Studies of School Segregation Summary of Investigations

It is evident that not all the arguments advanced by the various schools of thought for and against Negro school segregation

can be true. Many of the statements made by different thinkers have suggested questions for study which have been followed out in investigations. Attention will be given to them here.

Feger's study concerned "Teacher Standards in Negro Schools."²³ She found, among other things, that "The efficient colored teacher schooled in the south and understanding the southern child has a wide field among Negroes who have migrated to the north and, further, that the Negro college and university is needed because it meets the specific needs of the race, offering racial inspiration." Comparative data are needed to determine whether Negro schools are preferable, and these cannot be had from her study, since mixed elementary, secondary and higher schools do not exist in most of the region studied.

Holloway, in her "Social Conditions Affecting Stowe Junior High School Girls,"²⁴ concluded that the very serious social problems existing could best be studied and the delinquent or pre-delinquent child could better be guided by teachers of the same race as their pupils. This she thought should be done in a separate school where sympathetic understanding may be combined with high academic standards. Her findings are based only upon a Negro school. A comparative study involving both Negro and mixed schools would be valuable.

²³ Hattie V. Feger, "Teacher Standards in Negro Schools." Unpublished Master's Thesis, University of Cincinnati, 1924. Hattie V. Feger (Negro) is a teacher in Stowe School, Cincinnati, Ohio

²⁴ Mary K. Holloway, "Social Conditions Affecting Stowe Junior High School Girls." Unpublished Master's Thesis, Teachers College, University of Cincinnati, 1928. Mary K. Holloway (Negro) is a teacher in Stowe School, Cincinnati, Ohio.

Granger, after making a comparison of Negro education in Northern New Jersey where Negroes attend mixed schools with that in Southern New Jersey where they are segregated in grammar grades, found a considerably higher percentage of Negroes entering and graduating from segregated high schools than from the mixed high schools. ²⁵ It may perhaps be assumed that school standards within the state are comparable and that requirements for high school entrance and graduation are similar. It is stated, however, that housing conditions in some of the mixed schools show discrimination against the Negro. The factor of intelligence is not mentioned. It must be assumed that children entering high school in the two sections of the state are of similar mentality and that they are similarly capable of achieving, academically, before Granger's conclusion that the segregated school functions better than does the mixed may be accepted at face value. Exact knowledge of assumed factors would determine more fully the truth of his contention.

Porter, in her questionnaire study, presents a number of pertinent facts regarding the enrollment and graduation of Negroes in high schools. ²⁶ A comparison of the number of graduates from Gaines High School (Negro) with those from all of the mixed high schools of Cincinnati since Gaines was closed in 1889, shows that:

²⁵ Lester B. Granger, "Race Relations and the School System." Opportunity Magazine, Vol. III (November, 1925). Lester B. Granger (Negro) is a contributor to the Negro monthly, "Opportunity."

²⁶ Jennie D. Porter, Op. cit.

"(1) During the twenty years from 1870 to 1889 inclusive, when the schools were separate, there were nine hundred fifty-five negro graduates from Gaines High School. The range of negro population for those years was from 5900 to 11,284.

"(2) During the twenty years from 1889 to 1909 inclusive, when the schools were mixed, there were ninety-five negro graduates. The range of negro population for those years was from 11,284 to 19,639.

"(3) There was a decrease of sixty negro graduates from mixed schools notwithstanding the fact that the increase in population almost doubled." 27

In short, Gaines, a small Negro high school, graduated more Negro students in one year than the five mixed schools have, in any year since the closing of Gaines in 1889. During the thirty years since that time, the Negro population has increased from 2.3% to 8.1% of the total city population.

Miss Porter describes the social and economic success of many graduates from Gaines High School, which may be considered evidence of the high type of academic, vocational and personal guidance provided by the school and of the intelligence of its pupils. In regard to academic standards, it would be difficult to compare Gaines with the mixed high schools after a lapse of forty years.

27

Jennie D. Porter, Op. cit., Chapter IV, pp. 46-56.

In a study of one hundred eminent Negroes selected from all professions and fields, Porter found that eighty-three attended separate public schools and fifty-four attended mixed colleges. ²⁸ She concluded that separate schools have contributed more to Negro education than have mixed schools, and that

(1) Children in a Negro school have lost nothing vital from lack of contact with white pupils;

(2) Standards of teaching and pupil accomplishment are not lower in separate schools than in mixed schools;

(3) Children from mixed schools do not make better college records than those from separate schools.

From replies to questionnaires sent to all of the large northern and border cities of the United States, Porter found that two cities which have separate schools had the largest number of Negro graduates and the highest Negro percentages of total number of graduates. ²⁹

(1) Washington, D. C., had 279 Negro high school graduates, composing 14.3% of the total number of graduates.

(2) St. Louis had 230 Negro high school graduates, or 12% of the total number of graduates in the city.

These facts cannot be explained by difference in Negro population in the two cities. Philadelphia, which had only 61 Negro

28

Jennie D. Porter, Op. Cit., pp. 46-56.

29

Jennie D. Porter, Op. Cit., Chapter III, pp. 31-45.

graduates from high school composing 2.5 per cent of the total number of graduates, has a total Negro population of 170,000 as compared with 125,900 in Washington, and a public school enrollment of 26,333 as compared with 24,529 in Washington. Detroit has the same total Negro population as St. Louis, but exceeds her in Negro school enrollment by 3000, while Los Angeles has a smaller total population than St. Louis but an equal number of Negroes enrolled in school. Her conclusion is as follows:

"4. Where data are available, they seem to show that a larger Negro enrollment and a larger number of Negro high school graduates come from cities which have both mixed and separate schools, or separate schools exclusively, than from cities with mixed schools exclusively. Taking all the cities into consideration, separate schools for Negroes appear more frequently near the Mason and Dixon line." 30

Conclusions. - Pechstein summarized the results of these studies and of Roberts' investigation of "The Negro Press as a Factor in Education" 31 and arrived at the following conclusions:

1. While all would prefer to have democracy in education, this goal has not been reached and is not likely to be reached in the northern cities studied, since separation of the races in all walks of life is operating and seems likely to continue.
2. The aims of education may be best realized by negroes in separate public schools. Especially can the features of school

30 Jennie D. Porter, Op. cit., p. 44.

31 Norton Samuel Roberts, "Negro Press as a Factor in Education." Unpublished Master's Thesis, University of Cincinnati, 1925. Norton S. Roberts (Negro).

and community life which form a large part of an effective educational program be best handled in separate public schools.

3. Greater inspiration, greater racial solidarity, superior social activities, greater retention, and greater educational achievement are possible for negroes in separate public schools than in mixed schools.

4. Finally, the ideal separate public school for negroes in northern cities will, under a staff of well-trained negro teachers, function in providing a closer parent-pupil-teacher relation as well as a clearer insight into the treatment of mental deficiency, social maladjustments, special disabilities, and irregularities in behavior.^{3 2}

Thus it may be seen that a beginning has been made in the scientific approach to this problem of Negro school segregation.

D. The Problem of this Investigation

Statement of the Problem. - From the many questions raised in this wide field of opinion and study a single problem emerged as most suitable for the present investigation. This may be stated as follows: What differences in academic achievement are found between typical Negro pupils educated in segregated schools and typical Negro pupils of identical grade, chronological age, and mental age, educated in mixed schools?

As stated, the problem is one of actual achievement of pupils in two types of schools, but the answer obviously bears upon the effectiveness of these schools. The more fundamental question answered to a considerable degree in this study is a comparison of

³² Louis A. Pechstein, "The Problem of Negro Education in Northern and Border Cities." The Elementary School Journal, Vol. XXX, No. 3 (November, 1929), 197-198. Louis A. Pechstein (white) is Dean of Teachers College, University of Cincinnati, Cincinnati, Ohio.

the effectiveness of the teaching given to Negro children by Negro teachers in segregated schools with the effectiveness of the teaching given to Negro children by white teachers in mixed schools. The experimental conditions provide for an equation of the children both as to chronological age and intellectual level and as to general social and economic status, and also of the teaching staff in the two types of schools as to professional requirements and salary.

The study has the advantage, accordingly, of being conducted under nearly ideal conditions as regards the nature of the segregated schools and the mixed schools investigated. It may be regarded as an attempt to evaluate an educational situation in which the segregated and the mixed schools have as nearly an equal chance to do effective work as they are ever likely to have.

It was hoped that in the solution of this problem something of a factual basis would be provided for the judgments of several groups interested in the two types of schools.

(1) Parents of Negro children and other members of the race are concerned with the question of the relative educational effectiveness of the two types of schools.

(2) School administrators must determine policy with reference to buildings, teaching personnel, equipment, curriculum, supervision, et cetera, to be provided for Negro children.

(3) Tax payers are concerned with the cost of a dual school system as against an individual school system. The educational

values of the two systems may be influential in determining the attitude of those who have to meet the costs.

It is recognized that the data presented in this investigation by no means give a complete basis for judgment regarding the relative merits of segregated and mixed schools. Social training, moral education, relationships between parents and children, development of tolerance and desirable racial attitudes, and other factors, may well be involved and are to be considered in a final determination of the questions here raised. These added factors have not been evaluated in any sense in this study. The study simply furnishes one type of evidence with regard to the general problem of evaluating the segregated school in contrast with the mixed school.

Definitions. - In order that uniform meaning may be attached to several terms used frequently in this report, they are here defined.

Negro: The term Negro is used as Quillon used it, "to designate blacks, mulattoes, quadroons, octoroons, - all persons in short who have an appreciable trace of Negro blood in their ancestry," ³³ and whose parents were both Negro.

Segregated school: The segregated school is here a school voluntarily attended by Negro pupils taught by Negro teachers and administered by a Negro principal.

³³ Frank U. Quillon, "The Color Line in Ohio." University of Michigan Historical Studies, Vol.III, p. 125. Ann Arbor, Michigan: George Wahr, 1913. See p. 31. ()

Mixed schools: The mixed school of this investigation is one in which Negro and white children are educated together, and in which white teachers and a white principal are in charge.

CHAPTER II

THE PROCEDURE

A. Introduction

The Plan.— The problem was to measure accurately the difference in academic achievement found between typical Negro pupils educated in segregated schools and typical Negro pupils of identical age and intelligence educated in mixed schools. It was carried out during the school year, 1929-1930, according to the plan stated below.

a. Subjects from the fourth, fifth and sixth grades who had always attended segregated schools were paired with those from fourth, fifth, and sixth grades who had always been enrolled in mixed schools, holding constant their grade, chronological age, mental age, and intelligence quotient according to the Stanford Binet scale. Consideration was later given to the environmental factors, school history and personality habits, regarding which information was obtained from the pupil and the school.

b. Educational tests were administered to all subjects, under constant testing conditions.

c. Detailed statistical comparisons were made of the results from the various educational tests.

d. A single summary comparison was made, in which the results

of all the academic tests contributed, after having been weighted in accordance with the judgment of a number of educators.

Conditions Favorable to the Investigation in Cincinnati.-

The plan as stated in the foregoing was an outgrowth of the problem of the investigation, which itself was suggested by a number of very favorable conditions existing in Cincinnati. Altogether they made Cincinnati an admirable place to carry on the study.

a. The policy of the Superintendent of Schools and the Board of Education of Cincinnati has been for years to offer equal educational opportunities to all children regardless of race, color, sex or creed. Negro children are admitted to any public school in the district in which they reside, on equal terms with other residents.

b. The segregated schools of Cincinnati reflect both southern and northern influence. (1) Douglass School was organized before the Civil War and was not closed when the other segregated schools were discontinued toward the end of the last century. It is well patronized and serves as an influential social center for the suburban Negro. (2) Stowe School originated in the modern industrial period. It began as a kindergarten for neglected Negro children who were found on the streets of Cincinnati during the time of a serious flood in 1913. For a time it was taught by a teacher without pay who is now principal of the school. Under her leadership it has grown in numbers to one of the city's largest schools, is housed in a new and well-equipped building and functions as a civic center in

the crowded downtown section of Cincinnati.

c. Segregation in Cincinnati schools is voluntary. Every Negro child has the choice of attending the mixed school of his school district or a segregated school. No Negro child may be forced to attend a segregated school.

d. Pupil requirements are the same for segregated and mixed schools. A Negro pupil, on transferring from a mixed to a segregated school or the reverse, is placed according to his record in the school previously attended.

e. Teacher standards are the same for mixed and segregated schools. (1) Academic and professional training requirements are the same for white and Negro teachers. (2) Teachers, both white and Negro, have the same supervision in teaching by white members of the Superintendent's staff. (3) The salary schedule and opportunities for receiving an increase in salary are the same for all teachers engaged by the Cincinnati Board of Education.

f. The Psychological Laboratory of the Public Schools functions for all of the schools of Cincinnati, regardless of color. Individual child problems are studied at the request of the schools. Group tests are given annually in all sixth grades and in other grades when requested. Psychological and academic tests are thus a familiar part of the school procedure in Negro and white schools.

g. The Cincinnati Bureau of Vital Statistics has complete birth records of all children born in Cincinnati since May, 1874, and

free access to the records was granted to the investigator.

h. The experimenter was known to the teachers and to many pupils in both the segregated and the mixed schools, and was familiar with conditions in the schools. This facilitated the many necessary adjustments which attend any testing program.

i. The city's attitude toward the Negro race is typical of Northern and Border cities, as found by Quillon, who says:

After studying conditions in Akron, a town of 60,000 inhabitants, Portsmouth with 20,000 people, Chillicothe with 60,000 inhabitants, Urbana with 10,000, Xenia with 10,000, Delaware with 8,000, Pomeroy with 6,000, Richmond and Syracuse with 2,000 each and Point Isabel with 200, I feel justified in asserting that the feeling against the Negro, as pictured in the Chapters on Cincinnati, Dayton, Springfield, and Columbus is the sentiment prevailing with few exceptions throughout the state of Ohio.

In general the Negro has nothing resembling equality with the white man in social life or in the industrial life. He is refused admittance to hotels, to theatres, to restaurants, to soda fountains; he is barred from labor unions and is compelled to make his living by odd jobs, domestic service, working as janitor, waiter, etc. In almost every city he is an inhabitant of the most undesirable outskirts.¹

Mr. Quillon considered Cincinnati typical of Ohio cities and likewise chose Ohio for his study because it was representative of northern and border states. Cincinnati may then be considered typical of northern and border cities.

B. Choice of Schools in which the Study was Conducted.

Restrictions and Criteria. - One of the few restrictions

¹ Frank U. Quillon, "The Color Line in Ohio, University of Michigan Historical Studies III, George Wahr, Ann Arbor, Michigan, 1913, p. 166. Frank U. Quillon (white) was Professor of Sociology, Knox College, and is now in Toledo, Ohio

placed upon the study by the Superintendent of Schools was that it be limited to a very few schools, in order to avoid as much interruption of regular school order as possible. In compliance with his wish, it was planned to make the investigation in the large and centrally located downtown schools. The advisability of such a choice is readily seen in view of the housing conditions of the city. Like most large cities, Cincinnati has a densely crowded business area with suburban home and smaller business zones about it. Topographically, the city consists of a valley bowl enclosed by abruptly rising hills. The most crowded section is in the bowl, while the hilltops are more thinly settled as a rule. Of the total number of fifty-two regular elementary schools and their sixteen colonies, seventeen schools and two colonies are located in the bowl of the city. Of these, one main school and two colonies are segregated. The remaining schools are scattered among the suburbs, in one of which is the other segregated school and its colony. The fifty schools and fourteen colonies not included in this enumeration are either entirely white or mixed. After a careful survey of the pupils enrolled in the downtown segregated school and its colonies, it was found that additional subjects were needed for the experiment. The suburban segregated school and its colony, being the only other available segregated schools, were added to the downtown schools. This gave an enrollment of 4475 Negro pupils, in attendance upon segregated schools, from which to draw subjects for the study. The statistics of

their enrollment of May, 1929, are shown in Table I.

TABLE I
ENROLLMENT IN CINCINNATI SEGREGATED SCHOOLS,
ACCORDING TO THE SCHOOL CENSUS OF MAY, 1929

School	A	B Colony of A	C Colony of A	D	E Colony of D	Total
Enrollment	1873	815	714	938	135	4475

It was hoped that the subjects to be selected would represent the total number of 4475 Negro pupils enrolled in the two segregated schools and their three colonies.

In choosing the mixed schools in which to find the experimental mates of the segregated school subjects, it was necessary to set up some limiting criteria. Originally these were as follows:

a. Each mixed school should have a Negro enrollment of more than ten per cent and less than seventy per cent of its total school population.

b. Each mixed school should be situated in a community of social and economic conditions similar to that of the segregated school.

From five downtown mixed schools which met the first requirement four were used in finding subjects for study. Table II shows their respective enrollments, according to school census taken in May, 1929.

TABLE II

ENROLLMENT OF MIXED SCHOOLS FROM WHICH NEGRO PUPILS WERE TAKEN FOR
THE INVESTIGATION, ACCORDING TO THE SCHOOL CENSUS RECORDS
OF MAY, 1929

Schools	W	X	Y	Z	W, X, Y, Z.	All Unsegregated Schools
Total Enrollment	1052	1615	1312	814	4793	55,229
Negro Enrollment	179	671	777	534	2161	5067
Per Cent Negro Enrollment	17.0	41.5	59.0	65.6	45.1	9.1

The four mixed schools had Negro enrollments which ranged from 17% to 66% of their total enrollments. The percentages of Negroes enrolled in the four schools fall within the arbitrary limits of ten and seventy per cent fixed for mixed schools from which subjects might be selected. Their enrollment of 2161 Negro pupils was forty-five per cent of their total enrollment and was forty-two per cent of the total number of Negro pupils attending the fifty mixed schools of Cincinnati and their fourteen colonies. It was hoped that the subjects selected from these four schools would be typical of all of the Negro pupils enrolled in the mixed schools of the city.

The segregated schools in which the study was conducted contained all of the segregated school pupils of Cincinnati. The mixed schools in which subjects were found for the study, contained approximately one-half of the total Negro enrollment of all of the

non-segregated schools in Cincinnati and their Negro enrollments ranged from seventeen to sixty-six per cent of their total school enrollments. Almost an equal number of subjects were found in the two sets of schools.

The second criterion, that of similarity of school community, was set up in order to eliminate environmental differences. It was impossible to meet it, however, when the suburban segregated school was chosen for study, because there was no suburban mixed school of large enough Negro enrollment to be substituted for a downtown mixed school. Because of this and after careful deliberation, the criterion of community similarity between mixed and segregated schools was dropped. It was very gratifying to learn later from objective data, that the home environmental factors were fairly constant among the subjects selected from the two types of schools.

Some difference in the environmental factors within the two types of schools was anticipated in the problem. They are apparent in Table III, which indicates in a rough way the curricular and extra curricular activities which are carried on, as shown in the use of the rooms enumerated. Both of the segregated schools have a large number of rooms used in a variety of activities. The mixed schools have as many classrooms of the regular academic type but fewer for other activities. Twenty-four different kinds of rooms are listed in all, twenty-two of which are to be found in segregated schools and ten in mixed schools. Activities which are unique

to segregated schools are catering, laundering, swimming, cabinet making, brick and cement work, power machine work, open air and club rooms, home, school, and community activities. These suggest a greater enrichment of the curriculum in the segregated schools and a greater concentration upon academic studies in mixed schools.

Judging from the use which is made of the different rooms of the two types of schools, there is some difference in the school environment and the curriculum of the two types of schools which might account for any differences found in academic achievements of pupils attending the two types of schools.

(For Table III, see following page)

TABLE III

USES OF THE VARIOUS ROOMS IN THE SEGREGATED AND MIXED SCHOOLS OF THE
STUDY *

Schools	Segregated					Mixed			
	A	B	C	D	E	W	X	Y	Z
Date Erected	1923	1881 1883	1879 1885 1892	1910		1897 1910	1910	1906	1858 1882
No. Classrooms	28	16	23	19	8	22	32	30	21
Open-Air Rooms	2				1				
Domestic Arts	2			1			1	1	1
Domestic Sc.	1			1					
Catering Dept.	1								
Laundry	1			1					
Kindergarten	1	1	1	2	1	2	2	1	1
Auditorium	1		1	1		1	1		
Gymnasium	1			1		1	1	2	
Library	1			1				1	
Swimming Pool	1								
Showers	1			1			1	1	
Club Rooms	1			1					
Lunch Room	1	1	1	1	1	1	1		1
Print Shop	1							1	
Brick & Cement Department	1								
Cabinet Making Room	1								
Manual Train- ing Room	1			1					
Power Machine Room	1								
Play Rooms	2	2					2	2	
Banking Dept.			1						
Industrial Arts Department		1		1			1	1	1
Nurse & Doctor Office	1			1	1				
Dental Clinic						1			
Home, School, & Community House				6					

* Information taken from the Cincinnati School Directory
of October, 1929.

C. The Testing Program

1. Preliminary Selection of Children

Requirements. - Having met the approval of the Superintendent of Schools in number and choice of schools and having received an introduction from him to the principals of those schools, the investigator proceeded to find subjects suitable for study. Certain conditions controlled the selection of subjects: (1) In order to later pair subjects of the same chronological and mental ages, it was necessary to know each child's exact age. The date of birth of each child who participated in the study was therefore verified. Because of the difficulty of securing reliable age records from other localities, only those pupils whose births had been recorded at the Cincinnati Bureau of Vital Statistics were considered for study. (2) In order to compare the achievements of the pupils of one type of school with those of the other type of school and to ascertain the influence of the particular type of school which the pupil attended, it was necessary to select only those pupils who had attended but one type of school. Any pupils whose birth records were not found at the Cincinnati Bureau of Vital Statistics or who had attended both types of schools prior to the study were automatically dropped from consideration.

Tentative Selection Made from School Records. - A tentative selection of pupils was first made at the schools. The chosen schools were visited and the cumulative record cards of all

pupils in fourth, fifth and sixth grades were inspected. In the segregated schools the records were carefully scrutinized to find those pupils whose place of birth was recorded as Cincinnati and who had received all of their training in segregated schools. In the mixed schools it was necessary to distinguish the records of Negroes from those of whites. In many cases, the child's race was not designated on his card and it had to be learned from his teacher. Approximately 3500 cumulative record cards were examined, of which approximately 1800 were those of Negroes who gave Cincinnati as their birth place.

Verification of Birth Records. - From the information given on the cumulative cards for these 1800 children, lists were made of their names, their dates of birth, the names of their parents and of their brothers and sisters. These were taken to the Bureau of Vital Statistics where much time was given to the process of verifying each record. The year book was consulted for the index number of the case, according to which the physician's certificates were located in the volumes of individual records. Sometimes a name was misspelled in the school record, the month, day or year of birth was wrong, the name had been changed or the child had not been named at the time the birth record was filed. In all of these cases every entry of similar name, age, and sex were inspected to find a record of the child who had been located at the school. If his birth record was not found for the year given in

the school record, the books of the two previous and the two following years were searched. When a record was found in which the parents' names were identical with those secured at the school, and when the siblings were the same, the entire birth record was copied for that child. Where a difference occurred between the school record and that of the Bureau of Vital Statistics, both records were kept in the social history for identification. By this slow process records were verified and copied for 96 children who had always attended segregated schools and for 97 pupils who had always attended mixed schools, 193 in all. That an almost equal number of children were found in the two types of schools was an agreeable surprise to the investigator and proved the wisdom of selecting the particular schools in which the study was conducted.

2. Materials Used in the Investigation

The Tests Used. - The 193 pupils selected on the basis of schooling and birth records were subjected to a thorough testing program for the purpose of pairing subjects from the segregated schools with those from the mixed schools and of comparing their academic achievements. Psychological tests of intelligence were used in equating the group of segregated school subjects with those from mixed schools. Academic tests were used for comparing the academic achievements of the two groups. The tests were as follows:

I. Psychological Tests

- (a) Individual - Stanford Revision of the Binet-Simon Scale.

- (b) Group - Dearborn Group Tests of Intelligence, Series II. General Examinations, C and D.

II. Academic Tests

- (a) Individual - Gray Oral Reading Paragraphs Test.

- (b) Group -

- (1) New Stanford Achievement Test, Advanced Examination: Form X, including tests in the following subjects:

Paragraph Meaning (Reading)
 Word Meaning (Reading)
 Dictation (Spelling)
 Language Usage
 Literature
 Geography
 History and Civics
 Physiology and Hygiene
 Arithmetic Reasoning
 Arithmetic Computation

- (2) Morrison-McCall Spelling Scale

- (3) Freeman Handwriting Scale ²

Supplementary Data. - To supplement the intelligence test results and to give further information regarding the subjects who took part in the study, social histories were obtained from the children ³ and teachers were asked to rate their pupils who were participating, according to the New York Rating Scale of School Habits. ⁴

² A list of all the tests and scales used in the study are to be found in the Table of Contents.

³ A copy of the mimeographed forms used in recording test results and social histories may be seen in the Appendix.

⁴ New York Rating Scale of School Habits, by E. L. Cornell, W.W.Coxe, and J.S. Orleans, World Book Company, Yonkers-on-Hudson, N.Y., 1927.

Individual Intelligence Tests. - Each test was selected with careful consideration of its usefulness in the study. In order to have a reliable measure of the intelligence of each subject, a measure which could be used in equating the two groups which were to be studied, the Stanford-Binet Scale was used. The plan was to use the complete form of the Scale and it was administered to forty-two pupils, twenty-four in the segregated schools and nineteen in the mixed schools. Their results, according to the complete form, were then compared with their weighted results according to the abbreviated form of the same Scale. ⁵ These two sets of results were found to have a correlation coefficient of .98, P.E. 1005, according to the Pierson product moment method. Because of this high correlation between the two forms, it was decided to use the abbreviated form of the Scale in testing the remaining 149 children, thus shortening the time required to give the individual examinations, and to supplement the results of the abbreviated form by those of a group test of intelligence.

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The abbreviated form of the Stanford-Binet Scale consists of approximately two-thirds of the tests of the complete form at each year level. They were selected by Terman "on the basis of reliability, rapidity with which they may be given, and for variety," and are weighted in such a way that the two forms of the Scale are comparable in measurement. See Record Booklet for the Stanford Revision of the Binet-Simons Test, published by The World Book Company, Yonkers-on-Hudson, New York.

The Group Test of Intelligence. - The group test chosen for that purpose was the Dearborn group test of intelligence. Several factors entered into this choice. (1) It was considered advisable to use a group test of a type as different as possible from the individual test so as to provide a different basis for equating and for comparing one group with the other. Whereas the Stanford-Binet tests are largely verbal, the Dearborn tests are pictorial to a greater extent than most tests adapted to the age of pupils studied here. (2) The age norms of the Dearborn group test have a wider range than do most group tests. Here are to be found mental ages of six to twenty years. This wide range would include all possible subjects in grades four, five and six, whether of exceptional or limited intelligence, whereas many group tests would fail to measure those at the extreme upper and lower limits. (3) The Dearborn group test is seldom used in the regular testing programs carried on in the Cincinnati schools by the Psychological Laboratory. Several others are used and might have been repeated soon enough to make their results unreliable, either for this study or for those of the Psychological Laboratory. By using the Dearborn tests conflict with the program of the Psychological Laboratory was thus avoided and results could not be questioned on the grounds of repetition.

The Academic Tests. - The academic tests were selected with equal care. The New Stanford Achievement Test was chosen, first,

because of its wide standardization and consequent reliability of results, and second because it included all of the subjects commonly taught in the elementary grades of school. The particular form of the Test, Form X, was used because no child in Cincinnati was familiar with it. News of its publication arrived when the final individual tests were being given, upon which an order was placed for it. The tests came as soon as they were off the press and were administered at once. As other forms of the test had been used previously in various schools and there was a possibility that they might have fallen into the hands of the subjects of this investigation, and as the effects of retesting have not been definitely ascertained it was advisable to avoid the repetition of an older form of the test by using the new form. In this way the unfamiliarity of the subjects with the tests administered in this study was assured.

The Gray Oral Reading Paragraphs were used to supplement the silent reading tests of the Stanford Achievement Scale because it was considered advisable to measure oral as well as silent reading. It served nicely for that purpose because of its wide range of norms from first to twelfth grades. The Morrison-McCall Spelling Scale was used because the words in it are presented and written in a list, a method more common than that of writing sentences as they are dictated, which is the method followed in the Stanford Achievement spelling test. The Freeman Handwriting Scale was

selected for two reasons: First, the subjective element present in all handwriting scales is minimized by its detailed enumeration and illustration of five characteristics of writing, and second, this particular scale required no time for administering. The third and fourth lines of the Dictation test of the Stanford Achievement Scale were used as samples of handwriting and were scored for that purpose.

3. The Individual Examinations

Number of Children Examined. - The age records of ninety-six segregated school children and of ninety-seven mixed school children had been verified. Ninety-two of the former and ninety-three of the latter were given the Stanford-Binet Abbreviated Scale of tests. Ninety-four of the segregated school pupils and ninety-one of the mixed school pupils took the Gray Oral Reading test and at the same time records were made of their family, physical and educational histories. Ninety-six of the segregated school children and ninety-four of the mixed school pupils were rated by their teachers, according to the New York Rating Scale. A number of these were eliminated from consideration for various reasons, as is explained later.

The Examiners. - The individual Stanford-Binet examinations were given by the investigator with some assistance from Miss Grace Hammond. Both of them were trained psychological

examiners. The investigator had had two years of graduate training in psychology at the University of Chicago and had been a psychological examiner in the Psychological Laboratory of the Cincinnati Public Schools for eight years. She administered 170 of the 185 Stanford-Binet examinations. The remaining fifteen were given after school hours by Miss Grace Hammond, psychologist of Stowe School, to children in Stowe School and its colonies. Miss Hammond had worked with the investigator as laboratory assistant and examiner in the Psychological Laboratory for six years and had received a Master's degree from Harvard University in 1928. The fact that the work of Miss Hammond and the investigator had received similar supervision and that they had attended the same weekly conferences on testing methods for several years, eliminated many of the possibilities of differences of individual procedure in testing. In order to insure uniformity in administering the tests, Miss Hammond and the investigator met several times to discuss all of Terman's directions.⁶ In administering the tests, complete records were made of responses. These were scored by the person who had given them. The tests were then exchanged and if there was disagreement over the scoring it was discussed by the two examiners. Final decision was made in every case by the investigator. Thus the problem of introducing

⁶ Terman has made several slight changes in administering the Stanford-Binet tests since his book, "The Measurement of Intelligence," was published. These had been reported to the Psychological Laboratory, where the examiners had made record of them.

a second examiner in the study was not only controlled, but there was the distinct advantage of having each test score checked by another person.

Procedure in Making Individual Examinations. - Preparations for the individual tests were made by listing the names and ages of all children to be tested, according to school, grade and room number. The examiner used this in finding children for the tests. After having found a quiet place for testing, she sent for a child, made friendly contacts with him and then proceeded with the tests, saying, "I want to see how well you are doing in school." She was familiar to most of the children, either because of her presence in the school in former years or because of the previous personal interviews regarding age. The testing experience proved to be so agreeable that many children whose friends were being tested requested a test. Hearty cooperation was secured in all of the individual tests.

Following the test, each child was introduced to the assistant who gave the Gray Oral Paragraphs test and took the social histories. She was a college graduate, was interested, accurate and reliable. She was carefully coached by the investigator and for a week observed the investigator interview children for social histories and give the Gray test. She practiced using the test with twenty third-grade children and then began interviewing children for this study. While at the school she copied the cumulative

records of each child who participated in the investigation, and handed a copy of the New York Rating Scale for School Habits, together with a copy of the printed directions for rating, to each teacher who had a pupil in the study. These were marked by the teachers and were obtained by the assistant on a later visit to the school. Three months were consumed in giving the individual tests of intelligence and in securing this supplementary information.

4. Group Examinations

Procedure. - An eight-day schedule of group tests followed immediately upon the completion of the individual tests. Children who had taken the individual tests were divided into eight groups of as nearly uniform size as possible and each group was given an entire day for the tests. The Stanford Achievement tests were spread over the morning and in the afternoon the Dearborn group intelligence tests and the Morrison-McCall Spelling Scale were given. All of these were administered by the investigator herself. One group varied slightly from the others. It consisted of thirty-five children from the colony of the suburban segregated school, the largest group tested. They were somewhat late in arriving for the tests and as a consequence were late in finishing. This caused some confusion. Aside from that, all of the children were enthusiastically cooperative. Four absentees, three from two mixed schools and one from a segregated school, were given their group tests the following week. Table IV shows the number of children on whom information

was secured at each step of the study, following the first interviews at the schools.

TABLE IV
NUMBER OF CHILDREN SEEN DURING THE TESTING PROGRAM

Item of Information	Number of Children from Each School										
	Segregated Schools						Mixed Schools				
	A	B	C	D	E	Tot.	W	X	Y	Z	Tot.
Birth Records Verified	9	15	4	50	18	96	8	25	48	16	97
Indiv. Stanford-Binet	9	15	4	47	17	92	8	23	47	15	93
Stanford Achievement	9	14	4	47	16	90	8	22	45	15	90
Dearborn Intelligence	8	14	4	47	17	90	8	21	44	14	87
Gray Reading	9	15	4	49	17	94	8	23	45	15	91
Morris-McCall Spelling	8	14	4	47	17	90	8	21	44	14	87
Social Histories	9	15	4	49	17	94	8	23	45	15	91
Teachers' Ratings	9	15	4	50	18	96	8	24	47	15	94
School Records Copied	9	15	4	50	18	96	8	24	46	15	93

Table IV summarizes the work done preliminary to the final selection of the pairs of subjects. The numbers tested vary for the different tests. Persistent illness interrupted the program for several children. Several transferred to different schools or moved from the city. In the end, it was found that eighty-four segregated school pupils and eighty-one mixed school pupils had taken both the Stanford-Binet Intelligence Scale and the Stanford

Achievement tests. These became candidates for the groups which were to be equated on the basis of their Stanford-Binet ratings. All of the eighty-four segregated school pupils took the Dearborn Group test of intelligence, but three of the eighty-one mixed school pupils missed the Dearborn test. The number of candidates available for the groups which were to be equated on the basis of their Dearborn test ratings was thus eighty-four from the segregated schools and seventy-eight from the mixed schools, as shown below.

<u>Number of Pupils Given Both Tests</u>	<u>In Segregated Schools</u>	<u>In Mixed Schools</u>
Stanford-Binet and Stanford Achievement Tests	84	81
Dearborn and Stanford Achievement Tests	84	78

How fifty-five Binet pairs and fifty-three Dearborn pairs were selected from among these candidates is described in Section D of this chapter.

5. The Handling of Tests and their Results

The Scoring of Tests and the Recording of Test Results

Intelligence Tests. - As was explained in #3 above, the Stanford-Binet tests were scored and the findings were checked in weekly conferences of the investigator and Miss Hammond during the course of the testing program. This insured uniformity and accuracy in scoring. The different dates at which they were administered, however, made their results unfair bases of pairing as

they stood. Those tested at the beginning of the individual testing program waited three months before they were given the academic tests and thus had three months' advantage over those who took their individual tests later in the three months. Just how much advantage would accrue from the intervening time it was impossible to know, and so it was advisable to eliminate that factor and refigure each child's mental age to the date of his group tests, if his individual intelligence test had been given more than two weeks before the group test. The chronological age of the pupil at the time the group tests were administered was multiplied by the individual intelligence quotient, assumed to be constant and used as a decimal. The product was the new mental age at the date of the group test. It could be compared with all of the other mental ages similarly refigured to the date of the group tests.

The Dearborn group test, which was given at the time the group achievement test was given, was scored by the assistants under the direct supervision of the investigator. The printed directions for scoring the tests were followed exactly and the results were recorded in terms of total scores, mental ages and intelligence quotients. After scoring the tests, the assistants exchanged them, rescored them, and verified the results. Every step was repeated and every record was checked in order to eliminate the possibility of errors so common in group testing. ⁷ These

⁷ Walter F. Dearborn, and C. Wilson Smith, "The Results

results were used in equating two secondary groups for study, referred to as the Dearborn groups.

The Academic Tests. - The same procedure was followed in handling the academic tests as had been followed with the Dearborn group test. The printed directions which accompany the tests were followed exactly. The tests were rescored and all results were verified. A record was made of the score, of the educational age, and the grade equivalent of the score in each test, and of the total score in the Stanford Achievement tests.

The Morrison-McCall Spelling lists were scored and rescored by the assistants and a record was made of the raw score, the T score, the educational age, and the grade equivalent.

Samples of handwriting used in this study consisted of the third and fourth sentences of the Stanford Dictation test. These were rated according to the Freeman Handwriting Scale, by one of the regular assistants, under the supervision of the investigator. She scored the papers once in order to develop familiarity with the five divisions of the scale and practice in scoring. After this a second rating was made of each pupil's handwriting. This rating score was used in the study. It was composed of the combined ratings on the five characteristics analyzed and discussed

of Rescoring Five Hundred Thirty Dearborn Tests," Journal of Educational Psychology, Vol. XX, No. 3 (March, 1929), 177-183.

Rudolf Pintner, "Accuracy in Scoring Group Intelligence Tests," Journal of Educational Psychology, Vol. XVII, No. 7, (October, 1926), 470-475.

by Freeman, i.e., uniformity of slant, uniformity of alignment, quality of line, letter formation and spacing.⁸ The numerous samples in the chart gave objective standards for reference in making the subjective ratings.

The Gray Oral Reading paragraphs were scored by the assistant who gave the test and were rescored by the other assistant. Raw scores, B scores and grade equivalents were recorded and checked.

Finally, a composite score was derived from the combined scores of all of the individual academic tests given. This provided a general basis for comparing the general academic abilities of the equated groups, in addition to that obtained from the Stanford Achievement total score.

Formulating a Composite Scale of Academic Tests

Procedure. - After the academic tests had been scored and their results had been tabulated, the next step was to combine all of the results in a composite scale which would provide a final basis for a comparison of the equated groups. The Stanford Achievement Scale was a composite of most of the tests but it was advisable to formulate one which would include not only the tests of the

⁸ Frank N. Freeman, "The Teaching of Handwriting," Riverside Educational Monographs. Boston: Houghton Mifflin Company, 1914.

Frank N. Freeman, and Mary L. Dougherty, How to Teach Handwriting, pp. 7-8. Boston: Houghton Mifflin Company, 1923.

Stanford Achievement Scale but also the supplementary tests: The Gray Oral Reading, the Morrison-McCall Spelling, and the Freeman Handwriting Tests. The statistical procedure followed in deriving the composite scores was that prescribed by McCall⁹ and others. It involved two steps. First, the individual academic test scores were weighted according to the variability of the scores in each test; second, the individual academic test scores were further weighted according to the relative values of each test subject as judged by a number of educators. The two steps will be described in detail.

The Weighting of Scores According to their Standard Deviations. - The correlation problems which were worked for the purpose of arriving at final conclusions in the investigation and which are tabulated in Chapter IV, The Results, yielded the necessary data for carrying on the first step in deriving the composite scores. Here were found the distributions of the scores in all of the academic tests of the groups of pupils compared. Here, likewise, were found the standard deviations of the two distributions. In most of the tests there was a slight difference between the standard deviation of the scores of the fifty-five segregated school pupils and that of the fifty-five mixed

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William A. McCall, How to Experiment in Education, pp. 25-32. New York: The Macmillan Company, 1923.

William A. McCall, How to Measure in Education, p. 139. New York: The Macmillan Company, 1923.

school pupils. In order to have one measure of variability for the entire group of 110 pupils in each test, a mean of the two standard deviations was found, on the assumption that it would approximate the standard deviation of the 110 pupils' scores, were they thrown into a single distribution. The standard deviations of the scores of the fifty-five pupils in segregated schools and of the fifty-five pupils in mixed schools and the means of the standard deviations are presented in Table V.

(For Table V, see following page)

TABLE V

THE VARIABILITIES OF THE SCORES IN THE ACADEMIC TESTS, ON THE BASIS OF WHICH THE INDIVIDUAL ACADEMIC SCORES WERE WEIGHTED FOR THE COMPOSITE SCALE

	Gray Oral Reading	Stanford Paragraph Meaning	Stanford Word Meaning	Stanford Dictation	Morrison-McCall Spelling	Stanford Language Usage	Stanford Literature	Stanford History- Civics	Stanford Geography	Stanford Physiology- Hygiene	Stanford Arith- metic Reasoning	Stanford Arith- metic Computation	Freeman Handwriting
S.D. of Scores of Segregated School Pupils	5.91	16.88	16.64	15.49	7.71	18.24	16.47	19.00	15.64	13.16	14.14	9.54	2.52
S.D. of Scores of Mixed School Pupils	6.16	15.79	13.99	14.24	7.81	21.69	18.52	19.85	15.36	15.01	15.54	13.22	2.08
Mean of S.D.'s	6.04	16.34	15.32	14.87	7.76	19.97	17.50	19.43	15.50	14.09	14.84	11.38	2.30
Multipliers Used to Equalize S.D.'s	2.5	.9	1.0	1.0	2.0	.8	.9	.8	1.0	1.1	1.0	1.4	6.5
New S.D.	15.10	14.71	15.32	14.87	15.52	15.98	15.75	15.54	15.50	15.50	14.84	15.93	14.95

The standard deviations of scores in the different subjects show that if the scores were summed as they stand to form a composite scale, Language Usage and History-Civics with their standard deviations of approximately 19 would have the greatest weight, and handwriting would have the least weight, with its standard deviation of 2.3. In order to equalize the weights of the different subjects, each individual test score was later multiplied by the multiplier listed for that test in Table V.

The Weighting of Scores According to the Ratings of Educators.- The next step consisted of weighting the tests according to the judgment of a number of educators. Five university professors of education and one superintendent of county schools weighted the academic tests according to their estimates of the importance of the test subjects in the school curriculum. Their ratings are shown in Table VI.

(For Table VI, see following page).

TABLE VI
THE WEIGHTS OF EXPERTS AND THE FINAL MULTIPLIERS
USED IN OBTAINING THE TOTAL COMPOSITE SCORES

Educators	Original Weights						Refigured Weights						Mean Weight of Educa- tors	Multipliers based on Standard Deviation Table IV	Final Multipliers
	1	2	3	4	5	6	1	2	3	4	5	6			
Oral Reading	1.0	3.0	1.0	3.0	3.0	1.0	1.5	3.6	1.5	3.0	4.5	1.2	2.55	2.5	6.4
Paragraph Meaning	4.0	4.0	4.0	6.0	4.0	5.0	6.0	4.8	6.0	6.0	6.0	6.0	5.80	0.9	5.2
Word Meaning	3.0	3.0	2.0	3.0	3.0	2.0	4.5	3.6	3.0	3.0	4.5	2.4	3.50	1.0	3.5
Dictation (Spell.)	1.0	3.0	1.0	2.0	2.0	3.0	1.5	3.6	1.5	2.0	3.0	3.6	2.53	1.0	2.5
Spelling M.-McCall	0.5	3.0	1.0	1.5	2.0	1.0	0.8	3.6	1.5	1.5	3.0	1.2	1.92	2.0	3.8
Language Usage	4.0	4.0	3.0	4.0	2.0	5.0	6.0	4.8	4.5	4.0	3.0	6.0	4.72	0.8	3.8
Literature	3.0	1.0	3.0	4.0	3.0	2.0	4.5	1.2	4.5	4.0	4.5	2.4	3.52	0.9	3.2
History-Civics	3.0	2.0	3.0	4.0	3.0	5.0	4.5	2.4	4.5	4.0	4.5	6.0	4.32	0.8	3.5
Geography	2.0	2.0	3.0	4.0	3.0	2.0	3.0	2.4	4.5	4.0	4.5	2.4	3.47	1.0	3.5
Physiol.-Hygiene	3.0	3.0	3.0	3.0	3.0	5.0	4.5	3.6	4.5	3.0	4.5	6.0	4.35	1.1	4.8
Arith. Reasoning	2.0	5.0	4.0	5.0	4.0	5.0	3.0	6.0	6.0	5.0	6.0	6.0	5.33	1.0	5.3
Arith. Computation	1.0	3.0	2.0	5.0	3.0	2.0	1.5	3.6	3.0	5.0	4.5	2.4	3.33	1.4	4.7
Handwriting	0.5	2.0	1.0	2.0	1.0	1.0	0.8	2.4	1.5	2.0	1.5	1.2	1.56	6.5	10.1
Multipliers	1.5	1.2	1.5	1.0	1.5	1.2									

The different educators evaluated the tests according to different scales. Ratings of the first, third and fifth persons ranged from zero to four, those of the second and sixth ranged from zero to five and that of the fourth person ranged from zero to six. These were all converted into one scale which ranged from zero to six, by applying to each of the original weights, the multipliers placed below the original weights in Table VI. The means of these refigured weights were used as the mean weights of experts. The product of the mean weight of experts and the multiplier obtained according to the variability of scores then became the final multiplier to be used in obtaining the composite scale scores. These final multipliers were applied to the academic test scores of each pupil studied, to produce his new weighted scores and the sum of these weighted scores became his composite scale score. Complicated as the process appears to be, it was the most reliable way to derive comparable composite scores from the data at hand. These total composite scores were used, along with the total score of the Stanford Achievement tests in making the final comparisons of the academic achievements of the equated groups.

D. The Equating Process.

1. Available Candidates for Study.

The preliminary work done in locating pupils who might serve as subjects in the investigation is described in a previous section. The final step in selecting subjects is described here. (From the eighty-four segregated school pupils and the eighty-one mixed school pupils who had taken both the Stanford-Binet intelligence tests and the Stanford Achievement tests two groups of fifty-five subjects each, were equated upon the basis of age, grade in school, and intelligence, according to their Stanford-Binet test findings. It was necessary to pair members of the two groups as closely as possible in age and in intelligence, in order to make a reliable comparison of their differences in academic attainment, and it was desirable to have as many pairs as possible to compare.

TABLE VII.

THE NUMBER OF CANDIDATES AVAILABLE FOR SELECTION FOR THE EQUATED GROUPS, ARRANGED ACCORDING TO GRADE AND TYPE OF SCHOOL.

Grade	Number of Candidates.			
	IV	V	VI	Total
Segregated School	43	21	20	84
Mixed School	40	25	16	81
Total	83	46	36	165

The grade status of the 165 available candidates is shown in Table VII. Here it is apparent that the number of possible pairs to be selected would be limited by the ~~different~~ numbers of candidates in the separate grades of the two types of school. Only forty pairs could possibly be found in fourth grade, twenty-one in fifth grade and sixteen in sixth grade, making a total of seventy-seven pairs possible, in consideration of the grade factor alone. A further reduction in the number resulted from the matching process, when the factors of age and intelligence were held constant.

2. Procedure.

In the process of determining which subjects should be paired for study all of the 165 candidates who had been given both the Stanford-Binet intelligence test and the Stanford Achievement test were listed by grades in several different ways.¹ One arrangement was according to the ages of the children. The oldest child in the grade was placed first and the youngest last, with mental ages and intelligence quotients in parallel columns. A second arrangement was according to mental ages, from youngest to oldest with intelligence quotients and chronological ages in parallel columns. A second arrangement was according to mental ages,

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The individual pupils were numbered and indexed as soon as their tests were recorded in order to eliminate the possibility of bias in handling their results.

from youngest to oldest with intelligence quotients and chronological ages in parallel columns. The third arrangement was according to intelligence quotients, from highest to lowest. This one proved to be the easiest to use in pairing subjects, for the reason that the intelligence quotient is based upon both chronological and mental age. By carefully scrutinizing the parallel lists of data for pupils from segregated schools and for pupils from mixed schools it was possible to find the pairs within each grade who were similar in the three basic factors of age, mental age and intelligence quotient.

Some practice was had in mating members of the two types of schools and several trial selections were made before the final 55 pairs were chosen for study. The investigator began by selecting pairs who were of exactly the same mental age, chronological age and intelligence quotient. Three fourth grade pairs and one sixth grade pair were found to be exactly equal in respect to these factors. Trials of one month, two months, three months and so on up to ten months in chronological age and mental age and similarity of one point to ten points in intelligence quotient yielded an increasingly larger number of pairs. Fewer than fifty pairs were found when the difference between pairs was limited to six months and six points. Fifty-five pairs were found

with a difference of seven months or less in chronological age and mental age and of seven points or less in intelligence quotient. It was felt that at least fifty pairs were required for a sampling. As many more as possible were desirable, but rather than introduce significant differences with respect to the factors to be equated, it was decided to use the fifty-five pairs whose chronological ages and mental ages were no more than seven months apart and whose intelligence quotients were within seven points of each other. Table VIII shows that there were at least eleven candidates at the upper and lower limits of the age and intelligence ranges within the three grades, who were eliminated because of too great differences in age and intelligence. Others occurred likewise within the distributions, thus reducing the number of pairs to fifty-five. These fifty-five pairs were called the Binet pairs because they had been selected upon the basis of their Stanford-Binet test results, to distinguish them from the Dearborn pairs described later in this chapter.

(For Table VIII, see the following page)

TABLE VIII.

THE RANGES IN THE DISTRIBUTIONS OF THE CHRONOLOGICAL AGES, THE MENTAL AGES AND THE INTELLIGENCE QUOTIENTS OF THE 165 CANDIDATES, ACCORDING TO GRADE AND TYPE OF SCHOOL.

	Ranges in the Distributions.			
	Grade IV	Grade V	Grade VI	Combined IV, V and VI.
<u>Chronological Age in Months.</u>				
Segregated Schools	112-165	120-152	134-189	112-189
Mixed Schools	111-158	127-166	132-186	111-186
<u>Mental Age in Months.</u>				
Segregated Schools	94-143	104-164	108-194	94-194
Mixed Schools	104-170	102-159	126-175	102-175
<u>Intelligence Quotients.</u>				
Segregated Schools	66-118	76-132	57-129	66-132
Mixed Schools	73-128	61-123	79-118	61-128

3. The Equality of the Binet Groups.

Table IX which was compiled from the Binet test records of the fifty-five pairs, shows that only one pair differed seven points in mental age and nine pairs were seven months apart in chronological age. In four of the nine pairs the excess in age was among segregated school pupils while among five pairs the mixed school pupils were older. Eleven pairs were exactly equal in chronological age, four in mental age and ten in intelligence quotient. The means of the difference were .51 month in chronological age, .32 month in mental age and .02 point in intelligence quotient.

TABLE IX.

THE DISTRIBUTIONS OF THE DIFFERENCES IN MONTHS, OF THE CHRONOLOGICAL AGE AND THE MENTAL AGE, AND IN POINTS OF THE INTELLIGENCE QUOTIENT, BETWEEN THE BINET SUBJECTS FROM THE SEGREGATED SCHOOLS AND THE BINET SUBJECTS FROM THE MIXED SCHOOLS. ¹

Differences in Months or points	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	Mean
Chronological Age	5	2	2	6	3	4	4	11	1	3	5	2	2	1	4	-.51
Mental Age	0	2	6	4	7	7	2	4	2	5	8	2	3	3	0	-.32
Intelligence Quotient	0	1	2	3	4	4	8	10	6	3	9	2	1	1	1	+.02

¹ The negative sign is used to indicate those differences in which the segregated school pupils were younger in age and mental age or had lower intelligence quotients than their mixed school mates.

The similarity of the Binet groups is shown again in Chapter III in which the age and intelligence levels of the two groups are tabulated.

4. The Dearborn Groups.

The Dearborn groups were equated in exactly the same way as were the Binet groups. From the eighty-four segregated school pupils and the seventy-eight mixed school pupils who had taken both the Dearborn intelligence tests and the Stanford Achievement tests two groups of fifty-three subjects each, were equated upon the basis of age, grade, and intelligence according to their Dearborn test findings. The candidates were listed according to their intelligence quotient, from highest to lowest within each grade, with the accompanying age and mental age in parallel columns. The same criterion was set for the Dearborn pairs as for the Binet pairs. None of the pairs differed more than seven months in age and mental age or seven points in intelligence quotient. The mean difference of chronological age between the two groups was .62 month of mental age was .45 month and of intelligence quotient was .75 point. In mental age and intelligence quotient the average of the segregated school group was the higher and in chronological age the mixed school group ran higher. In view of their slight differences the Dearborn as well as the Binet groups provided reliable bases for comparing pupils of the two types of schools.

There was considerable overlapping between the Binet and Dearborn pairs but only four pairs were composed of exactly the same members in the Dearborn as in the Binet series. As may be seen in Table X thirty-one of the candidates were used in none of the groups, twenty-eight were chosen as members of Binet pairs alone, twenty-four were in the Dearborn groups only. Eighty-two candidates were in both Binet and Dearborn groups and all but eight of them were matched differently in the two sets of pairs. The fact that so few of the pairs were identical in the two series seemed to indicate that the re-equating of the groups would be of some value as a check upon the findings of the Binet pairs.

(For Table X, see next page.)

TABLE X.

NUMBER OF CANDIDATES FOR THE BINET AND DEARBORN GROUPS, SHOWING THE EXTENT OF OVERLAPPING AMONG THE GROUPS.

	Members of no pairs	Members of Binet pairs alone	Members of Dearborn pairs alone	Members of Binet and Dearborn Pairs	Total Number of Binet Candidates	Total Number of Dearborn Candidates	Number having the same mates in both series.
Grade IV.							
Segregated Schools.	4	10	5	24	43	43	1
Mixed Schools	3	9*	4	25	40	39	1
Total	7	18	9	49	83	82	2
Grade V.							
Segregated Schools	2	4	4	11	21	21	1
Mixed Schools	6	4	4	11	25	24	1
Total	8	8	8	22	46	45	2
Grade VI.							
Segregated Schools	11	1	2	6	20	20	2
Mixed Schools	5*	2	4	5	16	15	2
Total	16	3	6	11	36	35	4
Grand Total	31	29	23	82	165	162	8

* One pupil from each of the mixed groups starred failed to take the Dearborn test, thus reducing the number of Dearborn candidates from mixed schools, to seventy-eight.

E. The Comparison of the Achievements of the Equated Groups.

1. The Statistical Method.

The problem was to find whether there is any difference between the academic achievement of Negro pupils of segregated schools and Negro pupils of mixed schools. The method was to select as large and as random a sample as possible from the two types of schools, under the uniform requirements laid down for this study; to give the academic tests, to compute the mean scores, and to find the difference between the two means.¹ The selection of the samples from the two types of schools and the testing program have been described. The statistical procedure followed in obtaining the differences between the achievement of the equated samples will be discussed in this section.

The most common method of comparing the achievement of two groups is by means of the difference on similarity of the average achievements of the two groups. In this case the means were used. If the difference proves to be several points in favor of one group such a result is evidence for believing that the average pupil of the first group is better than the average pupil of the second group. Before drawing this conclusion definitely, however, it is necessary to know how reliable the obtained difference is: what its probable divergence is from the true difference which one would get if he could subtract the true mean of the second group from the true mean

1. The discussion of the statistical method is largely adapted from Garrett, Henry E., "Statistics in Psychology and Education." New York, Longmans Green and Company, 1926. pp 129-133.

of the first group. Otherwise, if we compound the means of other pupils similarly selected as those of the first and second group, the difference found might be wiped out or even reversed. As Gregory says, "If we know the mean accomplishment of the two groups and their standard deviations, we are able by the use of the formula to tell whether the difference is a real difference or only a chance difference which might occur in the reverse order if additional samples were taken."¹

The formula used in this investigation is:

$$\sigma_{m_1 - m_2} = \sqrt{\sigma_{m_1}^2 + \sigma_{m_2}^2 - 2r\sigma_{m_1}\sigma_{m_2}}$$

in which σ_{M_1} is the standard error (or deviation) of the mean of the first group, σ_{M_2} is the standard error of the mean of the second group, r is the correlation coefficient of the achievement scores of the two groups and $\sigma_{M_1 - M_2}$ is the standard error of the difference between the two means. As Walker points out, to find the standard error of the differences between the performances of equated individuals one "should correlate the score made by each child in the first group with the scores made by the other member of the same pair in the second group, and should use this r in the long formula," given above.

1. Gregory, Chester Arthur and Renfrow, Omar W. Statistical Method in Education and Psychology. Cincinnati. C.A. Gregory Co., 1929. p.114

Garrett says, "This (long) formula must always be used whenever there is any correlation between the X_1 and X_2 scores. If X_1 and X_2 are uncorrelated, that is, if $r = .00$ the third term under the radical disappears and the formula becomes"

$$\sigma_{m_1 - m_2} = \sqrt{\sigma_{m_1}^2 + \sigma_{m_2}^2}$$

which is called the short formula for the reliability of the difference between two series of scores.

Since the principle of reliability is the same in the two formulas the "r" of the long formula will be disregarded for the time being and the short formula will be used for reference in the discussion which follows. Here will be presented the method used to find the reliability of differences between the scores of the equated groups with the corresponding reliability of differences between their educational age and grade equivalents, and to interpret the differences found between them.

After finding the difference between the mean scores of the two groups of pupils the question was: Is this a reliable difference? Would further testing of other groups give approximately the same difference; or is it probable that the difference would be reduced to zero, or even reversed in favor of the other group? Stat-

ed more exactly, what is the probable divergence of this difference from the true difference between the two groups? To answer these questions the reliability of the means of the two groups was found and from these the reliability of the difference between the means. The formula for the reliability of the mean is

$$\sigma_m = \frac{\sigma \text{ distribution}}{\sqrt{N}}$$

in which N is the number of pupils or scores in the distribution. The sigmas of the two means found according to the formula above may be substituted in the previous formula to find the standard error of the difference obtained between two means.

An obtained difference is interpreted in terms of its standard error in exactly the same way in which an obtained mean is interpreted in terms of its standard error. Thus it was determined what are the chances in one thousand that the obtained difference does not diverge from the true difference by more than the standard error of that difference, and what are the chances that the obtained difference does not differ from the true difference by more than three times the standard error of that difference. If the lower limit of the range was negative there was at least some chance that the true difference is less than zero -- that the mean of the second group will sometimes be actually higher than that of the first. In spite of the obtained difference in favor of the first

group one could not be 100% sure that the true difference between the average pupil of the first group and the average pupil of the second group would be greater than zero.

The question then arose: What are the chances of a true difference greater than zero? If it were possible to have 1000 pupils of each group and to pair them so as to have 1000 differences they would follow the normal probability curve with its upper and lower limits three time sigma distance from the mean. The chances were even that any other obtained difference would be greater or less than the obtained difference so it becomes the logical place for the mean, and the standard error of this was as obtained.

Now in order to determine the chances that the true difference between the two groups is greater than zero, the difference which is the distance of the mean difference from the zero difference, was divided by the standard error of the difference distribution. Difference told how far the zero difference was below the σ difference mean in sigma terms. Reference was then made to Pearson's frequency tables.¹ There the number of chances in 1000, which lay between the mean and the Difference were found. Adding in the σ difference 500 cases above the mean and translating cases over into chances, it was clear that the chances were the number found below plus the 500 chances above, that the true difference between the means of the two groups was greater than zero. It was practically certain, therefore,

1. Tables for Statisticians and Biometricians, edited by Karl Pearson. Cambridge, England: The University Press, 1914. Pp. 80-81.

that if additional pupils of the two groups should be compared in the future the difference would be in favor of the group which proved to be superior in this investigation, as many times in 1000 as the number of chances found here.

Restated, the formula for the reliability of the difference means the reliability of an obtained difference in terms of the "chances that the obtained difference represented a true difference greater than zero."¹ Then from the table of chances were found the number of chances that the true difference is greater than zero. It is customary to take a $\frac{\text{Difference}}{\sigma \text{ difference}}$ of three as indication of complete reliability, since minus three sigmas includes practically all of the cases in the distribution of differences below the mean.

A $\frac{\text{Difference}}{\sigma \text{ difference}}$ greater than these is taken as indicating just so much added reliability. As Gregory says, "..... 3 or 4 P.E. means practical certainty. Therefore, if the obtained difference is three times the standard derivation or four times the probable error, the difference is a real one and is practically certain to obtain from all samples chosen."² These statistical checks of reliability were applied to the comparisons of academic achievement made in this study, in terms of test scores, and they were held to apply similarly to the educational age and grade equivalent of the mean scores.

Turning back to the long formula it is clear that it includes the short formula, and in addition, takes into consideration the factor of correlation. This makes it especially applicable to the study

1. Garrett, Op.cit., p.133.

2. Gregory, Op.cit., p.114.

at hand since the members of each group studied were carefully matched with their mates in the other group. As Walker says, "If the children have been well equated, the correlation may be fairly high as the two members of the same pairs are likely to occupy similar positions in the two series of scores. Certainly the correlation will seldom be negligible."¹ In this investigation it was almost certain that there would be some correlation between the achievement scores of the equated pairs. This, when taken into account by means of the long formula, would lower the standard error of the difference and would increase the degree of certainty which could be placed in the difference found between the achievement scores, and their corresponding equivalents in educational age and grade. For these reasons the long formula for the reliability of differences was used in comparing the achievements of the equated groups in each test, in the total composite scale.

The age and grade equivalents of the mean scores in tests which had age and grade norms were next compared. The difference was found in months and the $\frac{\text{Difference}}{\sigma \text{ difference}}$ which had been found for the difference of the scores was used in reference to them. In this indirect way the educational age and the grade equivalent of one equated group were compared with those of the other and it was possible to state the difference in terms of months

1. Walker, Helen M. "Concerning the Standard Error of the Difference." Journal of Educational Psychology. Volume XX, Number 1. (January, 1929) p. 57.

of schooling or of educational age. These terms are used to refer to mental growth and are likewise stated in terms of months. They are thus significant in a study of differences between the academic achievements of the two groups. Having found the months' difference between the educational ages of two groups, the reliability of the difference between their scores was used to answer the question of the reliability of the difference between the educational age and grade equivalents of their scores.. Chapter IV presents the differences obtained and the reliability of the differences between the achievements scores, and the educational ages and grade equivalents of the scores, of the equated groups.

2. Methods Used to Check the Samples of Subjects

Who Participated in the Study.

Introduction. - The differences between the achievements of the equated groups were noted and the reliability of those differences were found according to the accepted statistical method. Statisticians agree, however, that even the best measures of reliability have some limitations. As Gregory says:

Only two characteristics of the distribution are used, viz: the standard deviation and the number of cases. As far as the formulas are concerned, there is no reason why we could not find the standard error of any obtained measure from any distribution. Such an incritical application of reliability formulas, however, would lead many times to erroneous conclusions. We must have some criteria for determining whether a reliability formula is really applicable. The reliability of the formulas depends on certain fundamental assumptions. (a) It is assumed that the measures obtained from successive samples are distributed according

to the normal probability curve. Generally speaking, this assumption is true only when the number of cases is large. If, for example, N is less than 25, the reliability measures are unreliable, and the conclusions cannot be accepted as final. Even if the number of cases is large, the formulas are not necessarily reliable. One way of judging whether or not a sample is sufficiently large, is to take additional cases chosen at random and see if the extra cases change, appreciably, the obtained measure. The mere mechanical application of the formulas without a critical analysis of the samples or measures will lead to erroneous conclusions.

(b) Standard and probable errors of obtained measures can be assumed to measure only those errors which result from fluctuations due to "random sampling." Obviously many samples are not random samples, and other errors are liable to be present. The function of the reliability formulas is to give a measure of the sampling error, that is, the error made in taking a sample as a representation of the whole population. A small standard error does not mean that the obtained measure is reliable, but only that in so far as fluctuations due to sampling are concerned, is the obtained measure reliable. The formulas do not measure the effects of errors due to other causes, such as those which arise from the failure to get a random sample. When the student thoroughly understands that the reliability formulas measure but one characteristic of the obtained measures, viz., errors due to sampling, he will have a valuable criterion for judging whether or not he will be justified in deciding important issues on the basis of his reliability measures.¹

Thus before accepting the differences found between the achievements of the equated groups and the reliabilities of those differences, obtained by statistical method, it was necessary to test the assumptions upon which the statistical findings were based, i. e. the normality of the samples and the random method of sampling.

1. Gregory, Chester Arthur and Renfrow, Omar W. Statistical Method in Education and Psychology. pp. 115-116. Cincinnati, Ohio. C. A. Gregory Company, 1929.

The Normality of the Sample.- It was hoped that the measures obtained from the equated samples would be distributed according to the normal probability curve. The number of cases was not "large" but it exhausted the available number of Negro pupils who met the criteria adopted for the study. It was therefore impossible to test the normality of the samples by adding other samples. The only alternative was to divide the equated groups into sections and to measure the difference between their achievements as additional sections were added. Should the differences agree in direction and reliability it would be proof that the measures were distributed according to the normal probability curve. Accordingly, the fifty-five Binet pairs were divided into three sections which approximated thirds. The difference between the achievements of the first sections was measured and the reliability of the difference was found statistically. Then a second section was added to each of the first ones and the difference found between the combined sections of each group. Finally the third section was added, making the entire number of fifty-five in each group. The difference between the achievements of the entire groups had been studied, as described in the previous section. It was compared with the differences found between the first third of each group and two thirds of each group to learn whether the differences were equally reliable and follow-

ed the same direction when the number of cases was increased. If so, the groups would prove to have normal frequencies of distribution.

For the purpose of making this check upon the normality of the measures of the two Binet groups the entire groups were divided into approximate thirds. Gregory says that less than twenty five cases yield unreliable results. The investigator thought it advisable therefore to have as near twenty five cases in each of the first sections as possible. An exact third of fifty-five is only eighteen or nineteen. Twenty two were chosen for the first sections from each group in the following manner. The fifty-five Binet pairs were listed according to intelligence quotient from lowest to highest, beginning with sixth grade. Every third pair was selected from the list with the exception that every fourth selected pair followed consecutively upon the third as it came in the list. That is to say, the pairs selected for the first sections were first, fourth, seventh, eighth; eleventh, fourteenth, seventeenth, eighteenth; and so on in the list. The order was uniform. The second section of each group was composed of every other pair that remained after the first had been chosen, --seventeen in all. The third section was com-

posed of the sixteen remaining pairs. These sections were approximate thirds of the Binet groups and are referred to as such.

The Dearborn groups were studied by sections in order to check the normality of the Dearborn distributions. Here, in order to provide an additional check upon the findings of the Binet groups the sections were as near exact thirds as possible. Every third pair was selected for the first third from the entire list of pairs arranged in order of intelligence quotient and grades. Every second of the remaining pairs were chosen for the second third and the pairs remaining after the first and second thirds were taken, constituted the third sections. There were eighteen pairs in each of the first thirds and seventeen in each of the second and third. The comparison of the differences between the achievements of the first thirds, of the combined first and second thirds and of the entire Dearborn groups served to prove again whether the frequencies of the entire equated groups followed a normal probability curve.

The same principle applied to a study which was made of the differences between the achievements of the members of the Binet groups who were in the different grades. The difference between the achievements of the fourth grade subjects was found and its reliability ascertained. The difference between the

achievements of the fourth and fifth grade subjects combined was found and its reliability determined. Then these differences were compared with the difference between the achievements of the entire number of fourth, fifth and sixth grade subjects. Should the difference follow the same direction and have a similar degree of reliability it would be another check upon the normality of the total groups. In addition, there would be some indication of the normality of the grade distributions of subjects. This was of some value since the number of subjects in each of the fifth and the sixth grade was too small in itself to provide a reliable basis for a comparison of their achievements.

The Random Method of Sampling.- The other assumption upon which the reliability technique is based is that the method of sampling has been random. Every effort had been made to obtain a random sampling of all the Negro pupils of the segregated and the mixed schools of Cincinnati. This has been described in a previous section of this chapter. Now a check was introduced in order to learn whether a random sample had really been selected from each of the two types of schools, and had been equated for the investigation. It was thought that the subjects were unselected and were representative of all

Negro pupils in Cincinnati. In order to learn whether they really were, the factor of selection was introduced. A number of highly selected pairs which were biased in favor of one type of school were chosen from the Binet equated groups. Should the difference between the achievements of these selected subjects be correspondingly more favorable to that type of school than was the difference found between the two entire equated groups it would be evidence of the more random sampling of the entire groups.

Twenty-three of the fifty-five Binet pairs contained segregated school members who equalled or surpassed their mixed school mates in mental age and intelligence quotient. The mean difference between them in mental age was 2.9 months and in intelligence quotient was 2.3 points. The factor of chronological age was disregarded in this selection but the mean difference in age was less than one month, the segregated school group being older. This selection having been made to favor the segregated school group, the difference between their academic achievements was measured and studied by means of the reliability technique, in order to learn whether the segregated school group benefitted by the biased method of selection. The number of cases was too small to yield reliable results when taken alone but if the di-

rection of differences was shifted toward the favored group there would be some reason to believe that the entire groups were random samples.

In order to test the random sample of the Dearborn subjects twenty-eight Dearborn pairs were selected from the entire number of Dearborn pairs. They were similarly biased in favor of the segregated school groups in regard to mental age and intelligence quotient. The mean difference between their mental ages was 2.5 months and between their intelligence quotient was 3.1 points. In chronological age, which was disregarded as a factor in selection, the mixed school group was 1.7 months older on the average. After the twenty-eight Dearborn pairs had been selected a study of the difference between their achievements was made. Here again the number of cases was small but it was thought that if the degree and the direction of the difference showed the influence of the biased selection of subjects, there would be some ground for considering the entire Dearborn groups unselected and random samples. Should it agree with the difference found between the achievements of the Binet pairs the reliability of both would be increased. This leads to the fundamental consideration of how the entire Dearborn groups served as a check

upon the random sampling of the Binet groups.

The possibility of error resulting from the use of the abbreviated form of the Stanford-Binet tests was mentioned earlier, in the discussion of the tests used in the study. Such an error would be due to other causes than fluctuations in the sampling and so would not be measured by the statistical method. As has been stated, groups were equated upon the basis of their Dearborn group test results, in order to check any error which might arise from the use of the abbreviated form of the other test. In view of its higher reliability there is considerable reason for believing that even the abbreviated form of the Standard-Binet tests would yield more reliable grounds for selecting subjects than would any group test, yet the fact that the Dearborn tests contain a large amount of pictorial material as compared with the Binet tests, gave them value in equating supplementary groups for study. Furthermore as was seen before, the number of subjects was increased from 110 equated upon the basis of the Binet test alone, to 134 equated upon the bases of both the Binet and Dearborn tests.¹ By using the Dearborn tests twenty-three subjects were taken into account, who were omitted from the Binet pairs

¹ See Table X.

and all but eight of those who were included in the Binet pairs were re-equated. Should the achievement results of the Dearborn pairs agree with those of the Binet pairs they would serve as an additional check upon the random method of sampling the Binet pairs as well as increase the statistical reliability of the differences found between both the Binet equated groups and the Dearborn equated groups, by increasing the total number of subjects studied.

F. Summary.

The plan of the study was to equate Negro pupils of segregated schools with Negro pupils of mixed schools on the basis of their results in intelligence tests and to compare their achievements in academic tests. Among the 4500 Negro pupils enrolled in all of the segregated schools of Cincinnati and the 2000 Negro pupils in the mixed schools visited, 110 subjects were found in the fourth, fifth and sixth grades, who met the requirements for the study. They were paired in respect to their chronological age, mental age and intelligence quotient, and educational tests were administered to them. The difference between the achievements of the two groups was measured and evaluated according to the reliability technique. This answered the

questions: would the obtained difference hold true in other samples were similarly selected and tested and what are the chances that the true difference is greater than zero.

The statistical method tests errors due to the fluctuations which occur in a random sample. Several checks were introduced to determine whether the samples were normal groups and whether they were really random samples. The possibilities of other errors which frequently arise in the administering and scoring of tests and in the handling of test records were eliminated to a great extent. By these various means the statistical findings were made more reliable and the conclusions based upon them were rendered more significant. An analysis of the subjects who participated in the investigation threw further light upon the normality of the equated groups. This is to be found in the following chapter.

CHAPTER III

DESCRIPTION OF THE SUBJECTS: RESULTS OF THE INTELLIGENCE TESTS AND THE SOCIAL STUDY.

A. INTRODUCTION

Chapter II was concerned with the procedure followed in selecting and equating the subjects who participated in the investigation and with the methods used to measure the difference between the achievements of the equated groups. Chapter III is devoted to a discussion of the characteristics and home conditions of the subjects. Three questions are considered: (1) what kind of subjects are under investigation; (2) how nearly equal are the equated groups in regard to uncontrolled conditions as well as to the constant factors; and (3) are the subjects distributed according to the normal probability curve?

The third question is directly related to the larger question raised in the previous chapter, of the reliability of the statistical procedure followed in the study. A normal distribution of the subjects in reference to their various characteristics would add evidence to that already given that the reliability technique was applicable to the difference between their achievements. The second question is related to it. The more nearly equal the samples were in all but the factor to be

measured, the more reliable would be the findings in regard to that factor. Answer to the other important question was necessary before the results which are presented in the fourth chapter could be understood properly. What is the intelligence of the subjects and what are their environmental conditions?

The constant factors of age and intelligence are presented in as accurate measures as there are, being based upon objective data derived from the birth records and the intelligence tests. Here reference will be made to the previous studies of Negro ability and to norms which have been obtained from studies of white children. The other conditioning factors of parental and home influences are shown in less refined measures, the data having been derived from the subjective judgment of teachers, the school records and the verbal reports of the children. All of the sources revealed facts of interest to the study.

B. The Age and Intelligence of the Subjects.

1. The Age--Grade Distribution of the Subjects.

As was pointed out in the previous chapter, the equated groups are closely matched in age. The picture of their age distribution, given in Table XI, shows this same similarity between the entire groups, and between the grade groups of which the entire groups are composed. The difference between the means of the entire Binet groups of fifty-five subjects each, is only .63 month, a little more than one-half month in favor of the

mixed school group. This is fairly constant between the grade sections in degree and the shift of direction in grade six prevents any marked bias in the entire group. Looking at the distributions the mean age of the sixty-six fourth grade subjects of the Binet groups is seen to be ten years seven months, of the thirty in the fifth grade groups it is eleven years three months, and of the fourteen in sixth grade it is twelve years three months. Six years six months is about the average age at which children enter first grade in Ohio. The Binet subjects thus appear to have made normal school progress, an average of one year in each grade.

Approximately the same age results were found for the Dearborn subjects. The segregated and mixed school subjects are practically equal in age, the difference between their means being only 1.46 months. There is also a close similarity between the ages of the Dearborn subjects and the Binet subjects. In order to have some basis for comparison, the mean mean of the two Binet groups was compared with the mean mean of the two Dearborn groups.

(For Table XI see following page)

TABLE XI (Cont.)

THE CHRONOLOGICAL AGES AND THE MENTAL AGES OF THE 110 BINET SUBJECTS AND THE 106 DEARBORN SUBJECTS, ACCORDING TO GRADE AND TYPE OF SCHOOL, AND THE STANDARD MENTAL AGE OF AMERICAN SCHOOL CHILDREN, IN MONTHS

	Dearborn Subjects				Standard Mental Age (Approximate)		
	Chronological Age		Mental Age				
	Segregated	Mixed	Total Range Mean of Means and S. D.'s	Segregated		Mixed	Total Range Mean of Means and S. D.'s
4th Grade							
Range	113-151	111-158	111-158	93-118	89-117	89-118	120 125
Mean	126.22	126.22	126.22(10-6) a	107.00	106.31	106.66(8-11)	(10-0) (10-5)
S. D.	9.12	10.52	9.82	7.41	7.62	7.52	
5th Grade							
Range	120-152	127-156	120-156	103-151	105-150	103-151	132 137
Mean	134.70	137.23	135.97(11-4)	125.37	125.10	125.29(10-5)	(11-0) (11-5)
S. D.	8.51	9.78	9.15	13.71	12.38	13.05	
6th Grade							
Range	137-182	138-186	137-186	116-155	118-149	116-155	144 149
Mean	154.28	154.28	154.28(12-10)	136.06	135.50	135.73(11-4)	(12-0) (12-5)
S. D.	12.34	13.44	12.89	12.28	9.84	11.06	
Total							
Range	113-182	111-186	111-186	93-155	89-150	89-155	
Mean	132.54	134.00	133.27(11-1)	117.06	115.93	116.50(9-9)	
S. D.	13.92	14.64	14.28	15.52	14.72	15.12	

a. The age in years and months is given in parenthesis.

1. The Standard Mental Age is taken from Terman, Lewis M. "The Intelligence of School Children." Boston. Houghton Mifflin Company 1919. p. 40.

These new means of the combined Binet and Dearborn subjects were eleven years and eleven years one month, respectively. This close agreement between the two sets of subjects was to be expected in view of the overlapping between them. Comparing them grade for grade they are practically identical save in grade six where the subjects numbered only fourteen in the Binet groups and eighteen in the Dearborn groups. A consideration of the entire distribution finds a wider scattering of subjects at the upper range but the standard deviation of less than one year shows that there is a fairly normal concentration about the mean. On the whole the distribution appears to approximate the average.

A comparison of the mean age of the Binet and Dearborn groups, with that of the Negroes and whites studied by Peterson and Pressey shows that the Cincinnati Negroes are considerably nearer the age standards of Pressey's whites of Indiana than are either the Negroes or whites whom Peterson studied in Tennessee, North Carolina and Arkansas. This is shown in Table XII. Peterson's tests were spread over several months, from November tenth to April twenty-seventh, consequently some of his subjects are younger and some a month older than they were in March, the time that the Cincinnati Negroes were tested. Disregarding this difference and taking the age of his subjects at the time they were tested, there is a mean difference of more

than two years between his Negroes and those of the present study, in every grade but the sixth. Here the Dearborn subjects were one and one-half years younger. The Cincinnati Negroes were younger than Peterson's white school children, as well, and approximated Pressey's white children in age. The small number of Cincinnati Negroes studied in fifth and sixth grades makes the apparent differences less reliable but the fact that the degree of difference is consistent through-out the grades leads one to conclude that Cincinnati Negroes are on the whole considerably younger than Peterson's subjects of the same grades and that they approximate the standards of Indiana white children, in age.

(For Table XII see following page)

TABLE XII

A COMPARISON OF THE MEAN AGE IN YEARS AND MONTH, OF THE 110 BINET SUBJECTS AND THE 106 DEARBORN SUBJECTS OF THIS INVESTIGATION WITH THAT OF PETERSON'S NEGRO AND WHITE SUBJECTS¹ AND PRESSEY'S WHITE CHILDREN² BY GRADES. (FIGURES FROM TABLE XI OF THIS STUDY)

Groups of Subjects Compared	Grades					
	IV		V		VI	
	White	Negro	White	Negro	White	Negro
<u>Mean Ages</u>						
Mean Age, Binet Subjects		11-7		11-3		12-3
Mean Age, Dearborn Subjects		10-6		11-4		12-10
Mean Age, Peterson's Subjects	11-5	12-11	12-4	13-10	13-1	14-4
Mean Age, Pressey's Whites	10-1	11-7	11-7		12-2	
<u>Differences between Mean Ages</u>						
Mean, Peterson's Negroes -- Mean, Binet Subjects		2-4		2-7		2-1
Mean, Peterson's Negroes -- Mean, Dearborn Subjects		2-5		2-6		1-6
Mean, Peterson's Whites -- Mean, Binet Subjects	0-10		1-1		0-10	
Mean, Peterson's Whites -- Mean, Dearborn Subjects	0-11		1-0		0-3	
Mean, Peterson's Negroes -- Mean, Whites		1-6		1-6		1-3
Mean, Pressey's Whites -- Mean, Binet Subjects		0-6	0-3			0-1
Mean, Pressey's Whites -- Mean, Dearborn Subjects		0-5	0-3			0-8
Mean, Peterson's Negroes -- Mean, Pressey's Whites		2-10		2-3		2-2
Mean, Peterson's Whites -- Mean, Pressey's Whites	1-4		0-9		0-11	
<u>Number of Subjects</u>						
Number of Peterson's Subjects	146	192	126	148	254	218
Number of Binet Subjects		66		30		14
Number of Dearborn Subjects		58		30		18

1. Peterson, Joseph. "The Comparative Abilities of White and Negro Children." Comparative Psychological Monographs. Volume I, Number 5. (July, 1925) Table 6, p.40.

2. Pressey, S.L. and Teter, Q.F. "A Comparison of Colored and White Children by Means of a Group Scale of Intelligence." Journal of Applied Psychology. Volume III (September, 1919)

2. The Mental Age--Grade Distribution.

Here again the close matching of the equated pairs is apparent, as shown in Table XI. The difference between the mean mental age of the two entire Binet groups is .24 month and this is fairly constant, between the grade sections, in the direction of the mixed school group. Between the entire Dearborn groups the difference in mental age is 1.03 month and it is in favor of the segregated school group in each grade. According to the Binet results the Cincinnati Negro is from three to nine months retarded in mental age as compared with his chronological age and on the basis of his Dearborn group test results he is a year to a year and one-half retarded mentally. This difference between the results of the two tests will be discussed in reference to other studies that have been made of Negro intelligence.

The retardation noted above is seen again in comparing the mental ages of the subjects with the standard mental ages of American school children, listed in Table XI. It was noted that the subjects' chronological ages approximate the standard mental ages in years and months, and that their mental ages are somewhat below their chronological ages. Their mental ages fall about the same distance below the standard mental ages, i.e. a few months, as shown by the Binet tests and more than a year as measured by the Dearborn tests. It is interesting to see, however,

that in all of the Binet groups and all but the fourth grade Dearborn groups the upper range limit is considerably higher than the standard mental age for the grade. The mean of every Binet grade section plus its standard deviation includes the standard mental age of American children. This shows that there are at least sixteen out of one hundred of the Binet subjects who exceed the standard mental age of their grade. The upper range limits in these groups picture some subjects who are advanced mentally as much as twenty months for the grade in which they are enrolled. This is true of the Dearborn test findings, to a less extent. Taking into consideration the subjects at the lower end of the range and of the standard deviation below the mean as well as above, a fairly normal curve of the distribution of mental ages is apparent in both sets of test results.

3. The Distribution of Intelligence Quotients: The General Intelligence of the Subjects.

The discussion of the intelligence quotient becomes a summary of all of the information given, regarding the chronological age and the mental age upon which it is based. Table XIII supplements Table IX by showing how nearly equal are the ranges, means and standard deviations of the distributions of the intelligence quotients of the two Binet groups and the two Dearborn groups. The difference of .06 point between the means

of the entire Binet groups, in favor of the mixed school groups, is assumed to be insignificant. The Dearborn groups are similarly equated. There is a difference of .82 point between the means of the entire Dearborn group, in the direction of the segregated school group. Whereas the mixed school groups were slightly favored in the selection of the Binet pairs, in respect to chronological age, mental age and intelligence quotient, the segregated school groups were slightly favored in the selection of the Dearborn pairs but the influence of the difference was assumed to be negligible.

Inspection of the combined mixed and segregated school groups of the Binet subjects finds a fairly normal distribution of intelligence quotients. Ninety-five is the mean and the standard deviation is eleven points, within a range of 69 to 129. The mean falls practically at the center of the range and the standard deviation appears to be reasonably small in view of the number of subjects tested. There is considerable agreement among the means of the three grade sections but the fifth grade subjects are two points higher. The variation occurs between the fifth grade sections of the Dearborn groups, to a greater degree. There the mean intelligence quotient is eighty-seven. It has a similar standard deviation of eleven points, and it is approximately equidistant from the limits of the range, sixty-two and one hundred twenty-two.

(For Table XIII see following page)

TABLE XIII

THE INTELLIGENCE QUOTIENTS OF THE 110 SUBJECTS WHO TOOK THE STANFORD-BINET TESTS AND OF THE 106 SUBJECTS WHO TOOK THE DEARBORN GROUP TESTS

Intelligence Quotients						
	Binet Subjects			Dearborn Subjects		
	Segregated	Mixed	Total Range Mean of Means Mean of S.D.'s	Segregated	Mixed	Total Range Mean of Means Mean of S.D.'s
4th Grade						
Range	69-118	73-113	69-118	64-102	62-97	62-102
Mean	93.86	94.14	94.00	85.50	84.81	85.16
S.D.	10.53	11.09	10.81	9.63	9.14	9.39
5th Grade						
Range	81-129	79-122	79-129	77-122	72-115	72-122
Mean	98.57	97.37	97.97	93.37	91.63	92.50
S.D.	12.28	11.46	11.87	13.09	12.62	12.86
6th Grade						
Range	83-106	83-107	83-107	75-106	74-106	74-106
Mean	95.00	95.86	95.43	88.50	88.83	88.67
S.D.	8.78	8.79	8.79	11.47	10.99	11.23
Total						
Range	69-129	73-122	69-129	64-122	62-115	62-122
Mean	95.17	95.23	95.20	88.24	87.42	87.83
S.D.	11.00	11.04	11.02	11.82	10.97	11.40

The intelligence quotients of both the Binet and Dearborn subjects appear, then, to follow a normal frequency distribution.

These results may be compared with those of the previous studies of Negro Intelligence, as summarized in Table XIV. The median intelligence quotients of studies in which the Binet tests were used, range from 83 to 99 with a central tendency around 90. Graham found a median intelligence quotient of 99, which is higher than that of the Cincinnati Negroes, but all of the others were lower.

The problem of this investigation did not include a comparison of Negro intelligence with that of whites but the use of a scale which had been originally formulated for the classification of French children and was revised on the basis of the results of American white children involved a direct comparison with the intelligence of white children. Their average results were the norms by which the Negro child's intelligence was determined.

(For Table XIV see following page)

The median intelligence quotients of the white boys and girls tested by Terman were as follows:¹

Age in Years	5	6	7	8	9	10	11	12	13	14
Median I.Q. of Boys	100	99	101	100	98	103	96	97	96	100
Median I.Q. of Girls	104	105	103	102	102	103	101	99	97	96

The range in the intelligence quotients of the various groups was from 96 to 105 and above the age of fourteen years the median dropped several points. The median of the entire 905 subjects was 100 and approximately 75 per cent of his subjects ranged from 86 to 115, within a total range of 56 to 145.² As compared with them, the Cincinnati Negroes had a mean intelligence quotient of 95, as measured by the Binet scale, with 68 per cent of the subjects ranging in intelligence quotient from 84 to 106. Their whole curve of distribution was shifted to a mean of about five points less than that of the American white children. The standard error of their mean was 1.1 points, showing that there are sixty-eight chances in one hundred that it is near the true mean of the distribution of the intelligence quotients of Cincinnati Negroes similarly selected and tested. According to the Binet

1. Lewis M. Terman, The Measurement of Intelligence, p. 69. Boston: Houghton Mifflin Company, 1916.

2. Ibid., p. 66.

tests then, they may be ranked on the whole, among American children of average intelligence. Those at the upper end of the range were considerably above the average mentally and those at the lower end were below the average.

The similarity of the Dearborn groups and their normal distributions, in respect to intelligence quotients have been noted. The mean intelligence quotient obtained from the Binet tests falls within the section of the scale which indicates average mental ability. The mean intelligence quotient of eighty-seven, obtained from the Dearborn tests, is in the section of the scale which indicates dullness, according to Terman's classification.¹ This is eight points lower than the Binet mean but is higher than those of most of the group tests which have been used in the previous studies summarized in Table XV. The range in intelligence quotients in these group tests is from 58 to 92. On the whole they run lower than did the intelligence quotients obtained from the Binet tests. This bears out the difference between the results of the Binet and Dearborn tests in this study. This difference between the results of the individual and the group tests is further shown in Table XVI where the overlapping of the intelligence of the Cincinnati Negro upon that of the white child is shown to be much greater in terms of the Binet test results than in terms of the Dearborn findings.

1. Opp. Cit. p. 79.

TABLE XIV

A SUMMARY OF PREVIOUS COMPARISON OF NEGRO AND WHITE, BY MEANS OF THE BINET TESTS 1

Author	Comparison by Binet Tests			
	Negro		White	
	Median I.Q.	No. of Cases	Median I.Q.	No. of Cases
Schwegler & Winn ² (1920)	89	58	103	58
Arlitt ³ (1921)	83	71	106	191
Pintner & Keller ⁴ (1922)	88	71	95	249
Arlitt 5 (1922)	86	243	No white group	
Lacy ⁶ (1925-6)	91	817	103	5,159
Graham ⁷ (1926)	99	105	No white group	
Strachan ⁸ (1926)	93	609	102	14,463
Strachan (1926)	93	375	101	6,063

1. Table XIV is taken from Table 20, of "Intelligence Testing," by Rudolf Pintner, Henry Holt Company, New York, 1923, 1931. P. 433.

2. Schwegler, R. A. and Winn, E. A., "A Comparative Study of the Intelligence of White and Colored Children," Journal of Educational Research, Volume II. (December, 1920) pp. 838-848.

3. Arlitt, Ada Hart, "On the Need for Caution in Establishing Race Norms," Journal of Applied Psychology, Volume V. (June, 1921) pp. 179-183.

4. Pintner, R. and Keller, R., "Intelligence Test of Foreign Children," Journal of Educational Psychology, Volume XIII. (April, 1922) pp. 214-222.

5. Arlitt, Ada Hart, "The Relation of Intelligence to Age in Negro Children," Journal of Applied Psychology, Volume VI. (December, 1922) pp. 378-385.

6. Lacy, L. D., "Relative Intelligence of White and Colored Children," Elementary School Journal, Volume XXV. (March, 1925) pp. 542-546.

7. Graham, V. T., "Health Studies of Negro Children I. Intelligence Studies of Negro Children in Atlanta, Georgia," Public Health Report, Volume XLI. (1926) pp. 2759-2783.

8. Strachan, L., "Distribution of Intelligence Quotients of Twenty-two Thousand Primary School Children," Journal of Educational Research. (October, 1926) pp. 169-177. Volume XIV.

TABLE XV
A SUMMARY OF THE RESULTS OF VARIOUS GROUP TESTS OF NEGRO AND WHITE CHILDREN 1

Author and Date	No. of Subjects		Test	Negro I.Q.	Result
	Negro	White			
Pressey and Teter ² (1919)	187	1,022	Pressey		Negro Overlap 14%
Murdock ³ (1920)	225	514	Pressey		White + .85 P. E.
Haggerty ⁴ (1921)	3,000	13,000	Haggerty Delta		Negro Overlap 14 to 20%
Jordan ⁵ (1922)	247	1,504	N. I. T.	75	Negro Overlap 20 to 25%
Peterson ⁶ (1923)	37-734	71-841	Otis	58-75	Negro - 1.4 P. E.
Sunne ⁷ (1924)	1,112	5,834	Pressey Haggerty Myers N. I. T. Myers		Negro Overlap 14 to 33%
Garth and Whatley ⁸ (1925)	1,272		N. I. T.	75	
St. Louis Report ⁹ (1925)	1,574	8,998	Pintner Cunningham	92	White I. Q. 100
Hirsch ¹⁰ (1926)	448	1,030	Pintner Cunningham and Dearborn	85	American White I.Q. 98
Davis ¹¹ (1928)	222		Terman	78	
Peterson and Lanier ¹² (1929)	86	119	3 group tests		Negro - 2.2 Q.
	86	119	3 ingenuity tests		Negro - 0.8 Q.
Kempf and Collins ¹³ (1929)	399	677	Various	71	White I. Q. 88
Young ¹⁴ (1929)	314	323	N. I. Q.		White 95% better
Gray and Bingham ¹⁵ (1929)	258	219	Not given	76	White I. Q. 108
Garth et. al. ¹⁶ (1930)	2,006		Otis	76 or 78	Negro Overlap by Age from 1-32

TABLE XV (Cont.)

A SUMMARY OF THE RESULTS OF VARIOUS GROUP TESTS OF NEGRO AND WHITE CHILDREN ¹

1. Table XV is Table 21 of Rudolf Pintner's "Intelligence Testing" New York, Henry Holt and Company, 1923, 1931, p. 437.
2. Pressey, S. L. and Teter, G. F., "A Comparison of Colored and White Children by Means of a Group Scale of Intelligence," Journal of Applied Psychology, Volume III. (September, 1919) pp. 277-282.
3. Murdock, M. "Study of Race Differences in New York City," School and Society, Volume XI. (January 31, 1920) pp. 147-150.
4. Haggerty, M. E., Virginia Public Schools. Part II. Educational Tests. New York, 1921.
5. Jordan, A. H., "Notes on Race Differences," School and Society, Volume XVI. (October 28, 1922) pp. 503-504.
6. Peterson, J., "The Comparative Abilities of White and Negro Children," Comparative Psychology Monographs, Volume I, Number 5. pp.1-141.
7. Sunne, D. A., "A Comparative Study of White and Negro Children," Journal of Applied Psychology, Volume I. (March, 1917) pp. 71-83.
8. Garth, T. R. and Whatley, C. A., "The Intelligence of Southern Negro Children," School and Society, Volume XXXII. (September 27, 1930) pp. 431-435.
9. Report of St. Louis Public Schools. Public School Messenger, Volume XXIII. (1925) pp.45-57.
10. Hirsh, N. D. M., "A Study of the Nation--Racial Mental Differences," Genetic Psychology Monographs, Volume I, Numbers 3 and 4. (1926) Clark University.
11. Davis, R. A., "Some Relations Between Amount of School Training and Intelligence Among Negroes," Journal of Educational Psychology, Volume XIX. (February, 1928) pp. 127-130.
12. Peterson, J. and Lanier, L. H., "Studies in the Comparative Abilities of Whites and Negroes," Mental Measurement Monograph, Serial Number 5, 1929.
13. Kempf, G. A. and Collins, S. D., "A Study of the Relation Between Mental and Physical Status of Children in Two Counties in Illinois," U. S. Public Health Reports, Volume XLIV. pp. 1743-1784.
14. Young, P. C., "Intelligence and Suggestibility in Whites and Negroes," Journal of Comparative Psychology, Volume IX. (October, 1929) pp. 339-359.
15. Gray, C. T. and Bingham, C. W., "A Comparison of Certain Classes of Musical Ability of Colored and White Public School Pupils," Journal of Educational Psychology, Volume XX. (October, 1929) pp. 501-506.
16. Garth, T. R., et al., "Racial Differences in Mental Phatigue," Journal of Applied Psychology, Volume IV. (June-September 1920) pp. 235-244.

TABLE XVI

THE NUMBER AND PERCENTAGE OF THE SUBJECTS WHO EXCEEDED AN INTELLIGENCE QUOTIENT OF 100

Binet Subjects	Grades			
	IV	V	VI	Total
Segregated	9	9	3	21
Mixed	10	6	3	19
Total number exceeding I.Q. 100	19	15	6	40
Total number subjects studied	66	30	14	110
% of total number who exceed I. Q. of 100	29%	50%	43%	36%

Dearborn Subjects				
Segregated	2	5	3	10
Mixed	6	4	4	13
Total number exceeding I.Q. 100	7	9	7	23
Total number subjects studied	58	30	18	106
% of total number who exceed I. Q. of 100	12%	30%	39%	22%

Since the Binet test has proved to be the more reliable measure of native capacity its results are accepted in this study, as giving the more reliable indication of the Cincinnati Negroes' intelligence. The results of the Dearborn test, however, are considered suitably adapted to the purpose for which they were used, i. e. to provide a basis for equating supplementary pairs of school children whose differences in academic achievement would serve as a check upon those of the subjects given the abbreviated Binet tests. The following section is concerned with the questions raised for study at the beginning of the chapter:

(1) What kind of subjects are being investigated, what are their background factors; (2) how nearly alike are the segregated and mixed school groups in regard to their background factors; and (3) do their frequencies of measures follow a normal distribution: are they a representative sampling? This discussion is limited to the segregated and mixed school groups who were given the Binet tests and who were the primary subjects under investigation.

C. Other Conditioning Factors.

1. School History.

Something of the background of school experience was seen in the school records copied at the schools and in the statements of the pupils regarding their social histories. This information has been presented in rough form in Tables XVII, XVIII, and XIX.

(For Tables XVII, XVIII, and XIX see following page)

TABLE XVII

THE NUMBER OF THE BINET SUBJECTS WHO HAD ATTENDED KINDERGARTEN

Enrollment in Kg't'n	Type of School	
	Segregated	Mixed
Yes	42	40
No	13	15
Total Number	55	55

TABLE XVII

THE AGE OF THE BINET SUBJECTS ON ENTERING FIRST GRADE

Age in years and Months	Type of School	
	Segregated	Mixed
5-0 to 5-11	2	4
6-0 to 6-11	46	46
7-0 to 7-11	4	2
8-0 to 8-11	3	3
8-0 to 8-11	55	55

TABLE XIX

THE AVERAGE SCHOOL ATTENDANCE OF THE BINET SUBJECTS 1,2

Number of Days' Attendance	Type of School	
	Segregated	Mixed
Range per year	127.2 to 192.5	129.2 to 192.6
Mean per year	172.8	170.6

1. Average School attendance means the average number of days of attending school per year prior to the year of the investigation.
2. Information regarding school attendance was lacking from one subject consequently only fifty-four of the fifty-five pairs are reported here.

In so far as the fact of attendance in Kindergarten is concerned the equated groups appear to have a similar background. Forty-two of the segregated school subjects and forty of the mixed school subjects had been enrolled in Kindergarten. In regard to the age at the time of entering first grade the groups are similar again. Forty-six members of each group entered first grade when six years old, the age set by law in Ohio. The remaining nine subjects in each group began when five, seven or eight years old and were similarly distributed over those years. In average attendance per year, prior to the year of the study, the two groups are again very much alike. The school year in Cincinnati averages 190 school days and the month about nineteen school days.¹ The range in school attendance, being 127 to 193 days, was then, about seven to ten months and the mean number of months' attendance was almost nine months. This means that the same amount of school time, approximating one school month, was lost in absence from school. The two groups are remarkably uniform in the extent of absence and attendance which their records reveal.

1. This statement was made to the investigator by the Assistant Director of the Vocation Bureau, in charge of the Child Accounting Division of the office of the Superintendent of Schools of Cincinnati, during the time of the study.

2. General Physical Condition and Personality.

Information regarding the health of the subjects was obtained from the physical histories of the school records, the statements of the subjects, and their teachers' statements. The two groups were alike and appeared to be normal physically in that none of them had suffered any serious physical handicap or unusual ill-health. They proved to be similarly normal in conduct, as well. From the school records and the teachers' statements it was found that none of the subjects had been under observation at the Central Clinic of the Council of Social Agencies which handles the serious behavior problems of the Cincinnati schools. In so far as this freedom from misconduct indicates normal behavior, the subjects were normal.

Turning to the personality traits of the subjects, a striking difference is seen in the ratings obtained on the basis of the New York Rating Scale, from the two types of schools. These are shown in Tables XX, XXI, and XXII. The medians, and the two quartiles of the ratings made by the segregated school teachers exceed those made by the mixed school teachers in every one of the ten traits. The mean of the mean ratings of the segregated school teachers is 60 on a scale of 100 and that of the mixed school teachers is 48. A similar difference is indicated by the difference of the medians and quartiles of the distributions of the mean ratings.

(For Tables XX, XXI, and XXII see following pages)

TABLE XX

THE SCHOOL HABITS OF THE BINET SUBJECTS AS RATED BY THEIR TEACHERS
ON A SCALE OF 0 TO 100 ¹

Trait	School Type	Number of Subjects	Md.	Q 1	Q 3
Attention	Segregated	55	54	50	70
	Mixed	55	45	24	53
Neatness	Segregated	55	56	51	70
	Mixed	55	52	34	58
Honesty	Segregated	55	79	59	97
	Mixed	55	57	47	78
Interest	Segregated	55	58	53	76
	Mixed	55	49	32	57
Initiative	Segregated	55	59	52	87
	Mixed	55	52	33	58
Ambition	Segregated	54 a	58	52	79
	Mixed	54	51	32	59
Persistence	Segregated	54 b	56	45	72
	Mixed	54	43	19	56
Reliability	Segregated	55	57	51	73
	Mixed	55	44	22	56
Stability	Segregated	55	54	52	88
	Mixed	55	53	29	74
Originality	Segregated	35 c	54	29	70
	Mixed	35	50	23	57

1. The school habits which were rated in the study included the nine listed in the New York Rating Scale and that of Originality which was added by the investigator.

a,b. Ratings were not obtained for one subject in each of the traits of ambition and persistence. Consequently only fifty-four pairs were compared in regard to them.

c. Ratings were obtained for only thirty-five complete pairs in respect to originality. Having been added to the printed scale of the other traits it was overlooked in a number of cases and where one number of a pair was not rated, both were omitted from that part of the study.

TABLE XXI

A COMPARISON OF THE MEAN RATINGS OF THE BINET SUBJECTS IN TEN TRAITS (SCALE 0-100)

Type of School	Number of Subjects	Mean Ratings										Mean of Mean Ratings
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Segregated	55	0	1	2	5	10	13	9	5	4	6	60
Mixed	55	0	1	9	11	14	9	3	5	3	0	48

TABLE XXII

THE MEDIAN AND THE QUANTILES OF THE MEAN RATINGS OF THE BINET SUBJECTS IN THE TEN TRAITS

Type of School	Md.	Q 1	Q 3
Segregated	57	46	71
Mixed	46	34	57

In view of the brevity of the scale and the lack of complete objective standards or illustrations for the ten points of the scale, the subjective element may enter into the ratings which are made by means of it. This seems to the investigator to account for the apparent difference between the segregated school group and the mixed school group. However it is possible that three factors played a role in producing the difference.

(1) The mixed school teachers might have under-rated their Negro pupils; (2) the segregated school teachers might have over-rated their pupils; and (3) there might be an actual difference in the habits and traits developed under the conditions of the two types of schools. The question of how reliable is the difference between the personality traits of subjects and how effective are the possible influences which entered into the ratings made by the segregated and the mixed school teachers cannot be answered here. They are worthy of another study which should follow this, on the subject of the characteristics or personality traits of Negro subjects who attend segregated and mixed schools, and the possible differences between them.

3. Social Status.

In order to know something about the home environmental conditions, information was obtained from the teachers and the subjects themselves. The teachers were asked to rate their pupils in the matter of social status according to a briefly described

scale of zero to one hundred, and the children were questioned regarding the size of their families, the size of their dwelling houses or flats, the occupational status of their fathers, and the occupational status of their mothers.

Table XXIII presents the distributions of the teachers' ratings of social status. The mean of both distributions is below the exact center of the scale but the more prominent feature of the table is the difference between the two distributions. Teachers of the segregated school subjects rated their pupils higher on the same scale than did the teachers of the mixed school pupils. The more objective measures of social status which are shown in the following tables, Tables XXIV, XXV, and XXVI as well as later ones, help to answer the question raised by Table XXIII as to whether the social status of the two groups is different or whether the subjective standards of the teachers account for the difference between their ratings.

(For Tables XXIII, XXIV, XXV, and XXVI see following pages)

TABLE XXIII

THE TEACHERS' RATINGS OF THE SOCIAL STATUS OF THE BINET SUBJECTS
(SCALE 0 - 100)

Distribution of Ratings	Type of School	
	Segregated	Mixed
Range	11 to 100	0 to 88
Mean	47.33	39.82

TABLE XXIV

THE NUMBER OF CHILDREN PER FAMILY

Type of School	Number of Children												Mean
	1	2	3	4	5	6	7	8	9	10	11	12	
Segregated	4	9	9	7	4	7	9	4	1	0	1	0	4.6
Mixed	3	10	8	6	8	10	0	4	3	2	0	1	4.6

TABLE XXV

THE NUMBER OF ROOMS PER FAMILY (52 SUBJECTS OF EACH GROUP)

Type of School	Number of Rooms										Mean
	1	2	3	4	5	6	7	8	9	10	
Segregated	2	10	17	12	3	4	3	0	0	1	3.7
Mixed	1	7	15	13	6	2	4	2	2	0	4.3

TABLE XXVI

THE NUMBER OF ROOMS PER PERSON

Type of School	Number of Rooms			Mean
	0-0.9	1-1.9	2-2.9	
Segregated	40	11	1	.73
Mixed	38	14	0	.73

The following rough but objective measures of social states find considerable similarity between the groups which had been equated upon the basis of age, mental age and intelligence quotient, according to the Binet tests. The mean number of children per family is five, in each group and the distributions are skewed alike toward the lower end of the range showing that there are more small families in each group than there are large families. The mean number of rooms per family was four in each distribution and here again some skewness toward the lower end of the range was apparent. There are more families living in one or two rooms than are living in nine or ten rooms. Accordingly there is less than one room per person, on the average, in each group. No dwelling has as many as three rooms per person in the family and more than two thirds of them have less than one.

These objective measures, as obtained from the statements of the subjects, present a picture of striking similarity between the segregated and the mixed school groups, in regard to the social status of the home. Both groups are shown to be badly crowded in living quarters. This seems to be representative of the Negro population in view of the fact that recent studies of the housing conditions of Cincinnati Negroes, made in connection with the Council of Social Agencies of Cincinnati, have found similar conditions.

Further light was thrown upon the social status of the subjects by means of a study of the occupations in which the fathers and mothers were employed. The occupations of the fathers were classified according to the form of the government census, as shown in Table XXVII. The parents of both groups were employed largely in personal and domestic service and in unskilled labor. The trend is the same in the two distributions. The significant fact is that few fathers are employed in the professions. This agrees with the census returns of 1920 which show that only 1.7 per cent of all Negro men ten years of age and over are engaged in professional service as compared with 6.5 per cent of native white of native parentage.

TABLE XXVII

THE GENERAL OCCUPATIONAL DIVISION OF THE FATHERS OF THE BINET
SUBJECTS EMPLOYED AT THE TIME OF THE STUDY

General Divisions of Occupation	Segregated	Mixed
Professional Service	1	1
Clerical Occupation	0	1
Independent Business & Industry	1	4
Personal & Domestic Service	17	11
Trades	8	6
Unskilled Labor-Manufacturing Mechanical, & Public Service	16	15
Total Employed, to Knowledge of Subjects	43	38

This means that there are four white men engaged in the professions in comparison with one Negro similarly engaged. A question arose here of the relation of the occupation to the intelligence of the child. After summarizing several studies, Sandiford says, "Finally the results from vocational groups (white) show that occupational status correlates positively with intelligence; professional people test high, unskilled laborers test low. Further, whenever the children of these people in different occupations have been tested, those from professional homes have invariably tested higher than those from homes of manual laborers. In other words, intelligence sufficiently great to achieve success in a profession tends to be passed on to the next generation."¹ If the converse of this is true and if it applies to Negroes as well as whites, one would expect to find a higher percentage of the fathers of the subjects studied here, engaged in professional occupations. The small difference between the general intelligence of the Binet subjects and that of Terman's unselected white children would not account for the difference between the percentage of Negro parents engaged in the professions and that of white parents, as shown in the government census returns. The low percentage of Negro parents would indicate that factors other than intelligence have determined their occupations. A study of the Negro parents of Cincinnati in relation to their intelligence and to other factors

1. Sandiford, Peter. Educational Psychology, London, Longmans Green and Company, 1928. p. 166.

which might enter into their choice of occupation, would be a valuable contribution to the vocational guidance of Negro youths in both the segregated and the mixed schools.

4. Parental Supervision and Care of Child.

Closely allied to social status is the matter of parental supervision and care of the child. These are very important factors but they have evaded exact measurement, and no good method has been developed for the study of them. In order to see what opportunity parents of the subjects of this investigation have, for the supervision of their children, the facts presented in Tables XXVIII, XXIX, and XXX were obtained from the children. Here it may be seen that approximately the same number of the mothers of each group are living, forty-eight in the mixed school group and fifty in the segregated school group. Of these mothers, twenty-eight and thirty respectively are employed gainfully. This means that more than half of the living mothers are prevented by their gainful employment from supervising their children. Since most of the fathers are at work away from home, as seen in Table XXVII, neither of them has an opportunity to supervise the children personally. The fact that no serious behavior problems were found among the subjects is surprising in view of this condition. However, a study of the social implications of it and its influence upon the habits and the characteristics of the children could be included in the study of personality traits suggested above.

(For Tables XXVIII, XXIX, and XXX see following pages)

TABLE XXVIII

THE PERSONAL AND THE EMPLOYMENT STATUS OF MOTHERS OF THE BINET SUBJECTS

	Type of School	
	Segregated	Mixed
Number Employed	30	28
Number Unemployed	20	20
Number Dead & No Record	5	7
Total Number of Mothers	55	55

TABLE XXIX

THE PERSONAL STATUS OF THE FATHERS OF THE BINET SUBJECTS

School	Working	Dead	Ill	Unknown	Divorced or Separated	In Penal Institu'n	Total Number
Segregated	43	8	2	0	1	1	55
Mixed	38	6	1	4	6	0	55

TABLE XXX

PARENTAL SUPERVISION AND SUPPORT

Persons Supervising	Living with Child		Supporting Child	
	Segregated	Mixed	Segregated	Mixed
Both parents	40	34	38	26
Father only	5	6	0	2
Mother only	9	14	5	11
Grandparent	0	1	3	5
Guardian or Orphanage Supervisors	1	0	4	2
Father and Step-Mother			1	1
Mother and Step-Father			4	8
Total	55	55	55	55

The provision for play space was considered another indication of the extent of parental care given the subjects of this study. As seen in Table XXXI forty of the segregated school children and forty-one of the mixed school children have some play space at home, aside from the street or sidewalk. The two groups were practically identical in this respect. The alarming fact is that almost one-fourth of the children of each group had none. How and where they spend their hours outside of school time, is a question of great concern to one interested in the future, not only of the Negro race but of the whole society of which they are part. In rough measures the preceding paragraphs point to the conclusion that the responsibility for supervising and for providing for their children is felt equally among the parents of each group. A large percentage of all of the parents are prevented by their daily labor, from assuming their parental responsibility of supervision should they desire to assume it. In the absence of parents and in the absence of play space at home the question of the recreational supervision of Negro children looms large.

D. Summary

The questions raised at the beginning of the chapter were answered satisfactorily, as far as the number of subjects and measures used would permit.

(For Table XXXI see following page)

TABLE XXXI

THE EXISTENCE OF PLAY SPACE ASIDE FROM THE STREET AND WALK

School	Yes	No	Total number from whom infor- mation was obtained
Segregated	40	13	53
Mixed	41	12	53

The equated groups are practically identical, not only in respect to the highly refined measures of age, mental age and intelligence quotients which were constant in the equating process, but in regard to measures of social status and parental supervision which were obtained from less reliable but objective sources. With respect to personality traits, in which the information came from subjective sources there was a difference but it was questionable whether it was due to the difference in subjective standards of measurement or actual difference in personality development.

The Negro subjects of the study were found to be fairly normally distributed in regard to the factors measured. The fact that the means and ranges of the three grade sections of the groups were relatively constant in the measures of age, mental age and intelligence quotient indicated that the groups were representative samplings of Cincinnati Negroes who might meet the requirements for use in the study.

The question of the natures of the subjects studied here is related to the previous questions of the reliability of results based upon their selection. Intelligence test results and birth records show that the Cincinnati Negroes of this investigation approximate the average age of Indiana white children of the same grades and are much younger than southern Negroes and white school children. They are several months retarded mentally

as compared with the standard mental age of American school children. As a consequence they have mean intelligence quotients five points below the median of American school children but within the range of average intelligence. Their home conditions are very crowded and about half of them are dependent upon the employment of both parents for support. Their fathers' work is limited largely to personal service and unskilled labor. A considerably smaller percentage of the fathers are engaged in professional service than are white fathers of children of equal intelligence. The fact that both parents must work leaves the children without their supervision and the lack of play space at home robs about one-fourth of them of the recreational facilities which are regarded as very desirable for the American school child. In spite of the adverse home conditions pictured, the Negro children are not outstanding behavior problems, as far as the study can detect. The academic test results of the subjects here described will be presented in the following chapter.

CHAPTER IV
THE RESULTS OF THE ACADEMIC TESTS

A. Introduction

The previous chapter described the subjects of the investigation, chosen from the segregated and the mixed schools. They were found to be closely equated in age and intelligence, which were the constant factors, and in environmental conditions also. They had been carefully selected and tested, and their age and intelligence distributions appeared to follow a normal probability curve. These conditions gave promise that the results of the academic tests would provide reliable bases for comparing the academic achievements of the pupils of the two types of schools. This, then, is the problem to be answered here. Stated again, it is: How similar or different are the academic achievements of segregated school pupils as compared with the achievements of mixed school pupils of equal age and intelligence? The results will be stated in terms of the scores of the academic tests, the educational ages, and the grade equivalents of the scores.

From this comparison the same question arose here which was considered in the previous chapter. In reference to the academic tests it is as follows: How does the academic achievement of the subjects compare with that of American school children at large, upon whom the tests were standardized? Facts will be presented in answer to this question. Less information is available in reference to a

second comparison, that of the academic achievements of Cincinnati Negroes and of Negro pupils in other places. Some discussion of these problems will follow the treatment of the major question.

B. The Differences between the Achievements of the Equated Groups.

1. A General Comparison.

A summary of the total scores of the equated groups in the Stanford Achievement tests and in the Total Composite Scale is given in Table XXXIII. As was to be expected in view of the fact that the groups were equated in intelligence, there was considerable agreement between their academic test scores. The Binet groups had correlation coefficients of .52, P.E. $\pm$.07 and .47, P.E. $\pm$.07, according to the product-moment method, respectively, in the two scales. The Dearborn groups were more highly correlated. These all proved the advisability of using the long formula described in Chapter II, for finding the reliability of the difference between the achievements of the equated groups.

(For Table XXXIII see following page)

TABLE XXXIII

A SUMMARY OF THE ACADEMIC ACHIEVEMENTS OF THE EQUATED GROUPS, AS SHOWN BY THEIR TOTAL SCORES IN THE STANFORD ACHIEVEMENT TESTS AND THEIR TOTAL SCORES IN THE TOTAL COMPOSITE SCALE, AND OF THE DIFFERENCES BETWEEN THEM.

Subject Group	Stanford Achievement Total Composite Score								
	Segregated (1)	Mixed (2)	Total Range Mean of Mean Mean of S.D.s	r	P.E.	Differ- ence M ₂ - M ₁	S.D. of Differ- ence	Differ- ence S.D.	Number of chances in 1000
Binet									
Range	287-769	298-795	287-795						
Mean	507.50	524.32	515.91						
S.D. dis	111.89	121.31	116.60	.52	.07	16.82	16.00	1.05	853
S.D. mean	15.09	16.36	15.73						
Dearborn									
Range	328-800	341-795	328-800						
Mean	513.60	535.33	524.47						
S.D. dis	114.46	113.16	113.81	.72	.04	21.73	11.69	1.86	968
S.D. mean	15.72	15.54	15.63						
Totals									
Range	287-800	298-795	287-800						
Mean	510.55	529.83	520.19						
S.D. dis	113.18	117.24	115.21			19.28			
S.D. mean	15.41	15.95	15.68						
Total Composite Score of All Tests									
Binet									
Range	1274.7-3429.4	1413.5-3547.2	1274.7-3547.2						
Mean	2285.68	2389.32	2337.5						
S.D. dis	495.60	532.43	514.02	.47	.07	103.64	71.45	1.45	926
S.D. mean	66.83	71.80	69.32						
Dearborn									
Range	1496.6-3578.4	1493.5-3558.1	1493.5-3578.4						
Mean	2319.10	2408.26	2363.68						
S.D. dis	513.75	512.25	513.00	.67	.05	89.16	57.33	1.56	940
S.D. mean	70.57	70.37	70.47						

TABLE XXXIII (Continued)

Subject Group	Segregated (1)	Mixed (2)	Total Range Mean of Mean Mean of S.D.s	r	P.E.	Difference $M_2 - M_1$	S.D. of Difference	Difference $\frac{S.D.}{S.D.}$	Number of chances in 1000
Totals									
Range	1274.7-3578.4	1413.5-3558.1	1274.7-3578.4						
Mean	2302.39	2398.79	2350.59						
S.D.dis	504.68	522.34	513.51			96.40			
S.D.mean	68.70	71.09	69.90						

A comparison of the ranges, means, and standard deviations of the equated groups in the two composite scales finds small and unreliable differences and wide overlapping. In the Stanford Achievement Scale the segregated school Binet subjects had a total range of 287 to 769 with a mean at 508, approximately midway between the extremes. The range of the mixed school Binet group was a few points higher and the mean was 524. The standard error was larger, as well. The difference between the means was 17 points and the standard error of the difference was 16 points. If the total score is converted into an average score for the ten Stanford Achievement tests, by dividing by ten, the average difference becomes 1.7 points, and the standard error of the difference becomes 1.6 points. In terms of the educational age and the grade equivalents of the score the difference may be stated as one month, as shown in the first half of Tables XXXIV and XXXV.

(For Tables XXXIV and XXXV see following pages)

TABLE XXIV

A SUMMARY OF THE DIFFERENCES BETWEEN THE EDUCATIONAL AGES OF THE EQUATED GROUPS AND OF THE DIFFERENCES BETWEEN THEIR MEAN EDUCATIONAL AGE AND THEIR MEAN MENTAL AGE.

Subject Group	Educational Age Equivalent of Obtained Scores				Mean Mental Age of Subjects			Difference in favor of		
	Segregated (1)	Mixed (2)	Total Range Mean of Means Mean of S.D.s	Difference M ₂ - M ₁	Diff. Scores S.D.Diff. Scores	Segre- gated	Mixed	Totals	Edu- cation- al Age..	Mental Age
<u>Binet.</u>										
Range	8-4tol2-2	8-5tol2-6	8-4-12-6			8-11tol3-2	8-8tol3-0	8-8tol3-2		0-4
Mean	10-0	10-1	10-1			10-5	10-5	10-5		
S.D.dis	0-9.5	0-10	0-10	0-1	1.05	1-0	1-0	1-0		
S.D.mean	0-2	0-2	0-2							
<u>Dearborn</u>										
Range	8-8tol2-6	8-9tol2-6	8-8to 12-6			7-9tol2-11	7-5tol2-6	7-5tol2-11	0-4	
Mean	10-0	10-3	10-1			9-9	9-8	9-9		
S.D.dis	0-9.5	0-10	0-10	0-3	1.86	1-4	1-3	1-3		
S.D.Mean	0-2	0-2	0-2							
<u>Totals</u>										
Range	8-4tol2-6	8-5tol2-6	8-4tol2-6			7-9tol3-2	7-5tol3-0	7-5tol3-2		0
Mean	10-0	10-2	10-1	0-2		10-1	10-1	10-1		
S.D.dis.	0-9.5	0-11	0-10			1-2	1-2	1-2		
S.S.D.mean	0-2	0-2	0-2							

TABLE XXV

A SUMMARY OF THE DIFFERENCES BETWEEN THE GRADE EQUIVALENTS OF THE OBTAINED SCORES OF THE EQUATED GROUPS AND OF THE DIFFERENCES BETWEEN THEIR MEAN GRADE EQUIVALENTS AND THE STANDARD GRADE EQUIVALENT TO THEIR MEAN CHRONOLOGICAL AGE.

Subject Group	Grade Equivalent of Obtained Scores				Diff. Scores S.D.Diff. Scores	Standard Grade for Chronological Age			Difference	
	Segregated (1)	Mixed (2)	Total Range	Mean of Mean		Segregated	Mixed	Totals	Educational Age	Mental Age
Binet	2.9to6.3	3.0to6.7	2.9to6.7		0.1	3.6to7.9	3.6to7.5	3.6to7.9		0.9
	4.1	4.2	4.2			5.0	5.1	5.1		
	.8	.9	.9			1.0	1.1	1.1		
	.2	.2	.2							
Dearborn	3.1to6.7	3.1to6.7	3.1to6.7		0.2	3.6to8.9	3.4to9.0	3.4to9.0		1.0
	4.1	4.3	4.2			5.2	5.3	5.2		
	.8	.7	.8			1.2	1.3	1.2		
	.2	.2	.1							
Totals	2.9 to 6.7	3.0to6.7	2.9to6.7		0.2	3.6to8.9	3.4to9.0	3.4to9.0		1.0
	4.1	4.3	4.2			5.1	5.2	5.2		
	.8	.9	.9			1.1	1.2	1.2		
	.2	.2	.1							

This is a very small difference and the question arises: Is it a reliable difference? If other samples of the Negro pupils of Cincinnati were similarly selected and tested would the difference between their Stanford Achievement scores amount to exactly 1.7 points on the average per test, and to one month in educational age and grade equivalent? Or, is this only a chance difference which might occur in the reverse order? This is answered in two ways, (1) by the size of the index of reliability and (2) by the number of chances in one thousand that the obtained difference is the true difference between similarly tested samples of the total population.

If the difference between the means is three times the standard error of that difference, then a distance of three sigmas up or down from the obtained difference would include practically all of the possible differences which might be found between future samplings and gives practical certainty. If the obtained difference is less than three times its standard error, it will not include all of the possibilities of difference and therefore will not be completely reliable. In the present case the obtained difference is only 1.05 times its standard error. One and five-hundredths, the index of reliability, is far from three sigma, which means practical certainty. From this it follows that the differences which would obtain from further samplings similar to the present ones, might be greater or less than 1.6 points on either side of the present obtained difference of 1.7 points, and that they might even be reversed in favor of the segregated school group. Now

the question is: What are the chances that the true difference will or will not deviate more than 1.6 points from the obtained difference of 1.7 points? It was shown above that the obtained difference was 1.05 times its standard error, or may be said to be 1.05 sigma of the distribution of all possible differences between future samplings. Converting 1.05 σ into chances under a normal probability curve of 1000 chances, it is found to be 853 chances. This means that there are 853 chances in 1000 that the true difference will be greater than zero, and that there are 147 chances that it may be less or even be reversed in favor of the segregated school group.

The difference between the Stanford Achievement total scores obtained by the Dearborn equated groups is 22 points. Here the index of reliability is 1.86. In average score the difference is 2.2 and the standard error is 1.2 points. In terms of educational age the difference is three months and in grade equivalent it is two months. These results would indicate a more reliable difference between the segregated and the mixed school groups were it not for the fact that the Dearborn test is less reliable itself, than is the Binet test. The difference is so slight, however, that the result obtained from the Dearborn tested groups may be said to substantiate rather than disprove the conclusion reached above, that the difference between the achievements of the segregated and the mixed school groups in the total Stanford Achievement scale is small and unreliable. In fact, their achievements are much more similar than different, and the same may be said of their results in the

Total Composite Scale, as shown in Table XXXIII. Here the scores could not be converted into averages per test nor into educational age and grade equivalent, but it is reasonable to think that if the difference could be stated in those terms it would be similar to that of the Stanford Achievement Scale, by virtue of the fact that it consists so largely of Stanford Achievement tests.

2. Checks Upon the General Comparisons of the Equated Groups.

The general agreement found above, between the achievements of the Binet and the Dearborn groups, serves as a check upon the use of the abbreviated form of the Stanford-Binet individual tests and of the Dearborn group test as well, for selecting and equating the subjects for the study. Other checks, as described in Chapter II, were added to this and to the care used in finding the subjects tested, which would strengthen the bases upon which a comparison of the achievement test results could be made. It was impossible to add to the total number of subjects, so the equated groups were sectioned and the sections were combined one by one, in order to determine whether the size, the direction, and the reliability of the difference would remain constant as the number of subjects increased. If they did remain constant it would prove that the groups compared were random and representative samplings of the total Negro population under consideration in the study.

The similarities and differences between the equated groups as sectioned for this purpose are shown clearly in Tables XXXVI and XXXIII. Taking the Binet groups by thirds, the correlation

coefficients are seen to be .45, .35, and .52 respectively, between one-third of each group, two-thirds of each group, and the entire groups. The differences between their average scores are 1.3, 2.7, and 1.7 respectively in the direction of the mixed school group, and their standard errors are 2.9, 2.2, and 1.6. Their differences are only .4, 1.2, and 1.05 times their standard errors, and their chances of reliability are 67, 85, and 85, in 100, respectively. The size, the direction, and the reliability of the difference between the achievements of the segregated and the mixed school groups are here shown to be fairly constant as the number of subjects increases. The same is true of the Dearborn groups as they increase by thirds and of the Binet groups as sectioned according to the grades of the subjects. One exception occurs in the correlation of the fourth grade Binet subjects. The correlation between the two fourth grade sections ^{is} ~~is~~ $-.06$ for which there is no apparent reason. Otherwise the results are constant and the assumptions that the samplings of the subjects are representative and are normally distributed, are proved to be true.

(For Table XXXVI see following page)

TABLE XXXVI

A COMPARISON OF THE TOTAL STANFORD ACHIEVEMENT
SCORES OF THE BINET AND DEARBORN GROUPS BY
SECTIONS.

Group Section Used as Check	Stanford Achievement Total Composite Score								
	Segregated (1)	Mixed (2)	Total Range Mean of Mean and S.D.	r	P.E.	Differ- ence M ₂ - M ₁	S.D. of Diff.	Diff. S.D. Diff.	Number of chances in 1000
Binet 1/3									
Range	330-757	298-746	298-757						
Mean	510.18	523.18	516.68	.45	.11	13.	28.69	.45	673
S.D.	132.05	124.89	128.47						
Binet 2/3									
Range	287-757	298-789	287-789						
Mean	500.5	527.12	513.81	.35	.10	26.62	21.98	1.21	887
S.D.	117.3	122.85	120.08						
Binet IV Grade									
Range	287-537	298-678	287-678						
Mean	447.96	462.50	455.23	.06	.12	14.55	19.22	.76	775
S.D.	62.06	91.28	76.67						
Binet IV&V									
Range	287-769	298-789	287-789						
Mean	485.94	521.56	503.75	.35	.09	35.62	17.43	2.05	979
S.D.	99.14	112.01	105.58						
Dearborn 1/3									
Range	328-679	345-795	328-795						
Mean	494.29	538.71	516.50	.70	.09	44.42	20.92	2.12	983
S.D.	105.65	120.05	112.85						
Dearborn 2/3									
Range	328-800	301-795	301-800						
Mean	504.93	526.07	515.50	.65	.07	21.14	15.98	1.32	907
S.D.	103.71	120.11	111.91						
Binet Selected (23)									
Range	287-769	298-789	287-789						
Mean	513.81	519.46	516.64	.41	.12	5.65	25.65	.22	587
S.D.	102.11	121.80	111.96						

TABLE XXXVI

A COMPARISON OF THE TOTAL STANFORD ACHIEVEMENT
SCORES OF THE BINET AND DEARBORN GROUPS BY
SECTIONS.

Group Section Used as Check	Stanford Achievement Total Composite Score								
	Segregated (1)	Mixed (2)	Total Range Mean of Mean and S.D.	r	P.E.	Differ- ence M2 M1	S.D.of Diff.	Diff. S.D. Diff.	Number of chances in 1000
Dearborn Selected (28)									
Range	333-800	301-795	301-800						
Mean	524.96	549.64	537.3						
S.D.	132.80	138.62	135.71	.70	.10	24.68	18.48	1.34	908

The final check, that of finding the difference between the achievements of pairs of subjects who were biased in favor of the segregated school group, added its evidence to prove that the groups were unselected. As was to be expected, the difference between the selected pairs of the Binet groups was slightly less favorable to the mixed school group than was the difference between the entire groups, presumably unselected. On the contrary, the difference between the selected Dearborn groups was slightly larger, in the same direction. Neither of them changed enough to prove or disprove the factor of selectivity. This may be explained by the fact that, to begin with, the factor of selection was practically insignificant. As was pointed out in Chapter II, the mean differences between the 23 selected Binet pairs and the 28 Dearborn pairs was only a few points in intelligence quotient and a few months in chronological and mental age, in favor of the segregated school groups. The comparison of their achievement scores show general agreement with those of the entire groups from which they were selected. It thus adds evidence to that produced by the previous comparisons of other sections of the entire groups, to prove that the subjects are a random and normal sampling of the total population, but does so in a different way from that which was originally intended.

3. A Comparison in the Individual Tests.

Turning to the individual tests of the Stanford Achievement Scale, one finds that in three of the eight school subjects

for which there are tests, the difference is in favor of the segregated school group. In the other five the difference is in favor of the mixed school group. In none of the former and in only one of the latter are the differences completely reliable. Of the former there was a difference of 1.6 points, which approximates one month in educational age and one month in grade equivalent, in the test of Language Usage, as shown in Table XXXVII. (The equivalents of the differences are presented in Tables XXXVIII and XXXIX.) In History-Civics the difference of .4 point in score amounted to one month in educational age and in grade equivalent. In total Arithmetic the difference of 1.4 points in score amounted to one month in educational age and less in grade equivalent.

XXXVII,
(For Tables XXXVIII and XXXIX see following pages)

TABLE XXXVII

A COMPARISON OF THE SCORES OF THE BINET GROUPS IN THE INDIVIDUAL TESTS OF THE STANFORD ACHIEVEMENT SCALE AND IN THE SUPPLEMENTARY TESTS.

Individual Tests	Stanford Achievement Scores					
	Segregated	Mixed	Total Range Mean of M. & S.D.	r	P.E.	Difference of mean
<u>Reading</u>						
<u>Total</u>						
Range	30-181	38-183	30-183			
Mean	104.01	112.29	108.15	.46	.07	8.28
S.D.	31.89	28.96	30.43			2.85
						2.91
						998
<u>Paragraph</u>						
<u>Meaning</u>						
Range	20-92	17-93	17-93			
Mean	50.44	54.44	52.44	.39	.08	4.00
S.D.	16.88	15.79	16.34			2.44
						1.64
						949
<u>Word Meaning</u>						
Range	3-89	21-90	3-90			
Mean	54.29	58.22	56.26	.44	.07	3.93
S.D.	16.64	14.00	15.32			2.21
						1.78
						962
<u>Dictation</u>						
<u>Spelling</u>						
Range	19-79	27-86	19-86			
Mean	48.10	55.55	51.83	.25	.09	7.45
S.D.	15.49	14.24	14.87			2.45
						3.04
						999
<u>Language</u>						
<u>Usage</u>						
Range	20-85	20-88	20-88	.12	.09	1.55
Mean	49.26	47.71	48.49			3.59
S.D.	18.24	21.69	19.97			.43
						666

TABLE XXXVII (Continued)
A COMPARISON OF THE SCORES OF THE BINET GROUPS IN THE INDIVIDUAL TESTS
OF THE STANFORD ACHIEVEMENT SCALE AND IN THE SUPPLEMENTARY TESTS.

Individual Tests	Stanford Achievement Scores									
	Segregated	Mixed	Total Range Mean of M. & S.D.	r	P.E.	Difference of		S.D. of Diff.	Diff. S. D.	Number of chances in 1000
						Mean	Mixed			
<u>Literature</u>										
Range	20-84	20-93	20-93							
Mean	55.34	58.22	56.78	.28	.02		2.88	2.83	1.02	845
S.D.	16.47	18.52	17.50							
<u>Geography</u>										
Range	22-77	22-89	22-89							
Mean	49.43	54.26	51.85	.31	.06		4.83	2.44	1.98	976
S.D.	15.64	15.36	15.50							
<u>History and Civics</u>										
Range	20-81	20-83	20-83							
Mean	43.75	43.34	43.55							
S.D.	19.00	19.85	19.43	.32	.08	.41		3.06	.14	553
<u>Physiology and Hygiene</u>										
Range	23-78	23-77	23-78							
Mean	53.37	53.77	53.57	.40	.08		.4	2.18	.18	571
S.D.	13.16	15.01	14.09							
<u>Arithmetic</u>										
Total										
Range	63-169	36-164	36-169							
Mean	107.61	106.17	106.89	.35	.08	1.44		3.82	.38	646
S.D.	22.53	26.62	24.58							
<u>Arithmetic Reasoning</u>										
Range	26-81	3-81	3-81							
Mean	52.05	51.73	51.89	.22	.09	.32		2.51	.13	549
S.D.	14.14	15.54	14.84							
<u>Arithmetic Computation</u>										
Range	35-88	33-92	33-92	.42	.07	.38		1.70	.22	587
Mean	55.61	55.23	55.42							
S.D.	9.54	13.22	11.88							

TABLE XXXVII (Continued)

A COMPARISON OF THE SCORES OF THE BINET GROUPS IN THE INDIVIDUAL TESTS
OF THE STANFORD ACHIEVEMENT SCALE AND IN THE SUPPLEMENTARY TESTS.

Individual Tests	Other Test Scores									
	Segregated	Mixed	Total Range Mean of M. & S. D.	r	P.E.	Difference of Mean		S.D. of Diff.	Diff. S. D.	Number of chances in 1000
						Segregated	Mixed			
<u>Gray Oral Reading</u>										
Range	0-21	3-28	0-28							
Mean	10.64	12.82	11.73	.09	.09		2.17	1.10	1.98	976
S.D.	5.91	6.16	6.04							
<u>Morrison, McCall Spelling</u>										
Range	4-35	10-40	4-40							
Mean	17.99	21.43	19.71	.27	.09		3.44	1.31	2.63	995
S. D.	7.71	7.81	7.76							
<u>Freeman, Handwriting</u>										
Range	6-16	7-17	6-17							
Mean	11.56	13.00	12.28	.26	.08		1.44	.37	3.85	999
S. D.	2.52	2.08	2.30							

TABLE XXXVIII

A COMPARISON OF THE EDUCATIONAL AGES EQUIVALENT TO THE OBTAINED SCORES OF THE BINET GROUPS AND OF THEIR MEAN EDUCATIONAL AGE WITH THEIR MEAN MENTAL AGE.

Individual Tests	Educational Age Equivalent of Stanford Achievement Scores				Difference	
	Segregated		Mixed		Educational Age Equivalent	Standard Mean Mental Age (10-5)
	Mixed	Totals	Seg.	Mixed		
<u>Reading</u>						
<u>Totals</u>						
Range	7-5tol4-1	7-5tol4-4		0-4		
Mean	10-1	10-5				
S.D.dis	1-3	1-1			2.91	0-2
<u>Paragraph Meaning</u>						
Range	7-5tol4-4	7-5tol4-7		0-4		
Mean	9-11	10-3			1.64	0-4
S.D.dis	1-4	1-3				
<u>Word Meaning</u>						
Range	7-5tol3-9	7-6tol3-11		0-3		
Mean	10-3	10-6			0	
S.D.dis	1-7	1-1				
<u>Dictation</u>						
Range	7-5tol2-4	8-2tol3-3		0-7		
Mean	9-10	10-5			3.04	0-3
S.D.dis	1-2	1-1				
<u>Language Usage</u>						
Range	7-5tol3-1	7-5tol3-7		0-1		
Mean	9-11	9-10			.43	0-7
S.D.dis	1-5	1-4				
<u>Literature</u>						
Range	7-5tol2-11	7-5tol4-7		0-2		
Mean	10-4	10-6			1.02	0
S.D.dis	1-3	1-6				
<u>Geography</u>						
Range	7-8tol2-2	7-8tol2-9		0-4		
Mean	9-11	10-3			1.98	0-4
S.D.dis	1-3	1-2				

TABLE XXXVIII (Continued)

A COMPARISON OF THE EDUCATIONAL AGES EQUIVALENT TO THE OBTAINED SCORES OF THE BINET GROUPS AND OF THEIR MEAN EDUCATIONAL AGE WITH THEIR MEAN MENTAL AGE.

Individual Tests	Educational Age Equivalent of Stanford Achievement Scores					Difference	
	Segregated	Mixed	Totals	Diff. of Mean Seg. Mixed	Diff. Scores S.D. Diff. Sc.	Educational Age Equivalent	Mean Mental Age (10-5)
<u>History-Civics</u>							
Range	7-5 to 12-8	7-5 to 12-10	7-5 to 12-10				
Mean	9-6	9-5	9-6	0-1			0-11
S.D. dis	1-6	1-6	1-6		.14		
<u>Physiology Hygiene</u>							
Range	7-10 to 12-3	7-10 to 12-2	7-10 to 12-3				
Mean	10-2	10-3	10-3	0-1	.18		0-2
S.D. dis	0-11	1-2	1-1				
<u>Arithmetic Total</u>							
Range	8-7 to 13-1	7-5 to 12-8	7-5 to 13-1				
Mean	10-3	10-2	10-3	0-1			0-2
S.D. dis	0-10	0-11	0-10		.38		
<u>Arithmetic Reasoning</u>							
Range	8-2 to 12-7	7-5 to 12-7	7-5 to 12-7				
Mean	10-1	10-1	10-1	0	.13		0-4
S.D. dis	1-1	1-3	1-2				
<u>Arithmetic Computation</u>							
Range	8-10 to 13-7	8-8 to 14-4	8-8 to 14-4				
Mean	10-5	10-4	10-4	0-1			0-1
S.D. dis	1-1	1-0	1-0		.22		
Other Test Scores							
<u>Grey Oral Reading</u>							
Range	7-5 to 10-8	7-5 to 11-11	7-5 to 11-11				
Mean	8-8	9-3	9-0	0-7	1.98		1-5
S.D. dis	1-3	1-2	1-3				

TABLE XXXVIII (Continued)

A COMPARISON OF THE EDUCATIONAL AGES EQUIVALENT TO THE OBTAINED SCORES OF THE BINET GROUPS AND OF THEIR MEAN EDUCATIONAL AGE WITH THEIR MEAN MENTAL AGE.

Individual Tests	Educational Age Equivalent of Stanford Achievement Scores				Difference	
	Segregated	Mixed	Totals		Diff. Scores S.D. Diff Sc.	Educational Age Equivalent
			Seg.	Mixed		
Morrison, McCall Spelling	7-6 to 12-10	8-5 to 14-0	7-6 to 14-0			
Range	9-8	10-2	9-11			
Mean	1-4	1-5	1-5	0-6	2.63	0-6
S.D. dis						
Freeman Handwriting						
Range						
Mean					3.85	
S.D. dis						

1. NO EDUCATIONAL AGE EQUIVALENTS ARE STATED IN THE NORMS OF THE GREY ORAL READING TEST. THE GRADE EQUIVALENT OR B SCORE WAS CONVERTED INTO AN EDUCATIONAL AGE BY REFERRING IT TO THE STANFORD ACHIEVEMENT NORMS. THIS ASSUMES THAT THE STANDARDIZATION OF THE TWO TESTS IS SIMILAR AND THE GRADE NORMS COMPARABLE.

TABLE XXXIX

A COMPARISON OF THE GRADE EQUIVALENTS OF THE OBTAINED SCORES OF THE BINET GROUPS AND OF THEIR MEAN GRADE OF ACHIEVEMENT WITH THE GRADE EQUIVALENT TO THEIR MEAN CHRONOLOGICAL AGE.

Individual Tests	Grade Equivalent of Stanford Achievement Scores				Diff. of Mean		Diff. Scores S.D. Diff.Sc.	Difference	
	Segregated	Mixed	Totals	Seg.	Mixed	Stand. Grade Equivalent of Scores		Stand. Grade for Chronological Age	
<u>Reading</u>									
<u>Total</u>	2.6to8.2	2.6to8.2	2.6to8.2		.1	2.91		0.9	
<u>Range</u>	4.1	4.3	4.2						
<u>Mean</u>	.5	.5	.5						
<u>S.D.</u>									
<u>Paragraph Meaning</u>									
<u>Range</u>	2.6to8.4	2.6to8.5	2.6to8.5		.2	1.64		0.9	
<u>Mean</u>	4.1	4.3	4.2						
<u>S.D.</u>	.5	.5	.5						
<u>Word Reading</u>									
<u>Range</u>	2.6to7.9	2.6to8.1	2.6to8.1		.3	1.78		0.7	
<u>Mean</u>	4.3	4.6	4.4						
<u>S.D.</u>	.5	.5	1.0						
<u>Dictation</u>									
<u>Spelling</u>									
<u>Range</u>	2.6to7.9	2.6to8.1	2.6to8.1		.5	3.04		0.7	
<u>Mean</u>	4.0	4.5	4.4						
<u>S. D.</u>	1.0	1.0	.5						
<u>Language</u>									
<u>Usage</u>									
<u>Range</u>	2.6to6.6	2.8 - 7.5	2.6 - 7.5		.1	.43		1.1	
<u>Mean</u>	4.1	4.0	4.0						
<u>S.D.</u>	1.0	.5	.5						
<u>Literature</u>									
<u>Range</u>	2.6to7.4	2.6to8.5	2.6to8.5		.2	1.02		0.7	
<u>Mean</u>	4.4	4.6	4.4						
<u>S.D.</u>	.5	1.0	1.5						
<u>Geography</u>									
<u>Range</u>	2.6to6.3	2.6to7.1	2.6to7.1		.2	1.98		0.9	
<u>Mean</u>	4.1	4.3	4.2						
<u>S.D.</u>	.5	.5	.5						

TABLE XXXIX (Continued)

A COMPARISON OF THE GRADE EQUIVALENT OF THE OBTAINED SCORES OF
THE BINET GROUPS AND OF THEIR MEAN GRADE OF ACHIEVEMENT WITH
THE GRADE EQUIVALENT TO THEIR MEAN CHRONOLOGICAL AGE.

Individual Tests	Grade Equivalent of Standard Achievement Scores				Difference		
	Segregated	Mixed	Totals	Diff. of Mean Seg. Mixed	Diff. Scores S.D. Diff. Sc.	Stand. Grade Equivalent of Scores	Stand. Grade for Chrono- logical Age
<u>History- Civics</u>							
Range	2.6to7.0	2.6to7.1	2.6to7.1				
Mean	3.7	3.6	3.7	.1	.14		1.4
S.D.	1.5	1.5	1.5				
<u>Physiology</u>							
<u>Hygiene</u>							
Range	2.7to6.4	2.7to6.3	2.7to6.4				
Mean	4.3	4.3	4.3	0	.18		0.8
S.D.	1.0	.5	.5				
<u>Arithmetic</u>							
<u>Total</u>							
Range	3.1to7.4	2.6to7.0	2.6to7.4				
Mean	4.3	4.3	4.3	0	.58		0.8
S.D.	.5	.5	.5				
<u>Arithmetic</u>							
<u>Reasoning</u>							
Range	2.8to6.8	2.6to6.8	2.6to6.8				
Mean	4.2	4.2	4.2	0	.13		0.9
S.D.	.5	.5	.5				
<u>Arithmetic</u>							
<u>Computation</u>							
Range	3.2to7.8	3.1to8.4	3.1to8.4				
Mean	4.4	4.4	4.4	0	.22		0.7
S.D.	.5	.5	.5				
<u>Grey Oral</u>							
<u>Reading</u>							
Range	1.4to4.7	1.8to6.1	1.4to6.1				
Mean	3.1	3.4	3.2	.3	1.98		1.9
S. D.	1.0	1.0	1.0				

TABLE XXXIX (Continued)

A COMPARISON OF THE GRADE EQUIVALENT OF THE OBTAINED SCORES OF THE BINET GROUPS AND OF THEIR MEAN GRADE OF ACHIEVEMENT WITH THE GRADE EQUIVALENT TO THEIR MEAN CHRONOLOGICAL AGE.

Individual Tests	Grade Equivalent of Standard Achievement Scores				Difference	
	Segregated	Mixed	Totals	Diff. of Mean Seg. Mixed	Diff. Scores S.D. Diff. Sc.	Stand. Grade Equivalent of Scores for Chronological Age
<u>Morrison, McCall, Spelling</u>						
Range	1.8 to 6.6	2.4 to 7.7	1.8 to 7.7			
Mean	3.5	4.1	3.9	.6	2.63	1.2
S.D.	1.5	1.5	1.5			
<u>Freeman, Handwriting</u>						
Range	1.5 to 1.5	1.5 to 2.5	1.5 to 2.5			
Mean	1.5	1.5	1.5	?	3.85	3.6
S.D.	?	?	?			

Of the five tests in which the differences favored the mixed school group, the Dictation test of spelling showed a reliable difference of seven points, which amounted to seven months in educational age and five in grade equivalent. The index of reliability is 3.04 and there are 999 chances in 1000 that mixed school groups similarly selected and tested will always surpass segregated school groups. In the total Reading test there was a score difference which was equivalent to four months in educational age and one month in grade equivalent. The index of reliability is 2.91 and the chances 998 in 1000 that this difference is the true difference. This leaves some possibility that the segregated school group might surpass the mixed if additional samples were similarly selected and tested. In Geography, Literature, and in Physiology-Hygiene, the differences ~~decrease~~ respectively in size and degree of reliability.

In the three supplementary tests the differences are in the direction of the mixed school group. In the Gray Oral Reading test the difference amounts to seven months in educational age, in the Morrison McCall Spelling Scale it is six months and in the Freeman Handwriting the difference, though highly reliable, was not convertible into grade or age equivalents because the mean scores of both groups fell below the lowest norms of seven years six months in educational age and mid-first grade. This fact raises a question regarding the relative significance of the difference between the writing ability of the groups as compared with the similarity of the groups in regard to their very inferior accomplishment in handwriting, as shown in the Freeman Handwriting Scale.

It is possible that the writing specimens, judged according to the scale, are not fair samples of the handwriting of the pupils. Two sentences were selected from the Stanford Achievement Dictation test and were rated according to the quality of the writing. The pupils were not instructed to write their best and no reference was made to the quality of the writing, whereas in every other test the attention of the pupils was called again and again to the quality and the amount of achievement. In view of this point it is possible that the specimens by which the handwriting ability of the pupils was judged, are not valid tests of their writing ability. On the other hand, the fact that the mixed school group did better than the other group when no attention was being given to the process, might make the difference more reliable. The question stands unanswered by fact.

On the assumption that the difference in writing is reliable, as shown by its index of reliability, it is included in the following summary of the direction of the differences between the scores of the Binet groups, in the different school subjects measured.

DIFFERENCES IN THE DIRECTION OF:

<u>The Segregated School Group</u>	<u>The Mixed School Group</u>
History-Civics	Physiology-Hygiene
Arithmetic	Literature
Language Usage	Reading
	Spelling
	Handwriting

These are listed in the order of the size and degree of the reliability of the differences between the achievements of the two groups as previously described. In only handwriting and spelling as measured by the Morrison McCall Spelling Scale are the differences reliable. In the Stanford Achievement test of spelling and in all of the other subjects measured, the differences are too small and unreliable to show any marked superiority of one group over the other.

The records of the equated groups are far more similar than different in all of the subjects but spelling and handwriting. These are skill subjects and were rated low in comparison with the other school subjects in which tests were given, by the educators who helped to formulate the total composite scale. It may be said, then, that the segregated and mixed school groups show only insignificant differences between their school achievements as determined by the academic tests given in this study. This conclusion agrees with that stated in conclusion to the comparison of their total achievements in the total Stanford Achievement Scale and in the Total Composite Scale.

C. An Evaluation of the Achievements of the Cincinnati Negroes who Participated in the Investigation

The academic achievements of the equated groups were referred to the norms of the academic tests in order to make a comparison between them. On this basis, the achievements of the

segregated school group were found to be very similar to those of the mixed school group, their differences very small and unreliable.

This answered the question of the investigation but raised another, relative to the level of the academic achievement of both groups.

The question here was: Does the academic achievement of the two groups, proved to be similar, meet the standard expected of children of their age and intelligence? The school grading system has been based largely upon the chronological age of pupils, but studies such as Terman's ¹ find that school placement is dependent, to a considerable degree, upon the mental age of the pupils. In view of these facts it was thought wise to consider both factors in evaluating the achievements of the Negro subjects of this investigation. Table XI presented the mean chronological and mental ages of the subjects, according to the two intelligence tests. This mean mental age is again presented in Table XXXIV for comparison with the educational equivalent of the scores obtained in the academic tests. The mean chronological age, converted into the grade equivalent to it, according to the Stanford Achievement test norms which accompany the tests, are presented in Table XXXV for comparison with the grade equivalent of the scores obtained in the tests. There is in these tables, then, a comparison of the actual academic achievements of the subjects with the standards ordinarily expected of American school children.

In the educational-age - mental age comparison, the Binet

1. See Table XI, Chapter III, which includes the standard mental ages per grade, as stated by Terman.

subjects are four months below the level expected of American school children of equal mental level. There is no way of determining the exact reliability of this difference, but if it is compared to a difference of similar size which occurred in the previous comparison of the achievements of one equated group with the other, it is not a reliable difference, and the Cincinnati Negro is more like than different from Cincinnati school children in general, in academic achievement. That is, there are chances that there are no differences between the achievement of Cincinnati Negroes and that of American school children, or that the difference might even be reversed in favor of the Cincinnati Negro. The comparison of the achievement level with the mental age obtained in the Dearborn tests would sustain this conclusion if it were not for the fact that the group test is less valid as a measure of intelligence.

It was noted in Table XI that the mental age used above was about seven months below the mean chronological age of the subjects. After converting this chronological age into grade equivalent and having found the educational age of the subjects to be four months below their mental age, according to the Binet test, one would expect to find the grade equivalent about one year below. Table XXXV shows this to be true, on the average, in the Stanford Achievement tests. Table XXXIX itemizes the differences in each individual test of the Stanford Achievement Scale and in the supplementary tests. The following summary is based on it and on Table XXXVIII. It states how far the achievements of the Cincinnati Negroes who had been evaluated in intelligence according to the

Binet tests, are below the standard in educational age and grade of achievement.

(For Summary above referred to, Table XL, see following page)

TABLE XL

SUMMARY OF THE DIFFERENCES BETWEEN THE ACTUAL ACHIEVEMENTS
OF THE BINET EQUATED GROUPS AS COMPARED WITH THE
STANDARD EDUCATIONAL AGE LEVEL EQUAL TO THEIR
MENTAL AGE AND WITH THE GRADE EQUIVALENT TO
THEIR CHRONOLOGICAL AGE

Difference in Months in Favor of:							
Segregated				Mixed			
Test	Difference in Age and Grade	Diff. S.D. diff.	Standard of Mental Age and Grade	Test	Difference in Age and Grade	Diff. S.D. diff.	Standard of Mental Age and Grade
History- Civics	0-1 0.1	.14	0-11 1.4	Physiology- Hygiene	0-1 0.0	.18	0-2 0.8
Arithmetic	0-1 0.0	.38	0-2 0.8	Literature	0-2 0.2	1.02	0-0 0.7
Language Usage	0-1 0.1	.43	0-7 1.1	Reading (Stan.Ach.)	0-4 0.1	2.91	0-2 0.9
				(Gray)	0-7 0.3	1.98	0-5 1.9
				Spelling (Stan.Ach.)	0-7 0.5	3.04	0-3 0.7
				(M.M. Scale)	0-6 0.6	2.63	0-6 1.2
				Handwriting		3.85	3.6 +

The results of the comparison of actual achievement with mental age and grade standards show proportionate agreement with the findings in mental and chronological age, but in addition find an educational retardation of four months below the mental age. This is an educational retardation of approximately one year below the standard of mentally normal children of equal age.

There is no other information, similarly compiled, with which to compare these results, but the conclusion of a number of studies has been that Negro retardation, both mental and academic, is greater than that found in the present investigation. Thompson introduces his summary of the studies of the educational achievements of Negro pupils by saying:

"The current interpretations of the results of comparative racial studies have been predicated upon the premise that whatever differences are found between the achievements of white and Negro children are due chiefly to inherent mental differences between the two racial groups. The facts reveal, however, as we shall show later, that differences between white and Negro children are, quantitatively and qualitatively, the same as or less than those differences found within the same racial group but of diverse socio-economic status," ¹

and concludes by saying:

"A critical examination of the facts presented in this study shows that when Negroes are given equal environmental and school opportunities their educational achievements are equal to or better than that of the whites. . . . In other words, the educational achievement of Negro children, as with white children, is, in the main, a direct function

1. Thompson, Charles H. "The Educational Achievements of Negro Children." Volume CXXXX, (November, 1928) The Annals of the American Academy of Political and Social Science. p. 193. (Charles H. Thompson is a member of the Faculty of Harvard University.)

of their environmental and school opportunities, rather than a function of some inherent difference in mental ability."

As is evident from the quotation above, educational achievement has not been analyzed out of the general consideration of native ability and environmental conditions in any previous study, as it has been in this, and as a consequence, it has been confused with them. In the present investigation, in which there was perfect control of the school environment and in which there is shown to be no serious mental retardation, the educational achievement of the Negro pupil approximates the standard of other American children of equal mental level, as Thompson expects. A later study in which a comparison should be made of other Cincinnati Negroes and of Negro pupils of other cities would help to decide whether the small differences obtained in intelligence, as shown by the mean intelligence quotient of ninety-five and the small difference obtained in educational level, as shown by the four months' lower educational age, are reliable differences between the Cincinnati Negro pupil and American school children at large, including white pupils. If reliable, the study should find whether environmental factors other than the school conditions, such as home background and culture, are instrumental in causing them. By selecting and equating groups of Negro pupils of different socio-economic levels, comparing them, and then by comparing their differences with those of white pupils similarly selected and equated, the factors of intelligence versus environment should be accurately traced and evaluated,

supplementary to the present study.

D. Conclusion.

In conclusion, then, it may be said, on the basis of results obtained from standardized tests, administered uniformly to random and normal samplings of the Negro population of Cincinnati, selected according to the uniform requirements stated for the study, that the achievements of segregated and mixed school pupils are far more alike than different and that the children of neither school show any reliable superiority over those of the other group. A further conclusion, based upon the evaluation of their achievements on the basis of the norms of the tests, is that there appears to be no reliable difference between the achievements of the Cincinnati Negro children who served as subjects in this investigation, and those of American school children in general, including white pupils.

CHAPTER V

SUMMARY, CONCLUSIONS AND NEW PROBLEMS

A. Summary of the Investigation

1. The Problem.

Interest in the present investigation grew out of the conflict of opinion and thought regarding the segregation of Negro school children. A few studies had focused attention upon some specific values of the segregated school but left unanswered the question of its relative efficiency in comparison with other schools. The recent emphasis placed upon the child as the center of the school suggested a new point of attack, the refinement of standard measures of achievement suggested a technique for objective study, and Cincinnati offered ideal conditions for an investigation because of its uniform school opportunities for Negro and white children and the privilege which it offers to Negro pupils, or their parents, to choose between a segregated and a mixed school.

The problem was: What are the academic attainments of Negro pupils who have always attended a segregated school as compared with the attainments of Negro children of equal age, grade and intelligence, who have been enrolled in mixed schools throughout their entire school lives? The subjects were selected from the fourth, fifth and sixth grades of the two types of schools and

they were native to Cincinnati. This insured exact age records and allowed three years or more in which one or the other type of school had registered its influence upon its pupils.

2. The Procedure.

a. The Selection of Subjects and the Testing Program.

One hundred ninety ~~one~~ Negro pupils proved to be available as candidates for selection from among the 4475 enrolled in all of the segregated schools of Cincinnati and the 2161 Negro pupils enrolled in four mixed schools, in which permission was granted to study, by the school authorities. These pupils were given the abbreviated form of the Stanford Revision of the Binet-Simon Tests and answered a series of questions regarding their school histories and their families. To check the use of the abbreviated form of the tests a second intelligence test was administered, the Dearborn Group Tests. On the same day that the Dearborn test was given, the educational tests were administered. The Stanford Achievement Tests and three supplementary tests, the Gray Oral Reading Paragraphs, the Morrison-McCall Spelling Scale and the Freeman Handwriting Scale were used to measure the academic achievements of the subjects. Two groups of fifty-five subjects each, from the segregated and the mixed schools, were equated in grade, were within seven months in age and mental age and within seven points in intelligence quotient, from among the pupils given both the Binet Intelligence and the Stanford Achievement tests. Of those given both the Dearborn Group Test and the

Stanford Achievement tests, two groups of fifty-three each were similarly equated on the basis of their Dearborn test results. Eighty-two were members of both sets of equated pairs but were paired differently in all but eight cases.

b. The Statistical Procedure.

The achievement scores of the subjects who had been matched in age, grade, and intelligence, were paired and were correlated according to the Pearson product-moment Method. The distributions of the two Binet groups were then compared by noting the difference between their means, standard deviations and total ranges. The difference found between the mean scores was tested by means of the reliability technique in order to learn whether it was reliable, i.e., whether it would be true of other samples similarly selected and tested. Because of the correlation existing between the achievement scores of the equated pairs, the long formula was used for that purpose. It is stated below.

$$\sigma_{m_1 - m_2} = \sqrt{\sigma_{m_1}^2 - 2r\sigma_{m_1}\sigma_{m_2} + \sigma_{m_2}^2}$$

in which σ_{m_1} is the standard deviation or error of the first mean, σ_{m_2} the standard deviation of the second mean, r is the correlation between the two distributions of scores, $\sigma_{m_1 - m_2}$ is the standard deviation of the difference between the two means, m_1 and m_2 .

c. Checks upon the Random and Representative Sampling of the Binet Pairs.

The Dearborn groups were selected as a check upon the abbreviated form of the Binet tests, according to which the Binet groups were equated. It was impossible to add other examples to check the random and representative sampling which it was hoped the equated groups were, so they were sectioned into thirds. Then the number of subjects was increased from one-third to the total number, by adding thirds to each group. In this way it was possible to learn whether the size and the direction of the difference would remain constant with the addition of subjects and would thus prove the assumptions upon which the reliability technique is based. The Binet groups were also divided by grades and the difference watched as the fifth grade subjects were added to the fourth and then as the sixth grade was added, in order to test the grade samplings. A final check upon the equating process was made by selecting twenty-three Binet pairs and twenty-eight Dearborn pairs between all of which the difference in mental age and intelligence quotient was zero or in the direction of the segregated school members. Their difference in achievement score was obtained in order to learn whether the total groups were truly unbiased.

d. Evaluation of Results.

An evaluation of the achievements of the equated groups was next made, in terms of the educational ages and grades, equiv-

alent to the achievement scores obtained in the Stanford Achievement Tests and in the supplementary tests. The scores were converted into educational age and grade equivalents, and were compared with the standard of American children of the same mental age and of the same chronological age. This indicated how closely the Negro subjects, used in the investigation, approximated the standard which we would expect from American school children of like mental ability and age.

3. Description of the Subjects.

a. Constant Factors.

The subjects, having been equated in age, grade and intelligence, were practically identical in chronological age, mental age and intelligence quotient. Of each of the Binet groups, thirty-three subjects were in fourth grade, fifteen were in fifth and seven in sixth. Their mean chronological age was 11 years, the standard deviation one year, and the total range from 9 years 4 months to 13 years 9 months. Their mean mental age was 10 years 5 months, the standard deviation one year, and the total range from 8 years 8 months to 13 years 2 months. These results indicated a difference of seven months between chronological and mental ages, but the presence of actual mental retardation was questioned by the fact that the mean intelligence quotient was 95. It and a standard deviation of 11 points within a range of 69 to 129 fell almost entirely, if not altogether, within the distribution of 905 white school children tested by Terman in revising the Binet tests. This was a higher

record of intelligence than that found in most of the previous studies in which the Binet test was used. The mean difference between the Binet groups was only one-twelfth month in chronological age, one-third month in mental age and one-tenth point in intelligence quotient, all of which were in the direction of the mixed school group.

The Dearborn test results were somewhat lower than were those of the Binet tests but were higher than those of most previous studies in which group tests were used. The mean chronological age was 11 years 1 month, the standard deviation 1 year 2 months, and the range 9 years 3 months to 15 years 6 months. The mean mental age was 9 years 9 months, the standard deviation 1 year 3 months, and the total range 7 years 5 months to 12 years 11 months. The mean intelligence quotient was thus 87, the standard deviation 11 points, and the total range of intelligence quotients from 62 to 122. The difference between the means of the two Dearborn groups was practically zero, as it had been in the case of the Binet groups, but was in the direction of the segregated school group in mental age and intelligence quotient.

b. Supplementary Data.

Supplementary data obtained from the children, from the school records and from the teachers, showed a remarkable similarity between the Binet groups of segregated and mixed school children. Their school histories showed that the majority of each group had attended kindergarten, had entered first grade at the age of six

years and had attended school nine out of ten months, each year prior to that of the study. No serious health or conduct disorders were found in either group, and in a number of home factors measured objectively, the groups were similar. Each group had a mean number of five children per family, four rooms per home and seven-tenths room per person.

Further, in regard to social status and to home supervision, the groups were similar. Forty of the fathers of each group were working and most of them were engaged in unskilled labor, less than two per cent being in professional service, as compared with six per cent of white fathers in the United States, who are in the professions. Approximately thirty of the fifty living mothers of each group of subjects were gainfully employed. Both parents of forty of the segregated school subjects and thirty-four of the mixed live at home, and approximately forty children of each group had some play space at home, aside from street and sidewalk.

Ratings which the teachers of the two types of schools made of the school habits and social status of their pupils were consistently different. The Negro pupils rated by white teachers ranked somewhat lower than did those rated by Negro teachers, and it was a question whether this indicated a true difference in the children or was due to a difference in the teachers' standards. The information obtained regarding the school history, and the environmental factors of the Binet groups was a rough measure of the similarity of the segregated and the mixed school pupils who participated in the investigation, but served to show that they were fairly well equated in regard to these factors as well as in age

and intelligence.

4. The Results of the Achievement Tests.

a. The Difference between the Scores of the Binet Equated Groups.

The achievements of the two Binet groups were very similar. In the total Stanford Achievement scale the segregated school group had a mean score of 508, a standard deviation of 112, and a total range of 287 to 769. The mixed school group had a mean score of 524, a standard deviation of 121, and a total range of 298 to 795. This shows a mean difference of 17 points which is relatively small in proportion to its standard deviation of 16 points, and indicates a relatively low degree of reliability as shown by the coefficient of 1.05. In the total composite of all the Stanford tests and the three supplementary tests the mean score of the segregated school group was proportionately slightly lower and the coefficient of reliability, 1.45, was slightly higher. In both of the composite scales, then, there was a small, unreliable difference in the direction of the mixed school group and there was some chance that between the achievements of future samplings, similarly selected and tested, the difference might be zero or even reversed in favor of the segregated school group.

In the individual tests the differences in scores varied, but in all but two of the thirteen tests they were unreliable. In History-Civics, Arithmetic, including both the Reasoning and the Computation tests, and in Language Usage, the differences were small and unreliable and were in the direction of the segregated

school group. In Physiology-Hygiene, Literature, Gray Oral Reading, Stanford Achievement Reading, including the paragraph and the word meaning tests, and the Morrison-McCall Spelling test, the differences were small and unreliable and were in the direction of the mixed school group. In the Stanford Achievement Spelling Scale and the ~~Freeman~~ Handwriting Scale the differences were reliable and were in the direction of the mixed school group; but there was a question in regard to the validity of the handwriting test, due to the fact that the children were not told that they were being tested in writing, the specimens of writing being taken from the Stanford Dictation test in which their attention was upon spelling.

b. The Differences between the Scores of the Dearborn and the Sectional Groups.

A relatively small difference of 22 points was found between the total Stanford Achievement Scores of the equated Dearborn pairs. The standard error of the difference was 12 points and the coefficient of reliability was 1.86. In the total composite scale of all of the individual tests the coefficient was 1.55. In both cases the difference was in the direction of the mixed school. The differences were similarly small and unreliable in all of the comparisons made between the Binet and Dearborn groups, when sectioned into thirds, and between the Binet groups when divided by grades. The final check, by means of the biased pairs, was merely another check of the random and representative sampling of the Binet groups. They failed to show, consistently, the influence of the bias of

their members, possibly because the bias itself was limited to a mean of three months in mental age and two points in intelligence quotient. In chronological age they were equal. In every case the evidence pointed to the conclusion reached in the comparison of the achievements of the Binet groups, which was that the average differences are small and unreliable and that the overlapping in achievement is more significant than the difference between the achievements of the segregated and the mixed groups.

c. An Evaluation of the Differences between the Achievements of the Equated Groups.

The achievement scores of the equated Binet groups are shown to be more similar than different. This means that they have made similar school progress and educational growth. In order to compare them accurately in these terms, the mean total scores and the mean individual test scores were converted into the educational age and grade equivalent to them. The difference between the educational ages and the grades, equivalent to the mean total Stanford Achievement score of the Binet groups, is two months. The differences in the individual tests vary from zero to seven months. By combining the two Stanford Achievement reading tests in one and the two Arithmetic tests in one, the number of individual tests is reduced to eleven. In five of them the difference was two months or less, in three of which it was in the direction of the segregated school group. They were as follows: History-Civics, Arithmetic, Language Usage, Physiology-Hygiene and Literature. In five of them the

difference was four months or more and was in the direction of the mixed school group. They were as follows: Geography, Reading, Spelling -- of both the Stanford and the Morrison-McCall Scales -- Gray Oral Reading, and Stanford Silent Reading. The Freeman ratings of handwriting could not be converted into age differences because the mean scores of both groups were below the lowest norms, which are for seven years five months. However, in only one spelling test and in the handwriting test, were the differences found to be reliable, and the comparison of the grade and educational ages equivalent to the individual test scores add weight to the general conclusion that the segregated and mixed school groups are similar in educational attainment.

d. An Evaluation of the Achievements of the Cincinnati Negro Subjects.

A standard by which the achievements of the equated groups could be evaluated, in comparison with the achievements of other American children of the same age and mental level, was established by finding the educational age equivalent to their mean mental age and the grade equivalent to their mean chronological age. The former was ten years five months, in the case of the Binet groups, the same as their mean mental age, the grade equivalent of which was fourth grade fourth month. The grade equivalent of their mean chronological age of eleven years was fifth grade first month. The difference of seven months between the grade equivalent of the

mental age and the grade equivalent of the chronological age is due to the difference of seven months between their mean mental age and mean chronological age, which was pointed out earlier.

The educational age equivalent of their mean scores is ten years one month, four months below their mean mental age. This places them four months below the educational level of other American school children of equal mental age. In comparison with normal American children of their age they were eleven months retarded. Should the difference of seven months between the mental age of the Cincinnati Negroes and that of Terman's white children prove to be unreliable, then the difference between the school achievement of Cincinnati Negroes and other American children of their age might prove to be unreliable also. Disregarding the factor of age, it may be said definitely that Cincinnati Negro pupils come within four months of the educational level of other American school children of equal mental ability. Whether this difference of four months indicates definite educational retardation would depend upon whether Cincinnati white children of equal age and mental age fall as much as four months below the standard. This question is not answered in the present investigation. This much may be said, however, that if a difference of four months here is equal to a four months' difference found between the equated pairs, it is unreliable, and Cincinnati Negroes are not retarded in average educational achievement.

The differences found between the educational ages of

the Binet subjects and the standard, varied from zero to eleven months. In five of the ten individual tests in which the scores were converted into educational ages the difference was three months or less and thus appeared to be unreliable, while in the remaining five it more nearly approached complete certainty. In handwriting the level of achievement fell below the lowest norms, those of mid-first grade, and so could not be converted into accurate school or age levels. This indicated either very poor handwriting or invalidity of the test ratings which were based upon sentences written in a spelling test without the subjects' knowing they would be so rated. This and the Morrison-McCall Spelling Test, in which the retardation was six months, are both tests of skills which are rated relatively low as academic subjects. In Language Usage the retardation was seven months and in History-Civics it was eleven months. In both of these subjects the test results indicate a rather serious lack of training, but whether it is more true of negroes than whites in Cincinnati, cannot be stated here.

The comparison of the Dearborn and the sectioned groups found similar small differences and much overlapping between the level of Cincinnati Negroes and American school children as indicated by the similarity and difference between the scores, pointed out above. On the whole, the results of this investigation point to a small difference of four months between the academic achievement of Cincinnati Negroes and that of American school

children of equal mental age. They are thus shown to be much more alike than different, on the average, and their achievement distributions indicate that there are almost as many or possibly are as many Negro pupils of superior mental endowment and educational attainments as there are whites.

B. Conclusions and Recommendations.

1. Introduction.

A number of conclusions and recommendations may be stated as a result of this investigation. Some grew out of the comparison of the achievements of the segregated and mixed school pupils, some from the evaluation of their achievements in comparison with those of other American school children, and some from the consideration of the factors which conditioned the subjects who participated in the study. The first nine of those are based on the constant factors of age, grade, and intelligence.

2. Conclusions Based upon the Comparison of the Achievements of Segregated and Mixed School Pupils.

a. Segregated school pupils show similar academic attainment to that of Negro pupils in mixed schools, of the same age, grade, and intelligence. The mean difference of two months in educational age and grade achievement found in this study is unreliable.

b. The segregated schools of Cincinnati are as effective, on the whole, as are the mixed schools, in their academic training

of Negro children.

c. If any major difference in efficiency exists between the segregated school, as compared with the mixed, it is in respect to functions or activities other than those of academic training.

d. If the Negro child profits from attendance in one as compared with the other type of school, it is in respect to other than academic growth.

e. Specific academic tests in which the segregated school pupils of this study showed slight superiority over the mixed school pupils were: History-Civics, Arithmetic of both the reasoning and computative type, and Language Usage, but it is possible that this superiority would not be true of other samples.

f. Specific academic tests in which the mixed school pupils of this study showed slight superiority over the segregated school pupils were: Physiology-Hygiene, Literature, Geography, Silent Reading of both the paragraph and word comprehension type, and Gray Oral Reading, but it is possible that the difference would not be true of other samples.

g. School subjects in which the mixed school pupils showed a considerable advantage were Handwriting and Spelling.

h. The subjects in which a reliable difference occurred, spelling and writing, are tool subjects, and they rate low in comparison with other academic subjects in the school curriculum.

i. The difference in writing was less significant than the similarly low mean ratings of the two groups, which were below mid-first grade norms.

3. Conclusions Based upon the Evaluation of the Achievements of the Cincinnati Negro Subjects.

a. The academic achievement of Cincinnati Negro pupils of fourth, fifth and sixth grades, approximates the standard of American school children of the same mental level, as determined by a comparison of mean mental age with mean educational age.

b. The mean difference of four months between the mental and educational ages of Cincinnati Negro pupils appears not to indicate definite academic retardation.

c. The attainment of Cincinnati Negro pupils is equal to that of American school children of the same mental level as measured by the following tests: Literature, Physiology-Hygiene, Silent Reading, Arithmetic, Stanford Spelling, and Geography.

d. The attainment of Cincinnati Negro pupils is more than four months below standard, according to the following tests: History-Civics, Language Usage, Gray Oral Reading, and Morrison-McCall Spelling, but even here the difference would not be called definite retardation.

e. The ordinary handwriting of Cincinnati Negroes rates very low, according to the Terman Scale.

f. On the whole, the attainment of the Cincinnati Negro pupils measured here indicates that superior school advantages are provided for Negro pupils in the Cincinnati schools, as compared with those in some parts of the United States.

g. Negroes, showing practically the same academic attainment as whites of equal mental ability, are capable of profiting

from the same school opportunities.

h. Just as the Cincinnati Negroes fall in the normal group of children of equal mental level, so it is probable that they fall in the normal group of children of equal age. (The difference of eleven months between their mean chronological age and their mean educational age does not indicate definite retardation if the range of normal educational achievement is comparable to the range of normal intelligence at their age.)

4. Conclusions resulting from the consideration of the factors which conditioned the subjects.

a. Conclusions based upon the consideration of the constant factors are as follows:

(1) The Cincinnati Negroes of this study are from one and one-half to two and one-half years younger for their grades than are Southern Negroes.

(2) The Cincinnati Negroes of this study are of the same age as Indiana whites of the same grades.

~~(3)~~ Cincinnati schools rank high in their provision for Negro pupils, as judged by the age-grade distribution of the pupils of this study.

(4) The mean intelligence of the total group of Cincinnati Negro subjects falls within the range of normality, the mean mental age being seven months below the mean chronological age and the resulting intelligence quotient being 95.

(5) The mean intelligence of Cincinnati Negroes exactly

equals that of several age and sex groups included by Terman in his total distribution of white children.

(6) The Cincinnati subjects enrolled in each of the fourth, fifth and sixth grades were normally distributed in age and intelligence, as compared with white children.

(7) Cincinnati Negroes made higher rankings in the Binet individual tests than in the Dearborn group tests.

(8) The Cincinnati Negroes made higher rankings in the Binet and in the Dearborn tests each, than have the Negroes of previous studies in which the Binet and group tests were used.

(9) Most group tests are not as valid as is the Binet individual test for measuring the general intelligence of Negroes.

b. Conclusions based upon the study of the School and Environmental conditions are as follows:

(1) Most Cincinnati children attend kindergarten, and enter first grade at the normal age of six years.

(2) The average Negro child of Cincinnati is absent from school one month out of the school year of ten months.

(3) Ill health and misconduct are not serious problems among Cincinnati Negro children, as judged in the brief study made of them here.

(4) The average number of children in the Negro family of Cincinnati is five.

(5) The average dwelling of the Cincinnati Negro family consists of four rooms.

(6) Eighty per cent of the Negro fathers were gainfully employed at the time of the study, most of them being engaged in unskilled labor.

(7) A smaller percentage of the Negro fathers of Cincinnati, two per cent, are in professional employment, as compared with the percentage of white men of the United States, six per cent, of approximately equal intelligence.

(8) Factors other than intelligence prevent some Negro fathers of Cincinnati from engaging in the professions.

(9) More than half of the Negro mothers of Cincinnati are gainfully employed.

(10) A large percentage of the Negro children of Cincinnati lack parental supervision.

(11) In three-fifths of the Negro homes the parents are living together at home, and in the remaining fraction of homes the united supervision of the children is lacking.

(12) Approximately seven-tenths of the Negro children studied here have a play space at home. The remaining three-tenths have none, aside from street or sidewalk.

(13) Negro pupils rate slightly lower in school habits and social status, according to the judgment of white teachers as compared with that of Negro teachers.

5. Final Recommendations.

a. As far as academic training of the Negro child is concerned, the segregated and the mixed schools of Cincinnati may be

equally recommended to Negro parents, to pupils, and to school officials.

b. As far as the academic training of the Negro child is concerned, the segregated and the mixed school may be equally recommended to the public for support.

c. The Negro pupils of Cincinnati should be given special attention in the subjects covered by the tests of History-Civics, Language Usage, Spelling and Writing.

d. Negro children, having proved their ability to make the same educational progress as do average white children of the same mental age, should be given equal educational opportunities.

e. Negro children, having proved that they have intelligence similar to whites', should be given similar opportunities for professional and vocational training.

f. Conditions which might prevent the Negro child's normal development and expression in trade and profession should be removed, so far as the question of ability is concerned.

g. Negro children should have more home supervision.

h. Negro mothers should be released from the necessity of gainful employment in order to supervise their children.

i. In lieu of parental supervision, the Negro child should be given recreational supervision at school or community centers outside of school hours.

j. In the absence of maternal supervision at home, nurseries or pre-kindergartens should be provided, where needed, for pre-school children.

C. Problems Growing out of the Study.

1. Problems which arose from Assumptions made in the Study.

The problem stated for this investigation has been answered. During the course of the study many others have arisen and have been answered, while others have been defined and left for future consideration. Those relative to the random manner of selecting the subjects, the normality of the samplings, the reliability of the tests, the uniformity of conditions, the accuracy of test records and the statistical precision of technique used in the investigation have been answered. The attempt was made to prove all grounds for conclusion, but several assumptions remain unproved. (a) One is in reference to the random sampling of Negroes. The stated requirements may have introduced a possible element of selection which prevented the sampling of Negroes studied from being a true cross-section of all the Negroes of Cincinnati and of the United States. (b) Another is in reference to the validity of the tests administered, and a third (c) is in reference to the specific test of handwriting. These will be discussed more fully and the resulting problems defined below.

a. The requirements stated for the selection of subjects were carefully carried out, and there was evidence that the subjects were representative of those who could meet the requirements. The question here is, Did the requirements cause some selection from the total population of Negroes? Three requirements which might have

introduced this factor are (1) grade, (2) nativity in the same city, and (3) the city, Cincinnati, in which the study was conducted. These are worthy of consideration. There is some indication that there was some selection due to the grade requirement, in the fact that there were fewer fifth than fourth grade subjects and fewer sixth than fifth grade subjects. Are there actually fewer Negroes of fifth and sixth grade ability, or do economic factors enter in at those levels? Are there fewer Negroes of fifth and sixth grade age levels who can compete with the school requirements of those grades than there are at lower ages? Does actual retardation account for the fewer found in the upper grades, or is there an elimination due to specialized training or to economic pressure? Arlitt's¹ study indicated a decrease of intelligence with age of Negro children. The question could be answered by testing Negro children when they enter first grade and retesting them from year to year through sixth grade or higher. This would answer the question of the constancy of intelligence and also produce facts on the basis of which an analysis of the causes of the grade elimination of Negroes might be made.

It is possible that the requirement that the subjects be native of Cincinnati exercised a selection of a more stable type of Negro family than is typical of the total Negro population. The fact that they had been residents of Cincinnati for from eight to thirteen years might point to their being more substantial citizens,

1. Arlitt, Ada Hart. "The Relation of Intelligence to Age in Negro Children." The Journal of Applied Psychology, Volume VI (December, 1922) pp. 378-384.

socially and economically, than is common. In order to learn whether this is true, Negro children born elsewhere should be studied, with the factor of school opportunity held constant.

The third possibility of selection entered in the selection of the city in which to carry on the investigation. Evidence in the study shows that school advantages in Cincinnati are superior to those of Southern communities. Has that fact caused a selection of the more intelligent Negro parents, ambitious for their children's schooling, as residents of the city? A comparison of the intelligence of a cross-section of Cincinnati Negro parents with a similar selection of the parents of other cities and sections, both north and south, would answer the question. It might be answered indirectly by comparing the intelligence of a cross-section of Negro children in other places with that of Cincinnati children.

b. A second assumption which might introduce error was in reference to the validity of the tests administered. The question is: Do the standardized tests measure the academic training given in the Cincinnati schools? The fact that the Cincinnati Negroes so nearly approximated the standard of other American school children is evidence that the Cincinnati curriculum of academic subjects approximates that of other American schools. The question could be settled more positively by administering the same tests to a group of Cincinnati white children, similarly selected, other factors being equal.

c. A third assumption from which error might arise was to the effect that specimens of the ordinary handwriting of a pupil are a fair indication of his ability to write. In all of the other tests the children were urged to do their best, but when writing the sentences which were later rated according to the Freeman Scale, their attention was upon spelling the words. From this the question arises: How far did the lack of motivation used in the other tests influence the results in handwriting? This could be incorporated in a larger study of motives and incentives valuable in a tool subject. This would prove to be highly interesting in itself.

2. Problems for Future Investigation.

The answers to the questions stated above would determine whether the ability of Cincinnati Negroes studied here is equally characteristic of the total Cincinnati Negro population and the total Negro population at large, and whether the conclusions of the study are adequately founded. A number of other questions which do not affect the conclusions of this study but which arise from it will be stated briefly below. Their objectives may be grouped in general as: (a) Differences between the segregated and the mixed schools of Cincinnati, (b) Comparison of Cincinnati and other Negroes, north and south, (c) Comparison of Negroes and whites in Cincinnati, and (d) Comparison of equated Negroes and whites of Cincinnati with those of other sections, north and south. The questions will be listed according to these objectives.

a. Differences between the Segregated and the Mixed Schools of Cincinnati.

(1) What are the differences between the curricular and extra-curricular activities of Negro pupils in segregated and in mixed schools?

(2) What are the differences in the emotional responses, the habits, and the personality traits of Negroes in the two types of schools, and is there a difference in character training?

(3) What are the differences in child study and vocational guidance?

(4) What is the difference between the two types of schools in their interest in community affairs, their cooperation with community leaders, and their influence upon the social, moral, and political life of the community?

(5) What are the cultural influences of the two types of schools, i.e. their influence upon the art and refinement of life?

b. Comparison of Cincinnati and other Negroes.

(1) How do Cincinnati Negroes compare with the Southern Negro in general intelligence and academic attainment, and how do the school systems compare in opportunity and efficiency?

(2) How do Cincinnati Negroes compare with Negroes in Northern cities, and how do the school systems compare in opportunity and efficiency?

(3) How do Cincinnati Negroes compare with the Negroes of Washington, D.C., where it is claimed that the best schools are pro-

vided for Negro children? This question is concerned with the factor of enforced versus voluntary segregation. The Negroes of the mixed schools of Cincinnati could be used as a control group in comparing the two types of segregated schools.

c. Comparison of Negroes and Whites in Cincinnati.

- (1) How does the age-grade distribution of Cincinnati Negroes compare with that of whites?
- (2) How does the mental age-grade distribution compare?
- (3) How does the intelligence of Negroes compare with that of whites, other things being equal?
- (4) How does the health of the two groups compare?
- (5) How do the two groups compare in emotional response, habits, attitudes, personality and character traits?
- (6) How do the socio-economic levels of the two groups compare, other things being equal?
- (7) How does the occupational status of the fathers compare?
- (8) How do the two groups compare in respect to home supervision, control, culture, and training?
- (9) How do the housing conditions compare?
- (10) How does the recreational supervision of the two groups compare?

d. Comparison of Equated Negroes and Whites of Cincinnati with those of Other Sections.

Comprehensive studies of the intelligence, achievement, school opportunities, home conditions, and socio-economic status of Negroes and whites in different parts of the United States could be carried out to answer many of the questions detailed above. They would supplement the findings of the present investigation and be of value to many fields of study.

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