JOURNAL OF EDUCATIONAL RESEARCH MONOGRARHS

NUMBER TWO

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YATES

JOURNAL OF EDUCATIONAL RESEARCH MONOGRAPHS
No. 2 B. R. BUCKINGHAM, *Editor* June, 1922

A Study of Some High School Seniors of Superior Intelligence

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PUBLIC SCHOOL PUBLISHING COMPANY
Bloomington, Illinois

EDITOR'S INTRODUCTION

It is becoming a commonplace to say that our school system fails to detect and to furnish adequate training for the capable child. A certain doctrine, fortifying itself with the name of democracy, shrinks from the fundamental fact of individual differences and deprecates in the name of equality anything but a uniform treatment of school children. This doctrine is false and is based upon a faulty conception of democracy. The evidence that men are not born equal is conclusive. If, then, the fact of differences—many, varied, and wide—is accepted (as indeed it must be by anyone who approaches the facts with an open mind) then the corrolary that training should be different must also be accepted. Nor does this acceptance of differentiated training relate solely or mainly to gifted children. "The world's best brains fully trained" is only a partial program which should be replaced by the wider program "everybody's brains fully trained."

In this monograph the author brings into sharp relief the superior child. The "Child Study" of an earlier day, under the influence of the tendency to specialization which is so generally evident, has been broken up into the intensive study of types of children; and among these none is so attractive as the superior type.

Means for detecting children of this type and an analysis of their characteristics are surely important educational considerations. "To do justice to superiority we must understand it." The reader will seek and find in the following treatment a better understanding of this superiority. Whether it will enable him to do justice to superior children will depend upon his ability to use this knowledge.

At any rate, there is no virtue in ignorance. There are gifted children in every school system. The author takes us into one of

these systems and describes in minute detail the sort of superior children she found. We do not propose in this introduction to anticipate her in the treatment of her material.

One thing, however, stands out in the entire discussion, namely, the all-around superiority of the capable child selected on the basis of intelligence testing. For example, according to the data here presented the superior child is in the matter of interest always at an advantage. He not only has keener and more vitalizing interests, but he has more of them. Moreover, he makes greater effort, is more socially adaptable, and possesses higher qualities of leadership. In short, he is superior.

B. R. BUCKINGHAM, *Editor.*

April 30, 1922.

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CHAPTER I

INTRODUCTION

Compared with the extensive literature on the subject of subnormal intelligence that which has been written about supernormal intelligence seems remarkably scant. The latter has commonly been discussed in three typical ways: first, in treatises on genius, collectively considered, such as Galton's *Hereditary Genius* (3),[1] Lombroso's *The Man of Genius* (5), and Havelock Ellis' *British Genius* (2); second, in accounts of child prodigies, like Winifred Stoner (8), Karl Witte (12), and William James Sidis (11); and third, in sporadic short articles which are for the most part pleas for the bright children in the schools (1). Prodigies and geniuses appear infrequently, but in nearly every school there are some pupils who are decidedly above the average in intelligence. Is it not possible that these bright children deserve more attention than they are now getting?

Practically nothing has been done for exceptionally intelligent pupils except in some cases to provide a more flexible system of promotion. In 1915 McDonald (6) gathered information on this question from the public schools of this country. He gives a list of twenty-two cities that reported special classes for exceptionally intelligent children. Two years later Miss Elizabeth Woods (13) found that forty-five cities had classes formed of superior children only. Whipple (10) and Henry (4) consider these statements gross overestimates; for upon investigating some of the cases cited by McDonald, they learned that one city "only occasionally promoted individual pupils; one had a room for dull but never for bright children; one had a 'mixed' room for both dull and gifted (!); and two gave individual coaching to pupils who were trying for special promotions." Miss Woods (13) herself complains that the so-called "flexible promotion," in its various forms, was imperfectly developed and insufficiently applied; that "superior" teachers of special classes were almost never really

[1] Bibliographical references are given at the end of each chapter.

"superior"; and that they devoted their time to the dull pupils rather than to the bright ones.

At present interest in the bright child seems to be increasing. There are even a few evidences of the systematic study of groups of superiors. Whipple (10) has investigated (1919) the use of mental tests in the selection of bright children for special classes. Henry (4), working with him, has developed certain conclusions with regard to the organization and conduct of such classes. Terman (9) has given (1919) a detailed report of a highly selected group of superiors. We need just such careful studies as these if we wish to educate exceptional children intelligently.[2]

Stern (7) says, "We must not content ourselves with the oft-heard commonplace: conspicuous talent succeeds by its own strength. . . . After all, on what evidence is this common belief based? We know only those talents that have attained success. There is no book of epics to sing of potential greatness that has failed of fruition." Since superior intelligence is capable of such large returns to society, it can be only a short-sighted educational policy that devotes its best efforts entirely to the understanding and development of mediocre or subnormal intelligence. From a purely selfish standpoint it is to the advantage of all of us to have the world's best brains fully trained. Moreover, it is unfair to the superior child not to give him opportunity to develop his mental powers to their fullest capacity.

To do justice to superiority we must understand it. The unsupported generalities and vague descriptions of various earlier writers must give place to accurate and specific evidence. The complex nature of supernormal intelligence necessitates comprehensive and detailed preliminary studies, in order that no important factors may be overlooked.

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[2] Since the above was written another excellent group-study has just appeared, viz., "A Socio-Psychological Study of Fifty-three Supernormal Children," by W. T. Root *Psychological Review Monographs*, Vol. 29, No. 4, 1921.

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CHAPTER II

PURPOSE AND METHOD OF THIS STUDY

The aim.—The immediate purpose of this investigation was to study intensively a group of young persons of superior intelligence in order to determine group tendencies with regard to (1) heredity and home conditions, (2) health and physical development, (3) mental development and educational progress, and (4) kind and number of interests. The final aim was to show the pedagogical conclusions to be drawn from such a study. High school seniors, rather than younger pupils, were chosen as subjects for various reasons: to increase the probability of accuracy in report; to obviate the possibility of having a mixed group of adolescents and pre-adolescents; and to secure mental and physical data covering the entire school period. An earlier study had shown that Oakland, California, a city of 216,000, with a fairly typical population, was a suitable place for the investigation.

The method.—Briefly the plan was to discover the twenty-five brightest seniors in the five Oakland high schools and to compare them with a "control" group of twenty-five seniors of average intelligence. The Army Alpha Test and the Stanford Group Test[1] were used to select the groups because these tests seemed the best ones for the purpose available at the time. As the preliminary step the Army Alpha Test was given by the writer to 537 pupils during March and April, 1920. The Otis group test (Oakland edition) had already been given in February to 127 pupils by a member of the city Department of Research and Guidance. The total number tested, 664, comprised the junior B, or "high" junior classes, and the senior A, or "low" senior

[1] The Stanford Group Test, used by special arrangement with Dr. Terman, is the original of the Terman Group Intelligence Test, which appeared later. The former contains thirteen tests, but Test 3, Part A, and Test 4, Part B, have not been included in our final scoring because of their low correlation with the other tests and with school marks and teachers' estimates of intelligence.

classes, i.e., those who would make up the upper and lower senior classes the following semester, when the detailed studies of individuals were to be carried on. Both "high" and "low" grades were included in order to have a larger group from which to select. The fifty pupils who ranked highest in these first tests, and seventeen others who were recommended by their teachers as pupils of exceptional intelligence, were retested during May and June by means of the Stanford Group Test, the two parts of which were given on different days. To determine the "control group" the same test was also given to fifty-four whose Army Alpha or Otis scores lay at, or close to, the medians. With the Stanford test the time allowance was so generous as to be practically unlimited for a fairly quick worker. It gave opportunity, therefore, to the slower pupils.

Before the Stanford test was given the teachers had been asked to name any pupils in the grades under consideration whom they regarded as unusually bright. The list thus obtained was helpful in various ways. It reinforced the verdict of the preliminary tests because it included most of those excelling therein. It also brought to light four promising subjects who had been absent during the first tests.[2] And lastly, it contained the names of thirteen whose earlier mental ratings lay below the highest fifty. When these students were retested by the Stanford test, only one (Number 25, Table I) made a score high enough to warrant her inclusion in the group of the twenty-five brightest. As might be supposed, all the young people on the teachers' list had conspicuously high scholarship records. High-school teachers often have little time or opportunity to know many of their pupils well, so it is not surprising that they sometimes mistake schoolroom achievement, due largely to extraordinary application, for intellectual superiority. That is why the mental test, which is impersonal and carefully standardized, was taken as the only basis of selection in this study. There seemed to be no better criterion for the purpose. Not that we wish to claim too much for such tests. Doubtless they fail to give evidence of some phases of intellectual excellence. However, the superior pupils selected certainly rank high in the mental abilities that the tests measure.

[2] Number 1 in the superior group (see Table I) was discovered in this way.

The groups studied consist, then, of the best twenty-five, and the twenty-five nearest the median, selected by means of two group tests,[3] the longer of which was administered with a generous time allotment. Goddard (1) estimates that about four percent of the children in the public schools are so superior to the average child as to demand special educational opportunities. Our group of twenty-five superiors is a little less than four percent (3.8 percent) of the senior class, which in itself is a highly selected group. It should be added that four subjects whose first tests indicated that the performers would probably find a place in the superior group, could not, for one reason or another, be studied further.

When the personnel of the superior and control groups had been determined, the high-school records were consulted and all available data gathered. Besides this, as many teachers as possible were asked to give their estimate of each pupil's intelligence, and to rate each one in various mental, moral, and physical traits. This was done in personal conference with the investigator.

Next a questionnaire dealing primarily with interests was given to every young person individually by the writer herself. At the same time an attempt was made to secure the pupil's friendly cooperation. Moreover, it was stated at the beginning of the questionnaire that the investigator would be willing to give "a brief analysis of your mentality and indicate the kinds of work at which you will probably best succeed." This invitation was intended to serve somewhat as "bait." Twelve of the superior group and three of the control group asked for interviews, which, of course, furnished an excellent opportunity for studying the pupils and supplementing or correcting data. The writer also made it a point to have personal talks with the rest of the young people, either in their own homes or elsewhere. For the most part, the superior group was very friendly and interested. This was less true of the control group, in spite of the fact that any suggestion of their lesser ability was carefully avoided. Getting back their questionnaires sometimes proved an arduous task. In the end, however, remarkably complete data were obtained from both groups, and the writer is much indebted to her fifty young friends —for such they became—for their careful and detailed replies.

[3] See Chapter III for one partial exception.

Thanks are also due to the parents for their candid and courteous response to an appeal for a great deal of information. During home visits that lasted two or three hours or more, the writer filled out special blanks calling for information as to the immediate family and ancestry, the young person's physical development and health, mental development and educational history, his interests, traits, and special abilities, his home surroundings, duties, or other occupations, etc., etc. The present study attempts to discuss briefly only the more important findings. Forty-seven mothers, nine fathers, and one foster-mother were interviewed, and various other relatives made some contributions. One mother, who was out of town for a protracted stay, sent a complete report by mail.

No case was retained in the groups as they finally stood unless full and satisfactory data were obtainable. Evidence based on specific details not general descriptive terms was the only kind accepted. There were written records—in the form of "baby-books"—for ten. Most of the parents apparently gave unbiassed and fairly accurate accounts. Since information on certain points was obtained from several other sources—e.g., from teachers, school records, or the young people themselves—it was easy to check the general accuracy of parents' reports. In this way two mothers of pupils in the control group were found to have given rather unreliable testimony. Where this affects our conclusions attention will be called to the matter. The parents of the brighter pupils were almost always reluctant to stress their own children's superiority. The tendency seemed to be to underestimate rather than the reverse.

REFERENCE

(1) Goddard, H. H., "Two Thousand Children Measured by the Binet Measuring Scale of Intelligence," *Pedagogical Seminary*, 18: 232–259, June, 1911.

CHAPTER III

THE NATURE OF THE TWO GROUPS SELECTED

Mental-test ratings.—Table I shows that only one of the seventeen superiors who took the Army test scored lower than 156, the highest score being 191. It will be remembered that the greatest number of points attainable is 212, from 135 points to 212 being rated class A, or "very superior," in the Surgeon General's report (6), and from 105 to 134, class B, or "superior." Since the scores of our control group ranged from 106 to 120 (see Table II), even this group is superior with respect to the general population. The control group is "average" in the sense of "average for high-school seniors." The median score of the 537 given the Army test was found to be 119. Those just below, rather than above, the median were chosen for retesting by the Stanford test, because the tendency is to do better in a test with a wide time limit.

The intention had been to give all the pupils the Army test, but crowded conditions in the schools prevented further large-group testing. The Otis test (Oakland edition), which had already been given to 127 "low" seniors, is so similar as to be quite satisfactorily evaluated in terms of the Army test. Since, however, the latter differs in having more "spread" in the upper part of the scale, it differentiates superiority more sharply. The Otis test ratings of the eight who were included in the superior group ranged from 149 to 163 (out of a possible 172) points. The five pupils finally selected for the control group had scores ranging from 108 to 115. The scores of these five pupils may be compared with a median of 116 which was available from previous testing.

In the Stanford test the range for the superior group was from 302 to 346 (out of 366), the scores being fairly evenly distributed between these points. The pupils are listed in the order of their rank from the highest to the lowest, on the basis of the total number of points gained in both tests (i.e., in the Army or Otis on the one hand and in the Stanford on the other hand). A method of ranking depending simply on the addition of the two scores is,

of course, rather crude, and must not be taken too seriously. For instance, very high achievement at one time might be preceded or

TABLE I. SUPERIOR GROUP: MENTAL-TEST RATINGS, HIGH-SCHOOL MARKS, AND TEACHERS' ESTIMATES OF INTELLIGENCE

*(Girls' numbers are printed with an * following)*

Pupil's Number	Senior Grade	Army Alpha Test	Otis Group Test	Stanford Group Test	Average of High-School Marks	Teachers' Estimate of Intelligence	Course
1	A	191	.....	333	1−	1	College Prep.
2	B	.....	155	346	2+	1−	" "
3	B	.....	163	337	1−	1−	" "
4	B	.....	149	341	2+	1−	" "
5	A	172	.....	337	1−	1−	" "
6	A	171	.....	335	1−	2+	" "
7	A	178	.....	319	2−	2	" "
8*	A	165	.....	330	1	1	" "
9*	B	173	.....	321	1−	1	" "
10	A	.....	158	327	1	1	" "
11	A	166	.....	327	1−	1−	" "
12	B	.....	157	325	2−	2−	" "
13	B	.....	149	333	2−	3+	" "
14*	A	167	.....	317½	2−	2	" "
15*	A	172	.....	312	2+	2	General
16*	A	160	.....	321	2+	2	Normal Prep.[a]
17	B	.....	148	321	2−	1−	College Prep.
18	B	156	.....	321	2	2+	" "
19	A	166	.....	310	2	2	" "
20*	A	160	.....	313	2+	1	" "
21*	B	.....	153	310	2	2	" "
22*	A	168	.....	304½	2+	1−	" "
23	B	168	.....	302	1−	1−	" "
24*	A	163	.....	306	2+	2−	Commercial
25*	A	123	.....	327	1	1	College Prep.

[a] This girl intends to go to college after she has taught a while.

followed by an almost mediocre showing at another, because of ill health or some unfavorable condition. Yet the total score would

TABLE II. CONTROL GROUP: MENTAL-TEST RATINGS, HIGH-SCHOOL MARKS AND TEACHERS' ESTIMATES OF INTELLIGENCE

*(Girl's numbers are printed with an * following)*

Pupil's Number	Senior Grade	Army Alpha Test	Otis Group Test	Stanford Group Test	Average of High-School Marks	Teachers' Estimate of Intelligence	Course
26	A	120	.....	252	2−	2−	College Prep.
27	A	116	.....	252	2−	2	" "
28	A	119	.....	248	3−	4	" "
29*	A	118	.....	247	2−	2	General
30*	A	119	.....	245	2+	3+	College Prep.
31	A	116	.....	246½	3+	3−	" "
32	A	109	.....	251	2	3+	" "
33	B	.....	108	248	3+	3	General
34*	A	119	.....	239½	3+	3	"
35*	A	118	.....	238	2−	2−	"
36*	B	116	.....	239½	2+	2−	College Prep.
37	A	120	.....	232	2−	2−	" "
38	B	.....	115	[a]	3−	3−	General
39	A	117	.....	235	3+	3	College Prep.
40*	A	116	.....	235	3	3	General
41	B	.....	114	233½	3+	3	College Prep.
42	B	106	.....	243	3+	3	" "
43*	B	.....	114	232	3−	4+	General
44*	A	116	.....	220½	2+	2	Commercial
45	A	117	.....	218	3+	3	General
46*	A	115	.....	217	2−	3+	College Prep.
47*	A	117	.....	213	2−	2−	General
48	A	107	.....	221½	3+	3−	College Prep.
49	A	116	.....	201	3+	3−	General
50	B	.....	110	188	3+	3	"

[a] This boy's total score cannot be given because, by mistake, he took two forms of the first part of the test instead of the two different parts. His performance, however, was average, and subsequent data justify his inclusion in the group.

be the same as if both performances were only moderately high. The principle involved was helpful in selecting some members of the group. Number 25 is a case in point. She hardly scored above the median in the first test, but was given the second because she was recommended by her teachers as being very bright. In a small group, with every effort made to remove feelings of stress and strain, she not only made a score exceeded by just eight in the city, but also proved herself a very fast worker. Number 7 is another one who probably deserves a higher place in the group. He had the second highest score in the first test, but did not rank so well in one part of the second. Before that test he had tried to be excused because of a headache. It should also be pointed out that ranking by total number of points gained gives greater weight to the longer test, which had the wide time limit. This may, or may not, be a desirable thing to do. Furthermore, the Otis test can be only roughly evaluated in terms of the Army test in the higher points of the scale. For example, it is practically impossible to make distinctions in the total performance of the first three or four subjects. For these reasons, then, we may be sure that a few points difference in score means nothing. It would be hard to differentiate between the first thirteen at least, on the basis of their tests.

The control group has also been ranked in order of total achievement in the tests. This arrangement must be accepted with the same caution as in the case of the superior group. Table II shows that the range for the Stanford test was from 188 to 252. Terman's median for pupils of the same grade was about 240.[1] Seventeen of our group, or 68 percent, had scores between 252 and 232, while seven others went lower than this. Nine were above 240. Speaking generally, the control group is quite homogeneous with respect to mental test ratings. All proved themselves able to pass at least the first test close to the median. It is immaterial that one or two fell well below the median in the second, because the intention was to have a group thoroughly distinct in calibre from the superior one.

Proportion of "high" and "low" seniors.—At the time of the tests fifteen of the superior group and eighteen of the control group were scheduled to go into the senior A ("low") grade the following semester, as is indicated in Tables I and II. As a matter

[1] From unpublished data.

of fact, five of these superior pupils, by carrying extra work, made the "high" grade, and two "high" seniors of the control group failed to graduate. This, however, does not concern us here. The point is that the distribution of upper and lower grade seniors is not sufficiently different to need consideration. That there were originally fewer "high" seniors than "low" seniors in both groups was doubtless due to the fact that the "high" senior class was smaller.

Sex differences.—It is apparent from Table I (in which girls' numbers are starred) that there are fifteen boys and ten girls in the superior group. It will also be noted that most of the latter (eight out of ten) appear in the second half of the list, which means that the girls' standing in the tests was, generally speaking, below that of the boys. Much the same sex differences were earlier discovered by the writer (5) in another group of twenty superiors and by Terman (3) in a younger and more highly selected group of eighty. Just what conclusion we may draw is not altogether clear. Is there here an indication of the inferiority of the female sex in "general intelligence"? Or is support lent to the theory of greater male variability, set forth by such men as Havelock Ellis (1) and Thorndike (4), and hotly contested by Mrs. Hollingworth (2)? Or is it that the tests are better adapted to masculine intellect, training, or temperament?

It is not the purpose of this study to discuss the matter at length. In the first place there are hardly sufficient data concerning groups of superiors. And in the second place the differences noted are not great. Certainly it must be admitted that mental tests are man-made, and some of them at least (the Army test, for example) are generally conceded to favor the male sex. As has been pointed out, the ranking of our group is rather uncertain, and difference of a few points means little. It may well indicate a difference in training—more housework, less experience with the world—or a disposition to become "flustered" under test conditions, a state of mind which may itself be partly due to training, or rather, the lack of it.

The control group has the same proportion of girls and boys as the other group simply because it was thought better to keep the number the same for comparative purposes.