THE MENTAL HYGIENE OF EXCEPTIONAL CHILDREN

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The purpose of this article is to present some data on the relation of school success to intelligence, and more particularly to raise the question whether the treatment of exceptionally intelligent and exceptionally dull children in the grades has proper regard for the actual mental capacity of such children.

The data to be presented are some by-products of a study of the school success of 1,000 non-selected school children who were tested in 1914-1915 by the Stanford revision of the Binet-Simon measuring scale of intelligence. Those tested comprised all the children of all ages within two months of a birthday who were enrolled in the schools where the tests were made, and the subjects were therefore as nearly representative of the different ages as it was possible to secure. They included approximately one-third of the children enrolled, and we have no reason to suppose that if the other 2,000 not within two months of a birthday had been tested the facts for them would have differed materially from those we have found.

The mental age of each child was computed according to the Stanford revision of the Binet scale and comparisons were made between intelligence quotient and school success as indicated by three criteria: (1) The quality of the school work as judged by the teacher on a scale of five ("very inferior," "inferior," "average," "superior," and "very superior"); (2) Grade progress; and (3) The teachers' estimates of the children's intelligence. Intelligence, like school success, was also estimated on a scale of five. The present discussion will deal chiefly with the correlation between intelligence quotient and grade progress.

We have made this comparison for the entire number of children, but since there is little opportunity for children below 8 years to become retarded we have included in the following table only those with a mental age of 8 years or more.

1 The Stanford Revision, with analysis of data from 1,000 cases, will be published as a joint monograph by Terman, Ordahl, Lyman, Galbreath and Talbert.
Grade II is regarded normal for mental age 8, grade III for mental age 9, etc. The 8 year mental age group includes all mental ages from 7 years 7 months to 8 years 6 months, and so on.

**TABLE I**

**SHOWING GRADE DISTRIBUTION OF 676 CHILDREN BY MENTAL AGE**

<table>
<thead>
<tr>
<th>Grade</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>H.S. I</th>
<th>H.S. II</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>25</td>
<td>55</td>
<td>18</td>
<td>19</td>
<td>31</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>98</td>
</tr>
<tr>
<td>9</td>
<td>24</td>
<td>19</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>19</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>11</td>
<td>49</td>
<td>49</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>13</td>
<td>29</td>
<td>25</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
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<td></td>
<td>105</td>
</tr>
<tr>
<td>14</td>
<td>21</td>
<td>25</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>15</td>
<td>10</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>19</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>105</td>
</tr>
</tbody>
</table>

The above table shows that nine-year intelligence is found all the way from grade I to grade VII, inclusive; ten-year intelligence from grade II to grade VII, etc. Twelve-year intelligence, which here ranges from grade III to grade VIII, would doubtless have been found in high school also if tests had been made there in any considerable number.

Table II shows the number and per cent who, according to mental age, are retarded or accelerated in school, 1, 2, 3 or 4 years. The table includes only the mental ages 8 to 16 inclusive.

**TABLE II**

**SHOWING AMOUNT OF ACCELERATION AND RETARDATION IN THE GRADES USING MENTAL AGE AS THE BASIS**

<table>
<thead>
<tr>
<th>Grade below mental age</th>
<th>Normal grade for mental age</th>
<th>Grade above mental age</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 yrs. or more</td>
<td>3 yrs.</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>Number</td>
<td>13</td>
<td>69</td>
</tr>
<tr>
<td>Per cent</td>
<td>.52%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

It may be pointed out that, after the age of 7 or 8 years, misplacement by one grade is not especially significant, as that could easily happen from any one of a number of causes such as early or late entrance, illness, a little more or a little less than average industry, etc. But in 112 cases, or nearly 16% of all, there is a misplacement of two grades or more. Eighty-five of these, or over 71% of all, are cases of grade retardation below mental age; and 26, or nearly 4% of all, represent grade acceleration beyond mental age. It is interesting to note that school retardation of two years or more (reckoned on the mental age basis) is about three times as common as acceleration of two years or more. On the basis of chronological age the proportion of grade acceleration to grade retardation is even less than this.

Our present task, however, is to find an explanation of the rather surprising disagreement between grade progress and mental age. Taking up first the 26 children whose grade status is two or more years ahead of their mental age we find that 19 of these are by chronological age over-age for their grade. Ten of the 19 are chronologically from two to four years over-age. In other words, those who are accelerated in school on the basis of mental age are usually retarded on the basis of chronological age. The explanation is obvious. The school tends to promote children by age rather than ability, and although the very dull are allowed to become somewhat retarded, this retardation is ordinarily less than would be warranted by their actual mental development. For
example, there are six children of mental age 10 in the sixth grade. Two of these are 14 years of age, chronologically, two are 15, and one is 16. Of the two children of mental age 11 in the eighth grade, one is 17 years old, three are 16, and five are 15. Only two are normal age for the grade.

Turning now to the 85 children who are retarded two or more grades below the norm for their mental age, we find that 23% are by chronological age actually accelerated, and that over half of the remainder are in the grade where they belong by chronological age. Only 8% of those who are retarded two or more according to mental age are advanced two or more years by chronological age. This again confirms the suspicion that promotion is largely governed by chronological age and helps to explain why children of any given mental age are distributed over such a wide range of grades. There are of course other factors which sometimes cause children to be enrolled in grades too low for their mental age. Among these are irregularity of attendance, illness, and lack of industry.

Comparison of grade status by mental age and chronological age reveals the striking fact that, on the whole, the grade location of school children does not fit their mental age much better than it fits their chronological age. Except in the upper years, children of a given mental age are scattered over nearly as wide a range of grades as children of that chronological age. Plainly the efforts made at school grading fail to give groups of children of homogeneous mental ability.

That this is largely due to the incorrect grading of children of inferior and superior intelligence is easily shown by taking those whose intelligence quotient is practically normal, say between 96 and 105, and finding how these distribute themselves in the grades. This method gives the correlation relatively freed from the constant tendency of teachers to over-promote the dull and under-promote the superior children. Of our 227 children with an intelligence quotient between 96 and 105 only 4 who are below the age of 14 are more than one grade removed from the place where they belong by chronological age. All the two-grade displacements are in the direction of retardation. That is, the child with an I.Q. between 95-105 is never found (in our data) two grades advanced in school; and the chances are about 30 to 1 that if he is under 14 years of age and tests between 96-105 he will not be as much as two years retarded.

Another interesting comparison may be made by taking the extreme I.Q.'s and finding the location in the grades for the exceptionally dull and exceptionally bright children of each chronological age. We have done this for the I.Q.'s above 120 and below 80. We will consider first those with an I.Q. of 120 or above, and by way of information it may be stated that the child who tests at 120 or above belongs with the best 5 children out of 100 selected at random. Of 54 such children, 7 years old or above, 15 are in the grade where they belong by chronological age, and 3 are even retarded one year by chronological age. That is, 18, or one-third of all those having an I.Q. of 120 or above, fail to reap any advantage (as far as promotion is concerned) from their very superior intelligence. They are all doing "very superior" to "average" work, and would doubtless continue the same record if accorded the extra promotions warranted by their I.Q. The reluctance of teachers to give such promotions is probably due both to inertia and to an unwillingness to part with exceptionally satisfactory pupils.

Turning now to those who have an I.Q. of 80 or below, we find 42 children with two-thirds to four-fifths intelligence. Of these, only 2 are in the grade where they belong by chronological age. Both of these were doing "very inferior" school work and neither was promoted the following year. Six of the 42 are only one year retarded. Supplementary data are available for only 4 of the 6. Two of these 4 are doing "very inferior" work, 2 "inferior" work. Of the 18 retarded two or more years, supplementary data are available for 11, 4 of whom are said to be doing "average" work, 4 "inferior" work, and 3 "very inferior" work. Of the 16 retarded 3 years or more, we have supplementary data for 10, 3 of whom are doing "average" work, 4 "inferior," and 3 "very inferior." It is interesting to note that 2 of the 3 who are doing "average" work are 4 years retarded: one being 13 years old and in the third grade, the other 14 years old and in the fourth grade. This is what we should expect of high grade feeble-minded children of 13 and 14 years.

The above is suggestive as indicating what three-quarter intelligence can do. A child of this degree of deficiency is usually 2 to 4 years below grade for his age, and his work is usually "inferior" or "very inferior." Rarely is he found in the grade where he belongs by chronological age and he never does better than "inferior" work there.

To summarize our results bearing on the relationship between grade progress and I.Q., we have found:

1. That the range of distribution over the grades by mental age, though somewhat less than that by chronological age, is unjustifiably great.

2. The wider disagreements between the I.Q. and the grade status of the children are confined chiefly to those who are
superior to or below the average in ability. The explanation for this has been found in the fact that the tendency of the school is to promote children by age rather than ability. Those who have an IQ between 96 and 105 are hardly ever more than one grade removed from the location which is normal to their mental age.

3. The child with two-thirds to three-fourths intelligence (IQ 65 to 75) never does satisfactory work in the grade where he belongs by chronological age. After the age of 8 or 9 years he is usually found doing "very inferior" to "average" work in a grade two to four years below his age. Retarded by chronological age, by mental age he is actually accelerated.

4. The child with an intelligence quotient of 120 or above is rarely found below the grade for his chronological age, and occasionally he is one or two grades above. Compared to his possibilities, however, the child of exceptionally superior intelligence is almost always retarded. Wherever located his work is nearly always superior, and the evidence suggests strongly that this superiority of school work would continue even if extra promotions were granted.

ARE CHILDREN OF GENIUS USUALLY DEFECTIVE OR QUEER?

It is commonly believed that bright children are especially likely to be one-sided, nervous, delicate, morally abnormal, socially unadaptable, or otherwise peculiar. We have secured from teachers rather extensive information on these and other points regarding 31 children having an intelligence quotient of 125 or above. This degree of intelligence is possessed by only about 2 children out of 100, and is about as far above average intelligence as feeble-mindedness is below. The facts regarding these children, according to the testimony of their teachers, are as follows:

1. **Ability special or general.**—In the case of 20 out of 31 the ability is decidedly general, and with 2 it is mainly general. The talents of 5 are described as more or less special, but in only one case remarkably so. Doubtful, 4.

2. **Health.**—Fifteen are said to be perfectly healthy. Thirteen have one or more physical defects. Four of the 13 are described as delicate, 4 have adenoids, 4 have eye defects, 1 lisp and 1 stutter. Of the 4 delicate children, 1 has kidney disease, 1 digestive trouble, and 1 has been threatened with tuberculosis. On the whole, the health conditions appear to be fully up to the average for non-selected children in the schools.

It should be pointed out, too, that most of these children are from superior homes and that for this reason their physical defects would naturally be better known than would be the case with children from inferior homes.

3. **Studiousness.**—"Extremely studious," 15; "usually studious" or "fairly studious," 11; "not particularly studious," 5; "lazy," 0.

4. **Moral traits.**—Favorable moral traits only, 19; one or more unfavorable moral traits, 8; no answer, 4. Children with unfavorable moral traits are as follows:

- "Very self-willed," .... 2
- "Needs close watching," .... 1
- "Cruel to animals," .... 1
- "Untruthful," .... 1
- "Unreliable," .... 1
- "A bluffer," .... 1
- "Sexually abnormal and vicious," .... 1

The last-named child is the only one with more than one unfavorable trait, and he is described as being sexually abnormal, obstinate, perverted, and vicious. It will be noted that the bad traits of most of the others can hardly be regarded, from the psychological point of view, as really serious.

5. **Social adaptability.**—Socially adaptable, 25; not adaptable, 2; doubtful, 4.


7. **Is child a leader?**—"Yes," 14; "no," 5; not particularly, etc., 12; doubtful, 5.

8. **Is play life normal?**—"Yes," 26; "no," 1; "hardly," 1; doubtful, 3.

9. **Is child spoiled or vain?**—"No," 22; "yes," 5; "a little," 2; no answer, 2.

While the data just presented are not extensive and are subject to more or less error owing to the method by which they were collected, they suggest strongly that there is little if any ground for the wide-spread belief that genius children are more likely than ordinary children to be one-sided, unadaptable, morbid, queer or physically delicate. According
to the testimony of their teachers such children are fully as likely to be healthy as average children; their ability is far more often general than special, they are studious above the average, really serious moral faults are not common among them, they are nearly always socially adaptable, are sought after as playmates and companions, their play life is usually normal, they are leaders far oftener than other children, and notwithstanding their many really superior qualities they are seldom vain or spoiled.

Are we not justified in concluding that it would be greatly to the advantage of such children if their superior ability were more promptly and fully recognized and if (under proper medical supervision, of course) they were promoted as rapidly as their mental development would warrant? Under the present regime, when such children attain their highest possibilities it is more often in spite of the school than because of any special help or encouragement they receive from it. Even genius finds it difficult to survive when held over-long to tasks that are too easy.

Mental hygiene demands such an observance of the laws and conditions of mental activity as will promote the highest functioning which is possible without injury to the mechanism involved. The data presented suggest that these laws are frequently transgressed in the educational treatment of exceptional children. On the one hand, children of low-grade intelligence are promoted beyond their power to do. It is altogether probable that the wide-spread agitation against the evils of retardation has carried us too far, or rather that it has carried us in the wrong direction. Instead of developing a differentiated course of study which would allow dull children to make steady progress without becoming retarded we have too often promoted them to tasks which for them are impossible of accomplishment. The inevitable result is apathy and discouragement, or else over-pressure.

Bright children, on the other hand, are almost always under-promoted. They are rarely given tasks which call forth their best ability, and as a result they run the risk of falling into life-long habits of submaximum efficiency. These, too, should be given the advantages of a differentiated course of study. There is probably little ground for the common fear of over-pressure in the training of such children. The subnormals are more in danger of over-pressure; the supernormals of under-pressure. In the interest of both groups, mental hygiene demands that researches be undertaken for the purpose of ascertaining more definitely what performances may rightly be expected of 75 per cent. or 125 per cent. intelligence at the various age levels.