

No. 112

THE RELATION BETWEEN ENTERING AGE AND SUBSEQUENT PROGRESS AMONG SCHOOL CHILDREN

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REPRINTED FROM
EDUCATION, FEBRUARY, 1912, BY THE
DIVISION OF EDUCATION
RUSSELL SAGE FOUNDATION
400 METROPOLITAN TOWER, NEW YORK CITY

Printed January, 1912
Reprinted February, 1912
Reprinted July, 1912

The Relation Between Entering Age and Subsequent Progress Among School Children

Every parent and teacher desires an answer to the perennially important question "What is the best age at which to send a child to school?" Those whose interest becomes active usually seek an answer through questioning the recognized authorities in pedagogy and child hygiene. The experience of such seekers after knowledge is like that of Omar of old, for they eagerly frequent doctor and pedagogue and hear great argument.

In general, the pedagogue solves the problem through the processes of near-philosophic induction, and decides that the best entering age is relatively low, while the physician arrives at his conclusion through the simple method of dogmatic assertion, and declares that the best beginning age is a relatively high one. The discussion on both sides is invariably lively and protracted, for the exponents of the two theories enjoy the great advantage of being entirely unhampered by facts. The result is that, again like Omar of old, the seeker after knowledge comes out of the same door wherein he went.

In England, an important contribution toward the solution of the problem has recently been made by Inspector W. H. Winch, who has published the results of his extensive and careful researches in an excellent monograph entitled, "When should a Child Begin School?" Unfortunately, this study is of only limited value in its application to conditions in America, for the reason that children still commonly begin school in England at the age of three or four years, and the question at issue is whether or not this practice produces beneficial results. In the United States, on the other hand, the age of five is commonly the lowest school age, while in some states the lower limit is fixed by law at six. What the American parent and teacher want to know is which is in general the best entering age under present conditions in our school systems.

The present article presents data gathered by the writer which bear on one phase of this problem—the relative subse-

quent progress through the grades made by children who enter school at each of the ages from five to ten years inclusive.

In 1908, the writer conducted an investigation for the Board of Education of New York City in which a study was made of the school histories of some 20,000 children in fifteen schools in Manhattan. Among these was a group of 257 pupils in the eighth grades, who were about to graduate, and whose entire school histories from the date of first entering were intact and available. The number of children in each entering age group and the time taken to complete the course were as follows:—

I. AGE AT ENTERING AND TIME IN SCHOOL OF 257 EIGHTH GRADE PUPILS IN NEW YORK CITY, 1908

AGE AT ENTERING	NUMBER	AVERAGE NUMBER OF YEARS TO COMPLETE EIGHT GRADES
5.....	64	8.9
6.....	113	8.6
7.....	54	8.4
8.....	19	8.2
9.....	7	7.2

The figures show a steady but slight falling off in the amount of time required by the children of each advancing age group to complete the course. This decrease is so small that it lends no support whatever to the prevalent opinion that the child entering school late will make such rapid progress as easily to catch up with the children who entered two or three years earlier.

A second study of the histories of school children was conducted for the New York Board of Education in 1909. This investigation included the records of all the children who were in the graduating classes throughout the entire city in June of that year. There were 16,000 of them, and the investigation covered their complete school records from their entry into the Kindergarten or first grade through to the completion of the eighth grade.

For the purpose of studying the influence of entering ages upon subsequent progress, only records of children who had entered in the first grade and completed the eighth were tabulated. All those of children entering in grades beyond the first were discarded, as were those in which there was any question as to the accuracy of the data. This left a total of 11,185 cases. The ages at starting varied from five to twelve years, inclusive, while the time for completing the course ranged from five and one-half

to thirteen and one-half years. The following table shows the number of children in each entering age group, together with the median time required to complete the course:—

II. AGE AT ENTERING AND TIME TO COMPLETE EIGHT GRADES OF 11,185 CHILDREN IN NEW YORK CITY, 1909

AGE AT ENTERING	NUMBER	MEDIAN NUMBER OF YEARS TO COMPLETE EIGHT GRADES
5	1521	8.2
6	5828	8.1
7	2936	8.0
8	721	7.9
9	142	7.4
10	26	6.9
11	9	6.6
12	2	6.3

The lesson clearly taught by the table is that children entering school at the advanced ages made more rapid progress than did those who began earlier, but that the difference is slight. The child who entered at the age of six gained one school month in the course of eight years over his companion who began at five. The one who began at seven gained one month over the one who started at six, and the child entering at eight gained one month over the one starting at seven.

In the cases of the children who started at from nine to twelve years of age, the gains were greater, amounting to from three to five months for each advancing age. Nevertheless, these figures again expose the fallacy of the common assertion that the child entering late easily catches up with the one who begins early.

The third set of data throwing light on the question of entering ages is much more significant than those already hastily reviewed. In the spring of 1911 the Division of Education of the Sage Foundation undertook a co-operative investigation with the superintendents of a number of city school systems for the purpose of studying factors affecting the progress of school children.

Data of this investigation covering the progress and age records of 206,495 children in 29 cities have been tabulated. Of this number 13,867 are the records of the entire membership of the eighth grades of these twenty-nine cities at the close of the school year 1910-11. The number of years required to complete the eight grades varies from three to twelve, while the entering ages range from five to fourteen. The number of children in each entering age group, together with the median time

required to complete the eight grades, is shown in the following table:—

III. AGE AT STARTING AND TIME TO COMPLETE EIGHT GRADES OF 13,867 CHILDREN IN THE GRADUATING CLASSES OF 29 CITIES, JUNE, 1911

AGE AT ENTERING	NUMBER	MEDIAN NUMBER OF YEARS TO COMPLETE EIGHT GRADES
5.....	2663	8.7
6.....	6050	8.5
7.....	3653	8.2
8.....	1151	7.8
9.....	255	7.2
10.....	58	6.3
11.....	22	..
12.....	9	..
13.....	3	..
14.....	3	..

These figures closely resemble the two foregoing series. They show that the children who enter at advanced ages gain a little on those who enter early, and that this gain becomes greater as the upper ages are reached. They again show that this gain is not enough to enable the late entering child to catch up with the one who enters early.

RAPID, NORMAL AND SLOW PROGRESS

In studying the records of the children in the twenty-nine cities, a division into three progress groups was made in which those who had taken more than eight years to complete the eight grades were designated as slow, those who had taken just eight years as normal, and those getting through in less than eight years were termed rapid. The results of this tabulation show that the children of each entering age were divided among these three progress groups as follows:

IV. PROGRESS CLASSIFICATION OF 13,867 CHILDREN IN THE EIGHTH GRADES OF 29 CITIES, ACCORDING TO PER CENT RAPID, NORMAL, AND SLOW IN EACH ENTERING AGE GROUP

AGE AT ENTERING	PER CENT RAPID	PER CENT NORMAL	PER CENT SLOW
5.....	10	58	32
6.....	27	52	21
7.....	40	45	15
8.....	59	33	8
9.....	81	17	2
10.....	98	2	..
11.....	100
12.....	100
13.....	100
14.....	100

The table shows that the per cent of slow pupils is greatest among the children entering at five, and that the pupils making rapid progress are those who entered at the advanced ages. This brings up a difficult question. Is the best entering age the one which results in the greatest proportion of rapid pupils, the smallest proportion of slow pupils, the largest proportion of normal pupils, or the most equal balance between the three groups?

The writer is inclined to the opinion that so far as the present criteria are concerned, the best entering age is the one that results in a large proportion of normal pupils, combined with the most equal balance between the rapid and slow groups. In the present case, this is the entering age of six, which results in fifty-two per cent of the pupils making normal progress, twenty-seven per cent rapid progress, and twenty-one per cent slow.

DIVISION INTO YOUNG, NORMAL AND OVER-AGE GROUPS

A second tabulation of the data was made which classified the same children according to their ages. Here the common standard was followed which considers a fourteen-year-old child in the eighth grade as of normal age, one younger as below normal age, and one older as above normal age. This classification gave the following results:—

V. AGE CLASSIFICATION OF 13,867 CHILDREN IN THE EIGHTH GRADES OF 29 CITIES, ACCORDING TO PER CENT YOUNG, NORMAL, AND OVER-AGE FOR EACH ENTERING AGE GROUP

AGE AT ENTERING	PER CENT YOUNG	PER CENT NORMAL	PER CENT OVER-AGE
5.....	67	25	8
6.....	27	52	21
7.....	8	33	59
8.....	3	14	83
9.....	2	7	91
10.....	2	10	88
11.....		5	95
12.....		..	100
13.....		..	100
14.....		..	100

Here the results are just the opposite from those of the progress classification. The best showing is made by the children who entered at the lower ages and the worst ones by those who entered late. It resembles the preceding table, however, in that the entering age of six is the one which results in combining the greatest proportion of normal pupils with the most equal balance between the young and over-age groups.

The reason why the children of the lower age groups make the best showing becomes apparent at once if we refer to the table showing the median number of years required by these same children to complete the course and compute their ages at graduation, as follows:

VI. AGE AT ENTERING, YEARS TO COMPLETE COURSE AND AGE AT GRADUATION. BASED ON RECORDS OF 13,867 CHILDREN IN 29 CITIES

AGE AT ENTERING	MEDIAN NUMBER OF YEARS TO COMPLETE EIGHT GRADES	AGE AT GRADUATION
5.....	8.7	13.7
6.....	8.5	14.5
7.....	8.2	15.2
8.....	7.8	15.8
9.....	7.2	16.2
10.....	6.3	16.3

A glance at the figures of the last column shows that the children of all but the two lowest entering age groups are above the normal age for their grades. Moreover, nearly all the children who were eight years old or older at the time of beginning school remained above normal age for their grades during their entire school course. So far as age went, they were misfits during the entire elementary school period.

RELATIVE HOMOGENEITY OF ENTERING AGE GROUPS

Another test which may be applied to the data for the several entering age groups is one to tell us which entering age results in the greatest probability that the child will continue through the course with his companions of the same age with whom he entered the first grade. We may answer this question by finding the probable error for the progress data of each entering age group. That is to say, we may find which group is most homogeneous as to progress by finding the range in the distribution of the progress figures, which will include that half of the cases most closely clustered about the median point. The group in which the range is least is the one having the greatest homogeneity. The probable errors for the several entering age groups are as follows:—

ENTERING AGE	PROBABLE ERROR IN YEARS
5.....	1.05
6.....	1.01
7.....	1.24
8.....	1.28
9.....	1.46
10.....	1.27

Once more, the age of six is the one making the best showing. As the probable error for this group is the smallest, the group is the most homogeneous.

To summarize:—

1. The results of these three studies of the school histories of more than 25,000 school children who have completed the elementary course indicate that children entering at advanced ages subsequently make more rapid progress than those who enter younger.

2. The subsequent progress of children entering at the more advanced ages is slightly more rapid than that of those entering at the lower ages, but it is not sufficient to enable the child to overtake in the school course the child who entered younger.

3. The entering age of six is the one which makes the best showing with respect to resulting in a large proportion of the children making normal progress and nearly even balance between the rapid and slow groups.

4. The entering age of six is the one which makes the best showing with respect to resulting in the largest proportion of the children finishing the course at normal age and a nearly even balance between the under-age and over-age groups.

5. The entering age of six furnishes the most homogeneous group, judged on the basis of subsequent progress.

It must be remembered that the foregoing data and conclusions bear only on one phase of this problem, and that a phase which is measured only in terms of time. They do not furnish a complete answer to the question "Which is the best entering age?" nor do they indicate what results might be found in a system where each child's progress was directly and entirely dependent on his capacity and unaffected by more or less arbitrary systems of promotion. They do, however, throw considerable new light on the question of the relation between entering age and progress under present conditions in city school systems, and their indications point strongly to the age of six as the one which, in general, gives the best progress results.

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