JOURNAL OF P SYCHO-ASTHENICS

VOL. XVII March, 1912 No. 3

A quarterly journal devoted to the education and care of the feeble-minded, and the care and treatment of epileptics. Published under the auspices of the American Association for the Study of the Feeble-Minded.

Address JOURNAL OF PSYCHO-ASTHENICS, Faribault, Minn.
Entered at the post office at Faribault, Rice Co., Minn., as second-class matter.

REVIEWS AND NOTICES

Ueber Intelligenzpruefungen (nach der Methodc von Binet und Simon). O- BOBERTAG, *Zeitschrift fuer angewandte Psychologie*s *1912.*

This is the second of the author's articles giving the results of his study of the Binet-Simon tests in examining public school children. The first dealt with matters of his method of work and the analysis and accuracy of individual tests. The present article deals with the accuracy of the tests as a whole and with certain theoretical considerations underlying the same. Two of the basic assumptions of Binet and Simon are that the number of children who are mentally retarded according to the tests shall equal the number that are advanced, and that the majority shall test out at age, if the tests are to measure the mental age correctly. These two demands seem very

plausible on *a priori* grounds. But Binet has nowhere attempted to find what theoretical explanation might be given to show that they are correct. The author tests them out. In the first place he notes that the empirical results taken on the whole very closely approximate fulfillment of the former demand. Binet and Simon give three tables, one in 1908 and two in 1911, and the author has results from 261 children on this point. This shows the following:

	Retarded	At Age	Advanced
Binet and Simon	28%	48%	23%
Bobertag	23%	51%	25%

But this favorable result is obtained only when the results for all ages are taken together. When each chronological age is considered separately the equality of the number of retarded and advanced disappears almost entirely. Up to the eighth year the advanced exceeds the retarded in number. From the ninth year on the retarded exceeds the advanced. The favorable showing of the mass results is merely an accident. The tests are as a matter of fact not of the proper degree of difficulty in all the different age groups. This fact is followed out further by first dividing the children tested by the author into five grades according to the quality of their school work. From these groups are then chosen an equal number of boys and girls, 28 to 32, for each chronological age in such a way that the average grade for each age is always the same, the third or middle of the five grades. The average mental age for each group should then approximate the chronological age in each case. For this is only another way of saying that the number of retarded and advanced should be equal. The following are the results of this comparison:

Age	7	8	9	10	11	12
Av. Men. Age	7.16	8.43	9.00	9.97	10.65	**11.42**

If a majority, let us say a bare majority of 51%, test out at age, and if the number of retarded and advanced are equal, it leaves 75.5% of the children of any chronological age that will pass the tests of the corresponding age group. The question as to whether the majority should test out at age and the question as to what percentage should pass the tests of any age group may therefore be considered together. They involve another question still. This is whether the distribution of the number of children belonging to each of several grades of intelligence, assuming that the whole range of intelligence has been divided off into several equal steps, gives the normal distribution curve or whether the curve is skewed in either direction. The interrelation of these questions becomes clear as the author proceeds with the analysis. Binet nowhere states definitely what percentage of children of any given age should pass a test for that age in order that the test may be regarded as of the proper degree of difficulty for that age. From scattered remarks it is evident that he places it between 60% and 90%. Goddard places it at 75%. Terman and Childs at

66%. Some empirical results to show what the proper percentage to be assumed is, are offered. In the first place the actual percentage of the number of children at each chronological age that pass the test for that age are as follows:

Age	7	8	9	10	11	12
Per cent passing tests	80.4	84.5	72.3	71.8	56.8	58.6

The author concludes that these figures indicate that 75 is about the correct percentage. But he approaches the question in a second, different way. The question may be regarded as analogous to the question as to what shall be regarded as "satisfactory" in the quality of school work. We may always assume that the work of a majority of children shall come under the classification of "satisfactory." Accordingly the author asked the teachers from four schools to classify 2,772 children into five grades, the middle grade of which was the "satisfactory" grade, with grades 1 and 2 less than satisfactory, and 4 and 5 more than satisfactory. The distribution over these grades gave the following:

Grades	1—2	3	4—5
Per cent	25.7	50.8	23.5

This gives about 75<% as doing satisfactory work or better. The classification of the children tested with the Binet-Simon tests into retarded, at age, and advanced gives almost identical figures for the three classes.

These data so far might indicate that the distribution for several grades of intelligence arranged in order, corresponds to the normal distribution curve, without skews or other irregularities, and with about 50% or more in the middle grade. This question has been theoretically considered by various authors. Some have assumed an approximate identity between the two curves. Others have emphatically denied it, while others still regard it as an open question. The author joins in the last opinion, and holds that no empirical proof is possible, but believes that the curves are probably identical.

Returning now to the question whether the majority of the children tested with the Binet-Simon tests should test out at age, we saw already that the empirical results closely approximate this demand when the results for all ages are taken together. But again, when each chronological age is considered separately this no longer holds, and cannot. This results from the fact that a mental retardation of a year does not represent the same degree of retardation at all ages. A year's retardation in a young child will increase to several years with age. Thus for the higher ages there will be relatively more with a year or more of retardation, and relatively less who can test out just at age. Thus it follows that for the younger children the group that tests out at age will be relatively large, for the older children it will be relatively small. If the results for all taken together gives a bare majority that test out at age, less than a majority can belong to this group in the case of the older, and a great majority will belong to it in case of

the younger children. The author gives his empirical results showing how this works out, leaving the symmetry of the distribution curve unaffected for the different ages, but giving a decreasing number belonging to the "at age" group with increase in age.

In conclusion the application of the tests with the feeble-minded is considered. Chotzen examined a number of children of the Hilfsschule with the Binet-Simon tests. One of his conclusions was that with these children the absolute magnitude of the defect, that is the number of years of mental retardation increased with age, so that a year's retardation for the higher ages meant less actual deficiency than a year's retardation for younger children.

This raises two questions. (1) How much mental retardation at each age must there be in order to characterize a child as feeble-minded? (2) What rule does the increase in number of years of retardation with age follow with the feeble-minded? In regard to the former, Binet put the limit at two years, and he evidently regarded this two years as representing the same degree of deficiency at all ages. The error in this is seen further from the fact that the two or more years of mental retardation occur much less frequently in public school children for the younger than for the older. We may divide the mental by the chronological age and obtain an "Intelligence quotient," (I. Q.) a term first used by Stern, which would represent the true degree of deficiency. Thus a retardation of one year at five, two years at ten, and three years at fifteen, or an I. Q. of, 4-5, 8-10, and 12-15, would always represent the same degree of defect, and might give the limits between the normal and feeble-mindedness. But it is questionable whether the intelligence quotient is constant through the whole course of mental development of the feeble-minded. "It assumes that the feeble-minded child develops at the same rate until his intellectual development comes to a standstill, only he develops slower than the normal." The author points out three objections to this assumption. (1) The younger the children are the more difficult it is to determine differences in their intellectual development. We could arrange twenty normal twelve-year-old children in the order of their intelligence, but one could hardly do the same with twenty three or four-year-old children. Likewise feeble-mindedness can hardly be recognized in very young children. (2) It seems more correct to assume that feeble-minded children develop at a retarded rate that decreases more and more with age than at a retarded rate that remains constant. (3) Chotzen's results in testing children of the Hilfsschule are in harmony with this last assumption. His results give intelligence quotients for the different ages as follows:

Age	8	9	10	11—12
I. Q.	.79	.72	.70	.67

It is likely that normal children also develop mentally at a constantly decreasing rate instead of at a constant rate. This would correspond with physical development, and the course of brain development especially sug-