

# ARE THE PRESENT PSYCHOLOGICAL SCALES RELIABLE FOR THE EXAMINATION OF ADULTS?

AN ANALYTICAL COMPARISON OF EXAMINATIONS FOR  
CHILDREN AND FOR ADULTS

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**I**N a previous article,<sup>1</sup> the subject of irregularity on a psychological scale as a means of distinguishing deteriorated from feeble-minded individuals was discussed. In that paper a new method of figuring "irregularity" on the "Point Scale" was explained and norms for irregularity for groups of feeble-minded, dementia praecox and chronic alcoholic cases presented. The value of each test in the scale for differentiating deterioration from primary amentia was then worked out, the five tests most differential combined into a special differential group of tests and norms for this group also presented. The results appeared of considerable value for practical purposes.<sup>2</sup>

The present paper briefly reports work of largely similar nature, only done on normal children, feeble-minded children and feeble-minded adults. The study of these three groups of cases gives rise to two distinct, but related, questions. Do the feeble-minded show a greater irregularity—therefore a different make-up of examination—than the normal person? If so, what tests and mental processes are most affected?<sup>3</sup> Second; are the present standard intelligence tests applicable for work on adults? Does mere maturity change the make-up of an examination given by a mentally defective person? If so, what tests and mental processes are most affected? This last comparison of adults

<sup>1</sup>A New Method for Determining the Reliability of a Psychological Examination. S. L. Pressey, Boston Psychopathic Hospital and Luella Cole, Boston Psychopathic Hospital.

<sup>2</sup>In that paper reference was made to the difficulty of evaluating such findings, due to the fact that so little is known as to the results of psychological examination of *adults*. All well known psychological scales are based on work with school children and are planned primarily for use with children. But in practice these scales are given quite as frequently to adolescents and adults. It is assumed that a given mental age has essentially the same significance whether obtained from an adult or a child. As will appear from the following data, such an assumption is not wholly justifiable.

<sup>3</sup>This first question goes back in the last analysis to the old problem as to whether primary amentia is merely arrested development or involves mental abnormalities as well.

with children should measure what the comparative effects of maturity are and should determine whether or not tests, obtained from school children are valid for the mental measurement of adults. The results which have been obtained on these questions seem of decided interest, both theoretically and practically.

In this work the Point Scale was used throughout. The method of figuring irregularity may be described as follows. The basis was a table<sup>4</sup> giving the average score in points of the normal child at each mental age and for each test. Thus, the average score of eleven year old children on test one is 3.0; on test two, 3.8; on test three, 2.8; on test four 3.7, etc. If a given child, testing at eleven years, scores 3, 4, 5, and 5 on these first four tests, he shows variations from the average, or irregularities, of 0.0, 0.2, 2.2 and 1.3; and the sum of all these variations on all the twenty tests will be the total irregularity. In the case just mentioned the irregularity was 14.2. Such a statement of irregularity is simple and comprehensive and is often, as shown in the paper already referred to, of no small significance. It should be worked out, the writers believe, in all cases and recorded along with the mental age and coefficient as part of the findings.

This paper is a study of 275 cases. In obtaining data, results from normal children were most difficult to accumulate from the material available but were essential as a basis for all the further work. The examinations used were made at the Boston Psychopathic Hospital. Normal children are not usually brought here, but children whose fathers have developed neurosyphilis are frequently brought into the Out-Patient Department for a Wasserman test, accompanied by the routine physical and psychological examinations. If the Wasserman reaction is negative, the child tests at normal on the scale, and has a good school history, he may be considered as normal. Cases are also frequently brought in to the Out-Patient Department for minor delinquencies, who turn out to be average enough children who chanced to be caught in escapades more or less common to all children, but are haled into the Out-Patient Department by over-zealous social workers. Some children thus brought in are younger brothers or sisters of some child who has been in a reform school but who have themselves shown no abnormalities. In other instances there is no suspicion of mental defect, and the

<sup>4</sup>Table 30, p. 123 of "A Point Scale for Measuring Mental Ability" Yerkes R. M., Bridges J. W. and Hardwick R. S. Warwick and York 1915.

psychological examination is given in connection with the adoption of a child or some other such matter. In selecting these cases of normal children, only those grading within a year of age, above or below, giving a good school history and having the diagnosis of "no mental or nervous disease," were used. No individuals brought in for emotional or nervous instability, none with any physical disease, none from homes where no English was spoken, were taken even though their examinations were up to age. Fifty cases fulfilling these requirements and grading at the mental ages of eight to twelve inclusive, were found in the Out-Patient Department. The number of examinations is, of course, too small, but the group as thus selected was distinctly homogeneous and the averages obtained would appear to be of fair reliability.

Two groups of feeble-minded cases were considered. The distribution by mental age was fairly even for both groups. 110 of the cases were individuals under twenty years of age; 115 were over twenty, chronologically;<sup>5</sup> all were feeble-minded. Two thirds of the primary aments were cases tested at the Waverley School for the Feeble-minded the rest were persons so diagnosed at the Boston Psychopathic Hospital. These last cases were also carefully selected, none showing nervous or mental disorder in addition to their primary amentia being included, or any whose scoring would be influenced by an inadequate knowledge of English.

The total irregularities of all these 275 cases were figured first by the method described above. The results are shown on Table I.

<sup>5</sup>It may seem odd that *feeble-minded adults* were studied. But the crux of the problem is right here. Positive action is taken upon the results of the psychological examination only when the case is judged feeble-minded; otherwise the findings of the psychological tests are, for purposes of disposition, negative. And it is the adult who has what is usually called a child's mind to whom these children's tests should be most applicable. That the scales are only roughly satisfactory with such case would imply that they were even less satisfactory in work with normal or deteriorated individuals of adult years. A direct study of the examinations of normal adults was impossible as no data was available and the findings, supposing such data to be at hand, would have been less crucial. First and foremost, the tests are used for diagnosing feeble-mindedness and it is in proportion to their reliability for that work that they should be primarily judged.

TABLE I  
TOTAL IRREGULARITY (IN POINTS)

Mental Age	Normal Children (50 cases)	Feeble-Minded under twenty (110 cases)	Feeble-minded over twenty (115 cases)
	Av. m. v. No.	Av. m. v. No.	Av. m. v. No.
8	14.6 $\pm$ 1.8 (11)	15.6 $\pm$ 1.4 (24)	17.7 $\pm$ 1.5 (24)
9	16.8 $\pm$ 1.4 (10)	16.5 $\pm$ 1.6 (30)	18.2 $\pm$ 1.9 (29)
10	15.6 $\pm$ 2.5 (6)	16.8 $\pm$ 1.5 (20)	17.8 $\pm$ 1.9 (16)
11	15.7 $\pm$ 2.2 (10)	15.7 $\pm$ 1.5 (20)	17.8 $\pm$ 1.9 (25)
12	14.4 $\pm$ 1.5 (13)	15.0 $\pm$ 2.0 (16)	17.6 $\pm$ 1.5 (21)
	15.6 $\pm$ 1.9 (50)	15.9 $\pm$ 1.6 (110)	17.8 $\pm$ 1.7 (115)

The figures in parenthesis give the number of cases at each mental age. The average mean variation is the average of the mean variations at the different mental ages, not the mean variation of the averages.

It will be seen, in the first place, that the average irregularities for each of the three groups are surprisingly constant at the different mental ages. This is especially true of the two feeble-minded groups, so that it seems warranted to take sixteen as a general average for the feeble-minded under twenty and eighteen for those over twenty. The figures for the normal children are less constant from one mental age to another, but this is probably due to the small number of cases. A norm of sixteen for the mental ages of eight to twelve would seem to be indicated.

In the second place, it would appear that irregularity on the Point Scale is not indicative of mental defect. Feeble-minded cases under twenty, average only .3 more irregularity than the normal children. This is of no small interest. It is frequently stated that a greater irregularity is indicative of mental defect. On the Point Scale, at least, this is not true, if the feeble-minded cases are young. The greater irregularity found by previous writers may be largely due to the fact that they used the Binet Scale with its heterogeneous assemblage of tests. The smaller differential irregularity on the Point Scale might then be considered evidence that the Point Scale was more nearly a measure of intelligence, being freer of tests of information or other elements not closely associated with general intelligence by itself.

The definitely greater irregularity of the adult cases should be noted, however. It suggests that the results of other workers may be due in part to an inclusion in their averages for the primary aments, of cases too far removed in chronological age

from normal children to make the groups strictly comparable. The definite difference in irregularity between child and adult feeble-minded persons calls at once for an analysis of the examinations in these two groups to discover what is causing the difference<sup>6</sup>

Such an analysis was made by finding the average score of each group of the feeble-minded on each test and comparing the results with the average performance, on each test, of the school children on whom the mental age norms for the scale are based. The figures are given as per cents of the score of the normal children of the same mental age achieved by each of the mentally defective groups. Table II gives the data which for greater clearness has also been graphed (Plate I). In this

TABLE II

Test	1	2	3	4	5	6	7	8	9	10
Cases over 20	101	105	114	93	100	66	117	85	85	103
Cases under 20	102	103	115	89	100	65	115	100	100	94

Test	11	12	13	14	15	16	17	18	19	20
Cases over 20	102	101	79	74	134	56	95	119	143	101
Cases under 20	122	117	97	66	111	105	89	65	85	93

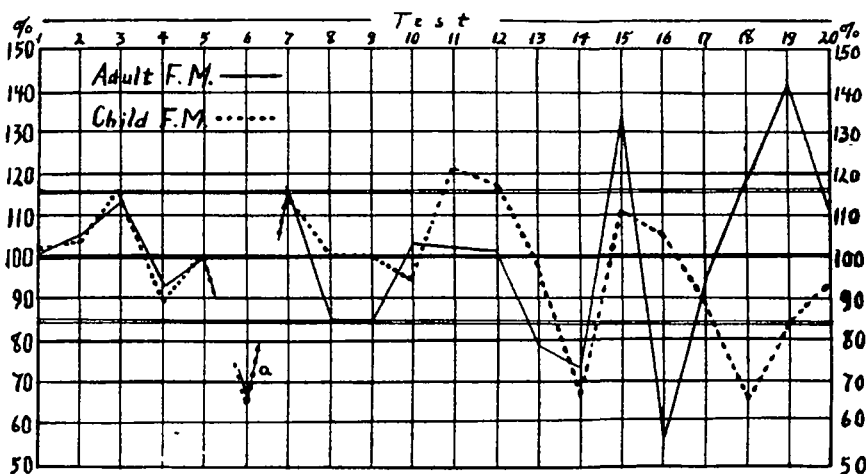
First line: tests of the Point Scale, in order. Second and third lines; percent, of score made on each test by normal children, shown by feeble-minded individuals (a) under 20, and (b) over 20.

graph the heavy mid-line, at 100 per cent, represents the performance of the normal child and the dotted and plain lines the variations from that norm, in per cent, of the two groups of feeble-minded cases. These last lines give what might be called a "profile" of mental defect and of maturity as compared with normality. Or to put it another way, they give a graphic representation of irregularity. On the graph, double lines have been drawn at the points marking fifteen per cent above and below

<sup>6</sup>The norms for the adult feeble-minded should supersede those given in the previous paper; as mentioned in that paper the norms were at fault in including cases of all chronological ages in one group. This was then necessary as sufficient data for treating the two groups, children and adults, separately had not been accumulated. Comparison will show that these new norms, for adults only, are more satisfactory for purposes of differentiating primary amentia from deterioration. The norms for the differential group now run 3.6, 5.0, 5.5, 5.5, and 5.4; the averages are more constant from one mental age to another and the scatter of individual cases around the average is less. This differential group, with the norms here given seems likely to prove of decided practical interest.

normal. Variations beyond these limits may surely be considered significant.

"Profile" of the Irregularity shown by (a) Adolescent and (b) Adult Feeble-minded Cases on the Point Scale.



Heavy line (100%) indicates score of normal children on each test. Graph shows variations from this, in percents. Double lines mark 15% variations, above and below the normal line.

(a) This variation due to a change on test six, made after the norms were established. The variation is thus of no significance.

If test six is excluded (see note, Graph I) the only significant variations occur on tests 11, 12, 13, 14, 15, 16, 18, 19. The younger group of the feeble-minded show only four such irregularities. The showing is definitely better on test 11, (resisting suggestion) and test 12 (drawing square and diamond) It is poorer on test 14 (writing a sentence containing Boston, money and river) and test 18 (reconstructing dissected sentences). These results may be taken as further evidence that the feeble-minded do relatively well with tests requiring merely sensori-motor adjustments, but very poorly with work involving ideation. The poor showing on these last mentioned tests may, however, be correlated more directly with the retardation in, and early elimination from, school, symptomatic of primary amentia.<sup>7</sup>

<sup>7</sup>An attempt was made to develop a special group of tests for distinguishing primary amentia (using tests 11, 12, 14 and 18) similar to the differential group for distinguishing deterioration, described in a previous article. See note 1. But the result was not sufficiently satisfactory to merit report here.

The adults show an irregularity of a definitely different make-up. They do poorly on test 13 (free association) test 14, (writing the sentence containing Boston, money and river) and on test 16 (drawing two geometrical figures from memory). They do surprisingly well on tests 15 (comprehension of practical questions) and 19 (definition of abstract terms). A natural interpretation is that these adult defectives are especially characterized by a paucity of ideation, test 13 being free association, lack of ingenuity (test 14) and a poor capacity for learning (test 16). And the experience, which comes with greater age, has brought the capacity for understanding practical questions of a simple sort (test 15) and knowledge of abstract ideas of a social significance, (test 19), somewhat greater than has the average child of the same "mental age."<sup>8</sup>

Whether such interpretations be accepted or not, the fact remains that adolescent, and particularly adult feeble-minded persons give examinations on the psychological scale which are essentially different from the examinations given by normal children by which the results are judged.

The bearing of these results upon the general problem of mental measurements of adults is obvious. It had been customary, in work with adults, to use one of the standard psychological scales. The total score, or with the Binet scales the total number of passes, was then found and the result read as a "mental age." If the mental age was ten, the individual was supposed to have the intelligence of a ten-year old child. The graph above makes it clear that such an assumption is true only in a very rough way. The examination which has given the adult this mental age of ten is strikingly different, in important features from the typical child's examination, which gave 65 points, or 48 passes on the Stanford scales, its significance as an indication of a ten year mentality. Such an interpretation, in dealing with feeble-minded children or adolescents is not altogether sound theoretically. In dealing with adults, the connotation which this form of statement gives, is a distinctly false one,—the impression is altogether wrong.

<sup>8</sup> A comparison of these "profiles" with a similar graph for dementia praecox and chronic alcoholic patients is of decided interest. Feeble-minded, chronic alcoholic and dementia praecox patients have, each their own profiles which mark off the groups with some definiteness from every other group. See Pressey S. L. Distinctive Features in the Psychological Examination of Dementia Praecox and Chronic Alcoholic Patients. *Journal of Abnormal Psychology*, June 1917.

A much better statement for the findings of a psychological examination is the coefficient of intelligence or the index quotient. The adult giving a mental age of ten, has a coefficient of .74 on the Point Scale or of .57 on the Stanford. That is, he obtains 74% or 57% of the score that he should earn if he were of average intelligence. His score happens to be the same as that of the ten year old child, but the two examinations are not the same, and with the findings stated as a coefficient, there is no pretension that they are.

The irregularities exhibited on the psychological scale mean more than that the commonly used statement for the findings on the scale is unsatisfactory, however. They mean that these scales are inadequate for work with adult individuals. A change in mental make-up with maturity is doubtless one cause, but there are other factors. The failure of the subnormal adult to reproduce from memory the Binet figures is not due, primarily, to his mental defect. The problem presented is so utterly foreign to his experience that he does not know what to make of it, how to "take hold" of it. It is wholly different from the varieties of problem by which, in his environment, his intelligence is tested and his failure here has very little significance. A school child finds such a task of memory not unnatural. For an adult the test is next to valueless.<sup>9</sup>

The writers feel that other tests of the scale have, for dealing with adults, the same inapplicability. Any one experienced in clinical work must have felt acutely, at times, the inadequacy and the irrelevancy for such purposes of much of this material. A day laborer, fairly intelligent in his reaction to his own limited environment, is bewildered and irritated by many of the problems set him. When he is asked what he would do if he had broken something belonging to another, (part of the Binet "comprehension of questions" test) or requested to define justice, the problem seems to him not unnatural as a test of his judgment and moral sense. And, as the graph shows, he does fairly well on these questions. But when asked to give disconnected words for three minutes, to draw designs from memory or to make up a sentence containing Boston, money and river, he does poorly. The reason is not so much lack of intelligence as unfamiliarity and awkwardness with the type of problem.

But, to whatever causes we assign these irregularities; the

<sup>9</sup>That is, as a test of intelligence. In working with cases of mental disease it gives results of great interest. See notes 1 and 8.



conclusion is obvious. The standard intelligence scales have been developed primarily for use with school children and are based upon work with them. When used upon adults, even when the adults are low mentally, the results must be considered much less exact and the significance of the total score with regard to the relative development of the various abilities largely different. The measurement of the intelligence of adults is a problem altogether different from the measurement of the mentality of children. We need special methods and, to a large extent, special tests for this problem.

The standard scales have been used in work with adults because they made a contribution to the study of a case not obtainable elsewhere. If used with discrimination and judgment they are of decided value in dealing with such cases. They will continue to be of service in this work. But in using them for these purposes, it must be constantly remembered that they are being used in a way for which they were not primarily intended and in a type of work for which they are only roughly applicable. A group of tests originally developed for use with adults should give results of much greater definiteness and value. In general, adults may be thought of as grading somewhat too low on the present psychological scales because of the unsatisfactoriness of many of the tests for such work.

#### SUMMARY

The paper may be briefly summarized. It reports the study of the psychological examinations given by 50 normal children, 110 feeble-minded children, and 115 adults of feeble-minded grade, all grading on the scale between the ages of eight and twelve. The major purpose of the paper was to determine the applicability of the present psychological scales to work with adult individuals. In connection with this a minor study was made;—a comparison of normal and feeble-minded children to obtain some evidence as to the distinctive features of the defective mentality. The conclusions reached were as follows:

1. Individuals over twenty show a definitely greater irregularity on a psychological scale than do normal or feeble-minded children. Feeble-minded children are not distinguished from normal children by greater irregularity.

2. The feeble-minded show an examination of a make-up different from that given by normal children. In general, the

mentally defective show a better sensori-motor ability than normal children of the same mental age, but a smaller number of ideas and a poorer ability for their re-combination and use in a new situation.

3. Adult individuals again give a result distinctively different. The strikingly different make-up of the examination given by the adult individual is used as an argument, (*a*) for the use of the "intelligence quotient" or "coefficient of intelligence" as a form of expression for the results of a psychological examination and (*b*) for the development of methods and tests especially adapted for use with adults.