CHAPTER II

HISTORY OF MEASUREMENT OF INTELLIGENCE.

The intelligence tests available in the present forms were not known before 1905, when Alfred Binet of France prepared his first test of intelligence. This is the beginning of the measurement of intelligence on scientific foundations. "From the ancient times there has been a recognition of differences along mental lines, together with crude ways of distinguishing one man from another in terms of vocational or social fitness"[1/]. It will be in the fitness of things to trace the history of the measurement of intelligence to see how these crude ways of measuring intelligence took the present form.

Ancient India.

Vedas, Upanishads and Purans contain discussions, between different persons, which pose problems resembling those used in present intelligence tests. In Bana's Kadambari we find a number of problems of filling up the gaps with omitted alphabets or consonants, completion of the fourth line of a given Shloka (a verse) and riddles. Many anecdotes are found in Sanskrit literature, in which problems for testing intelligence are posed.

During mediaeval period, contests of learned people were held

1/Stoddard G.D., The Meaning of Intelligence, The Macmillan Company, New York, 1959, pp 79.

in the royal courts of Hindu and Muslim rulers and the successful scholars were rewarded. Varieties of puzzles were presented in the darbar and time limits, even to the extent of six months, were prescribed.

Western Countries.

We find such riddles, puzzles, and mazes even in the literature of Western Countries.

However in the eighteenth century attempts were made to use the measures of the body as the measures of intelligence. Lavater (1772) tried to judge the capacity of the mind by associating it with the facial features. He concentrated more on Osteology, the science of bony structure. Bell (1806) discarded Osteology and concentrated on Sacrology, the science of fleshy part of the face. He felt that the elastic material of the face is the indicator of the mental ability. Franz Joseph Gall (1807) thought that "personality characteristics of all kinds, including special talents and deficiencies, may be inferred by careful examination of the contour of the skull".[1/]

These along with a number of other methods were developed by different persons when psychology was a branch of philosophy and its method of study was restricted only to introspection and observation. Though the use of a physical trait of the body as a criterion for judging the intelligence of the individual did not produce any direct results, it played an important role in the

1/Goodinough F.L., Mental Testing. Holt Rinehart and Winston, New York, 1961, pp 38.

history of mental measurement.

The starting of the psychological laboratory by Wilheld Wundt in 1879 at Leipzig in Germany was a land-mark in the development of psychology in general and experimental psychology in particular. The work of constructing Sensorymotor tests was started to measure intelligence, thenafter.

Sensory Motor Tests.

In 1883, Sir Francis Galton developed certain tests of Sensory discrimination and reaction time. He tried his tests on his friends and concluded that intelligent persons are good at sensory discrimination. He felt that the converse, namely persons who are good at sensory discrimination are intelligent, was true. So to measure this sensory discrimination precisely, he devoted most of his time in perfecting the instruments for this purpose.

J. Mac Catell, a student of Wundt, returned to America and prepared number of tests for measuring the keenness of vision and hearing, sensitivity to pain, reaction time, rote memory, mental imagery etc. However he felt that reaction time is the measure of intelligence.

The psychologists now began to feel that individuals differ in sensory discrimination and this discriminating ability is the indicator of mental ability. They mostly concentrated on the lower senses. With the application of statistical procedures, it was observed that the tests of lower senses were of no use for measuring mental capacities. Naturally the test constructors concentrated

themselves on higher senses.

1905 onwards.

Galton and Cattel were attempting to draw conclusions regarding the complex ability from the study of simple abilities. Alfred Binet was doubtful about them. He and others thought that ability to think and reason, ability to solve problems, ability to adapt to new environment in the light of past experiences etc. are the qualities of an intelligent person, and hence they were working in this direction.

In 1904, Ministry of Education in Paris, assigned Alfred Binet the task of discovering a method of finding out children who would not be benefited by formal schooling, so that they may be educated in special schools. While discharging this responsibility, Binet got the first hand information regarding the behaviour of children of varying intelligence and his famous scale of 1905 was an outcome of it.

His main theme was to find the number of years by which a child is advanced or retarded by finding the normal progress of a child at different ages. By observing the behaviours of children, he classified the mental processes into two categories namely lower and higher. The lower category consisted of reception of sensory images and the higher ones manifested in purposive direction and adaptation.

In 1905, he along with his collegue Dr. Simon prepared the scale of 30 tests. This scale laid the foundation for the modern

movement of intelligence testing. The level of intelligence was determined by the number of tests passed by the individual. This test had better reliability and validity than any other test constructed till then for this purpose.

In 1908, he used his original method of using the age scale or age norm for determining the level of intelligence. He introduced the concept of "mental age" and used it as a unit of the measure of intelligence.

In 1911, the second revision of Binet-Simon scale appeared. It differed from the first scale in details rather than in principles.

Revisions of Binet Scale

Success of Binet-Simon scale, gave an incentive to the psychologists in different countries to revise the scale for the use in their own countries. Some such revisions, popular in those countries are given below.

a. America:-

Godard was the first to translate the Binet Simon Scale in English and to put it into actual use in America. Attempts were made to revise it. The two famous revisions made in America are the Stanford Revision of 1916 and of 1937.

i. Stanford Revision of 1916:-- In 1916, Terman published the Stanford revision of the Binet-Simon scale. In fact it was the first real revision that appeared since the time of Binet. The revision introduced new items, and changed the methods. The use of

the I.Q. was made in the scale. For the first time, a series of well organised instructions for administering and scoring the test were provided. "Terman was also the first of the constructors to realize clearly the importance of securing a representative sample of subjects for use in standardization".[1] This revision put the movement of intelligence testing on a firm scientific basis. These were the tests which were most popular amongst the tests used for testing both in America or else where for a long period of twenty one years.

ii. Stanford revision of 1937.-- It was realised later that some defects remained in the 1916 revision and hence the scales were thoroughly revised by Terman and Merrill and were published in the year 1937. The characteristics of this revision as stated by the authors themselves are quoted below:- "We have accordingly provided two scales instead of one, have extended them so as to afford a more adequate sampling of abilities at the upper and lower levels, have defined still more meticulously the procedures of administration and scaring and have based the standardization upon larger and more representative population".[2]

b. England:-

Sir Cyril Burt published his London Revision of 1921. He found that tests required rearrangement and replacement of items. He revised the tests and adopted refined statistical approaches.

1/Ibid, pp. 64.

2/Terman Lewis M & Merrill Maud A, Measuring Intelligence. Houghton Mifflin Company Riverside Press, Cambridge, 1937, pp ix.

c. India:-

C. Herbert Rice of Lahore translated the Binet tests in Hindustani in 1929 for the children of the age group 5-16 yrs.

Dr. V.V.Kamat published his revision of Stanford Scale in both Marathi and Kannad. Gujrati version of Kamat's test was brought out by Dr. N.N.Shukla in 1950.

Group Tests

All the above Tests are individual tests i.e. one person could test one individual at a time by employing these tests. When a large number of children are to be tested, the time required will be too large. Thus test constructors like Otis, Thorndike etc. started working on the idea of group testing.

This idea got impetus when America plunged into the first World War (1914-1917). The problem before the American Government was to test a large number of applicants and select efficient personnel for the army. They assigned this task to a committee under the chairmanship of R.M.Yerkes. Otis who was working on the idea of group testing presented all the data to this committee and on the basis of Otis model, Army Alpha and Beta tests of intelligence were prepared.

Alpha tests were meant for educated persons who had adequate knowledge of English which was quite necessary for taking the tests. But there were many applicants who were either uneducated or had no adequate knowledge of English as they were migrants from the countries where English was not in usage. Beta test was meant for

such persons as the use of pictures and diagrams was made in this test in place of words and sentences. For some time these tests were the guarded secret of Defence Department of America.

When these tests were made known to others in the field of mental measurement, many were quite impressed due to their efficiency and simplicity. So, many group tests of intelligence, both verbal and non-verbal, were constructed on these lines.

Performance Tests.

Beta tests avoided the use of language in the test material. Another approach is avoid the use of any language in the test material was tried by the test constructors and the performance tests came into existence. In these tests the testee is asked to perform a particular activity under the given conditions. These tests may be used in case of those who cannot express adequately in a particular language. These may also be used in case of deaf and dumb who cannot express themselves in any language. Goodenough's Man-Drawing Test, Godard's Form Board Test, Alexander's Pass Along-Test a battery of performance test by Collins and Drever and similar battery by C.M.Bhatia are some of the examples of performance tests.

Classification of the tests.-- The numerous tests of intelligence that have been constructed so far may be classified in more than one way according to different criteria in the following manner.

1. They may be classified into following three categories

according to the modes of response:-

a. Oral Tests - The response is oral.

b. Performance Tests - The response is in the form of an activity.

c. Written Tests - The response is in writing.

2. They may be classified into two groups according to the number of individuals that may be tested by one person at a time.

a. Individual Tests- Only one individual can be tested at a time by one person with the help of these tests.

b. Group Tests- More than one individual can be tested at a time by one person with the help of these tests.

3. They may be classified into verbal and non-verbal tests according to the nature of content used in the tests.

a. Verbal Tests- In these tests the language skills like reading and writing are essential to deal with the content of the test.

b. Non-Verbal Tests- No such language skills are necessary.

4. They may also be classified as Culture-fair and Culture-free Tests.

a. Culture-fair Tests - The influence of the environment

in which the individual has grown up, plays an important role in responding to the content of the test.

b. Culture-free Tests - The influence of the environment in which the individual has grown up is almost negligible in responding to the content of the test.

Present Undertaking:-

As the children in Marathwada have no experience of taking the tests, and as this test was meant for the children studying in standards VIII to X in High Schools and as these children have developed adequate basic language skills, it is decided to prepare a verbal and written group test of intelligence.

References

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5. Stoddard G.D., The Meaning of Intelligence. The Macmillan Company New York, 1959.

6. Terman Lewis M, Merril Maud A, Measuring Intelligences. Houghton Mifflin Company, Riberside Press, Cambridge, 1937.