Intelligence Testing I

The Development of Intelligence Tests

Galton’s Attempt

- Francis Galton (a cousin of Charles Darwin) attempted to measure intelligence indirectly, by obtaining measures of physical ability such as reaction-time or grip strength.
- To validate these as measures of intelligence, he correlated them with objective measures of academic and professional success.
- Unfortunately, the correlation was low, indicating that the physical measures were not valid measures of intelligence.

The First Successful Test of Intelligence

- Psychologist Alfred Binet was given the task of developing a test that would identify French school-children in danger of performing poorly in school.
- Children so identified would be given a program of remedial education designed to boost their performance.
- The result was the first successful test of intelligence: The Binet-Simon test.
Nature Versus Nurture

- Galton’s approach was based on his view that intelligence is largely determined by genetic inheritance.
- Binet’s approach was guided by the belief that experience plays a large role in determining one’s intelligence.
- Galton framed the debate between these opposing views as “nature versus nurture,” where nature represents inheritance and nurture represents experience.

The Binet-Simon Test

- Individually administered and scored.
- Consists of items testing reasoning, memory, and general knowledge that a French school child of average intelligence would have acquired by a given age.
- Test items are graded in difficulty from those a young child should know to those more suitable for older children.
- Results are given as a mental age. A child of a given mental age performs at a level equal to that of the average child of that age.
- If the child’s mental age is below his or her chronological age, the child’s mental development is considered to be retarded (thus the term “mental retardation”).

How Intelligence Tests Work

- The Binet-Simon and its descendants assume that a child of a given age, living in the culture, will have been exposed to certain information.
- Low performance (for the child’s age) is therefore attributed to lack of intelligence, above average performance to high intelligence, etc.
- However, if the assumption of exposure is not met, all bets are off: the test means nothing.
Army Alpha and Beta Tests

- World War I brought a request from the U.S. Army to develop a group-based, paper-and-pencil intelligence test that could be used to rapidly determine what fields a recruit would best be trained in.
- The Army Alpha relied more on verbal skills. However, if it were suspected that there might be a language problem, the recruit was to be given the Army Beta, which relied less on verbal skills.
- These were the first group-based intelligence tests.

The Stanford Binet

- Louis Terman translated the Binet-Simon test into English and revised the items to reflect American culture and schooling.
- Initially the test yielded a mental age, just as the Binet-Simon did. However, this was soon replaced by the intelligence quotient, or I.Q.

Computing I.Q. by the Ratio Method

- The method
  - I.Q. = (Mental Age/Chronological Age) X 100.
  - Example: (12 years/ 10 years) X 100 = 120.
- Advantage: Easy to compute
- Disadvantage: I.Q. not comparable across age groups.
Computing I.Q. by the Deviation Method

- The deviation method has replaced the old ratio method because it permits comparison of I.Q. across age groups.
- The method
  - Administer test to a standardization sample. Compute mean and standard deviation of the raw scores.
  - Use mean and standard deviation to convert raw scores to standard (I.Q.) scores having a mean of 100 and a known standard deviation (16 for the Stanford Binet).

The Wechsler Intelligence Tests

- Developed by David Wechsler
- Include both verbal and performance measures, yielding three I.Q.s:
  - A verbal I.Q.
  - A performance I.Q.
  - An overall I.Q. (average of the above)
- Separate tests for adults and children:
  - Wechsler Adult Intelligence Scale (WAIS)
  - Wechsler Intelligence Scale for Children (WISC)
- Standardized to mean = 100, SD = 15