

Intelligence Testing

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Intelligence tests are tools used by psychologists to objectively measure an individual's cognitive ability and prior knowledge. The administration, scoring and interpretation of intelligence tests are conducted by trained professionals to ensure standardized administration and appropriate use of the resulting test scores. Intelligence testing measures an individual's current intellectual functioning, to diagnose an intellectual disability, and to diagnose specific learning disabilities, among other reasons. However, societal concerns and controversies surround the acceptance and use of intelligence testing.

Contemporary intelligence testing stems from the work of Jean-Etienne-Dominique Esquirol. He described differences between individuals with mental illness and those with an intellectual disability. He argued that it was important to devise a way to gauge normal intelligence and identify differences from normal. Esquirol's work coincided with the work of Sir Frances Galton on hereditary genius, James Cattell on individual differences in behavior and Hermann Ebbinghaus on tests of memory, computation, and sentence completion. Their work led Alfred Binet and Theodore Simon to develop the first practical test of intelligence, the Binet-Simon Scale, in 1905. The test was intended to identify French school children with below normal intelligence using an objective, precise, and scientific procedure, so they could receive special education.

The Binet-Simon Scale used items developed by earlier psychologists. The scale treated intelligence as a combination of discreet processes such as memory, reasoning ability, numerical

facility and object comparison. The Binet-Simon scale rank-ordered items from easy to difficult and recorded individual results as age-based cognitive development scores. Revisions of the test were completed in 1908 and 1911.

In 1916, Lewis Terman of Stanford University revised the Binet-Simon Scale for use in the United States with children of all ability levels. The *Stanford-Binet Intelligence Scale* introduced the concept of a “mental quotient” obtained by dividing mental age, or the score obtained on the test measured in months of age, by chronological age in months and multiplying the result by 100. Average performance was a mental age score of 100. The mental quotient was later renamed the intelligence quotient (IQ). An IQ score is now calculated by comparing an individual’s raw score to a sample that represents the population to obtain a standard score. A Standard score has a mean, or average, of 100 and a standard deviation of 15. Thus, a standard score of 100 is average, and scores between 85 and 115 fall within the average range of performance.

With the onset of World War I, psychologists saw an opportunity to apply intelligence testing to practical problems. In 1917, Robert Yerkes, a Harvard Psychologist, established the Committee on Methods of Psychological Examining of Recruits. This group of experts in test construction developed two novel cognitive measurement tools for group testing: the Army Alpha and Army Beta. Their goal was to use intelligence testing to enhance the efficiency of the U.S. Army. The Army Alpha measured verbal ability, numerical ability, ability to follow directions, and knowledge of information. The Beta Test was a non-verbal intelligence test for speakers of foreign languages and the illiterate. Over two million tests were given to segregate and eliminate the mentally incompetent, classify men according to their mental ability, and assist in selecting competent men for responsible positions. As a result of publicity surrounding the use

of these tests, people came to believe psychologists had devised a simple and useful method for testing intelligence. Unfortunately, scientific analysis of the data post-war provided fuel for the emerging eugenics controversy.

The perceived success of intelligence testing in the army, combined with the historical use of intelligence testing in schools, paved a path for the continued use of intelligence testing. Consequently, the *Wechsler Intelligence Scale for Children* was created by David Wechsler in 1949, followed by the *Wechsler Adult Intelligence Scale* in 1955 and the Wechsler Preschool and Primary Scales of Intelligence in 1967. Other scales, including the *Woodcock-Johnson Tests of Cognitive Ability* in the 1970s, the *Kaufman Assessment Battery for Children* in the 1980s, and the *Universal Nonverbal Intelligence Test* in the 1990s were also developed. Each of these tests, along with *The Stanford-Binet Intelligence Scales*, have current editions in print. Later tests, like the *Kaufman Assessment Battery for Children* and the *Universal Nonverbal Intelligence Test*, were developed to address emerging concerns about cultural bias in intelligence testing.

Despite the widespread use of intelligence testing, the controversy surrounding their use remains. In particular, the use of intelligence testing with minority groups in the U.S. has been heavily scrutinized for test bias. Because intelligence testing reflects white, middle class, English speaking cultural norms, the use of intelligence tests with individuals from other cultural and linguistic backgrounds may be unfair. A district court decision, *Larry P. v. Riles* (1979), bans the use of intelligence testing for special education eligibility with African American students in California. More recent editions of tests have been revised to address sources of cultural bias.

While test publishers have done much to address sources of bias within the test instruments themselves, concerns regarding the use of intelligence testing remain. For example, tests standardized on native English speakers may inadvertently function as English language

proficiency tests rather than as intelligence tests. In addition, research suggests that non-test factors such as familiarity with the examiner, the examiner's adherence to standardized test administration procedures, and motivation to participate in testing, among others, may influence performance. These factors appear to have a large negative impact on examinees of low socioeconomic status background.

Further Readings

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