MODULE 34

Assessing Intelligence

Module Preview

Modern intelligence testing began more than a century ago in France when Alfred Binet developed questions that helped predict children's future progress in the Paris school system. Lewis Terman of Stanford University used Binet's ideas to develop the Stanford-Binet intelligence test. German psychologist William Stern derived the formula for the famous intelligence quotient, or IQ.

Modern aptitude and achievement tests are widely accepted only if they are standardized, reliable, and valid. Aptitude tests tend to be highly reliable, but they are weak predictors of success in life. One way to test the validity of a test is to compare people who score at the two extremes of the normal curve: the challenged and the gifted.

Module Guide

The Origins of Intelligence Testing

- ➤ Exercise: A World War I IQ Test
- ➤ Video: Module 17 from *Psychology: The Human Experience: Pros and Cons of Intelligence Tests*
- ➤ Instructor Video Tool Kit: *Locking Away the "Feebleminded": A Shameful History*

34-1. *Discuss the history of intelligence testing.*

The modern intelligence-testing movement started at the turn of the twentieth century when French psychologist Alfred Binet began assessing intellectual abilities. Together with Théodore Simon, Binet developed an intelligence test containing questions that assessed ***mental age*** and helped predict children's future progress in the Paris school system. The test sought to identify French school children needing special attention. Binet and Simon made no assumption about the origin of intelligence.

Lewis Terman believed that intelligence was inherited. Like Binet, he believed that his test, the ***Stanford-Binet,*** could help guide people toward appropriate opportunities. William Stern derived the ***intelligence quotient,*** or ***IQ,*** for Terman's test. The IQ was simply a person's mental age divided by chronological age multiplied by 100. During the early part of the twentieth century, intelligence tests were sometimes used in ways that, in hindsight, even their designers regretted—by "documenting" a presumed innate inferiority of ethnic and immigrant groups not sharing an Anglo-Saxon heritage.

Modern Tests of Mental Abilities

➤ Project: Joining Mensa

34-2. *Distinguish between aptitude and achievement tests, and describe modern tests of mental abilities such as the WAIS.*

Aptitude refers to the capacity to learn, and thus ***aptitude tests*** are those designed to predict a person's future performance***. Achievement tests*** are designed to assess what a person has learned.

The ***Wechsler Adult Intelligence Scale (WAIS)*** is the most widely used intelligence test. It consists of 11 subtests and yields not only an overall intelligence score but also separate verbal comprehension, perceptual organization, working memory, and processing speed scores. Striking differences between these scores can provide clues to cognitive strengths that a teacher or therapist might build on. Other comparisons can help clinicians identify a possible reading or language disability.

Principles of Test Construction

➤ Exercises: Issues in Testing; Reliability and Validity; Remote Associates Test
➤ Project: Understanding Predictive Validity

34-3. *Discuss the importance of standardizing psychological tests, and describe the distribution of scores in a normal curve.*

Because scores become meaningful only when they can be compared with others' performance, they must be defined relative to a pretested group, a process called ***standardization***. Obviously, the group on which a test is standardized must be representative of those who will be taking the test in the future. Standardized test results typically form a normal distribution, a bell-shaped pattern of scores that forms the ***normal curve.*** Most scores cluster around the average, and increasingly fewer are distributed at the extremes. Intelligence test scores form such a curve, but in the past several decades the average score has risen, a phenomenon known as the *Flynn effect.* The cause of this increase remains a mystery.

34-4. *Explain the meanings of reliability and validity in terms of test construction, and describe two types of validity.*

Reliability refers to the extent to which a test yields consistent scores. Consistency may be assessed by comparing scores on two halves of the test (*split-half*), on alternative forms, or on retesting. A test can be reliable but not valid.

Validity refers to the extent to which a test measures or predicts what it is supposed to. ***Content validity*** is determined by assessing whether the test truly samples the behavior that is of interest. For example, driving tests should measure driving ability. ***Predictive validity*** is determined by computing the correlation between test scores and some *criterion,* that is, some independent measure of what the test aims to assess. Aptitude tests have predictive validity if they can predict future achievement. The predictive power of aptitude scores diminishes as students move up the educational ladder.

The Dynamics of Intelligence

➤ Lecture: Why Do Intelligent People Fail?

34-5. *Describe the stability of intelligence scores over the life span.*

The stability of intelligence test scores increases with age. By age 4, children's performance on intelligence tests begins to predict their adolescent and adult scores. After about age 7, intelligence scores, though certainly not fixed, stabilize.

➤ Lectures: Giftedness; Are Intelligent People Happier?
➤ ActivePsych: *Digital Media Archive,* 2nd ed.: *Psychologist Ellen Winner Discusses "Gifted Children"*

34-6. *Describe the two extremes of the normal distribution of intelligence.*

At one extreme of the normal distribution are people whose intelligence scores fall below 70. To be labeled as having ***intellectual disability*** (formerly referred to as *mental retardation*), a child must have both a low test score and difficulty adapting to the normal demands of living independently. Intellectual disabilities sometimes result from known physical causes, such as ***Down syndrome,*** a disorder of varying severity that is attributed to an extra chromosome in the person's genetic makeup. Most adults with intellectual disabilities can, with support, live in mainstream society.

At the other extreme are the "gifted." Contrary to the popular myth that they are frequently maladjusted, research suggests that high-scoring children are healthy, well adjusted, and academically successful. Controversy surrounds "gifted child" programs in which the "gifted" are segregated and given academic enrichment not available to the masses. Critics note that tracking by aptitude sometimes creates a self-fulfilling prophecy: Those implicitly labeled "ungifted" can be influenced to become so. Denying lower-ability students opportunities for enriched education can widen the achievement gap between ability groups and increase their social isolation from one another.