

Intelligence & Testing

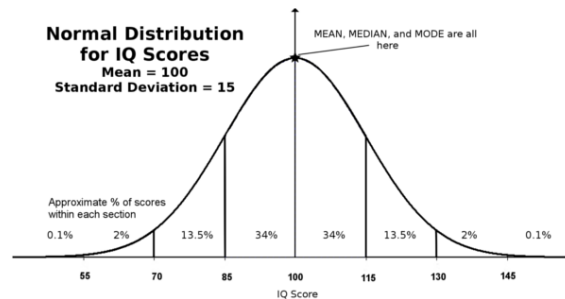
Defining Intelligence

Charles Spearman (1863-1945)	Used factor analysis to identify g-factor (general intelligence)
Louis Leon Thurstone (1887-1955)	Proposed 7 primary mental abilities
Howard Gardner	Modular theory of 8 multiple intelligences
Prodigy	Child with high ability in one area; normal in others
Savant	High ability in one area; low/disability in others
Robert Sternberg	Triarchic theory: analytical, creative, & practical intelligences
Emotional Intelligence	Ability to recognize, express, manage, & use emotions
Fluid vs. Crystallized Intelligence Raymond Cattell (1905-1998)	Ability to solve new problems & use new approaches vs. knowledge & skills acquired over time

Psychometrics & Testing

Psychometrics	Study & design of testing for abilities & traits
Power	How well an assessment can differentiate results
Achievement test	Measures knowledge or skills previously learned
Aptitude test	Predicts potential ability
Validity	Does a test measure what it is intended to measure?
Construct validity	Is test related to <i>property</i> ?
Face validity	Does test appear relevant?

Content validity	Is the test comprehensive?
Concurrent validity	Do results match other tests done at the same time?
Predictive validity	Do test results predict future outcomes?
Reliability	Same object, same measure → same score
Split-half reliability	Randomly split test items → similar scores for each ½
Test-retest reliability	Retake test; compare scores
Equivalent form reliability	Alternate test versions receive similar scores
Standardization	Rules for administering, scoring, & interpreting (norms) test



Intelligence Testing

Francis Galton (1822-1911)	Father of psychometrics ; invented calculation of correlation
Binet-Simon Test (Alfred Binet & Theodore Simon)	Assessment designed to place French schoolchildren
Intelligence Quotient (IQ)	Score representing general mental ability
Ratio IQ score	Mental age divided by chronological age * 100

Deviation IQ score	Individual score divided by average group score * 100
Normal / Bell / Gaussian Curve	Symmetrical bell-shaped distribution of scores
Lewis Terman (1877-1956)	Stanford-Binet Intelligence Scale ; longitudinal study of high IQ children
David Wechsler (1896-1981)	Developed several IQ tests; WAIS, WISC, WPPSI
Intellectual Giftedness	IQ ≥ 130; associated with many positive outcomes
Intellectual Disability (ID)	IQ ≤ 70; difficulties living independently
Down Syndrome	Extra 21 st chromosome; mild/moderate ID, characteristic facial features
Williams Syndrome	Mild/moderate ID; high friendliness, love of music
Heritability Score h²	Indicates proportion of the variation in a trait (in a population) explained by genetic differences; 0 to 1
Eugenics Greek “good stock”	Movement to “improve” gene pool via artificial selection
The Flynn Effect James Flynn	Rise in avg IQ ~3 pts per decade; likely Env. factors (nutrition, education, etc.)
Self-fulfilling Prophecy	Expectations actually cause desired outcome/results
Fixed vs. Growth Mindset Carol Dweck	Belief abilities are unchanging vs. malleable
Stereotype Threat Claude Steele & Joshua Aronson, 1995	Pressure of confirming a negative stereotype reduces performance