

INTELLIGENCE

Theories of intelligence

It's conceptual, not a thing
(reification—assuming it's a thing)
Single intelligence theory
Spearman: “g” represents related clusters of skills (used factor analysis)
Multiple intelligence theories
* Based on evidence from savants
Thurstone: primary mental abilities
7 clusters
Gardner: 8 intelligences
- linguistic, logical-mathematical, musical, spatial, kinesthetic, intrapersonal, interpersonal, naturalistic
Stenberg's triarchic theory
- analytical, creative, practical
Emotional intelligence (EQ)
Relates to success in family, career

Creativity

Convergent vs. divergent thinking
How to maximize:
Develop expertise
Keep a venturesome personality
Stay intrinsically motivated
Live in creative environment

Neurological evidence

Brain anatomy:
Larger brain (thickening of cortex due to enhanced connections?)
17% more synapses (maybe better neural plasticity?)
Einstein's brain—thicker in parietal lobe (math/spatial intelligence?)
Brain function:
Frontal lobe activity during IQ test questions
Perceptual speed correlates positively
Neurological speed (evoked brain response faster)
More efficient glucose consumption
Uses less, processes more efficiently?
Genes:
Identical twins highly correlated
Adopted children, little correlation
Heritability

Assessing intelligence

Binet's test (to identify special needs)
Terman (Stanford)
Supported eugenics (Social Darwinism)
American version (Stanford-Binet)
 $MA/CA \times 100 = IQ$
Wechsler Adult Intelligence Scale (WAIS)
Wechsler Intelligence Scale for Children (WISC)
Bias: Stereotype threat, gender bias

Creating tests

Standardization
Representative sample, compare scores
Chart on normal curve
68-95-99.7 (standard deviation)
Flynn effect
IQ scores improving over time
Principles of test creation
Reliability: test needs to get same results each time it's given
Test-retest reliability
Split-half reliability
Validity: test needs to measure what it's designed to measure
Content validity (material reflects what should be tested)
Face validity
Criterion-related validity (matches in dependent measure of what the test is designed to measure)
Concurrent validity
Predictive validity
May be affected by range of scores tested
Construct validity (use a previous validated instrument and correlate to that test's results)
Extremes of intelligence:
Mental retardation:
Mild (50-70 IQ), moderate (35-50 IQ), Severe (20-35 IQ)
Down syndrome (extra 21st chromosome)
Gifted (Terman's study — “Termites”)
Healthy, well-adjusted, successful
No tracking, special treatment in China/Japan