CHAPTER 9 - INTELLIGENCE

I. DEFINITION

Classic = verbal reasoning & visual-spatial problem-solving

II. THEORIES OF INTELLIGENCE

A. Psychometric Theory
   1. Traits on which individuals differ
   2. Findings re intelligence:
      a. general mental ability
         - Spearman’s g
      b. s - special abilities
      c. verbal vs. problem-solving
      d. fluid vs. crystalized

IQ & Aging
- crystallized increases through life
- fluid increases to young adulthood, then declines
  (slower processing speed)

B. Sternberg’s Triarchic Theory
   1. Information-processing
   2. How person processes information
   3. Aspects of intelligent behavior:
      a. context
         - “intelligent” depends on context
      b. experience
         - doing well on familiar tasks is NOT intelligence,
         - task must pose a challenge
         BUT - the ability to automatize common tasks = intelligence
      c. components/skills
         - must examine person’s cognitive processes in addition to answers
   4. Incorporating into assessment
III. MEASURING INTELLIGENCE

A. Test Construction
   1. Select items
   2. Norms
   3. Standardized Testing
   4. Reliability
   5. Validity

B. Infant & Toddler Tests
   1. Development
      - not IQ (& may not be correlated)
      - how close development is to average for age (DQ)
      - used for identifying children at risk
   2. 2 Tests
      a. Gesell Developmental Scales
         (1940s, 1980)
         - 4 scales (adaptive, motor, language, personal-social)
         - normed on small group of middle-class kids
      b. Bayley Scales (2-30 months)
         - ability to manipulate toys
         i. Mental Scale
            - learning
         ii. Motor Scale - controlling body
         iii. Behavior Record - emotional adjustment
            - Most commonly used
            - Normed on 1,262 normal kids
              (race/sex/geographic area/urban-rural/parent education)
C. Child & Adult Tests

1. History
   a. Binet-Simon Scale
      - first intelligence test (1905)
      - to identify “dull” kids for remedial work
      - test reliably discriminated dull, average, bright by teacher ratings
      - reliable & valid
      
      mental age
      - age at which child performs

   b. Stanford-Binet (for ages 3-13)
      - 1916 - Terman
      - normed on 1000 American kids
      
      intelligence quotient (IQ)
      = MA/CA x 100
      - 100 = average (MA=CA)
      - to compare kids at different ages
      
      Problem: still gives age at which child performs, not comparison to own agemates

      deviation IQ
      - compare kids to same-age peers

2. 4 Main Tests
   a. Stanford-Binet (2-elderly)
      - 2 hours
      - norms are representative (SES, race, age, sex)
      - IQ + other scores

      Pros: **1) Best test for very high/low IQs
      2) Wide age span
      3) 2 equivalent forms
      4) Excellent norms

      Cons: 1) lengthy
      2) difficult to administer
      3) lower examiner reliability

   b. 3 Wechsler Tests 1-1.5 hours
WPPSI-III (4-6.5) WISC-III (6-16.5) WAIS-III (16-74)
- IQ + other scores

Pros: 1) Shorter
2) Easier to administer
3) Most commonly used
4) Census-based norms
5) Can compare performance across ages/tests

Con: 1) Not as useful for IQ extremes
- important for MR

C. K-ABC (2.5-12.5) 45-75 minutes
- No IQ score
- Composite + Sequential/Simultaneous

Pros: 1) Differences in Seq/Sim can point to interventions
2) Flexible administration
3) Short/quick

Cons: 1) Unclear distinction between Sequential & Simultaneous
2) Shorter age range
3) Norms under-represent disadvantaged blacks & Hispanics

D. McCarthy Scales (2.5-8.5) 45-60 minutes
- No IQ
- General Cognitive Index + others

Pros: 1) Used for evaluation of kids with learning problems
2) Gives profile of abilities
3) Includes motor coordination
4) Good standardization
5) Very short

Cons: 1) Few abstract or social judgment problems
2) Restricted age range
D. Use of IQ Tests

1. Historically
   - 1905 - created to identify kids needing remediation
   - 1940s & 50s - widely given to categorize kids
   - 1960s - awareness of abuses

2. Current uses
   a. to diagnose problems
   b. to rule out IQ problems
   c. to identify ways to help

NOT to simply place children in classrooms

To diagnose a learning disability
- normal intelligence (IQ)
- performing below level in 1+ subject (on achievement test)

IV. FACTORS INFLUENCING IQ SCORES

A. Heredity

1. Family & Twin Studies

2. Adoption Studies

B. Environment/Socioeconomic Status (SES)

1. Twin & Family studies

2. Adoption Studies

3. Impoverished Environments

4. Enriched Environments
5. **Parental Education & Occupation**

C. **Race**

1. **General findings**
   a. Asian > Caucasian > Hispanic > African-American/Native American
   b. **Much overlap among the groups**
      - More variability within than between groups
      - Group differences don’t explain why
      - Group differences don’t address any individual’s performance
      - Differences often accounted for by SES

2. **Theories**
   a. **Genetic - Jensen/Rushton**
      - racial differences are genetic because they are stable
      - because IQ is equally due to genetics **within** any race,
        differences **between** races must also be due to genetics

      **Criticism:**

      Jensen & Rushton:
      More “white” genes = smarter person

      **Findings:**
      IQs of mixed-race kids are not lower than IQs of Caucasians
      IQs of blacks don’t differ by number of white ancestors

      => NO support for genetic theory

b. **Test Bias**
   - tests measure cognitive skills & knowledge middle-class
     Caucasian kids likely to acquire
- culture-based experience
- tests are in standard English

Revisions
- “culture-fair” tests & revision of standard tests

Findings
- Caucasians still perform better

Conclusion

c. Motivation
- lower class and ethnic minority kids may be less motivated on these tests
discrimination
- lower self-esteem & motivation

Findings: Friendly examiners & flexible administration raise IQ by 7-10 points
+ K-ABC halves race difference
**But: Caucasian kids also score higher in these situations**

Conclusion

d. Environment/SES
- impoverished environments are less conducive to intellectual development
- parents may have fewer resources

Evidence
- Afr.-Am. kids who move to better environments show IQ jumps
- lower-class Afr.-Am. kids adopted into middle-class Caucasian homes have average/above IQs
**- SES statistically accounts for most racial differences**
V. MENTAL RETARDATION

A. Definition

1. Subaverage intellectual functioning
   - IQ < 70
2. Poor adaptive behavior skills
   - pattern of low functioning

B. Levels

1. **Mild** (55-69) - “Educable” - majority
   - often self-sufficient
   - may reach 3rd - 6th grade level

2. **Moderate** (35-55) - “Trainable”
   - developmental delays
   - simple communication
   - sheltered workshops

3. **Severe** (20-35)
   - large developmental delays
   - understand some speech
   - routines & supervision
   - some daily living skills

4. **Profound** (< 20/25)
   - nursing care
   - may not be able to walk/talk
   - poor/no daily living skills

C. Outcomes

1. All retarded people (mild/moderate)
   a. Worse than non-retarded peers
   b. But better than stereotypes suggest
      - majority (80%) of males work skilled labor & retail
      - most are self-supporting
      - most married
      - life satisfaction
   c. Conclusion
      - Sternberg’s contextual intelligence
      (not measured with IQ)
2. Severe & Profound
   - institutionalization
   BUT, a very small percentage of MR population

VI. MENTALLY GIFTED

A. Terman’s “Termites” (1921)
   - 1500 kids with IQ ≥ 140

1. As kids
   a. weighed more at birth
   b. walked & talked sooner
   c. puberty earlier/health better
   d. mature & well adjusted
   e. classroom leaders
   => initially more advanced in physical, social, moral, cognitive realms

2. As adults
   a. fewer psychological & health problems
   b. higher marital/sex satisfaction
   c. many college graduates with notable careers

3. Why better in all domains?
   a. IQ
   b. Home
      - parent education
      - fewer divorced parents
VII. CREATIVITY

A. Definition
- no standard
- imagination, originality
- different from intelligence
-> reach goal in novel way (useful & unusual)

B. Ways to measure:
1. divergent thought - originality
2. ideational fluency - many ideas
3. consensual assessment
   - others agree that something is creative
4. remote associations
   - see relationships among ideas that are remote from one another

D. To increase creativity
1. **Brainstorming**
   - people alone are often more creative
2. **Synectics**
   - use of analogies in creative thinking
   - look to other areas for a solution
   - used in industry but no research
3. **Incubation**
   - more likely to solve difficult problem if delay between periods of work
   - plausible but seldom demonstrated

Why not more effective?

**Social Factors**
- evaluation decreases creativity

**Other conditions**
- when someone is watching you work
- when you are offered a reward
- when you must compete for prizes
- when someone restricts your choices about how you can express creativity

Creativity seems to be more personal/private