Measures of Intelligence and Adaptive Behavior

Psychological Testing

- Assessment of intelligence
- Alfred Binet and Theodore Simon
- Stanford Binet Intelligence Test
  30 Items
  Standardization- sample, conditions, instructions, format.
Mental Age as a Measure of Intelligence

Key Terms

- **Intelligence**—A general concept of an individual’s ability to function effectively within various settings.
IQ (Intelligence Quotient)—This is usually expressed as a standard score with a mean of 100.

- **Adaptive Behavior**—One’s ability to function in various environments.
- **Innate Potential**—Thought to be one’s ability or potential for development of abilities from birth.
- **Environmental Influence**—The impact of the environment on the student’s learning ability.
Pupil Characteristics And The Assessment Of Intelligence

Acculturation
The influence of one culture on another culture.

Indicators of Possible Bias in Assessment

- Inappropriate content.
- Inappropriate standardization samples.
- Examiner language bias
- Inequitable social consequences.
- Measurement of different constructs.
- Differential predictive validity.
- Qualitatively distinct minority and majority aptitude and personality.
Alternative Views of Intellectual Assessment

- Gardner’s Theory of Multiple Intelligences
  - Linguistic Intelligence
  - Logical-Mathematical Intelligence
  - Spatial Intelligence
  - Musical Intelligence
  - Bodily-Kinesthetic Intelligence
  - Interpersonal Intelligence
  - Intrapersonal Intelligence

Dynamic Assessment—uses the assessment experience to measure the precise task of learning.

Tasks are those in which the learner is presented with interventions to determine how the learner responds to those strategies or interventions.

The learner begins a task and is assisted by the examiner rather than merely observed by the examiner.
Court Cases and IQ Assessment

- **Larry P. v. Riles (1984)**—Issue: The use of IQ tests to determine mental retardation in minorities.

- **PASE v. Hannon (1980)**—Issue: Item bias of specific items of IQ tests.


Use of Intelligence Tests

- Although IQ scores have been misinterpreted and inappropriately used in the past, it is likely that they will remain a substantial part of the assessment process.
- Educators should promote fair and appropriate use of intelligence measures.

Kaufman (1994) stated that intelligence tests should be used “as a helping agent, rather than an instrument for placement, labeling, or other types of academic oppression.”

One approach to discovering a more complete picture of a person’s true intellectual abilities is to use cross battery assessment, an assessment approach that borrows measures from multiple intelligence batteries.
Commonly Used Measures of Intelligence

- Wechsler Intelligence Scale for Children-IV (WISC-IV)
- Wechsler Adult Intelligence Scale-III (WAIS-III)
- Wechsler Preschool Primary Scales of Intelligence (WPPSI)

- Kaufman Assessment Battery for Children-II (KABC-II)
- Stanford-Binet-V
Nonverbal Measures of Intelligence

- Universal Nonverbal Intelligence Test (UNIT)
- Comprehensive Test of Nonverbal Intelligence (CTONI)
- Test of Nonverbal Intelligence-III (TONI-III)

Interpretive Descriptions of IQ Scores

<table>
<thead>
<tr>
<th>IQ Score</th>
<th>Descriptions Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;130</td>
<td>Very Superior, genius, gifted</td>
</tr>
<tr>
<td>120-130</td>
<td>Superior</td>
</tr>
<tr>
<td>110-120</td>
<td>Above average, high average</td>
</tr>
<tr>
<td>90-110</td>
<td>Average</td>
</tr>
<tr>
<td>80-90</td>
<td>Low Average</td>
</tr>
<tr>
<td>70-80</td>
<td>Delayed, borderline</td>
</tr>
<tr>
<td>&lt;70</td>
<td>Very Delayed, within range of mental retardation</td>
</tr>
</tbody>
</table>
Look at the percentages. These represent the percentages of scores in the normal distribution.

Remember that the standard deviation is 15. What percentage of persons in this distribution would be within 1 standard deviation above and below the mean IQ score?
What percentage of persons in this distribution would be within 2 standard deviations above and below the mean IQ score?

Behavior Sampled by (WISC-IV)

The WISC IV has been normed on normal peers and for special education populations: Mental Retardation (MR), Attention-Deficit / Hyperactivity Disorder (AD/HD), Learning Disabilities (LD), both AD/HD and LD, Traumatic Brain Injury (TBI), etc.

WISC-IV (which is an update of the WISC-III) indicates significant advances in the understanding of cognitive abilities.
Time Required: between 65 and 80 minutes.

WISC-IV contains 10 core subtests and 5 additional subtests. These are summed to four indexes:

- **The Verbal Comprehension Index - The Perceptual Reasoning Index**
- **The Working Memory Index (Processing Speed Index)- One Full Scale IQ (FSIQ)**

The age range: between 6 years and 16 years 11 months.

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**Verbal Comprehension Index (VCI)**

*Measure: Verbal concept formation.*

It assesses children's ability to listen to a question, draw upon learned information from both formal and informal education, reason through an answer, and express their thoughts aloud.

Note: This index is a good predictor of readiness for school and achievement orientation, but can be influenced by background, education, and cultural opportunities.
Perceptual Reasoning Index (PRI)
Measure: Non-verbal and fluid reasoning.
It assesses children’s ability to examine a problem, draw upon visual-motor and visual-spatial skills, organize their thoughts, create solutions, and then test them. It can also tap preferences for visual information, comfort with novel and unexpected situations, or a preference to learn by doing.

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Working Memory Index (WMI)
Measure: Working memory.
It assesses children's ability to memorize new information, hold it in short-term memory, concentrate, and manipulate that information to produce some result or reasoning processes. It is important in higher-order thinking, learning, and achievement. It can tap concentration, planning ability, cognitive flexibility, and sequencing skill, but is sensitive to anxiety too. It is an important component of learning and achievement, and ability to self-monitor.
Processing Speed Index (PSI)

Measure: Processing speed.

It assesses children's abilities to focus attention and quickly scan, discriminate between, and sequentially order visual information. It requires persistence and planning ability, but is sensitive to motivation, difficulty working under a time pressure, and motor coordination too. Cultural factors seem to have little impact on it. It is related to reading performance and development too. It is related to Working Memory in that increased processing speed can decrease the load placed on working memory, while decreased processing speed can impair the effectiveness of working memory.

Q: How does schooling affect intelligence?

• Schooling affects intelligence. Schooling can improve knowledge of specific facts for intelligence tests, familiarity with testing practices, concentration and attention span, and

• Children who do not attend school or who attend intermittently eventually have poorer scores on IQ tests than those who attend regularly. Children who move from low-quality schools to high-quality schools show improvements in IQ scores. Schools teach problem solving, abstract thinking, and how to sustain attention.
IQ as a measure of innate intelligence???

- Staying in school can raise IQ or prevent it from dropping.
- IQ drops when schooling is delayed.
- Each additional month a student remains in school may increase her/his IQ above what would have been expected had he dropped out.
- The longer a student stays in school, the higher her/his IQ.
- Dropping out of school can also decrease IQ.
- IQ is affected by vacations.

Measuring Adaptive Behavior

Assessment of adaptive behavior is an assessment of the individual’s ability to function across various situations and environments.

Instruments designed to assess adaptive behavior are often questionnaires or rating scales. These may be completed by the teacher, parent, or other member of the IEP team.
The scales are used in a variety of clinical, educational, or research settings.

Perhaps the major clinical use to which an Adaptive Behavior Scale will be applied is as a major or ancillary diagnostic tool.

In order to have a more holistic understanding of a student’s capacity for functional and academic learning, adaptive behavior scales provide information about functioning in the world in various environments.
The Vineland is also recommended for use with individuals who have other handicaps, to determine levels of adaptive behavior and the extent to which the handicaps affect daily functioning.

An assessment of adaptive behavior is necessary to obtain a comprehensive picture of a non-handicapped person's abilities, as well.

The Vineland Social Maturity Scale was developed by Edgar A. Doll (1935, 1965) for use in the evaluation of mentally retarded individuals.

According to Doll, the primary focus of assessment of mentally retarded individuals should be on their capacity for maintaining themselves and their affairs.

Subsequently, legislation (e.g., Public Law 94-142) and the official manuals of the American Association on Mental Deficiency (Heber, 1959, 1961; Grossman, 1973, 1977, 1983) have stated that deficits in adaptive behavior, as well as in intelligence, must be substantiated before an individual is classified as mentally retarded.
Defining Adaptive Behavior

- Physical Environment
- Social and Cultural Expectations
- Age and Adaptation
- Performance Versus Ability
- Maladaption
- Context
- Frequency and Amplitude

Vineland Adaptive Behavior Scales, Second Edition (VABS II)

Two Forms
1. Survey Interview Form assesses:
   - Communication
   - Daily Living Skills
   - Socialization
   - Motor Skills
   - Maladaptive Behavior
2. The Parent/Caregiver Rating Form assesses:
   • Communication
   • Daily Living
   • Social Skills and Relationships
   • Physical Activity
   • Maladaptive Behavior Part 1
   • Problem Behaviors Part 2

Assessing Adaptive Behavior

• Why Do We Assess Adaptive Behavior?
Adaptive Behavior Items

Adaptive behavior scales include items that ask about a student’s ability to perform specific skills and behaviors independently.

For example, items may ask about a student’s ability to: dress himself independently, select clothing appropriate for the weather, or button buttons independently.

Because the assessment is attempting to determine the student’s level of independence or mastery, the items may include a rating system to indicate degree of independence or mastery. Items may be rated as the following example indicates:

<table>
<thead>
<tr>
<th>Never</th>
<th>With Assistance</th>
<th>Independently</th>
</tr>
</thead>
<tbody>
<tr>
<td>The student uses a knife to spread butter or jam.</td>
<td>0</td>
<td>1</td>
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</table>
All subscales are scored and then a profile of abilities can be determined. The final profile of scores on an adaptive measure might look like this:

<table>
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<tr>
<th>Subscale</th>
<th>Standard Scores</th>
<th>Percentile Ranks</th>
<th>Developmental Age</th>
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<tbody>
<tr>
<td>Communication</td>
<td>65</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>Daily Living Skills</td>
<td>60</td>
<td>1</td>
<td>3.6</td>
</tr>
<tr>
<td>Functional Community</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living Skills</td>
<td>68</td>
<td>3</td>
<td>4.2</td>
</tr>
<tr>
<td>Academic Skills</td>
<td>59</td>
<td>1</td>
<td>3.5</td>
</tr>
<tr>
<td>Motor Skills</td>
<td>70</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>Behavior</td>
<td>7</td>
<td>5</td>
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Adaptive Behavior Scores

What can you determine by analyzing these scores? Are there any relative strengths or weaknesses?

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