A brief review

Definition of a clinical disorder
Sensitivity
Specificity
PPP
NPP
Working Definition of a Clinical Disorder: a constellation of symptom_________ that significantly _______ an individual’s ability to function, and is characterized by a particular symptom __________ with a specifiable onset, c_________, d_________, o_________, and response to __________, and associated familial, ______social, and biological correlates.
Working Definition of a Clinical Disorder: a constellation of symptoms that significantly impairs an individual’s ability to function, and is characterized by a particular symptom picture with a specifiable onset, course, duration, outcome, and response to treatment, and associated familial, psychosocial, and biological correlates.

Onset: age of initial symptoms + insidious vs rapid
Course: slowing worsening or improving; episodic vs chronic; waxing & waning vs continuous
Duration: how long does a particular episode last?
Outcome: do you fully recover?
**Differential Diagnosis & Conditional Probabilities**

<table>
<thead>
<tr>
<th>Symptom Present</th>
<th>Meets Dx</th>
<th>Doesn’t Meet Dx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>E</td>
</tr>
<tr>
<td>Symptom Absent</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

**Sensitivity** = \( \frac{A}{B} \) (true positive) The proportion of children with a particular disorder who exhibit a specific symptom;

**Specificity** = \( \frac{C}{D} \) (true negative) The proportion of children without a particular disorder who do not exhibit a specific symptom;

**PPP** = \( \frac{A}{E} \) The proportion of children with a particular symptom who meet diagnostic criteria for a particular disorder;

**NPP** = \( \frac{C}{F} \) The proportion of children without a particular symptom who do not meet diagnostic criteria for a particular disorder.
Clinical Assessment
Psychological assessment

The process of gathering data about children and families in order to reach valid conclusions about their current functioning and future well being

Purposes

1. To screen children for possible problems
2. To arrive at a diagnosis
3. To identify & treat a specific behavior problem
4. To monitor the progress of treatment
Four Pillars of Psychological Assessment
Sattler (2001)
Multimethod assessment
1. Clinical interviews
2. Structured observations
3. Norm-referenced tests

Multiinformant assessment
1. Parents
2. Teachers/daycare providers
3. Child
Clinical interviews:

Psychosocial history

- presenting problem
- family background
- child’s developmental/medical history
- child’s academic history
- child’s social history
- child’s behavioral history
- child’s psychiatric history
Open acrobat file of K-SADS
Psychological/psychiatric hx including DSM disorders, LD, suicide, hospitalizations; also age of siblings and children.
Mental status examination

Overt behavior
- General appearance
- Posture, eye contact, body movements, activity level
- Behavior toward clinician & caregivers

Emotions
- Mood
- Affect
- Appropriateness

Cognitions
- Thought content
- Thought process
- Intelligence
- Attention
- Memory
- Orientation to person, place, & time
- Insight
- Judgment
Methods of observation

Observations during clinical interview
Analogue tasks
Naturalistic observations (e.g., playground, classroom)
Observations

Antecedents
Child does not understand assignment, cannot read directions, does not know what to do

Behavior
Child leaves seat, talks with classmates, disrupts teacher

Consequences
Child is positively reinforced by teacher’s attention and classmate’s giggles; child is negatively reinforced by avoiding the assignment

How might you intervene to reduce the child’s problem behavior?
Norm-referenced testing

Involves the administration of a standardized measure of children’s behavior that allows comparisons of that child to other individuals her age.

All norm-referenced tests are administered, scored, and interpreted in a standardized format, that is, each administration of the test involves the same item content, the same administration procedure, and the same method of scoring and interpretation.

Standardization permits comparison of an individual child with other children in the norm group.

**Standard score**

A raw score that has been changed to a different scale with a designated mean and standard deviation.
The standard normal distribution. Approximately 68% of people earn scores within one standard deviation from the mean. Approximately 95% of people earn scores within two standard deviations from the mean. Raw scores can be transformed into standard scores to make them easier to understand.
The WISC-IV:

*Verbal Comprehension* reflects knowledge gained through formal and informal educational experiences and reflects the application of verbal skills to new situations. Everyday tasks that require verbal comprehension include providing factual information, defining words, and understanding verbal analogies.

| Similarities       | In what way are a shoe and a sock alike?  
|                   | In what way are a car and a train alike?  
| Vocabulary         | What is a horse?                        
|                   | What does *jumping* mean?               
| Comprehension      | What should you do if you get lost in a store? 
|                   | Why should you look both ways before crossing the street? |
The WISC-IV:

*Perceptual Reasoning* reflects the ability to organize and interpret visually presented material and to engage in visual-spatial problem solving. Everyday tasks that require perceptual reasoning include solving puzzles and mazes, manipulating geometric shapes, and understanding patterns.

**Matrix Reasoning**

Select one of the five choices below to complete the matrix:

```
  ▼ ▼ ▼
  ▲   ▼
  ●   ●
```

**Block Design:**

Reproduce a design using colored blocks:

```
□ □ □ □
```

1 2 3 4 5
The WISC-IV:

*Working Memory* reflects the ability to attend to information, retain and manipulate information in memory, and apply information when necessary. Everyday tasks that require working memory include remembering someone’s telephone number and solving arithmetic problems in one’s head.

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digit Span</td>
<td>Repeat a string of 2 to 9 numbers from memory. Then, repeat a string of 2 to 8 numbers <em>backwards</em> from memory.</td>
</tr>
<tr>
<td>Letter-Number Sequencing</td>
<td>Listen to a string of 2 to 8 letters and numbers. Then, repeat the string from memory with numbers first (in ascending order) than letters (in alphabetical order). For example, <em>w 7 b 2</em> would be repeated <em>2 7 b w</em>.</td>
</tr>
</tbody>
</table>
What is Working Memory?

- Working memory is a limited capacity system that enables individuals to store briefly and process information (Baddeley, 2007).
WM Capacity

- Academic achievement
- Computer programming
- Reasoning/organizational ability
- Literacy
- Long-term memory retrieval
- Bridge & chess playing
- Writing; Note taking
- Following directions
- Complex learning
- Lexical-semantic abilities
- Reduced proactive interference
- General fluid intelligence
WISC-IV

IQ

$R^2 = .58$

WM

IQ

5 Years

Working Memory

5 Years

Previous Research

IQ

$R^2 = .22 - .81$

WM

Reading

Math

Spelling

Reading

Math

Spelling

5 Years

Alloway and Gathercole, 2008 (Nature)
Domain General

- **Central Executive**
  - Auditory Input
    - Phonological Analysis
      - Phonological
        - STS
          - Inferior parietal lobe
        - Orthographic to phonological recoding
      - Phonological output buffer
        - Broca’s area-premotor cortex
        - Spoken Output
  - Visual Input
    - Visual analysis & STS
      - Visuospotral Analysis
        - Visuospatial output buffer
          - Right premotor cortex
          - Motor Output
    - Rehearsal Process

Shared Variance

Phonological task
- Input Process
  - Phonological buffer/rehearsal loop
- Visuospatial task
  - Input Process
  - Visuospatial buffer/rehearsal loop

Input

Phonological
- STS
  - Inferior parietal lobe

Visuospatial
- STS
  - Right hemisphere

Alan Baddeley’s (2007) WM Model

Central Executive Input Process

Visual Input Process

Auditory Input Process

Phonological
- Phonological
  - STS
  - Inferior parietal lobe

Visuospatial
- Visuospatial
  - STS
  - Right premotor cortex

Orthographic to phonological recoding

Rehearsal Process

Spoken Output

Motor Output

Phonological output buffer

Broca’s area-premotor cortex

Right premotor cortex
Example illustrating the differences between short-term (STM) and working memory (WM)
Short-term Memory

Remember the following 6 digits:

4 3 7 5 8 6
Mentally calculate the sum of the three digit number series below:

\[
\begin{array}{c}
4 & 3 & 7 \\
+ & 5 & 8 & 6 \\
\hline
1 & 0 & 2 & 3 \\
\end{array}
\]
Phonological (PH) WM Task

Children are instructed to recall the numbers in order from smallest to largest, and say the letter last.

Phonological Task

3, 4, 5, 6 stimuli sequences

Verbal Response: 2, 5, 6, M

Correct Response Sequence

Watch the following series of numbers and letter and re-arrange the stimuli based on these instructions
The standard normal distribution. Approximately 68% of people earn scores within one standard deviation from the mean. Approximately 95% of people earn scores within two standard deviations from the mean. Raw scores can be transformed into standard scores to make them easier to understand.
The WISC-IV:

*Verbal Comprehension* reflects knowledge gained through formal and informal educational experiences and reflects the application of verbal skills to new situations. Everyday tasks that require verbal comprehension include providing factual information, defining words, and understanding verbal analogies.

| Similarities         | In what way are a shoe and a sock alike?  
|                     | In what way are a car and a train alike?  
| Vocabulary          | What is a horse?                          
|                     | What does *jumping* mean?                 
| Comprehension       | What should you do if you get lost in a store? 
|                     | Why should you look both ways before crossing the street? |
The WISC-IV:

*Perceptual Reasoning* reflects the ability to organize and interpret visually presented material and to engage in visual-spatial problem solving. Everyday tasks that require perceptual reasoning include solving puzzles and mazes, manipulating geometric shapes, and understanding patterns.

---

**Matrix Reasoning**

Select one of the five choices below to complete the matrix:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▽</td>
<td>▽</td>
<td>▽</td>
<td></td>
</tr>
<tr>
<td>△</td>
<td></td>
<td>□</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Block Design:**

Reproduce a design using colored blocks:

![Design Image]
The WISC-IV:

*Processing Speed* reflects the capacity to visually scan and process nonverbal information quickly and accurately. Tasks that require processing speed include scanning a supermarket aisle for a specific product, or activities that require matching and sorting.

**Coding**

Copy as many symbols as possible from a key in two minutes.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>V</td>
<td>/</td>
<td>O</td>
<td>X</td>
<td>L</td>
</tr>
</tbody>
</table>

| 3 | 6 | 1 | 2 | 6 | 4 |

**Symbol Search**

Decide whether one of two symbols on the left appears in the group of symbols on the right as fast as possible.

<table>
<thead>
<tr>
<th>☐</th>
<th>/</th>
<th>☩</th>
<th>△</th>
<th>⌀</th>
<th>◊</th>
<th>☚</th>
<th>☚</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>☓</td>
<td>☳</td>
<td>☐</td>
<td>☘</td>
<td>☐</td>
<td>☚</td>
<td>☚</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>
## Academic achievement domains:

<table>
<thead>
<tr>
<th>Domain</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reading</strong></td>
<td></td>
</tr>
<tr>
<td>Basic Reading Skills</td>
<td>recognizing letters, reading words, reading fluency, sounding out phonemes</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>understanding the meaning of sentences and paragraphs</td>
</tr>
<tr>
<td><strong>Mathematics</strong></td>
<td></td>
</tr>
<tr>
<td>Math Calculation Skills</td>
<td>math skills ranging from arithmetic to geometry, math fluency</td>
</tr>
<tr>
<td>Math Reasoning</td>
<td>formulating and solving story problems</td>
</tr>
<tr>
<td><strong>Written Language</strong></td>
<td></td>
</tr>
<tr>
<td>Basic Writing Skills</td>
<td>spelling, editing grammar and punctuation</td>
</tr>
<tr>
<td>Written Expression</td>
<td>writing sentences and paragraphs</td>
</tr>
<tr>
<td><strong>Oral Language</strong></td>
<td></td>
</tr>
<tr>
<td>Listening Comprehension</td>
<td>understanding directions, answering questions about stories</td>
</tr>
<tr>
<td>Oral Expression</td>
<td>recalling verbal stories, telling the names of objects</td>
</tr>
<tr>
<td>Domain</td>
<td>Example</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Conceptual Skills</strong></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Follows simple commands, such as “Come here.”</td>
</tr>
<tr>
<td></td>
<td>Uses complete sentences.</td>
</tr>
<tr>
<td>Functional Academics</td>
<td>Knows colors.</td>
</tr>
<tr>
<td></td>
<td>Counts from 1 to 20.</td>
</tr>
<tr>
<td>Self-Direction</td>
<td>Follows simple rules, such as “No yelling indoors.”</td>
</tr>
<tr>
<td></td>
<td>Controls temper when parent takes a toy away.</td>
</tr>
<tr>
<td><strong>Social Skills</strong></td>
<td></td>
</tr>
<tr>
<td>Leisure</td>
<td>Asks to be read a favorite book.</td>
</tr>
<tr>
<td></td>
<td>Waits turn during games and activities.</td>
</tr>
<tr>
<td>Social</td>
<td>Shares toys with others.</td>
</tr>
<tr>
<td></td>
<td>Offers to help others.</td>
</tr>
<tr>
<td><strong>Practical Skills</strong></td>
<td></td>
</tr>
<tr>
<td>Community Use</td>
<td>Looks both ways before crossing street.</td>
</tr>
<tr>
<td></td>
<td>Finds restrooms in public places.</td>
</tr>
<tr>
<td>Home Living</td>
<td>Gets own snacks from pantry.</td>
</tr>
<tr>
<td></td>
<td>Places dirty clothes in laundry basket/hamper.</td>
</tr>
<tr>
<td>Health and Safety</td>
<td>Avoids hot stove.</td>
</tr>
<tr>
<td></td>
<td>Buckles seatbelt or car seat.</td>
</tr>
<tr>
<td></td>
<td>Carries scissors appropriately.</td>
</tr>
<tr>
<td>Self-Care</td>
<td>Washes hands with soap.</td>
</tr>
<tr>
<td></td>
<td>Uses bathroom without help.</td>
</tr>
<tr>
<td></td>
<td>Cuts meals into bite-size pieces.</td>
</tr>
</tbody>
</table>
Behavior rating scales

*Externalizing Problems* reflect children’s disruptive behavior. Externalizing symptoms include hyperactivity, aggression, and conduct problems.

*Internalizing Problems* reflect disturbance in children’s emotional functioning. Internalizing symptoms include anxiety, depression, and somatic complaints.

*School Problems* reflect academic difficulties, including low motivation, inattention, and learning problems. This scale is only completed by teachers.

*Adaptive Skills* reflect behavioral and social-emotional competence, appropriate social and daily-living skills, and general prosocial behavior.
Open acrobat file of CBCL for children
Projective Measures
Rorschach Inkblot Test

Based on the projective hypothesis, the notion that people who take the test “project” or impose structure and organization on the inkblots in order to perceive them in meaningful ways

Individuals with social, emotional, or cognitive disturbance will show difficulty in the perceptual-cognitive process required to make sense of the inkblots

John Exner (2003) developed a standardized method for administering, scoring, and interpreting the Rorschach known as the Comprehensive System
Evaluating psychological tests

Reliability

The consistency of psychological test scores

• Test-retest reliability
• Internal consistency

Validity

The degree to which its users can have confidence in the inferences made from the test’s results for a specific purpose

• Content validity
• Construct validity (convergent & discriminant validity)
• Criterion-related validity (concurrent & predictive validity)
## Diagnosis

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parsimony</td>
<td>Loss of detailed information</td>
</tr>
<tr>
<td>Professional communication</td>
<td>Focuses exclusively on individuals</td>
</tr>
<tr>
<td>Prediction</td>
<td>Normality is sometimes arbitrary</td>
</tr>
<tr>
<td>Treatment planning</td>
<td>High comorbidity</td>
</tr>
<tr>
<td>To obtain social services</td>
<td>Subjective &amp; value-laden criteria</td>
</tr>
<tr>
<td>To help parents</td>
<td>Stigma</td>
</tr>
<tr>
<td>To facilitate scientific discovery</td>
<td></td>
</tr>
</tbody>
</table>