History of the Wechsler Scales

- Wechsler considered intelligence to be both:
  - **Global** – Characterizes individual's behavior as a whole
  - **Specific** – Composed of elements or abilities distinct from one another

Current research supports clustering of specific abilities into higher-order cognitive ability domains
- Original **Verbal – Performance** dichotomy seen by Wechsler as practical
- “…the subtests are different measures of intelligence, not measures of different kinds of intelligence…”

- Broad vs. Narrow Domains
  - Cognitive functions are functionally and neurologically interrelated
    - Difficult to measure pure domains
  - Ecologically valid to include subtests requiring use of multiple cognitive abilities
    - Cognitive tasks rarely performed in isolation

- Caveats to Interpretation
  - Must take into account attributes other than intelligence when interpreting test results
  - Children with similar test scores may not cope equally well with similar environmental challenges
  - Children with different underlying levels of intellectual ability may achieve similar scores

- Broad vs. Narrow Domains
  - No single measure can adequately test all domains
    - Wechsler believed in measuring related factors (e.g., memory, motor skills) using appropriate instruments
  - Performance on measures of cognitive ability reflects only a portion of what comprises intelligence
A Broad View

“What we measure with tests is not what tests measure—not information, not spatial perception, not reasoning ability. These are only a means to an end. What intelligence tests measure is something much more important: the capacity of an individual to understand the world about him and his resourcefulness to cope with its challenges.” (Wechsler, 1975, p. 139)

All assessments should be linked with intervention and appropriate services

• The use of assessment solely to diagnose is insufficient.

Three-Level Assessment Model

• The Three-Level Assessment Model is a solution-focused, system applicable across the lifespan. The unique circumstances surrounding the student dictate at what level one begins the assessment process.
• Regardless of the path taken, all assessment results are integrated with the student’s typical functioning and unique background to formulate and evaluate appropriate interventions.

Level One – Screening & Early Intervention

• Involves large-scale screening within the regular education setting to identify those at-risk for failure.
• Early intervention directed by the results of research-based, brief assessments to provide students with appropriate, needs-based instructional experiences.
• Goal: to assist the regular classroom teacher in identifying student needs in core educational and/or behavioral indices.

Level 2 – Monitoring & Modification

• Conducted for the purposes of monitoring progress and applying more specific curriculum modifications for students unsuccessful at Level 1.
  – Monitoring techniques used to identify rate of progress on identified goals. Curriculum and instructional environment also assessed to ensure that effective teaching techniques present for the child to make progress.
  – Continual feedback loop.
• May also be accessed to monitor response to interventions selected from a customized Level 3 assessment.

Level 3 – Customized Diagnostics

• Reserved for those students who have not responded to the assessments, interventions, and monitoring that has taken place in Levels 1 and 2.
  – allows for the fact that a small percentage of students, despite interventions, will not keep pace with age-mates in physical, emotional, academic, and/or cognitive domains.
Level 3-
• Draw upon the extensive amount of information available from Levels 1 and 2, to develop a customized individual assessment to provide additional information concerning the academic, social, behavioral, and/or emotional profile.
• Purpose: to obtain specialized data regarding the child’s functioning to develop a more effective educational plan.
• Immediate entry into Level 3 may also be appropriate in situations where a youngster’s needs dictate that it is the most appropriate course of action.

Level 3
• Utilize the information gained via formal and informal assessment to address why failure/non-response has occurred.
• Comprehensively investigates complex cognitive functioning.
• Involves the use of specialized assessments in a process-oriented approach, which requires clinical decision-making in the selection of tests and interpretation of data.

Why should you obtain an ability estimate?
• Provides a useful baseline for analysis
• Provides insight into functions that are more, or less, impacted by attention, for example
• Look for PATTERNS in functioning

Limitations of Ability-Achievement Discrepancy Analysis
• Determining a severe discrepancy doesn’t constitute LD; it only establishes that the primary symptom exists (Reynolds)
  – There should be “reality-based” AND test-based evidence to suggest a failure to achieve in a principle academic area
  – Clinical evidence and observation should suggest a processing problem linked to underachievement.

Revision Goals
- Update and Strengthen Theoretical Foundations
- Enhancing Clinical Utility
- Improving Psychometric Properties
- Increasing and Enhancing User-Friendliness
- Maintaining Continuity and Familiarity
Update and Strengthen Theoretical Foundations

• Current Status of Intelligence Theory
  – Use of Factor Index Scores
    • Emphasizes multiple factors in cognitive abilities
    • De-emphasizes reliance on VIQ and PIQ to characterize a child’s overall cognitive abilities
    • Consistent with WPPSI-III and WAIS-III
  – Enhanced Measures of Fluid Reasoning
    • Tasks that involve ‘manipulating abstractions, rules, generalizations, and logical relationships’ require fluid intelligence (Carroll, 1993, p. 583). MR, PCO, and WR developed to enhance the measures of fluid intelligence.

Update and Strengthen Theoretical Foundations

• Current Status of Intelligence Theory
  – Enhanced Measures of Working Memory
    • Emphasizes the importance of working memory in learning
    • Focuses on more “active” types of working memory
  – Enhanced Measures of Processing Speed
    • Targets role as “mediator” in cognitive functioning and learning
    • Recognizes impact as predictor of reading comprehension.

Working Memory

• The brain area in which multiple pieces of information—otherwise separated by time or space—are brought together for processing
• Allows for the simultaneous holding and manipulation of information

Processing Speed

• Processing speed and working memory capacity are highly interrelated
  – Delay is the enemy of working memory
    • Allows previously retrieved content to decay or degrade
  • Reduced speed interferes with the encoding, processing, and retrieval of information

Processing Speed

• Slow processing interferes with the development of reading skills
  – Learning disabled children process information more slowly, especially rapidly changing information
  • Reduced naming speed (of letters, numbers, colors, objects) impairs word recognition and the development of reading automaticity
• Slow processing interferes with math learning
  – Slow access to numeral names and arithmetic processes interferes with functioning of working memory
    • Precious capacity must be allocated to accessing labels and tracking procedures, siphoning off resources from math concepts
    • Delay increases risk of loss of working memory contents
Processing Speed

- Slow processing interferes with math learning
  - Slow access impairs efficiency, which is necessary to optimal performance of working memory
  - Only with rapid movement of information in and out of the limited-capacity working memory store is it possible to juggle information of any complexity at all

Processing Speed

- Slow processing interferes with written expression
  - Hinders efficient shifting of working memory focus within hierarchy of multiple demands
  - Vocabulary, spelling, mechanics, grammar rules, ideas, transitions, organization, style
  - Individual steps (e.g., lexical retrieval) are slowed, increasing risk of losing overall task focus

Enhancing Clinical Utility

- Increasing the Number of Special Group Validity Studies
- Updating Statistical Linkage to Other Cognitive Measures and Measures of Achievement

Enhancing Clinical Utility

**Enhanced Link with Other Assessments**

- Equivalency studies with WISC-III, WAIS-III, WPPSI-III, WASI, approximately 200 cases each, counterbalanced
- WIAT-II Link, 550 cases
- CMS Link, 110 cases (Study in Progress)
- Adaptive Behavior Assessment System (ABAS) Link, 200 cases each for Parent/Teacher forms
- Bar-ON EQ, 200 cases
- Gifted Rating Scale, 240 cases

Improving Psychometric Properties

- Updating of Norms
- Improving Evidence of Reliability and Validity
- Extending Floors and Ceilings
- Re-examining Item Bias

Increasing User-Friendliness

- Decreasing Testing Time
- Simplifying Administration and Scoring Procedures
- Improved Stimulus Materials
- Elimination of the Object Assembly subtest
- Dividing and Reorganizing the Manual
- Dividing and Reorganizing the Record Form
**WISC-IV Model**

![Diagram of WISC-IV Model]

**Block Design**

- 14 items – divided into two parts
  - 3 new items designed to improve ceiling and item difficulty gradient.
  - No time bonus administration option (a process score)

**Block Design**

- Designed to measure the ability to analyze and synthesize abstract visual stimuli and nonverbal concept formation.
- Also involves visual perception and organization, visual-motor coordination, spatial visualization, learning, and the ability to separate figure and ground in visual stimuli.

**Block Design Subtest**

- Visuospatial reasoning; visuoconstructional ability
- Record student’s solution process in block-by-block manner
- Look at whether he/she tends to work in L → R (typical) or R → L (atypical) direction
  - Also, top → bottom (typical) or vice versa
- Also note novel and original approaches to construction
  - E.g., beginning 9-block designs by “anchoring” the four corners, then constructing the middle

**Block Design: Instructional Implications**

- Does the child experience difficulty with the timed factor of tests (i.e., slow but accurate)?
  - Additional time or reduced items with visual spatial tasks, reinforce efforts & attention to detail, reduced motor demands with visually based tasks
- A lack of planning or structuring of performance may signal difficulties with Executive Functions
  - assist with structure
Block Design: Instructional Implications

- Compare breaks in configuration with other visual data to obtain information re: severity
- Difficulties obtaining the “big picture” (part-to-whole)
  - use diagrams, charts, outlines to show relationships between details and “big ideas”
  - begin lecture with big idea, keep referring back
  - May require further assessment
- Does the child’s performance improve with the aid of structure?

Similarities

- Designed to measure verbal reasoning and concept formation.
- Also involves auditory comprehension, memory, distinguishing non-essential and essential features, and verbal expression.

Similarities Subtest

Verbal concept formation and verbal reasoning
- Concrete vs. abstract responses
- Functional vs. categorical responses
  - Verbs vs. nouns
- Difficulties with oral expression of knowledge
  - Responses that improve with talking

Digit Span Subtest

Auditory short-term memory (Digits Forward); auditory working memory (Digits Backward)
- Look for pull to automatized sequences (“3 – 2 = 1”)
  - Suggests problems with response inhibition
- Difficulties with “acoustic frame” vs. content/sequence
- Inconsistencies within given string length
  - Fluctuations in attention, motivation
- After administration, ask student how he/she did Digits Backward task
  - “Hearing” vs. “seeing/reading”
  - “Chunking” or other high-level strategies
Digit Span Subtest

- Report *Forward* and *Backward* string lengths in report
- Use Process Scores to evaluate *Forward* and *Backward* performances independently
  - Table B.7
- Evaluate differences between *Forward* and *Backward* performance
  - Table B.8
  - Median difference at all ages is 2 digits

Digit Span: Instructional Implications

- What length limitations appear to be present for child’s STM?
- If see overall poor skills, may investigate further memory assessment.
- If memory appears weak, use common strategies such as
  - Verbal rehearsal
  - Mnemonics
  - Overlearning
  - Guided and distributed practice
  - Link new information to prior learning in lessons

Picture Concepts

- Designed to measure abstract, categorical reasoning ability.
- Solutions to easier items are generally attained by reasoning based on concrete representations, and the solutions to more difficult items are obtained by reasoning based on more abstract representations.

Coding

- **Assesses processing speed**
- **Also involves short-term memory, learning ability, visual perception, visual-motor coordination, visual scanning ability, cognitive flexibility, attention, motivation and visual and sequential processing.**

Coding Subtest

*Graphomotor speed and accuracy (fine motor control); incidental learning*

- Record student’s position at 30", 60", 90", and 120" to allow later calculation of output (speed) changes over time
  - Look for student who starts strong but loses momentum, student who needs to “warm up” to task
- Compare with RAN (Speeded Naming) tasks

Coding: Instructional Implications

- Does the child demonstrate relative (typical) consistency in response rate?
  - Provide frequent breaks in work periods if performance wanes and production not much of an issue
  - Structure expectations, provide guidelines
- Is graphomotor speed an issue? For several clinical groups, this is problematic.
  - Reduce writing demands, extra time
Vocabulary

• Designed to assess a child’s word knowledge and degree of language development. Also designed to measure a child’s fund of knowledge, learning ability, long-term memory, and verbal concept formation.
• Other abilities that may be utilized include auditory perception and comprehension, verbal conceptualization, abstract thinking, and verbal expression.

Vocabulary Subtest

Word knowledge (and retrieval)
• Difficulties with oral expression of knowledge
  – Receptive and reading vocabulary vs. subtest score
• “Receptive paraphasias”
  – Phonemic
  – Semantic (encoding and retrieval problems)

Letter-Number Sequencing

• Measure of Working Memory
• Adapted from the WAIS-III
• Child is presented a series of Numbers and Letters. The child repeats numbers then letters in proper order.
• Involves sequencing, mental manipulation, attention, short-term auditory memory, visuospatial imaging, and processing speed.

Letter-Number Sequencing Subtest

• After administration, ask student how he/she performed task
  – “Hearing” vs. “seeing/reading”
  – “Chunking” or other high-level strategies
• Compare errors on letters vs. numbers
• Look for inconsistency and warm-up effects at individual string lengths

Matrix Reasoning

• 35 items – child completes matrices from five response options.

Matrix Reasoning

• Measure of fluid intelligence and a reliable estimate of general intellectual ability.
• Four types of matrices including: continuous and discrete pattern completion, classification, analogical reasoning, and serial reasoning.
**Matrix Reasoning Subtest**

*Nonverbal reasoning and concept formation*
- Look for errors on particular types of items
  - Repetition, pattern
  - Analogy
  - Visual rotation or manipulation
  - Rule derivation
  - Inference

**Comprehension**

- Designed to assess verbal reasoning and conceptualization, the ability to evaluate and utilize past experiences, verbal comprehension and expression, and the ability to demonstrate practical information.
- Also involves knowledge of conventional standards of behavior, social judgment and maturity, and common sense.

**Comprehension Subtest**

*Social knowledge and reasoning*
- Concrete vs. abstract items
- Applying old knowledge to new questions
- Cognitive flexibility
  - Generation of alternative responses
- Impulsivity, poor response inhibition
- Personal associations, emotional interference

**Symbol Search**

- Involves processing speed.
- The subtest also involves short-term visual memory, visual-motor coordination, cognitive flexibility, visual discrimination, and concentration.
- It may also tap auditory comprehension, perceptual organization, and planning and learning ability.

**Symbol Search Subtest**

*Mental processing speed and accuracy*
- Most important use for this subtest is score comparison with *Coding*
  - Allows partialing out of fine motor (graphomotor) speed from mental processing speed

**Picture Completion**

- 38 items – all artwork has been redrawn, enlarged and colorized.
- 25 items retained, 13 new items to improve difficulty gradient.
Picture Completion

- Now a Supplemental Subtest
- Designed to measure visual perception and organization, concentration, and visual recognition of essential details of objects.

Picture Completion Subtest

Attention to visual detail
- May be the best subtest for eliciting word-finding difficulties and paraphasias
  - These do not affect scoring, but should be noted in report

Picture Completion Subtest

- Look for impulsivity, impatience in dealing with stimulus materials
- Unusual scanning behaviors
  - E.g., holding head close to booklet
- Note accuracy on left vs. right sides of stimuli

Picture Completion: Instructional Implications

- Provide pattern cues (emphasize visual cues)
- Guide to recognition of patterns via language-based cues such as analogies
- Provide word banks
- Label common objects
- Provide language “starters”
- Erase boards well to account for possible figure-ground difficulties

Cancellation

- Supplemental Subtest
- Measure of Processing Speed
- 2 forms (Random & Structured)
- Forms share identical target locations
- Targets are animals
- Foils are common non-animal objects
Information

• Designed to assess a child’s ability to acquire, retain, and retrieve general factual knowledge, commonly referred to as general fund of knowledge.
• Involves crystallized intelligence, long-term memory, and the ability to retain and retrieve knowledge from school and environment. Also involves auditory perception and comprehension and verbal expressive ability.

Information: What does it mean?

• Does the child experience difficulty recalling or finding the information?
• Is the information within the child’s fund of knowledge?
• Can the child verbally express the information?

Information Subtest

Recall (retrieval) of verbally-encoded factual knowledge
• Single word (noun) retrieval vs. understanding of concepts
• Confusion of verbally-encoded material
  – Phonemic similarity
  – Semantic similarity
  – Sequencing difficulties
• Content areas

Arithmetic

• It involves mental manipulation, concentration, attention, short- and long-term memory, numerical reasoning ability, and mental alertness.
• It may also involve sequencing, fluid reasoning, and logical reasoning

Arithmetic Subtest

Auditory short-term memory, auditory working memory, fact retrieval
• Good indicator of attention and working memory problems
  – Repetition requests
  – Audible self-talk
  – Finger counting
  – “Writing” on table

Arithmetic Subtest

• Nature of errors
  – Retrieval errors
  – Minor calculation errors
  – Language errors
  – Lack of conceptual understanding
• Testing the limits
  – Timed vs. untimed scores
  – Mental processing vs. pencil-and-paper scores

VC

WM

WM
Arithmetic: Instructional Implications

- Does the child benefit from having working memory demands minimized?
  - Provide visual cues, allow for repetition, use concise language
- Does the child have the basic calculation knowledge to complete problems?
  - Content-specific remediation and compensation
- Does the child become confused with operation signs, columns, L R orientation? (compare with other visual information)
  - Use graph paper (columns); bold or color code signs, signal via "green light" or arrows where to start problem

Word Reasoning

- Measures verbal deductive reasoning.
- Skills that contribute to success include verbal comprehension, expressive language ability, domain knowledge, analogic and general reasoning ability, the ability to utilize contextual and syntax information, verbal abstraction, the ability to generate alternative concepts, and the ability to integrate and synthesize different types of information.
- Other skills contributing include long-term memory, cognitive flexibility, and trial and error learning.

Evidence of Internal Consistency

- The reliability coefficients for WISC–IV composite scales range from .88 (Processing Speed) to .97 (Full Scale).
- The average reliability coefficients of the WISC–IV subtests range from .79 (Symbol Search and Cancellation) to .90 (Letter–Number Sequencing). All remaining reliability coefficients range from .80 (Word Reasoning) to .89 (Vocabulary and Matrix Reasoning).

Evidence of Interscorer Reliability

- All WISC–IV protocols were double-scored by two independent scorers, and evidence of interscorer agreement was obtained using the normative sample.
- Because the scoring criteria for most of the subtests are simple and objective, interscorer agreement is very high, ranging from .98 to .99.
- Total subtest scores were used in the analysis, interscorer reliabilities were .98 for Similarities, .98 for Vocabulary, .95 for Comprehension, .96 for Information, and .97 for Word Reasoning.

Clinical Linking Studies

- Mental Retardation – Mild
- Mental Retardation – Moderate
- Learning Disabled – Reading
- Learning Disabled – Reading, Writing
- Learning Disabled – Reading, Writing, Math
- Learning Disabled – Math
- PAL
- WISC–IV
- WISC–IV PI
- WIAT–II
- PAL

Receptive Language Disorder
- WISC–IV
- WISC–IV PI
- CELF–4

Clinical Linking Studies

- ADD
- ADD/LD Combined
- Motor Impaired
- Hearing Impaired
- Autism/Aspergers
- TBI – Open
- TBI – Closed
- Gifted

- WISC–IV
- WISC–IV PI
- NEPSY
- D–KEFS
- EQ
- GRS

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Full Scale IQ

• Stronger contributions of working memory and processing speed
  – Supported by contemporary research
• 30% each VCI and PRI
• 20% each PS and WM

Composite Scores

• Working Memory Index
  – Essential component of fluid reasoning and other higher order skills
  – Closely related to achievement and learning
  ─ See Fry & Hale, 1996; Perlow, Juttasoo, & Moore, 1997; Swanson, 1996

Composite Scores

• Processing Speed Index
  – Dynamically related to mental capacity, reading performance & development, and reasoning by conservation of resources (e.g., efficiency)
  – See Fry & Hale, 1996; Kail, 2000; Kail & Hall, 1994; Kail & Salthouse, 1994)

Enhancement of Clinical Interpretation

• Qualitative Descriptions of FSIQ Score and Index Scores
• Confidence Intervals
• Additional Tables for Determining Statistical Significance
• Base Rates for Discrepancy Scores (Overall and by Ability Level)
• Age-Corrected Subtest Scaled Scores
• Discrepancies Between Digit Span Forward and Backward

Qualitative Descriptions of IQ Scores

<table>
<thead>
<tr>
<th>Score</th>
<th>Classification</th>
<th>Percent Included in Theoretical Normal Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 and above</td>
<td>Very Superior</td>
<td>2.2</td>
</tr>
<tr>
<td>120–129</td>
<td>Superior</td>
<td>6.7</td>
</tr>
<tr>
<td>110–119</td>
<td>High Average</td>
<td>16.1</td>
</tr>
<tr>
<td>90–109</td>
<td>Average</td>
<td>50.0</td>
</tr>
<tr>
<td>80–89</td>
<td>Low Average</td>
<td>16.1</td>
</tr>
<tr>
<td>70–79</td>
<td>Borderline</td>
<td>6.7</td>
</tr>
<tr>
<td>69 and below</td>
<td>Extremely Low</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Conceptualization Structure

• Core Input Requirements
  – e.g., Hearing, Vision, Motor, etc…
• Core Output Requirements
  – Minimal verbal expression to maximal verbal expression required.
  – Minimal motor output required to maximal motor output required.
  – Maximal structure and organization provided to minimal amount of structure and organization required.
  – Maximal amount of contextual information provided to minimal amount of contextual information provided.
Conceptualization Structure

• Characteristics of Response
  – Correct, Efficient and Automatic
  – Incorrect, Efficient and Automatic
  – Correct, Inefficient and Effortful
  – Incorrect, Inefficient and Effortful

Patterns and Profiles of Performance

- Profile analyses can be used to evaluate scatter within or among FSIQ, Index Scores and Subtests.
- Profile analyses can be used to generate hypotheses that are, in turn, either corroborated or refuted by other evaluation results, such as:
  - background information,
  - direct behavioral observation,
  - additional evaluation,
  - consistency with injury or disorder.

Statistical Versus Clinical Significance

“Although statistically significant differences between scores can occur in many clinical groups, the same differences may also occur frequently in the normally functioning population.”
- Matarazzo, 1990

Base rate information provides a basis for estimating the rarity or commonness of the examinee’s obtained difference within the normal adult population.

Statistical Significance of Index Score Differences

- A statistically significant difference between scores, for example between the VCI and the PRI scores, refers to the likelihood that obtaining such a difference by chance is very low (e.g., \( p < .05 \)) if the true difference between the scores is 0 (Matarazzo & Herman, 1985).
- The level of significance reflects the level of confidence the examiner can have that the difference between the scores, called the difference score, is a true difference.

Frequency of Index Score Differences

- The prevalence or frequency of an observed score difference in the general population is also referred to as the base rate. Often the difference between an individual’s composite scores (e.g., VCI and PRI) is significant in the statistical sense but is not infrequent.
- The statistical significance of differences between scores and the rarity of the difference are two different issues and consequently have different implications for test interpretation. (Matarazzo & Herman, 1985; Payne & Jones, 1957; Sattler, 2001; and Silverstein, 1981.)

Base Rate Information By Entire Sample or Ability

- Overall sample
  – VCI-PRI by 15 points = 14.5%
  – VCI-PRI by 15 points = 12%
  – WMI-PSI by 15 points = 19.8%
  – WMI-PSI by 15 points = 16.4%

- FSIQ ≤ 79
  – VCI-PRI by 15 points = 16.9%
  – VCI-PRI by 15 points = 15.5%
  – WMI-PSI by 15 points = 22.1%
  – WMI-PSI by 15 points = 15.5%
Recommendations

Statistical Significance vs. Frequency

- The statistical significance of a score difference is much less important than how frequently it occurs
  - Significance (p < .05) (from Tables B.1, B.3) tells us only the likelihood that a difference is real (i.e., not due to chance)
  - Frequency (from Tables B.2, B.4) tells us whether that difference is unusually large (and therefore likely to be important)

Differences Between Subtest Scaled Scores

- An evaluation of the variability helps the practitioner identify the strengths and weaknesses of the child’s cognitive functioning.
- As with differences between the index scores, the interpretation of a particular subtest score as especially high or low should take into account the statistical significance of the observed difference and estimates of population base rates.

Recommendations for Administration & Interpretation

- Give more weight to composite score differences that are infrequent than to those that are merely statistically significant
- Don’t be unduly impressed by apparent scatter (variability among subtest scores)
- Include relevant qualitative process information in reports

Recommendations

Interpretation of Scatter

- Variability among subtests scores is common
  - Does not necessarily indicate a learning disability or other cognitive problem
- Assess frequency of a student’s scatter using Table B.6 before assuming it to be unusual or important
  - For example:
  - Over half of all students exhibit scatter of up to 7 points among the 10 Core subtests
  - When all 15 subtests are administered, well over a third of students exhibit scatter of up to 9 points

Full Scale IQ

- Stronger contributions of working memory and processing speed
  - Supported by contemporary research
- 30% each VCI and PRI
- 20% each PS and WM

Mediating Factors of:

- Processing Speed
- Working Memory

Conservation of cognitive resources
Composite Scores

• Working Memory Index
  – Essential component of fluid reasoning and other higher order skills
  – Closely related to achievement and learning
  – See Fry & Hale, 1996; Perlow, Juttuso, & Moore, 1997; Swanson, 1996

Composite Scores

• Processing Speed Index
  – Dynamically related to mental capacity, reading performance & development, and reasoning by conservation of resources (e.g., efficiency)
  – See Fry & Hale, 1996; Kail, 2000; Kail & Hall, 1994; Kail & Salthouse, 1994)

Useful Score Comparisons

• Coding vs. Symbol Search
• Coding and Symbol Search vs. Perceptual Reasoning subtests
• Picture Completion vs. PR and PS subtests
• Working Memory vs. Processing Speed Index scores

Coding & Symbol Search vs. Perceptual Reasoning Subtests

• Ability to process visual information sequentially vs. simultaneously
  – Sequential processing
    • Coding, Symbol Search
  – Simultaneous processing
    • Block Design, Picture Concepts, Matrix Reasoning, Picture Completion

Working Memory vs. Processing Speed Index Scores

• Working memory and processing speed are highly interrelated
  – WM and PS scores often rise or fall together
  – In students with ADHD (especially those with the Predominantly Inattentive Type), both WM and PS index scores are often significantly lower than Verbal Comprehension and Perceptual Reasoning index scores

WISC-IV Spanish

• To be normed entirely in the U.S.
• Items adapted from WISC-IV
• Where adaptation is impossible, parallel items have been created.

• Standardization begins in 2003 (Apr/Aug)
• We NEED your help!
WISC-IV Integrated

WISC-IV as a Process Instrument

• Data-based testing-the-limits
• Multiple-choice versions of WISC-IV verbal subtests and Block Design
• Spatial Span – Spatial Working Memory
• Elithorn Mazes – executive functions
• Frequencies of error types

Learning is a Multifactorial Process

Interventions: Executive functions & attention

• Focus attention on successful behaviors
  – explicit reminders
  – cue card system
  – visual cues
• Use task analysis to break complex tasks or expectations into more manageable steps
  – model think aloud strategies

Interventions - Attention & Executive Functions

• Help students plan/set goals routinely
  – keep a learning log - what’s your plan for the day, how will you do it, how’d you do, why or why not successful
• Try planning backwards
  – begin with what they have to do last and then plan accordingly
  – grade on final product and performance on steps

Interventions: Language

• Use picture directions
• Tape record directions and responses
• Segment directions
• Provide lecture/chapter summaries
• Use word banks
• Make word illustration cards

Interventions - Language

• Have students keep word “journals”
  – as a group (bulletin board/wall) or individually
  – by category
  – with definitions, syllables, illustration
• Engage in word sorting activities
  – beginning/ending sounds
  – words inside of words
  – spelling features
Interventions - Language

- Have students formulate questions
  - make games
  - make test questions
  - use reciprocal teaching techniques
- Provide “wait time”
- Focus teaching on letter sounds in addition to names

Interventions - Language

- Encourage students to engage in active reading
  - underline unknown words to ask about later
  - underline common themes, ideas, or characters
- Teach similar word patterns by sight and sound

Interventions - Sensorimotor Functions

- Practice copying and/or tracing large to gradually smaller figures
- With young children, encourage play with clay, finger paints, crayons, mazes, and model construction
- Possible referral for consultation with an OT

Interventions - Visuospatial Processing

- Practice with categorization (series of pictures - which category do they represent?)
- Use graph paper, bold, lines, color to show borders, margins, columns
- Games to address visual similarities and differences
- Draw maps (treasure hunts, maps of rooms, etc.)

Interventions - Visuospatial Processing

- Practice with left-right exercises
- Use graph paper to align columns/rows
- Practice with puzzles
- Copy models
- Play with blocks (regular and snap together ones)
- Decrease distances for copying

Comprehensive assessment within a data-based decision making model includes:

- Multiple domains
- Multiple environments
- Across time
- Multiple methods
- Multiple sources of information
- Multiple disciplines
Importance of Multi-factored Assessment

- Multi-method, multi-informant evaluations permit analysis from all angles
- Best practice to reflect
  - Differences across environments & tasks
  - Multiple manifestations of behaviors
  - Actual student performance vs. perception of key individuals
- What is a true impairment?

Comprehensive Assessment Includes:

- Review of student products (classwork, CBA, portfolios)
- Medical Information
- Clinical Interview (developmental and family history, structured or semi-structured)
- Norm-referenced assessments

ASSESSMENTS ARE TOOLS

They assist in clinical judgments, rather than replace them.

- Gather & weigh information
- Consider defenses, compensations, adaptations
- Consider maladaptive behaviors that arise from coping with the disorder

3-Level Model of Assessment

- Customized Diagnostics is consistent with the spirit of educational reform.
- The keys to the model are the selection of assessment methods dictated by the needs of the student and continuous progress monitoring and revision of approaches, rather than a perfunctory battery of tests that is applied to all individuals.
- When it is conducted authentically, the entire assessment model addresses the unique needs of all students.

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