

Deciphering the Tests

By Ray Boyd, M.S.E.
Licensed Psychologist

What Is Assessment?

- The process of collecting information to determine a child's strengths and weaknesses and to identify interventions that will address areas of concern
- An assessment usually includes testing in the following areas:
 - Intelligence or ability testing
 - Information processing (how the brain takes in, uses, stores, retrieves and expresses information)
 - Academic skills
 - Attention
 - Emotional, social and behavioral functioning

Psychoeducational Evaluation

- An integration of psychology and education
- Provides an estimate of a person's intellectual, or cognitive abilities, and educational achievement levels
- Determines recommendations for educational planning

Psychoeducational assessment

- Designed to answer questions – does the client have a learning disability?
- An attention disorder?
- Specific or general cognitive weaknesses?
- What are the client's academic and cognitive strengths and weaknesses?
- What are appropriate educational recommendations?
- What are appropriate accommodations?

Instruments used for measuring cognitive abilities and intellectual functioning

- Wechsler Intelligence Scale for Children – 4
- Wechsler Adult Intelligence Scale – 4
- Woodcock-Johnson Tests of Cognitive Abilities – 3
- Kaufman Assessment Battery for Children – 2

Ability or cognitive areas evaluated:

- Auditory processing
- Phonological processing
- Visual – spatial processing
- Long-term retrieval or memory
- Short-term memory
- Working memory
- Processing speed

Ability areas measured:

- Oral language
- General knowledge
- Fluid reasoning – inductive reasoning and deductive reasoning, how well you can solve novel problems
- Quantitative reasoning
- Executive functioning and attention
- Fine-motor functioning

Verbal comprehension

- Measures verbal knowledge
- Ability to use verbal skills in new situations
- Scores are partly a reflection of educational and home environment
- Testing in this area focuses on vocabulary, factual and practical knowledge, and forming verbal ideas or concepts

Implications in the classroom:

- Comprehending oral or written language
- Expressing ideas verbally and in written form
- Learning vocabulary
- Acquiring knowledge in content areas
- Using prior knowledge to understand new concepts

Working Memory

- Ability to hold on to and manipulate information
- The ability to store and keep on line the relevant information, and then perform the manipulation
- Hold information in mind in order to carry out cognitive tasks or actions

Working memory, cont.

- Affects writing process which has multiple cognitive demands:
- Hold information in mind related to what to write, such as words, ideas and sentences
- How to write it: grammar, syntax, mechanics
- Purpose of the text: audience, style
- Overall, a high load on working memory

Working memory and math:

- Ability to inhibit irrelevant information in word problems
- Use of strategies for solving math computation problems
- Associated with solution accuracy in word problems

Working memory and reading:

- Retaining information so that the content flows
- Recalling sequences of information
- Memorizing factual information
- Problems with remembering information long enough to process it for understanding

Implications in the classroom:

- Difficulty following directions
- Taking notes
- Listening to and comprehending lengthy verbal information

Working memory, cont.

- Interferes with ability to hold events or information in mind to guide actions
- Follow directions and perform tasks that require sequential steps
- May reduce ability to reflect on actions, monitor progress, and demonstrate self-awareness of needs and strengths

Fluid reasoning:

- The ability to reason and solve novel problems
- Use of rules to solve problems requiring inductive and deductive reasoning
- Form concepts and solve problems using unfamiliar information

Implications of weaknesses:

- Difficulty making inferences and solving abstract problems
- Creating solutions to problems
- Generalizing information
- Thinking conceptually
- Problem solving through rule application

Fluid reasoning, cont.

- Difficulties understanding mathematical and science concepts
- Difficulties with comprehending abstract language

Perceptual reasoning

- The ability to think about and organize visual information
- Understanding and organizing visual information
- Interpreting visual information

Implications of weaknesses in visual - spatial or visual processing:

- Difficulty reading maps, charts, graphs, or other visual information
- Attending to visual detail
- Understanding geometry
- Organizing math problems spatially
- Difficulty with more visually complex or cluttered worksheets

Cont.:

- Copying information from blackboards to texts
- Tracking from one line to the next on standardized tests
- Interpreting nonverbal social cues

Processing speed:

- The rate at which an individual can process incoming and outgoing information
- The ability to automatically and fluently perform relatively easy or over-learned cognitive tasks
- Including simple tasks requiring attention and focused concentration

Processing speed, cont.:

- Refers to the speed at which you process information in the brain
- Automaticity, or the ability to develop or use skills so quickly that they become routine and do not require much effort

Implications in the classroom:

- Difficulty completing assignments within time limits
- Taking timed tests
- Making rapid comparisons between and among bits of information
- Copying information
- Engaging in more complex problem-solving

Processing speed, cont.:

- Difficulty keeping up in class
- Slow to respond to questions
- Difficulty retrieving specific words and slow to construct questions
- Slow to search and scan information
- Can interfere with reading rate, rate of written production, and rate of problem-solving in mathematics

Phonological awareness and processing:

- Important areas to measure when evaluating for possibility of dyslexia
- Phonological awareness refers to a person's awareness of and understanding of the sound structure of his or her language (CTOPP-2)

Phonological awareness:

- Refers to an individual's explicit knowledge of the sound segments, or phonemes, which comprise words (Phonological Awareness Test – 2)
- When encountering a word, you have to decode a series of letters, store their associated sounds in short-term memory, and then blend these sounds to form words

Phonological awareness:

- For spelling, opposite process takes place
- First, retrieve the blended form of the word
- Break it down into sounds
- Represent them with corresponding letters

Phonological awareness:

- In order to read and spell, you have to be aware of the sound segments that are blended in to syllables and words (Robertson, Salter, 2007)

Phonological processing:

The ability to see or hear a word, break it down into discrete sounds, and then associate each sound with letters that make up a word (2012, Ghotit Ltd.)

Dyslexia:

- Is characterized by weaknesses in phonological awareness or phonological processing
- Weaknesses in the explicit knowledge of the sound segments (or phonemes) which comprise words
- Phonemes are the building blocks we use to construct words and sentences when speaking, spelling and reading

Assessment for dyslexia: Tests used

- Comprehensive Test of Phonological Processing – 2
- Phonological Awareness Test – 2
- Test of Auditory Processing Skills – 3
- Portions of Woodcock Johnson Tests of Cognitive Abilities – 3
- Oral and Written Language Scales - 2

Assessment for dyslexia, cont.

- Phonological awareness and processing are measured by:
- Asking the student to provide rhyming words
- Divide sentences into their words
- Divide words into syllables
- Segment words by phonemes

Assessment for dyslexia, cont.

- Identify initial, medial and final sounds in words
- Repeat words after deleting syllables or phonemes
- Isolate a sound in a word, and then change it to another phoneme to form a new word
- Blend syllables or phonemes to form words

Assessment for dyslexia, cont.

- Match pictures that have objects beginning with the same sound
- Recall numbers in order – measures auditory sequencing and auditory memory abilities
- Repeat nonwords – again, measures auditory memory and sequencing

Assessment for dyslexia, cont.

- Rapid naming – refers to efficient retrieval of phonological information from long-term memory
- Related to word retrieval and reading fluency
- rapid naming is one of the most robust early indicators of potential reading difficulties (Norton, Wolf, 2011)

Assessment for dyslexia, cont.

- Rapid naming tasks do have a visual component
- Measures how fast an examinee can scan an array of visual symbols and encode a phonological response
- This is the same type of ability that underlies decoding when reading aloud (CTOPP-2, 2013)

Assessment for dyslexia, cont.

- Rapid naming tasks require an individual to read letters or numbers while being timed
- Or require the individual to name objects or colors while being timed

Assessment for dyslexia:

- Word retrieval – a symptom of dyslexia
- Again, requires individual to name pictured objects as quickly as possible
- Provide names of objects in specific categories while being timed

Assessment for dyslexia, cont.

- Phoneme-grapheme tasks
- Presenting them with letters or phonemes, and then asking them to provide the corresponding sound (e.g., sm, er, ou, str, ai, oa)
- Decoding – asking the student to blend sounds into nonsense words, which requires them to demonstrate sound-symbol correspondence (neep, reeg, burm, mupe, hoy)

Assessment for dyslexia, cont.

- According to Sally Shaywitz (Overcoming Dyslexia, 2004), "the ability to read nonsense words is the best measure of phonologic decoding skills in children."
- This is also referred to as "word attack" skills

Assessment for dyslexia, cont.

- Direct measurement of reading and written language skills
- Reading lists of words that become progressively challenging
- Reading nonsense words
- Oral reading
- Reading comprehension

Dyslexia, cont.

- Word reading efficiency – by having a student read lists of actual words and nonsense words while being timed
- Reading vocabulary – knowledge of word meanings

Dyslexia, cont.

- Spelling measure
- Written expression
- Writing a story
- Combining two sentences or more into one complete and grammatically correct sentence
- Capitalization and punctuation

Instruments used for direct measurement of reading and spelling skills:

Tests

- | | |
|---|--|
| • Woodcock – Johnson Tests of Achievement – 3 | • Woodcock Reading Mastery Tests – 3 |
| • Wechsler Individual Achievement Test – 3 | • Gray Silent Reading Tests (for measuring silent reading comprehension) |
| • Test of Word Reading Efficiency – 2 | • Phonological Awareness Test – 2 |
| • Gray Oral Reading Tests – 5 | • Test of Written Spelling – 4 |
| | • Test of Written Language – 4 |

Diagnosis of dyslexia

- Shaywitz, 2003, Overcoming Dyslexia:
- Pattern to look for when diagnosing dyslexia:
 - Difficulty reading individual words
 - Difficulty decoding nonsense or unfamiliar words
 - Reading comprehension stronger than decoding of words

Shaywitz, cont.

- Labored or inaccurate reading of passages
- Difficulty reading small function words, such as "the", "is", "for"
- Slow reading
- Weaknesses in spelling

Testing young adults

- Gather good historical information
- Administering tests to evaluate reading fluency is highly important
- Oral reading (Gray Oral, Woodcock Reading Mastery Tests)
- Nelson-Denny
- Nonsense words
- Speed in recognizing individual words and decoding nonsense words

Evaluating young adults:

- determine if the reading problem is unexpected or does not fit with the individual's level of education or professional status (Shaywitz, 2004)
- Determine evidence of a specific phonologic weakness in contrast to strong functioning in other language areas, such as comprehension, vocabulary, verbal reasoning

Academic areas assessed:

- Basic reading skills in sight word recognition and phonetic decoding
- Reading comprehension
- Reading fluency
- Mathematics calculation
- Mathematical reasoning
- Mathematical fluency – how quickly you can complete simple math problems

Academic skills assessed:

- Basic writing skills
- Spelling
- Expression of ideas
- Writing fluency
- Oral expression
- Listening comprehension
- Oral expression

Measures of attention

- Rating scales
- Questionnaires
- Computerized tests of attention
- Behavioral observations
- Looking for patterns on formal testing
- Behavioral and medical history
- Teacher and parent rating scales

Evaluation of social-emotional-behavioral functioning

- Behavioral history
- Teacher and parent rating scales
- Personality measures
- Questionnaires focusing on specific areas of emotional functioning, such as depression and anxiety inventories
- Previous assessments
- Interview with parents
- Interview with client

The Components of a Good Assessment

- Has to be conducted by a qualified professional
- Testing must be current
- Testing should be complete and comprehensive enough that the evaluator can arrive at a diagnosis
- Relevant historical information, including past and current functioning, age of initial diagnosis, if appropriate (old report cards, standardized testing reports, relevant medical records)
- History of accommodations used in past educational settings

Components of an assessment

- Standard scores and percentiles should be provided
- Tests used should be valid and reliable
- Norms should be based on age
- A narrative description of a child's performance in each area
- In the summary, there should be a clear and direct statement that a learning disability or an attention deficit disorder exists
- There should be clear evidence that there is current impairment that substantially limits learning

- Rule out alternative explanations for the learning problem
- Recommendations should be tailored to the individual, rather than using a standard set of recommendations
- The evaluators should develop a strong rationale as to why accommodations are necessary at this time

Norm-referenced tests

- A child's performance is compared with the performance of a large group of participants who have taken the test
- norm – an indication of what is "normal" performance
- Have to compare to children who are similar (in age, grade, socioeconomic status)

- A test has to go through a process of standardization, which means it is given to a large group of children whose performance serves as the standard, or norm, against which the child's score can be measured
- IQ tests and many tests of achievement are administered to large groups of people

- When administered to a large group of children or adults of different ages, genders, ethnic backgrounds, and economic status, selected from different parts of the United States, we find that intelligence approximates what is called a normal distribution
- A normal distribution is sometimes called the bell-shaped curve – it's shaped like a bell
- The majority of scores fall in the middle of the possible range of scores
- Fewer scores are recorded toward the extremes of the range

- Most scores pile up in the middle, and fewer and fewer scores occur farther away from the middle
- This normal curve applies to a wide range of human behaviors and abilities, from personality traits to motor speed to cognitive abilities to academic achievement
- A goal of an assessment is to determine where a child's performance in a variety of areas falls on a normal curve

- THIS CONCEPT IS IMPORTANT BECAUSE:
- MANY DISORDERS ARE DEFINED BY A CHILD'S BEHAVIOR OR PERFORMANCE THAT FALLS OUTSIDE OF THE NORMAL RANGE

- IT IS IMPORTANT TO EXAMINE THE PATTERN OF SCORES FOR EACH INDIVIDUAL TO SEE WHICH SCORES FALL WITHIN THE NORMAL RANGE AND WHICH SCORES FALL OUTSIDE THE NORMAL RANGE

WAYS OF DESCRIBING A CHILD'S TEST PERFORMANCE

- MEAN – calculated by adding all the scores, then dividing the total number of scores
- STANDARD DEVIATION – how far the average child's score deviates from the mean
- Standard deviation is a statistic that represents the degree to which the scores scatter around the mean

- On a normal curve, a certain percentage of scores fall at certain distances, measured in standard deviations, from the mean
- For example, about 68 percent of scores fall between plus and minus one standard deviation from the mean (15 points)
- 95 percent fall between two standard deviations, plus or minus, from the mean
- 99 percent fall between three standard deviations, plus or minus, from the mean
- The average range is considered to be within approximately one to one and a half standard deviations around the mean

- Intelligence tests usually have a mean of 100 and a standard deviation of 15
- The subtests of most IQ tests are referred to as scaled scores: they have a mean of 10 and a standard deviation of 3
- Percentile ranks - refers to the percentage of scores that fall below a particular score
- It means your score was better than whatever percentage you obtained

- Test manufacturers determine what type of scaled or standard scores are most appropriate for their tests
- Expect a variety of scores within an assessment if it is a comprehensive battery

- Age equivalency scores: what the average score is for children at various ages
- Grade equivalency scores: the level of test performance for an average student at a certain grade level
- Grade equivalency scores are usually expressed in tenths of a grade
- Age equivalency scores are expressed as years and months

Descriptive Classifications

- | | |
|--------------------------|-------------------------|
| • <u>Composite Score</u> | • <u>Classification</u> |
| – 130 and above | – Very Superior |
| – 120 – 129 | – Superior |
| – 110 – 119 | – High Average |
| – 90 – 109 | – Average |
| – 80 – 89 | – Low Average |
| – 70 – 79 | – Borderline |
| – 69 and below | – Extremely Low |

Wechsler Intelligence Scale for Children – Fourth Edition

- Most widely used intelligence test for children ages 6 through 16
- Yields a Full Scale IQ score
- Also, yields four factor scores which measure different dimensions of intellectual functioning
- Provides standard scores, scaled scores, and percentile ranks

Verbal Comprehension

- Measures verbal knowledge and ability to use verbal skills in new situations
- Scores are a reflection of educational and home environments

Verbal Subtests

- **Vocabulary** - measures word knowledge and language development
- **Information** – general knowledge
- **Similarities** – verbal concept formation or ability to place things in groups
- **Comprehension** – knowledge of conventional standards of behavior, social judgment and common sense

Implications in the classroom

- Learning vocabulary
- Answering factual questions
- Comprehending oral or written language
- Acquiring knowledge in content areas
- Using prior knowledge to understand new concepts
- Expressing ideas verbally and in written form

Working Memory

- The ability to hold on to and manipulate information
- **Digit Span** – measures short-term auditory memory, attention and manipulation
- **Letter-Number Sequencing** – measures working memory
- **Arithmetic** – measures attention, concentration and math ability

Implications in the classroom

- Difficulty following directions
- Problems with remembering information long enough to process it for understanding
- Retaining information when reading independently
- Recalling sequences of information
- Memorizing factual information
- Taking notes
- Listening to and comprehending lengthy verbal information

Perceptual Reasoning

- Measures ability to think about and organize visual information without the use of words
- **Block Design** – measures spatial visualization, perceptual organization and abstract thinking
- **Matrix Reasoning** – measures nonverbal reasoning
- **Picture Concepts** – measures nonverbal reasoning and ability to categorize objects

Implications of visual-spatial or visual processing weaknesses

- Reading maps, graphs, charts, or other abstract visual information
- Attending to visual detail
- Understanding geometry
- Organizing mathematical problems
- May have difficulty with more visually complex or cluttered worksheets
- Copying information from blackboards or textbooks
- Tracking from one line to the next on standardized tests
- Interpreting nonverbal social cues

Implications of weaknesses in fluid reasoning

- Difficulty making inferences and solving abstract problems
- Creating solutions to problems
- Generalizing information
- Thinking conceptually
- Problem solving through rule application
- Difficulties with understanding mathematical and science concepts
- Difficulties with comprehending abstract language

Processing Speed

- Measures speed at which children can process visual information without making errors
- Difficulty in processing simple information, such as copying letters or numbers or quickly scanning visual information can result in less time and energy to understand and process new material

- **Symbol Search** – tests visual discrimination and visual scanning ability
- **Coding** – tests ability to learn an unfamiliar task and also measures speed and accuracy of visual-motor coordination, attention and short-term visual memory

Implications in the classroom

- Difficulty processing information rapidly
- Difficulty completing assignments within time limits
- Taking timed tests
- Making rapid comparisons between and among bits of information
- Copying information
- Engaging in more complex problem-solving

Wechsler Adult Intelligence Scale – Fourth Edition

- Just released in 2008
- Provides a Full Scale IQ
- Also, has four factor or index scores similar to the WISC-4
- Verbal Comprehension Index Scale
- Perceptual Reasoning Index Scale
- Working Memory Index Scale
- Processing Speed Index Scale

- General Ability Index – an optional composite score
- Derived from the Verbal Comprehension and Perceptual Reasoning subtests
- Provides a summary score that is less sensitive to the influence of working memory and processing speed
- In the presence of neuropsychological deficits, performance on the working memory and processing speed subtests is more likely to be impaired than performance on the Verbal Comprehension and Perceptual Reasoning subtests

- In such situations, impaired performance in the areas of working memory and processing speed may mask actual differences between general cognitive ability and other cognitive functions
- When unusual variability is observed within the index scores or subtests comprising the Full Scale IQ, clinical interpretation should characterize this diversity of abilities

- Examinees with neuropsychological problems, such as ADHD, difficulties with working memory and processing speed may result in lower Full Scale IQ's than examinees without neuropsychological problems

- The WAIS-4 takes less time to administer because there are fewer incorrect items needed to obtain a ceiling
- Also, the Comprehension subtest is now a supplemental subtest
- There is one new subtest on the Perceptual Reasoning Scale
- Most colleges prefer the Adult version of the Wechsler Scales instead of the WISC-4
- WISC-4 might be given instead to someone who is 16 if low ability is suspected

Wechsler Intelligence Scale for Children: Fourth Edition – Integrated

- Published in 2004, this test focuses on problem-solving style and cognitive processes
- A process oriented approach to assessment

Classification of Standard Scores and Percentile Rank Ranges for Woodcock-Johnson III Tests of Achievement

Classification of Standard Scores and Percentile Ranges

Standard Score Range	Percentile Rank Range	W-J III Classification
130 and Above	98-99.9	Very Superior
121 – 130	92 – 97	Superior
111 – 120	76 – 91	High Average
90 – 110	25 – 75	Average
80 – 89	9 – 24	Low Average
70 – 79	3 – 8	Low
69 and Below	0.1 – 2	Very Low

Woodcock-Johnson III Normative Update Tests of Achievement

- Broad Reading
 - Letter-Word Identification
 - Reading Fluency
 - Passage Comprehension

- Basic Reading Skills
 - Letter- Word Identification
 - Word Attack

- Reading Comprehension
 - Passage Comprehension
 - Reading Vocabulary

- Broad Mathematics
 - Calculation
 - Math Fluency
 - Applied Problems

- Math Calculation Skills
 - Calculation
 - Math Fluency

- Mathematical Reasoning
 - Applied Problems
 - Quantitative Concepts

- Broad Written Language
 - Spelling
 - Writing Samples
 - Writing Fluency

- Written Expression
 - Writing Samples
 - Writing Fluency

- Basic Writing Skills
 - Spelling
 - Editing

Guidelines for Documentation of ADHD

- A qualified professional must conduct the evaluation
 - Clinical psychologist
 - Neuropsychologist
 - Psychiatrists
 - Relevantly trained medical doctors

- Documentation should be current
 - Completed within the last three years
- Documentation should be comprehensive
 - There should be evidence of early impairment, including relevant historical information
 - This information might include report cards, transcripts, past testing, teacher comments and third party interviews

- Evidence of current impairment
 - A statement of presenting problems including evidence of ongoing impulsive/hyperactive or inattentive behaviors significantly impairing functioning in two or more settings
- Diagnostic interview
 - History of presenting symptoms
 - Developmental history
 - Family history for presence of ADHD and other difficulties
 - Relevant medical and medication history
 - Academic history of elementary and secondary education
 - Description of current functional limitations pertaining to an educational setting that are presumed to be a direct result of problems with attention

- Instruments used:

- Rating Scales – self rater or interviewer rated scales for categorizing and quantifying nature of the impairment
 - Brown ADD Scales
 - Behavior Rating Inventory of Executive Function-Self Report
 - Behavior Rating Inventory of Executive Function-Other
 - Conners Teacher Rating Scale
 - Conners Parent Rating Scale

Bibliography

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WAIS-4 Technical and Interpretive Manual by Diane L. Coalson and Susan Engi Raiford, 2008, Pearson

Woodcock-Johnson III: Reports, Recommendations and Strategies by Nancy Mather and Lynne E. Jaffe, 2002, John Wiley & Sons, Inc.

Essentials of School Neuropsychological Assessment by Daniel C. Miller, 2007, John Wiley & Sons, Inc.

WISC-4 Advanced Clinical Interpretation by Weiss, Saklofske, Prifitera, and Holdnack, 2006, Academic Press

Resources and Organizations

- Association on Higher Education and Disability (AHEAD) www.AHEAD.org
- Children and Adults with Attention Deficit Disorders (CHADD) www.chadd.org
- Council for Exceptional Children www.cec.sped.org
- International Dyslexia Association (IDA) www.interdys.org
- Learning Disabilities Association of America (LDA) www.Idanatl.org
- Recording for the Blind & Dyslexic (RFB&D) www.rfbd.org

- How to Read, Understand, and Use Psychoeducational Reports by Dr. Sherry Mee Bell from Keys to Effective LD Teaching Practice
- Accommodations for Cognitive and Academic Deficits by John Seaman, Ph.D., School Psychologist