



# UNDERSTANDING EVALUATION SCORES

Laura K. Eskridge, Ph.D., LSSP

# Professional Background

- Licensed Psychologist (Doctorate in Clinical Psychology)
- Licensed Specialist in School Psychology (Texas)
- Previous work experience in the public schools (assessment of students 2:9 to 21 for autism, other health impairment, emotional disturbance)
- Current Private Practice (focused predominantly on completing IEEs for parents/families seeking a second opinion on district-completed FIEs/evaluations)

# Learning Objectives

## Learning Objectives:

- ❖ By the end of the session, participants will be able to describe the basic statistical concepts underlying assessments of intellectual and educational achievement.
- ❖ By the end of the session, participants will be able to name two assessments of educational and intellectual achievement and describe what they measure.
- ❖ Upon returning to their office, participants will apply interpretation strategies learned during this session to the assessments in their clients' files to improve their understanding of those results, as well as what other assessments should be requested based upon them.



# **BURNING ASSESSMENT QUESTIONS**

(THAT YOU'VE GOTTA GET OFF YOUR CHEST)

Please chat me any general questions you have about assessment.



# **EVALUATING THE EVALUATION**

(There should be ominous music to accompany this slide)



# QUESTIONS- EVALUATOR

Green means Go! Start your checklist now...

## 1. Was the evaluator **competent** in the area(s) of assessment?

- ❖ Although states vary, in Texas, IQ and academic achievement testing can be completed by an:
  - ❖ Educational Diagnostician
  - ❖ Licensed Specialist in School Psychology (Masters- or PhD-level)

## 2. Does the evaluator have **current and relevant experience**?

- ❖ Is the evaluator's educational experience appropriate for the student (e.g., has he/she tested students with similar behaviors or diagnoses, previously)?
- ❖ Has the evaluator administered the measures given, previously? Evaluators should become proficient with a measure before administering it to a student.

### 3. Did the evaluator conduct the evaluation via **standard procedures**?

- ❖ If procedures were modified, the evaluator should document alterations to standard administration procedures in the report. If procedures were modified, did the evaluator note if the change impacted the findings?
- ❖ Refer to the instrument's manual for standard administration procedures, if needed.



#### 4. Did the evaluator **adjust** for any known needs of the student (within or outside standard evaluation procedures)?

- ❖ Slower processing speed (e.g., requiring additional time to answer questions on untimed tasks without interruption).
- ❖ Speech/language impairments (e.g., resulting in, possibly, a need for nonverbal assessment or use of a measure that is less verbally-loaded).
- ❖ Need for frequent breaks (e.g., requiring testing over multiple days).
- ❖ Motor or visual impairments (e.g., resulting in the examiner not administering certain subtests or ensuring font size appropriate for student).
- ❖ Students will not generally perform better than their abilities/skills but there are numerous reasons why a student won't show his/her true abilities or skills on testing. It is the evaluator's job to minimize impacting factors, as possible.



# QUESTIONS- MEASURES

Add these to your checklist!

## 1. Is the measure **reliable and valid**?

- ❖ Does the test produce consistent measurement results within one administration and across administrations?
- ❖ Does the test measure what it purports to measure?
- ❖ When in doubt, refer to the instrument's manual for detailed information.
- ❖ “Big name” measures, including the WISC-V and the WJ-IV, are considered reliable and valid measures of IQ. However, occasionally, new measures are published, requiring individuals to examine reliability and validity.

2. Is the student **represented** within the instrument's norming sample or were special group studies conducted?

- ❖ Were students similar to your client included in the normative sample (which is generally representative of US children and adolescents, based on census data)?
- ❖ Were studies conducted to examine how students with different diagnoses (e.g., AU, ADHD, ID) perform on the instrument?

### 3. Was the **most recent edition** of the measure used?

- ❖ Generally, evaluators have up to one year before they are required/expected to use updated measures.
- ❖ In **Fall 2020**, the updated version (4<sup>th</sup> Edition) of the Wechsler Individual Achievement Test (WIAT-IV) will be released.

### 4. Were the **most recent norms** used?

- ❖ In March 2018, a normative update was published for the Kaufman Assessment Battery for Children-4<sup>th</sup> Edition. As such, since that time, evaluators are required to use the updated norms to score student responses (as a student's scores frequently differ based on the original and updated norms, impacting interpretation).

5. Was the measure **chosen for the student** or is the measure part of the (not supposed to exist) “standard” district assessment?

- ❖ Purpose of assessment is to obtain the student’s best performance, if possible.
- ❖ Make sure measures were chosen for the student, considering his/her individual needs.
- ❖ Different measures may be better or worse for a student (e.g., WJ-IV instructions are often language intense; KABC-II depends less on verbal language for responses).



# **IQ MEASURE EXAMPLES**

## 1. Wechsler Scales

- ❖ Wechsler Preschool and Primary Scale of Intelligence-4<sup>th</sup> Edition (WPPSI-IV; ages 2:6 to 7:7)

- ❖ **Wechsler Intelligence Scale for Children-5<sup>th</sup> Edition** (WISC-V; ages 6 to 16:11)

- ❖ Wechsler Adult Intelligence Scale-4<sup>th</sup> Edition (WAIS-IV; ages 16:0-90:11)

## 2. Stanford-Binet Intelligence Scales-5<sup>th</sup> Edition (SB-5; ages 2 to 85+)

## 3. Woodcock-Johnson 4<sup>th</sup> Edition Tests of Cognitive Abilities (WJ-IV; ages 2 to 90+)



4. Kaufman Assessment Battery for Children-2<sup>nd</sup> Edition: Normative Update (KABC-II NU; ages 3 to 18)
5. Differential Ability Scales-2<sup>nd</sup> Edition (DAS-II; ages 2:6 to 17:11)
6. Test of Nonverbal Intelligence-4<sup>th</sup> Edition (TONI-4; ages 6:0 to 89:11)
7. Universal Nonverbal Intelligence Test-2<sup>nd</sup> Edition (UNIT-2; ages 5 to 21:11)

# Poll

What IQ measures do you typically or frequently see administered in your area?

- A. WISC-V or Wechsler Scale
- B. WJ-IV Tests of Cognitive Abilities
- C. KABC-II
- D. DAS-II
- E. Other

# Notes of Interest

- ❖ Some measures are statistically linked to/correlated with other measures:
  - ❖ WISC-V links to the WIAT-III and the KTEA-3.
  - ❖ WJ-IV Tests of Cognitive Abilities and Tests of Achievement are linked.
- ❖ When possible, evaluators (including myself) attempt to administer correlated measures.
- ❖ Some measures, including the Wechsler IQ Scales, the WIAT-III and the KTEA-3, are available via **web-based administration** and, potentially, can be administered via **telepractice**.

# Notes of Interest (cont'd)

- ❖ Some measures, including the Wechsler IQ Scales, the WIAT-III and the KTEA-3, are available via **web-based administration** (Q-global by Pearson Assessments) and, potentially, can be administered via **telepractice**.
- ❖ Although these measures were not standardized in a telepractice mode, reliable and valid information may be obtained via telepractice administration, if certain factors have been “thoroughly considered and addressed.”

(<https://www.pearsonassessments.com/professional-assessments/digital-solutions/telepractice/telepractice-and-the-wisc-v.html>)

# Notes of Interest (cont'd)

- ❖ As noted previously, any change to standard administration procedures, including administering measures via telepractice, should be documented in the evaluation.

# WISC-V

## Full Scale

### Verbal Comprehension

Similarities

Vocabulary

Information

Comprehension

### Visual Spatial

Block Design

Visual Puzzles

### Fluid Reasoning

Matrix Reasoning

Figure Weights

Picture Concepts

Arithmetic

### Working Memory

Digit Span

Picture Span

Letter-Number  
Sequencing

### Processing Speed

Coding

Symbol Search

Cancellation

# WISC-V (cont'd)

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❖ The **Full Scale IQ (FSIQ)** composite score “summarizes ability across a diverse set of cognitive functions. The FSIQ is considered the most representative indicator of general intellectual functioning.” Scores between 90 and 109 are considered “average” The FSIQ includes seven subscales:

- ❖ **Similarities**
- ❖ **Vocabulary**
- ❖ **Block Design**
- ❖ **Matrix Reasoning**
- ❖ **Figure Weights**
- ❖ **Digit Span**
- ❖ **Coding**

# WISC-V (cont'd)

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❖ The **Verbal Comprehension Index (VCI)** measures the student's ability to "access and apply acquired word knowledge." The VCI also "reflects the student's ability to verbalize concepts, think about verbal information, and express him/herself using words."

Subtests include:

❖ **Similarities**

❖ **Vocabulary**

❖ **Information**

❖ **Comprehension**



# WISC-V (cont'd)

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- ❖ The **Similarities** subtest requires a student to “describe similarities between words with common characteristics” (e.g., “How are yellow and blue alike?”).
- ❖ The **Vocabulary** subtest requires a student to “name pictures or verbally define words” (e.g., “What is a table?”).
- ❖ The **Information** subtest requires a student to “answer general knowledge questions and assesses his/her ability to acquire, remember and recall learned information” (e.g., “Name a type of flower.”).

# WISC-V (cont'd)

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- ❖ The **Comprehension** subtest requires a student to “answer questions about general principles and social situations,” The subtest measures “practical knowledge and ability to verbalize meaningful concepts” (e.g., “What should you do if you hear someone scream, “Fire!””).
  - ❖ Often low/lower scores are observed in children diagnosed with Autism Spectrum Disorder.

# WISC-V (cont'd)

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❖ The **Visual Spatial Index (VSI)** measures a student's ability to "evaluate visual details and understand visual spatial relationships." The VSI examines "visual spatial reasoning, integration and synthesis of part-whole relationships, attentiveness to visual detail, and visual-motor integration." Subtests include:

- ❖ **Block Design** (Timed)
- ❖ **Visual Puzzles** (Timed)

# WISC-V (cont'd)

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- ❖ The **Block Design** subtest requires a student to use blocks (with solid red, solid white and half red, half white sides) to create a design. The subtest measures a student's ability to analyze and synthesize visual information" and "understand part-whole relationships."
- ❖ The **Visual Puzzles** subtest requires a student to "view a completed puzzle and select three pieces that together would reconstruct the puzzle." The subtest measures "mental rotation skills and ability to understand part-whole relationships."

# WISC-V (cont'd)

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❖ The **Fluid Reasoning Index** (FRI) measures a student's "ability to detect the underlying conceptual relationship among visual objects and use reasoning to identify and apply rules, which "requires inductive and quantitative reasoning, broad visual intelligence, simultaneous processing, and abstract thinking."

Subtests include:

- ❖ **Matrix Reasoning**
- ❖ **Figure Weights** (Timed)
- ❖ Picture Concepts
- ❖ Arithmetic (Timed)

# WISC-V (cont'd)

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- ❖ The **Matrix Reasoning** subtest requires the student to “select the missing piece to complete a pattern,” assessing inductive (logical thinking involving forming generalizations from experiences, observations, true/false facts) reasoning.
- ❖ The **Figure Weights** subtest requires the student to “look at a scale with a missing weight and identify the weight that would keep the scale balanced.” The Figure Weights subtest measures quantitative reasoning.

# WISC-V (cont'd)

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- ❖ The **Picture Concepts** subtest requires the student to “choose pictures from two or three rows to form a group with a common trait,” measuring categorical reasoning skills.”
- ❖ The **Arithmetic** subtest requires a student to “solve math word problems in his/her head.” The subtest measures “numerical reasoning ability and concentration skills.”

# WISC-V (cont'd)

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❖ The **Working Memory Index** (WMI) measures a student's "ability to register, maintain, and manipulate visual and auditory information in conscious awareness, which requires attention and concentration, as well as visual and auditory discrimination."

Subtests include:

❖ **Digit Span**

❖ Picture Span

❖ Letter-Number Sequencing



# WISC-V (cont'd)

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- ❖ The **Digit Span** subtest requires the student to listen “to strings of numbers read aloud and recall them in the same order, backward order, and ascending order,” measuring auditory working (short-term) memory.
- ❖ The **Picture Span** subtest requires the student “to memorize pictures and identify them in order on subsequent pages,” measuring visual memory.

# WISC-V (cont'd)

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- ❖ The **Letter-Number Sequencing** subtest requires a student to listen to “sequences of numbers and letters, then recall the numbers from lowest to highest and the letters in alphabetical order.” The subtest measures “sequential processing, mental manipulation, and attention.”

# WISC-V (cont'd)

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- ❖ The **Processing Speed Index (PSI)** measures a student's "speed and accuracy of visual identification, decision making, and decision implementation." The index "is related to visual scanning, visual discrimination, short-term visual memory, visuomotor coordination, and concentration." Subtests include:
  - ❖ **Coding** (Timed)
  - ❖ **Symbol Search** (Timed)
  - ❖ **Cancellation** (Timed)

# WISC-V (cont'd)

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- ❖ The **Coding** subtest requires the student to copy symbols paired with numbers, measuring associative memory and graphomotor speed (pencil-paper version). Q-global has a **digital version** that simply requires touching the correct symbol, decreasing the impact of motor speed.

# WISC-V (cont'd)

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❖ The **Symbol Search** (SS) subtest requires a student to “scan a group of symbols and mark the target symbol,” measuring visual scanning. Again, Q-global has a **digital version** that simply requires touching the correct symbol (or “No,” if the symbol is not present), decreasing the impact of motor speed.

# WISC-V (cont'd)

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- ❖ The **Cancellation** subtest requires a student to scan arrangements (structured and unstructured) of objects and mark target objects. The subtest “measures speed, scanning ability, and visual discrimination.” Presently, only a paper-pencil version of the subtest is available.

# WISC-V (cont'd)

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- ❖ The **Symbol Translation Index** (STI) provides a “broad estimate of visual-verbal associative memory,” measuring long-term storage and retrieval. During testing, the student is “shown symbols and taught the word that each symbol represents.” Subtests include:
  - ❖ Immediate Symbol Translation
  - ❖ Delayed Symbol Translation (20-minute delay)
  - ❖ Recognition Symbol Translation (30-minute delay in a multiple-choice recognition format)

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# **ACADEMIC ACHIEVEMENT MEASURE EXAMPLES**

1. Wechsler Individual Achievement Test-3<sup>rd</sup> Edition (WIAT-III; ages 4 to 50:11)
  - ❖ Fall 2020 release of WIAT-IV
2. Woodcock-Johnson 4<sup>th</sup> Edition Tests of Achievement (WJ-IV; ages 2 to 90+)
- 3. Kaufman Test of Educational Achievement-3<sup>rd</sup> Edition (KTEA-3; ages 4 to 25:11)**
4. Process Assessment of the Learner-2<sup>nd</sup> Edition (PAL-II Reading and Writing, Math; grades Kinder to 6<sup>th</sup>)

5. Comprehensive Test of Phonological Processing-2<sup>nd</sup> Edition  
(CTOPP-2; ages 6 to 24)

6. Feifer Assessments (grades Kinder to college)

- ❖ Reading (FAR)

- ❖ Math (FAM)

- ❖ Written Expression (FAW)

7. Test of Orthographic Competence (TOC; ages 6 to 17:11)

8. KeyMath-3 Diagnostic Assessment (KeyMath 3 DA; ages 4:6 to 21:11)

# Query/Poll

What academic achievement measures do you typically or frequently see administered in your area?

- A. WIAT-III
- B. WJ-IV Tests of Achievement
- C. KTEA-3
- D. Other

# KTEA-3

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- ❖ The **Kaufman Test of Educational Achievement, Third Edition** (KTEA-3) “is an individually administered measure of academic achievement for grades pre-kindergarten through 12 or ages 4 through 25 years.”
- ❖ Two independent, parallel forms (Form A and B) are available.
- ❖ In March 2018, **updated norms** were published and supersede previous norms.

# KTEA-3 (cont'd)

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- ❖ The KTEA-3 “measures achievement in reading, mathematics, written language, and oral language, and allows the examiner to administer a single subtest or any combination of subtests to assess achievement in one or more domains.”
- ❖ The KTEA-3 provides measures of **all eight specific learning disability areas identified in the IDEIA**, 2004 as well as the areas of impairment specified by the Diagnostic and Statistical Manual of Mental Disorders-5<sup>th</sup> Edition.

# KTEA-3 (cont'd)

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- ❖ The **Reading Composite** includes the Letter and Word Recognition subtest, which requires a student to read isolated words, and the **Reading Comprehension** subtest, which requires a student to read a passage and answer questions about the passage (referencing the passage, if needed).
- ❖ The KETA-3 also has subtests that measure **phonological processing, nonsense word decoding, reading vocabulary and reading fluency**.

# KTEA-3 (cont'd)

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- ❖ The **Mathematics Composite** includes the **Math Concepts and Applications** subtest and the **Math Computation** subtest.
- ❖ The **Math Concepts and Applications** subtest requires the student to respond orally to items that “require the application of mathematical principles to real-life situations,” including number concepts, operation concepts, time and money, measurement, geometry, fractions and decimals, data investigation, and higher math concepts.”



# KTEA-3 (cont'd)

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- ❖ The **Math Computation** subtest requires the student to “write answers to as many math calculation problems as possible,” assessing simple counting and number identification; addition, subtraction, multiplication, and division operations; fractions and decimals; square roots and exponents; and algebra.”
- ❖ The KTEA-3 also has subtests to measure **math fluency**.

# KTEA-3 (cont'd)

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- The **Written Expression** composite includes the **Written Expression** and **Spelling** subtests.
- The **Written Expression** subtest requires PreK and Kinder students to trace and copy letters as well as “write letters, words, and a sentence from dictation.” At grades 1 and higher, children complete “writing tasks in the context of a grade-appropriate story format. Items at those levels include writing sentences from dictation, adding punctuation and capitalization, filling in missing words, completing sentences, combining sentences, writing compound and complex sentences, and writing an essay based on the story.”

# KTEA-3 (cont'd)

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- ❖ The **Spelling** subtest requires the student, for younger students, to write single letters that represent sounds” and/or “write increasingly difficult (regular and irregular) words from dictation.”
- ❖ The KTEA-3 also has subtests to assess writing fluency.
- ❖ The KTEA-3, if administered at several intervals, can also provide **Growth Scale Values** (GSV), that allow the examiner to assess intra-individual change (progress, plateau or regression) over time.



**THE NUMBERS ARE IN BUT  
WHAT DO THEY MEAN?**

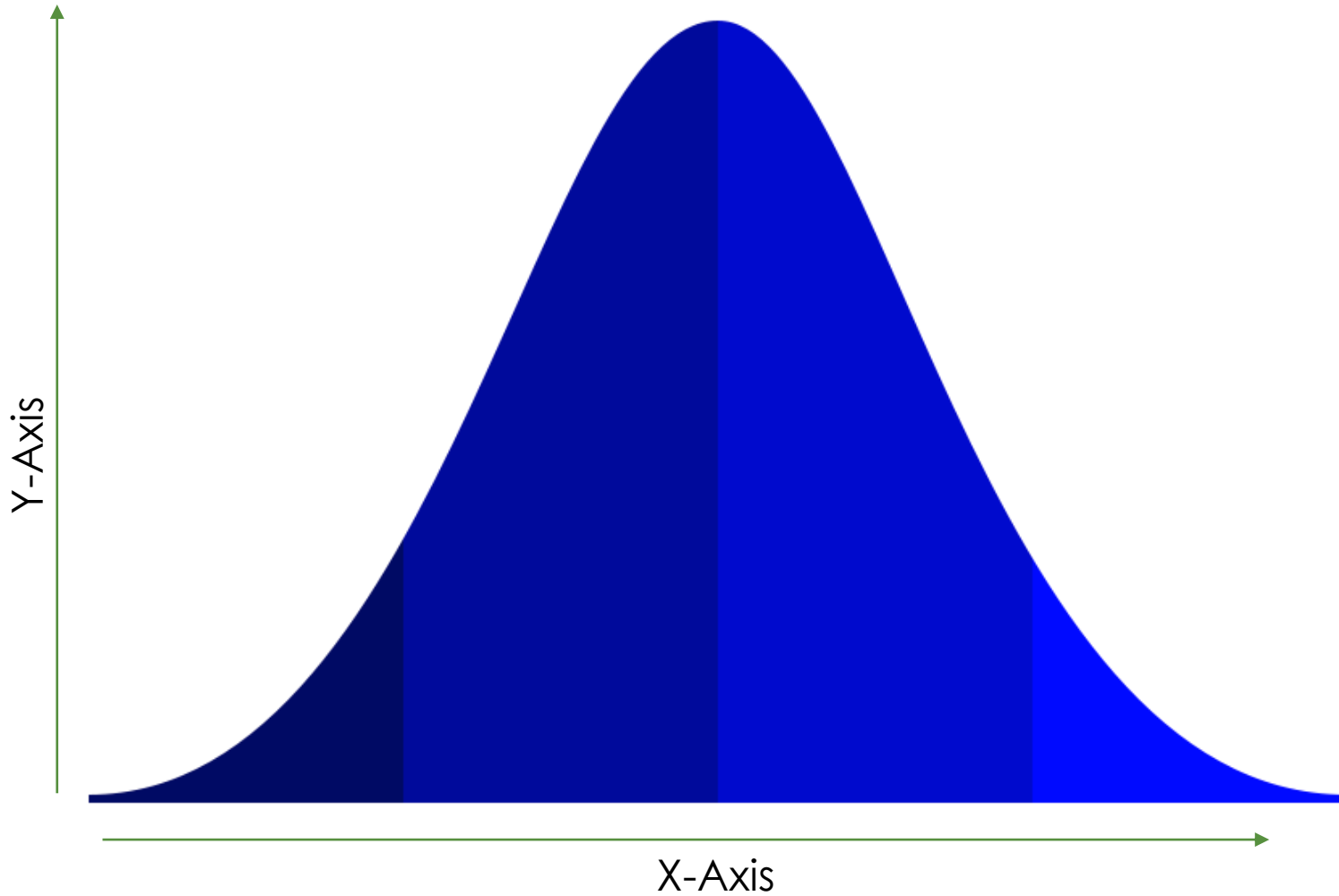
# Understanding Test Results-Scores for Interpretation

a student's performance on standardized assessment is documented by a combination of the following scores:

- ❖ Percentile Rank
- ❖ Standard Deviation
- ❖ Standard Scores
- ❖ Scaled/Subtest Scores
- ❖ Composite Scores
- ❖ Confidence Interval
- ❖ Age- and/or Grade-Equivalent Scores
- ❖ T-Scores and z-Scores

# The Bell Curve

- ❖ Represents the normal frequency distribution of a trait or characteristic in a population
- ❖ Is well-known and thoroughly researched
- ❖ Visually represents a student's score and compares the student with children the same age or in the same grade
- ❖ Provides a way to look at a student's scores over time, including possible regression/progress
- ❖ Should be well-understood, as it relates to all standardized assessments



## The Bell Curve

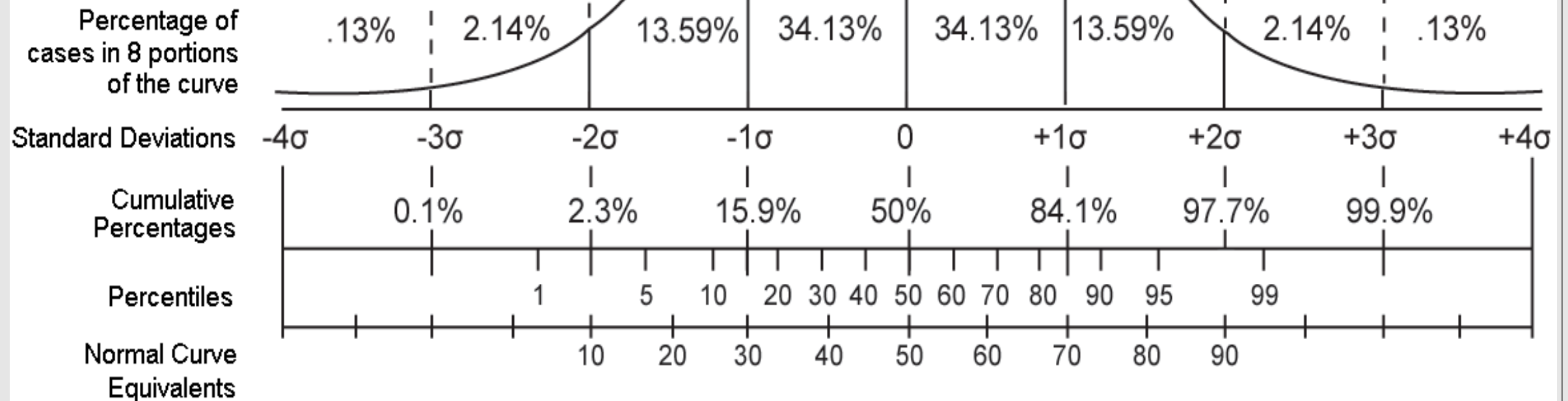
- ❖ The horizontal line (**X-Axis**) represents a trait, characteristic or behavior (e.g., IQ)
- ❖ The vertical line (**Y-Axis**) represents the number of individuals who earned a specific score
- ❖ The middle line is the **average** or **Mean** score of the group, scores are distributed around the Mean in an expected manner

# How Do Test Scores Relate to the Bell Curve?

- ❖ Educational and psychological tests are designed to represent the normal Bell Curve, with a predictable pattern of scores
- ❖ Mean, Standard Deviation, and Percentile Ranks all relate to the Bell Curve



*Normal,  
Bell-shaped Curve*

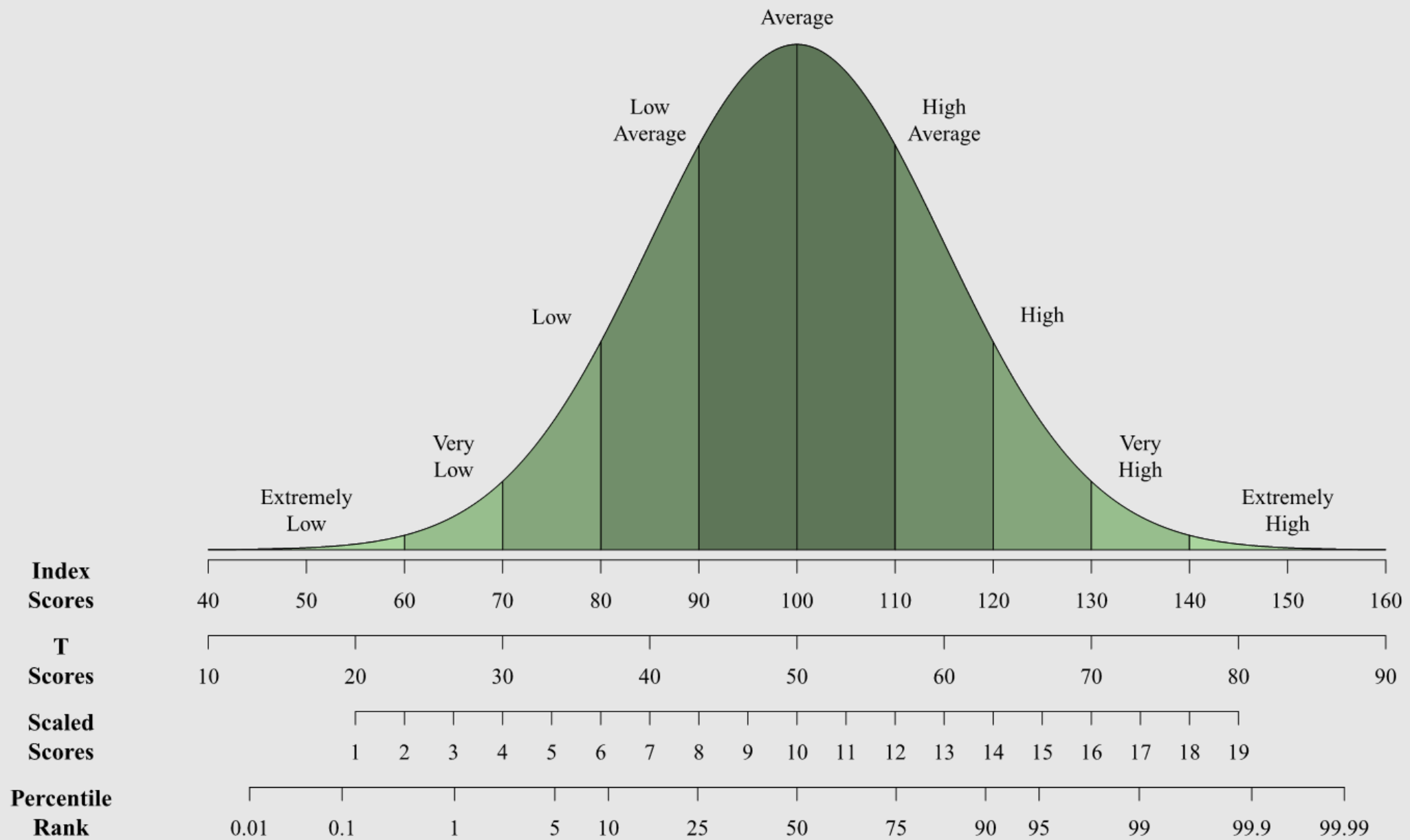


# Standard Deviation

- ❖ Standard Deviation refers to the **variability of scores around the Mean** or **how far a score spreads out or deviates from the Mean**
- ❖ The center of the Bell Curve is at 0 (zero) Standard Deviations
- ❖ +/- 1 SD of the Mean represents about 68% of the population and, as such, is considered “average” performance)
- ❖ +/- 2 SD of the Mean represents about 96% of the population
- ❖ 1 SD **above the mean** is always at the **84<sup>th</sup> percentile**
- ❖ 1 SD **below the mean** is always at the **16<sup>th</sup> percentile**

# How Do Test Scores Relate to the Bell Curve?

- ❖ To understand the student's scores, the Mean and Standard Deviation of the measure must be known.
- ❖ Most IQ and academic achievement tests have a Mean of 100 and a standard deviation of 15, for Standard and Composite scores, and a Mean of 10 and a standard deviation of 3, for Subtest scores.
- ❖ Some IQ measures, however, including the DAS-II, provide T-scores for each subtest (to be discussed later).



# Poll

Students identified as Intellectually Disabled typically exhibit an IQ score:

- A. Below 60
- B. Two standard deviations below the mean
- C. Below 70
- D. One standard deviation below the mean
- E. A and B
- F. B and C

# Percentile Ranks

- ❖ Describe the student's rank or position (on the Bell Curve) compared with other children the same age or grade
- ❖ Are not equal units
- ❖ Cluster around the mean and stretch out toward the high or low end of the Bell Curve
- ❖ Are not the same as percent of correct answers on a test

# Percentile Ranks

- ❖ The Percentile Rank for a Standard Score of 100 (0 SD from the Mean) is always at the 50<sup>th</sup> percentile.
- ❖ The Percentile Rank for a Standard Score of 115 (+1 SD from the Mean) is always at the 84<sup>th</sup> percentile.
- ❖ The Percentile Rank for a Standard Score of 85 (-1 SD from the Mean) is always at the 16<sup>th</sup> percentile.
- ❖ **A Percentile Rank means the student scored as well as or better than the identified percentage of his/her peers** (i.e., a Percentile Rank of 84 indicates the student scored better than 84% of his peers in the given area of assessment).
- ❖ **50% of all children will score between the 75<sup>th</sup> and 25<sup>th</sup> percentile, receiving an average Standard Score between 90 and 110.**

# Standard Scores

- ❖ Are nothing like a grade (100 is not the best score the student can receive)
- ❖ Compare one student's performance on a test to the performance of other students
- ❖ Estimate whether or not a student's scores are average, above average, or below average compared with his/her peers
- ❖ Have a **Mean of 100** and a **Standard Deviation (SD) of 15** (meaning, for IQ and achievement tests, scores between 85-115 are within one SD from the Mean)



# WISC-V (cont'd)

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| <b>Composite Score Range</b> | <b>Descriptive Classification</b> |
|------------------------------|-----------------------------------|
| 130 and above                | Extremely High                    |
| 120-129                      | Very High                         |
| 110-119                      | High Average                      |
| 90-109                       | Average                           |
| 80-89                        | Low Average                       |
| 70-79                        | Very Low                          |
| 69 and below                 | Extremely Low                     |

# KTEA-3 (cont'd)

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| <b>Composite Score Range</b> | <b>Descriptive Classification</b> |
|------------------------------|-----------------------------------|
| 130-160                      | Very High                         |
| 120-129                      | High                              |
| 110-119                      | Above Average                     |
| 90-109                       | Average                           |
| 80-89                        | Below Average                     |
| 70-79                        | Low                               |
| 40-69                        | Very Low                          |

# Scaled/Subtest Scores

- ❖ Represent the standard score of a given subtest.
- ❖ Have a **mean of 10** and a **Standard Deviation of +/- 3**.
- ❖ Currently, when assessing academic deficits, scaled scores below 8 (equaling a standard score of 90) are considered possible deficits and suggest follow-up/additional testing may be needed.

# Composite Scores

- ❖ Are comprised of several subtest scores
- ❖ Are an average of several subtest scores
- ❖ Cannot always be trusted to provide a true estimate of the student's ability as Subtest Scores may be variable
- ❖ **Can mask significant weaknesses or differences**

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# Example-WISC V

| Composite            |      | Sum of Scaled Scores | Composite Score | Percentile Rank | 95% Confidence Interval | Qualitative Description | SEM  |
|----------------------|------|----------------------|-----------------|-----------------|-------------------------|-------------------------|------|
| Verbal Comprehension | VCI  | 24                   | 111             | 77              | 102-118                 | High Average            | 3.97 |
| Visual Spatial       | VSI  | 27                   | 119             | 90              | 110-125                 | High Average            | 4.50 |
| Fluid Reasoning      | FRI  | 24                   | 112             | 79              | 104-118                 | High Average            | 3.97 |
| Working Memory       | WMI  | 17                   | 91              | 27              | 84-99                   | Average                 | 4.24 |
| Processing Speed     | PSI  | 20                   | 100             | 50              | 91-109                  | Average                 | 5.41 |
| Full Scale IQ        | FSIQ | 78                   | 108             | 70              | 102-113                 | Average                 | 3.00 |

# Example-WISC V

| Domain               | Subtest Name         |    | Total Raw Score | Scaled Score | Percentile Rank | Age Equivalent | SEM  |
|----------------------|----------------------|----|-----------------|--------------|-----------------|----------------|------|
| Verbal Comprehension | Similarities         | SI | 29              | 12           | 75              | 11:10          | 1.04 |
|                      | Vocabulary           | VC | 29              | 12           | 75              | 11:6           | 1.08 |
|                      | (Information)        | IN | 19              | 12           | 75              | 11:10          | 1.12 |
| Visual Spatial       | Block Design         | BD | 35              | 13           | 84              | 14:2           | 1.24 |
|                      | Visual Puzzles       | VP | 20              | 14           | 91              | 16:6           | 0.95 |
| Fluid Reasoning      | Matrix Reasoning     | MR | 21              | 12           | 75              | 14:10          | 1.08 |
|                      | Figure Weights       | FW | 23              | 12           | 75              | 12:2           | 0.73 |
| Working Memory       | Digit Span           | DS | 19              | 7            | 16              | 7:2            | 0.99 |
|                      | Picture Span         | PS | 26              | 10           | 50              | 9:6            | 1.08 |
|                      | (Letter-Number Seq.) | LN | 15              | 9            | 37              | 8:10           | 1.08 |
| Processing Speed     | Coding               | CD | 37              | 10           | 50              | 9:10           | 1.37 |
|                      | Symbol Search        | SS | 23              | 10           | 50              | 9:6            | 1.34 |

# Example-WIAT III

| Composite Score Summary |                                |                |                         |                 |                     |         |                         |
|-------------------------|--------------------------------|----------------|-------------------------|-----------------|---------------------|---------|-------------------------|
| Composite               | Sum of Subtest Standard Scores | Standard Score | 95% Confidence Interval | Percentile Rank | Normal Curve Equiv. | Stanine | Qualitative Description |
| Basic Reading           | 154                            | 77             | 73-81                   | 6               | 18                  | 2       | Below Average           |
| Written Expression      | 277                            | 90             | 83-97                   | 25              | 36                  | 4       | Average                 |
| Mathematics             | 244                            | 124            | 119-129                 | 95              | 84                  | 8       | Above Average           |
| Math Fluency            | 282                            | 93             | 86-100                  | 32              | 40                  | 4       | Average                 |



# Example-WIAT III

| Subtest                     | Raw Score       | Standard Score | 95% Confidence Interval | Percentile Rank | Normal Curve Equiv. | Stanine | Grade Equiv. | Age Equiv. | Growth Score |
|-----------------------------|-----------------|----------------|-------------------------|-----------------|---------------------|---------|--------------|------------|--------------|
| Reading Comprehension       | 31 <sup>1</sup> | 91             | 79-103                  | 27              | 37                  | 4       | 5.0          | 10:8       | 513          |
| Math Problem Solving        | 66              | 121            | 113-129                 | 92              | 79                  | 8       | >12.9        | >19:11     | 693          |
| Sentence Composition        | -               | 96             | 85-107                  | 39              | 44                  | 4       | 9.6          | 15:10      | 526          |
| Word Reading                | 55              | 89             | 84-94                   | 23              | 35                  | 4       | 7.7          | 13:0       | 597          |
| Essay Composition           | -               | 96             | 86-106                  | 39              | 44                  | 4       | 8.4          | 14:4       | 527          |
| Pseudoword Decoding         | 13              | 65             | 59-71                   | 1               | 1                   | 1       | 1.9          | 7:0        | 452          |
| Numerical Operations        | 52              | 123            | 116-130                 | 94              | 82                  | 8       | >12.9        | >19:11     | 733          |
| Spelling                    | 33              | 85             | 79-91                   | 16              | 29                  | 3       | 7.0          | 12:0       | 611          |
| Math Fluency-Addition       | 38              | 91             | 79-103                  | 27              | 37                  | 4       | 9.0          | 13:8       | 694          |
| Math Fluency-Subtraction    | 36              | 99             | 88-110                  | 47              | 49                  | 5       | 10.4         | 16:00      | 751          |
| Math Fluency-Multiplication | 28              | 92             | 82-102                  | 30              | 39                  | 4       | 7.2          | 13:0       | 704          |

# Confidence Intervals

- ❖ Measure the probability that a score will fall between two set values
- ❖ Of **90% or 95%** is usually documented for Standard Scores (although Confidence Intervals are not always calculated)
- ❖ Are interpreted as the student, if re-tested on the same measure, will likely receive a score between \_\_\_ and \_\_\_

# Age- and/or Grade-Equivalent Scores

- ❖ Are reported as years and months (for age) or grades and months (for grade)
- ❖ Are not equal units (an age-equivalent score of 7.6 equals 7 years, six months (out of 12); a grade-equivalent score of 7.6 equals 7<sup>th</sup> grade, 6<sup>th</sup> month (or 10<sup>th</sup> of a school year, 18 school days)
- ❖ Are **less accurate/reliable for junior high and high school students** due to increased variability in skill levels
- ❖ Can be **significantly misleading** and should not be used as the basis for determination of need
- ❖ **Are interpreted as the student answered as many questions as an average (age equivalent) or student in the (grade equivalent).**

# T-Scores and z-Scores

## T-Scores:

- ❖ Typically seen in parent-, teacher- or student-rated measures of behavior and emotional functioning but are also used in the DAS-II.
- ❖ Have a **Mean of 50** and a **Standard Deviation of 10**

## Z-Scores:

- ❖ Have a **Mean of 0** (zero) and a **Standard Deviation of 1**
- ❖ Are rarely utilized



# QUESTIONS-IQ MEASURES

We've learned a lot! Now, find that first piece of paper with your checklist!

## 1. Were subtest scores **variable or cohesive**?

- ❖ You want subtest scores under each composite to be cohesive (generally within 2 to 3 points of each other). If scores are divergent, additional subtests may need to be administered to determine reason for difference (e.g., to identify strengths or weaknesses within a specific area, like auditory memory versus visual memory).

## 2. Is the FSIQ or global IQ score truly representative of the student's ability?

- ❖ Are there significant differences among composite scores? If so, the FSIQ may not be the best picture of the overall child. With some measures, too much difference between composite scores (e.g., 2 SD) may, essentially, invalidate the FSIQ.

# Example of KABC-II

| Global Scale                          | Sum of Subtest Scores | Index (Standard Score) | 95% Confidence Interval | Percentile Rank | Descriptive Category |
|---------------------------------------|-----------------------|------------------------|-------------------------|-----------------|----------------------|
| <b>Fluid-Crystallized Index (FCI)</b> | <b>62</b>             | <b>72</b>              | <b>66 - 78</b>          | <b>3</b>        | <b>Below average</b> |

| Scale                  | Sum of Subtest Scores | Index (Standard Score) | 95% Confidence Interval | Percentile Rank | Descriptive Category | Normative Strength/Weakness | Difference from Scale Mean | Personal Strength/Weakness | Frequency of Difference |
|------------------------|-----------------------|------------------------|-------------------------|-----------------|----------------------|-----------------------------|----------------------------|----------------------------|-------------------------|
| <b>Sequential/Gsm</b>  | 17                    | <b>91</b>              | <b>82 - 102</b>         | 27              | Average              | -                           | 12                         | PStr                       | >10%                    |
| <b>Simultaneous/Gv</b> | 9                     | <b>67</b>              | <b>59 - 79</b>          | 1               | Lower extreme        | NWk                         | -12                        | PWk                        | >10%                    |
| <b>Learning/Glr</b>    | 13                    | <b>81</b>              | <b>74 - 90</b>          | 10              | Below average        | NWk                         | 2                          | -                          | -                       |
| <b>Planning/Gf</b>     | 9                     | <b>69</b>              | <b>60 - 82</b>          | 2               | Lower extreme        | NWk                         | -10                        | PWk                        | >10%                    |
| <b>Knowledge/Gc</b>    | 14                    | <b>85</b>              | <b>78 - 94</b>          | 16              | Average              | -                           | 6                          | -                          | -                       |

Mean Scale Index: 79

**Bold** denotes core subtests.



# **QUESTIONS-ACADEMIC ACHIEVEMENT MEASURES**

Add these, too! It's going to be an awesome checklist!



## 1. Were **global and specific measures** administered, if needed?

❖ WIAT-III, KTEA-3 and the WJ-IV are often administered to assess reading, math and written expression. However, if weaknesses or concerns are noted, more specific measures (e.g., CTOPP-2, FAR, FAM, FAW, TOC) may need to be administered.

## 2. Were **all referral concerns** assessed?

❖ If parents or teachers were concerned about a specific area, were tests or subtests administered to assess each area of concern?

❖ Not every measure assesses every area of concern (or is best for the individual student). As such, then, multiple measures are often administered to assess all areas of concern (i.e., **cross-battery assessment**).

### 3. If discrepancies were noted between scores, were follow-up or **additional subtests administered?**

- ❖ It is important to determine why a low score was obtained. For example, was the student inattentive during the subtest or is there an actual deficit in the identified area. If it's a true deficit, likely, similar scores will be obtained across subtests.



# QUESTIONS-FIE

We've looked at psychoeducational assessment, but don't forget the rest of the FIE!  
We may have to cover this next year, but here's a glimpse! 😊

1. Did the evaluator **observe** the student in **unstructured and structured settings**?

❖ Observations should be completed in structured, academic environments as well as unstructured, social environments (e.g., recess, lunch). Additionally, observations should be completed in varying ratio environments (e.g., large group, small group, 1:1).

2. Did the evaluator observe in the academic **subject of concern**?

❖ For examples, if concerns are noted in reading or writing, observations should be conducted, at a minimum, in English/Language Arts.

3. If ratings suggested differences in school settings or between teachers, were observations completed to assess the difference?

❖ If one teacher has difficulties with a student and another does not, observations may be needed to determine factors affecting the difference.

4. Were **child- parent- and teacher-rated measures** completed by all essential informants?

5. Did the evaluator follow-up with **specific measures** if global behavior measures suggested areas of concern (e.g., depression or anxiety)?

5. Does the student described in the evaluation **match** the child?

6. Do the **recommendations and programming** match the student in the report?

7. Are the **interventions tailored/individualized** to the student?

❖ In July 2020, Flanagan and colleagues are expected to publish the Intervention Library: Finding Interventions and Resources for Students and Teachers

❖ WISC-V, WIAT-III, KTEA-3 and other IQ and academic achievement measures often provide specific interventions based on scores

# References

Wrightslaw

- ❖ [http://www.wrightslaw.com/advoc/articles/tests\\_measurements.html](http://www.wrightslaw.com/advoc/articles/tests_measurements.html)
- ❖ [www.wrightslaw.com/whitepaper/test\\_scores.whitepaper.pdf](http://www.wrightslaw.com/whitepaper/test_scores.whitepaper.pdf)

# References

WISC-V

❖ <https://images.pearsonclinical.com/images/assets/wisc-v/WISC-VInterpretiveReportSample-1.pdf>

KTEA-3

❖ <http://downloads.pearsonclinical.com/videos/KTEA3-Overview-021414/KTEA3OverviewPart1WebianrHandout-02142014.pdf>



# Contact Information

Laura Eskridge, PhD, LSSP

(281) 624-6483

[drlaura@lauraeskridgephd.com](mailto:drlaura@lauraeskridgephd.com)