The Numbers Gap…

Making Sense of Testing Results

(Popular Psychological Tests & What They Can Mean)

A Primer for the Layperson

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Caveats & Warnings

- This primer is intended to give you a very basic understanding of how testing scores work & are used to sort, classify, & describe a person's strengths & areas of challenge in the realm of psychological testing
- It is not a substitute for training & education
- Use it as a guide to ask for more or better explanations

Psych vs Neuropsych Testing

- Psych testing looks at
  - Cognitive functioning abilities (intelligence)
    - As defined by the test, there are lots of them
  - Academic Achievement
    - Reading/writing
    - Mathematics
  - Personality/Observed Behaviors
    - What we say we do
    - What others say we do…

Psych vs Neuropsych Testing

- Neuropsych testing looks more closely at (brain function)
  - A psych test PLUS more detailed
    - Attention & Cognitive Processing
    - Language
    - Spatial Perception & Reasoning
    - Sensory & Motor Functions
    - Executive Functioning

ADHD, Brain Injuries, Effects of trauma, ASD…

A Little Bit of History

- Earliest Psych testing:
  - Binet in France
  - Weschler- still use this today
  - Everybody else (hundreds of different tests)

- Things to keep in mind…
  - Designed to
    - Sort & classify
    - Target strengths & weaknesses

  - Standardization
    - Very expensive & time consuming (so not many new things…
    - Uses mostly middle class & white populations because they are accessible

Cognitive Functioning

What?

- Crystallized Intelligence
  - ability to use skills, knowledge, & experience
  - mostly school-based learning

- Fluid Intelligence
  - capacity to think logically & solve problems in new situations, independent of acquired / school / book learning

- What's an IQ?

  a score derived from standardized tests designed to assess intelligence- a way to *quantify* the estimation of crystallized & fluid intelligence

Common Cognitive Functioning Tests

- Wechsler Intelligence Scale for Children- 5th Ed. (WISC-V)
- Wechsler Adult Intelligence Scale- 5th Ed. (WAIS-V)

- Woodcock Johnson Tests of Cognitive Abilities- 3rd Ed Normative Update (WJ3- Cog)
- Woodcock Johnson Brief Intelligence Assessment- 3 (Normative Update) (WJ3-BIA-NU)

- Kaufman Assessment Battery for Children- 2nd Ed. (KABC-2)
- Kaufman Brief Intelligence Test, 2nd Ed., Revised (KBIT2R)

Attention & Cognitive Processing

- The ability to attend to a task, be observant of details, & the speed it can be done in on long-term & short-term tasks
  - Working Memory
  - Processing Speed

- Tests Include:
  - Wechsler: Coding & Symbol Search (processing speed), Digit Span, & Letter-Number Sequencing (working memory) tasks
  - Symbol-Digit Modalities Test
  - Tests Of Everyday Attention for Children (TEA-Ch)
  - Connor's Continuous Performance Test (Computerized)

Memory & Learning Tests

- Immediate & delayed encoding, consolidation, storage, retrieval, & recognition of novel (new) stimuli
- Verbal & spatial/graphic tests for comparison
- Tests Include:
  - Rey Auditory Verbal Learning Test (RAVLT)
  - NEPSY II- List Memory
  - Rey Complex Figure Test-immediate & delayed recall + recognition
  - There are also narrative memory subtests

Language

- Receptive & expressive language skills.
  - Understood vs said

- Central auditory processing- the ability of the brain & the ears to coordinate so that auditory information can be understood & processed effectively

- Common tests:
  - WJ 3- Ach: Picture Vocabulary Test
  - WISC-IV Vocabulary

Spatial Perception & Reasoning

- Nonverbal abilities to accurately copy complex figures, to solve visual & spatial problems, & to understand spatial relationships

- Nonverbal Learning issues- trouble seeing links or patterns $ connections between information or parts of the whole

- Common tests
  - Rey Complex Figure Test (RCFT)
  - WISC Block Design
  - Judgment of Line Orientation

Sensory & Motor

- Tactile, visual, & auditory stimuli used to look for neurological impairment in the sensory-motor cortex or impairment in hemispheres of the brain

- Common tests:
  - Reitan-Kløve Sensory – Perceptual Examination
  - Line Bisection (visual/sensory)
  - Grooved Pegboard (fine motor)
  - H& Dynamometer (grip strength)
  - Finger Tapper (fine motor repetition/speed)

Executive Functioning

- Areas of the brain involved in planning; organizing, strategizing; paying attention to & remembering details; managing time & space; problem solving; inhibition; & “switching” between tasks.

- Common tests:
  - Wisconsin Card Sorting Test (WCST- Computerized)
  - Delis-Kaplan Executive Function System (D-KEFS)
    - Color-Word Test; Tower; 20 Questions; Verbal & Design Fluency
  - NEPSY II- Inhibition Test
  - WISC Similarities, Picture Concepts, & Matrix Reasoning
  - Stroop Test

Autism Spectrum Disorders

- Complex developmental disorder that results in problems with social interactions & communication
  - Social reciprocity
  - Understanding of emotional states in self & others
  - Stereotyped patterns of behavior (to block out incoming information)

- Gold Standard (but there are many more)
  - Autism Diagnostic Observation Schedule (ADOS)
  - Autism Diagnostic Interview-Revised (ADI-R)
  - Social Responsiveness Scale (SRS)

Symptom & Behavior Rating Scales

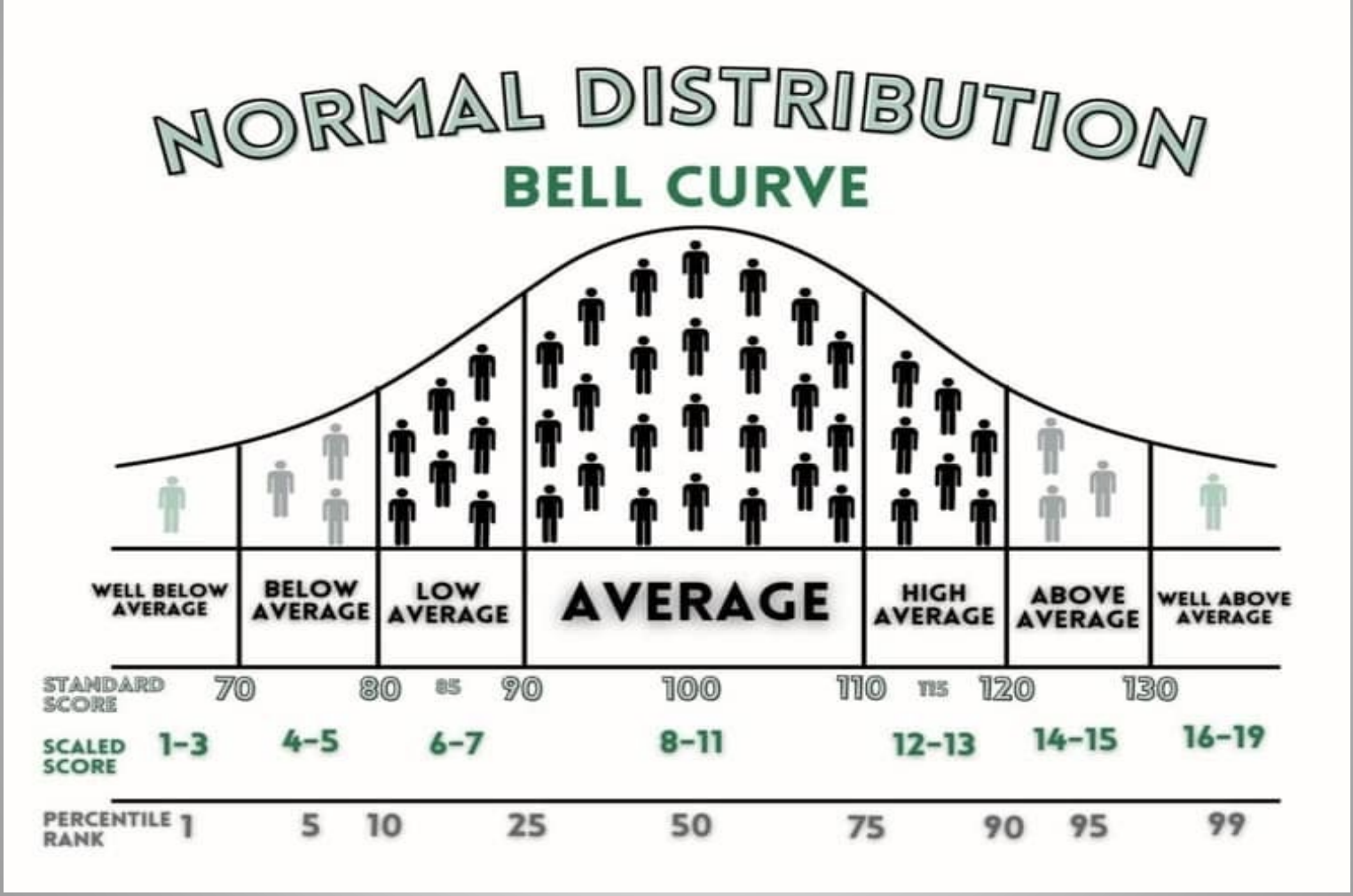
- Various st&ardized instruments used for parents, teachers, & clients to report their level of symptoms.

- Common Tests:
  - Adaptive Behavior Assessment System-Second Edition (ABAS-2)
  - Vinel& Adaptive Behavior Scales, Third Edition (Vinel&-3)
    - adaptive behaviors: skills for daily living, communication, self-care, & socialization
  - Behavioral Assessment System for Children, 2nd edition (BASC-2)
    - school & home behaviors, study skills, limited adaptive skills
  - Swanson, Nolan, & Pelham–IV (SNAP-IV)
    - checklist of nine DSM symptoms of inattention & nine of hyperactivity
  - Trauma Symptom Checklist Series

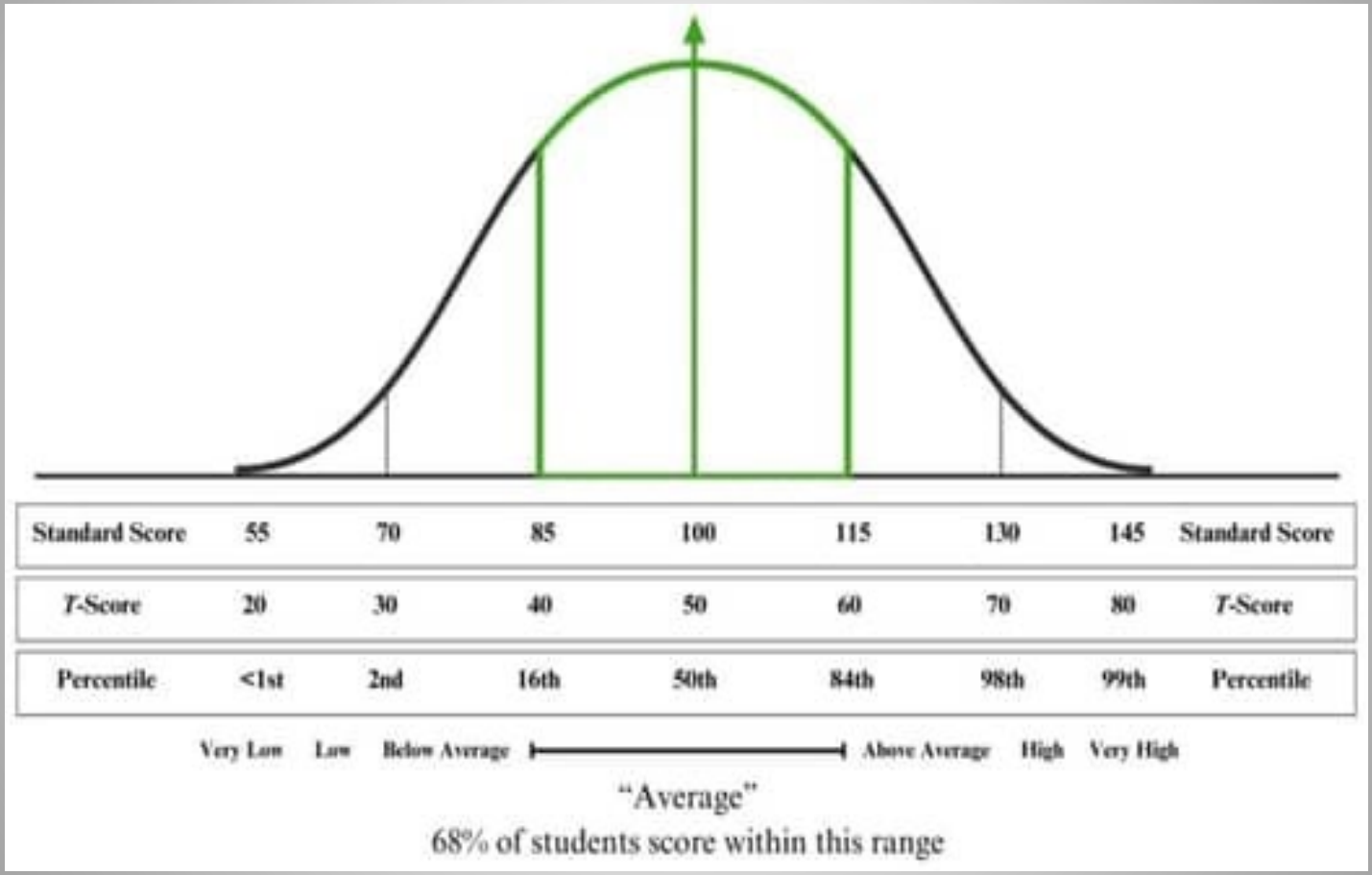
A (Very) Few Factors that Impact Test Outcomes

- Familial & heritability issues
- Specific Cognitive Impairments
  - Lower cognitive functioning
  - Neurological insults (injury, stroke, lead poisoning, substance abuse induced)
- Language Issues
  - Dysfluency
  - Language Disorders
- Environmental & Educational factors
  - Poverty & geography
  - Lack of exposure
  - Poor school system

It sort of looks like a bell…



And it means lots of different things… but the same, kind of...



Ok, but what does that mean?

- **Common Score Labels**
  - **Standard Score**: IQ, some performance & personality tests
    - Also called the Composite Score
  - **Scaled Score**: Individual tests in some batteries
  - **T-Score**: behavioral measures

- **Average:** number representing the "typical" value in a set of numbers
  - **Standard Score**: 100
  - **Scaled Score**: 10
  - **T-Score**: 50

& some more weird numbers…

- **Standard deviation (SD)**: how spread out numbers are from average
  - **Standard Score**: 15
  - **Scaled Score**: 3
  - **T-Score**: 10

- **Confidence Interval:** the range of scores a score can fall into

- **Percentile:** number of other scores an individual's score equals or exceeds
  - NOT a percentage- that's not how these tests are "graded"

Example of a WAIS-5 Result

Index	SS		Index	SS
Verbal Comprehension	95		Processing Speed	74
Fluid Reasoning	90		Visual-Spatial	83
Working Memory	75		Full Scale IQ	91

The testing program calculates the scores.

What are some things you notice about the scores?

What is there to see?

What does this tell us?

- Wide scatter of scores (95-74=21) “Peaks & Valleys”
- She is better at language than other things
- She “thinks” more slowly- takes more time to consider options & come up with an answer
- Has a harder time shifting or holding information in her mind to work with
- Can solve problems, it just takes a bit longer for her to get there

- Overall cognitive processing is “average”- but some things need accommodation or compensation

Things to do

Accommodation (what they do)

- More time to respond
- Chunking information
- Having both written & spoken information
- Quieter space to limit distractions

Compensation (what you do)

- Ask for what you need (more time, quiet space…)
- Visual aids- calendars, lists, schedules
- Asking for help
- Do not respond immediately- deep breaths, ask questions…

Questions?