

WAIS INTERPRETATION

I MEAN, WE ALREADY ADMINISTERED AND SCORED IT, SO WE MIGHT AS WELL INTERPRET IT

PSY 563

RICK GRIEVE, PH.D.

WESTERN KENTUCKY UNIVERSITY

INTERPRETATION

- Interpretation is more than just looking at the scores!
- You have to interpret with a ready knowledge of **research, theory, and clinical skill**
- Keep the big picture in mind
- Context is important

INTELLIGENT TESTING PHILOSOPHY

- **1. Subtests measure what the examinee has learned**
 - Learning is **culture-bound**
 - IQ is still a sort of achievement test!
 - This is good because it doesn't mean that someone is "doomed" because they have a low IQ – they can still improve if given helpful recommendations
 - Keep it **practical** – there are big picture theoretical questions (e.g., nature v. nurture) that aren't very helpful for any one examinee

INTELLIGENT TESTING PHILOSOPHY (CONT'D)

- **2. Subtests are limited samples of behavior**
 - Not exhaustive – be careful not to **overgeneralize** interpretations to other behaviors that may or may not occur outside of a **testing situation**
 - High IQ does not mean ultimate success at everything
 - What we **INFER** from testing is important – it really doesn't matter if they can play with blocks
 - Supplement IQ assessment data with **other data** to get a more comprehensive picture
 - Behavior observations, personality, neuropsych, adaptive behavior, etc.
 - Cross-battery assessment, theory driven (CHC)

INTELLIGENT TESTING PHILOSOPHY (CONT'D)

- **3. Standardized individually administered tests assess mental functioning under fixed experimental conditions**
 - Sticking to the script is important, but creates an **artificial** situation, an experiment
 - No bending the rules! You can **test the limits** later
 - Establishing and maintaining **rapport** takes clinical skill
 - It's tough to be personable when you're reading to them

INTELLIGENT TESTING PHILOSOPHY (CONT'D)

- **4. Test batteries are most useful when interpreted from a theoretical model**
 - There are many theories to choose from
 - Neuropsych, CHC, info processing
 - Things you are learning in PSY 560
 - Choosing any one theory to guide you can help you explain the results and derive helpful recommendations

INTELLIGENT TESTING PHILOSOPHY (CONT'D)

- **5. Hypotheses generated from the test profile should be supported from multiple data sources**
 - This prevents the misuse of test results
 - We need corroborating data
 - Background info, observed behaviors, knowledge of one's approach to each problem solving task
 - Be thinking of potential **alternative hypotheses** that might explain results
 - Consider the **whole person**, not just the results

QUALITATIVE AND CLINICAL ANALYSIS

THIS ASPECT HELPED SEPARATE WECHSLER FROM
BINET/TERMAN 100 YEARS AGO!

FUNCTIONS OF QUALITATIVE ANALYSIS

- 1. Provides a cross-check for you to evaluate the **reliability** of the person's obtained scores
 - Do they **always** show the observed behavior? Only during structured situations? Only during visuoperceptual tasks?

FUNCTIONS OF QUALITATIVE ANALYSIS (CONT'D)

- 2. Provides a cross-check for you to evaluate the **validity** of the person's obtained scores
 - Was it **relevant** to the performance?
 - Did the behavior have a mild, moderate, or severe impact on the performance?
 - Was it positive or negative?

FUNCTIONS OF QUALITATIVE ANALYSIS (CONT'D)

- 3. Helps ensure you observe the **positive and negative influences** of behavior on performance and understand the process of the test situation and the products
 - Do they persevere?
 - How do they cope with difficulties?

FUNCTIONS OF QUALITATIVE ANALYSIS (CONT'D)

- 4. Helps you make decisions about **potential future testing objectives**
 - Did poor performance relate to executive dysfunction? Or anxiety or depression?

STEP-BY-STEP HOW TO INTERPRET THE WAIS



SYSTEMATIC INTERPRETATION

- You need a plan!
- Best to go from global (FSIQ, GAI, CPI) to specific
- Helps you generate good hypotheses
- Helps you write a coherent report
- WAIS-IV Interpretative Worksheet on Appendix A.1 of CD is helpful!

BASIC INTERPRETATION SYSTEM

- Good for all ages
- Based on core 10 subtests
- Uses the following scales:
 - FSIQ
 - 2 special indexes: GAI and Cognitive Proficiency Index (CPI)
 - I do not generally use these, though
 - VCI, PRI, WMI, PSI
 - Subtest Scores

STEP 1: PROVIDE A TABLE WITH STANDARD SCORES

- Create a table with information
 - Include subtest standard scores, FSIQ, and Index Scores

<u>VCI Subtests</u>	<u>Scaled Score</u>	<u>PRI Subtests</u>	<u>Scaled Score</u>
Similarities	10	Block Design	13
Vocabulary	9	Matrix Reasoning	8
Information	11	Visual Puzzles	12
<u>WMI Subtests</u>	<u>Scaled Score</u>	<u>PSI Subtests</u>	<u>Scaled Score</u>
Digit Span	9	Symbol Search	15
Arithmetic	9	Coding	13

VCI = 99 PRI = 114 WMI = 97 PSI = 120 Full Scale IQ = 106

STEP 2: DETERMINE BEST WAY TO SUMMARIZE OVERALL INTELLECTUAL ABILITY

- FSIQ or GAI
- FSIQ is best as long as there's not too much variability
- GAI = Only VCI and PRI (excludes WMI and PSI)
 - Also available for the WISC-IV
 - Best option when memory or speed subtest scores deviate significantly from scores on verbal and nonverbal tasks
 - VCI and PRI subtests are usually best measures of g
 - WMI and PSI subtests = usually the worst

STEP 2A: CAN WE USE FSIQ?

- Subtract lowest index score from highest index score
- Is the size of the standard score difference < 1.5 SDs (or < 23 points)?
 - If YES, then FSIQ can be interpreted as a reliable and valid estimate of one's global intellectual ability. Go to step 4.
 - If NO, then there's too much variation in the index scores to meaningfully summarize global intellectual ability using a single score (i.e., the FSIQ). Go to Step 2b.

STEP 2B: WHEN THE FSIQ IS FUBAR...

- Can we use the GAI instead?
- Is the size of the standard score difference between the VCI and PRI < 1.5 SDs (< 23 points)?
 - If YES, GAI is a good estimate of overall ability. Sum the 6 scaled scores that comprise the GAI, then look at Appendix C in the Technical and Interpretive Manual to figure out GAI. Go to Step 3.
 - If NO, GAI is FUBAR, too. Go to Step 3.

EXCEPTION TO STEP 2...

- When you need a global score for diagnosis (e.g., of ID) or placement decisions (e.g., gifted program), then always interpret an overall score
- Use clinical judgment to decide the best score to go with (FSIQ or GAI)
 - Example: Impulsive or distractible examinee... which one would you use?

STEP 3: ARE THE GAI AND CPI REALLY DIFFERENT?

- Cognitive Proficiency Index (CPI)
 - Combo of WMI and PSI core subtests
 - Larry Weiss et al (2006)
 - “Proficient processing, through quick visual speed and good mental control, facilitates fluid reasoning and the acquisition of new material by reducing the cognitive demands of novel tasks”
 - A little controversial (neuropsychologists don’t like it... see Hebben, 2009) – may indicate additional neuropsych testing is needed
 - Useful when GAI is best estimate of global ability; for LDs, TBIs, and Asperger’s (which no longer exists!)

STEP 3A: ARE GAI AND CPI INTERPRETABLE?

- GAI: Is the size of the difference between VCI and PRI < 1.5 SDs (< 23 points)? (Remember Step 2b?)
 - If GAI isn’t interpretable, you can’t compare it with CPI. Go to Step 4.
- CPI: Is the size of the difference between WMI and PSI < 1.5 SDs (< 23 points)?
 - If YES, GAI and CPI are interpretable. Go to Step 3b.
 - If NO, GAI-CPI comparison can’t be made. Go to Step 4.

STEP 3B: CALCULATE GAI AND CPI

- Calculate GAI (Remember Step 2b?)
- Calculate CPI
 - Sum scaled scores for 2 core WMI and 2 core PSI subtests
 - Go to Appendix A.2 in CD-ROM, write down CPI, CI, and PR

STEP 3C: COMPARE GAI AND CPI

- Is the difference between the two significant?
 - 8.8 points or greater = $p < .05$
 - 11.6 points or great = $p < .01$

STEP 3D: IS THE DIFFERENCE BETWEEN GAI AND CPI UNUSUALLY LARGE?

- Unusual = occurs less than 10% of the time in the standardization sample
- If difference is ≥ 19 points, the difference between GAI and CPI is uncommonly large
- Table 5.2 (p. 164 of Essentials) shows values needed for base rates of 5%, 2%, and 1%

STEP 4: INTERPRET OVERALL INTELLECTUAL FUNCTIONING

- Interpret FSIQ (or GAI) in a written paragraph
 - Include percentile rank, 95% Confidence Interval, and descriptive category

Ms. Smith obtained a Full Scale IQ (FSIQ) score of 106 (66th percentile), which places her intellectual functioning in the Average range. There was a 95% confidence interval of 102 to 110, which means that if she were tested 100 times, 95 of them would fall in this range.

WAIS DESCRIPTIVE CATEGORIES

- Descriptive categories
 - Table 6.3 in the WAIS-IV Tech and Interp Manual
 - <70 Extremely Low
 - 70-79 Borderline
 - 80-89 Low Average
 - 90-109 Average
 - 110-119 High Average
 - 120+ Superior

NORMATIVE DESCRIPTIVE CATEGORY SYSTEM

- Based on distance in SD units from the mean
 - Upper Extreme/Normative Strength = 131+
 - Above Average = 116-130
 - Average = 85-115
 - Below Average = 70-84
 - Lower Extreme/Normative Weakness = <70

CONFIDENCE INTERVAL

- A range of scores that allow us to consider error when interpreting our findings
 - Obtained Score = True Score + Error
- Usually either 90% CI or 95% CI
 - I like 95% CI so I can be more certain I capture the client's score

STEPS 5: INTERPRET INDEX SCORES

- In the same paragraph, provide an interpretation of VCI, PRI, PSI, and WMI
 - Include percentile rank, 95% CI, and descriptive category

Ms. Smith obtained a Verbal Comprehension Index (VCI) score of 99 (47th percentile), with a 95% confidence interval of 94 to 104, which places her verbal ability in the average range. She obtained a Perceptual Reasoning Index (PRI) score of 114 (82nd percentile), with a 95% confidence interval of 106 to 120, which places her nonverbal ability in the high average range. She obtained a Working Memory Index (WMI) score of 97 (46th percentile), with a 95% confidence interval of 90 to 102, which places her memory in the average range. She obtained a Processing Speed Index (PSI) score of 120 (90th percentile), with a 95% confidence interval of 114 to 130, which places her processing speed in the high average range.

STEP 6: INTERPRET DIFFERENCES AMONG INDEX SCORES

- In the same paragraph, provide an interpretation of the differences among index scores
 - Be sure to include a statement about base rate

Significant differences were noted among her index scores. Her PSI scores was higher than her VCI scores, indicating that her processing speed is better developed than her verbal abilities. A difference of the magnitude in Ms. Smith's profile occurred in 3% standardization sample, making this a meaningful difference. Ms. Smith's PSI score was higher than her WMI score, meaning that her processing speed is better developed than her memory. A difference of the magnitude found in Ms. Smith's profile occurred in 2% of the standardization sample, making this a meaningful difference. Ms. Smith's PRI score was higher than her VCI score, meaning that her nonverbal and reasoning abilities are better developed than her verbal abilities. A difference of the magnitude in Ms. Smith's profile was seen in 10% of the standardization sample.

STEP 7: INTERPRET SUBTEST SCORES

- Describe Normative Strengths and Weaknesses
 - Compared to normative sample
 - $M = 10$; $SD = 3$
 - Normative strengths and weaknesses are 2 SD above and below the mean
 - 4 & 16
 - Some people use 1 SD
 - Why this is wrong
 - List abilities assessed by the subtests

STEP 7 (CONT'D)

- Describe Relative Strengths and Weaknesses
 - Relative = compared to one's own abilities
 - From Determining Strengths and Weaknesses Table in Record Form
 - Alternate method
 - Find the mean of the obtained scale scores
 - Bracket 1 SD around this mean
 - Anything above is a strength
 - Anything below is a weakness
 - List abilities assessed by the subtests

STEP 7 (STILL CONT'D)

- What to do if the same subtest is both a Normative **and** Relative strength or weakness
- Common vs. Uncommon Strengths and Weaknesses
 - <10% is considered Uncommon

An evaluation of Ms. Smith's subtest scaled scores revealed a relative (compared to her own abilities) strength in the Block Design subtest, which assesses spatial ability, perceptual organization, mental processing skills, and visual-motor coordination. A strength of this magnitude occurred in 5% of the standardization sample, making this uncommon. There were no normative (compared to others) or relative weaknesses or normative strengths.

SOME PEOPLE DO THIS: DETERMINE IF FOUR INDEXES ARE UNITARY AND INTERPRETABLE

- If there is too much variability within an index, then that index is not a good estimate of the ability it's supposed to measure
 - It's not unitary, and it's not interpretable
 - P. 177 of Essentials shows great ways to say this in the report
 - If someone scores very high on a subtest, expect uninterpretable indexes

IS VCI UNITARY?

- Subtract lowest subtest scaled score from highest
- Is the difference less than 1.5 SDs (<5 points)?
 - If YES, then the ability VCI is measuring (Gc) is unitary and interpretable
 - If NO, then too much variability, VCI cannot be interpreted as representing a unitary ability

ARE THE PRI, WMI, AND PSI INTERPRETABLE?

- Same thing x3
- Still 5 points as the cutoff
- Even if there is too much variability for a unitary construct to be interpreted, you may still be able to generalize if all scores are high (>11) or low (<9)