



Interpretation of WISC-IV

LEDA, 2013

Gloria Maccow, Ph.D.
Assessment Training Consultant

ALWAYS LEARNING

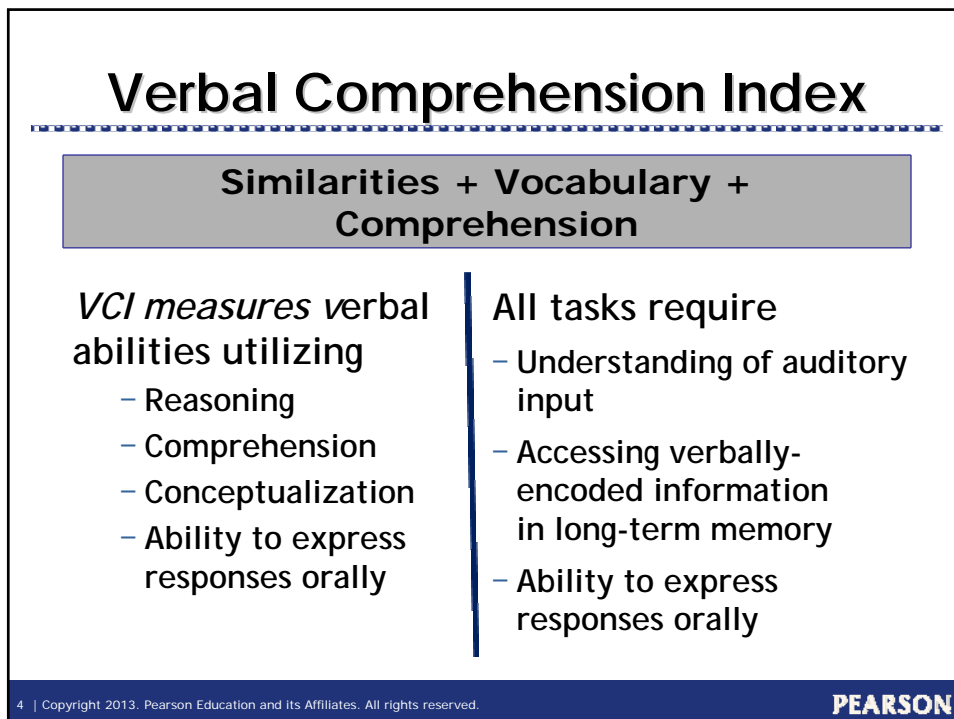
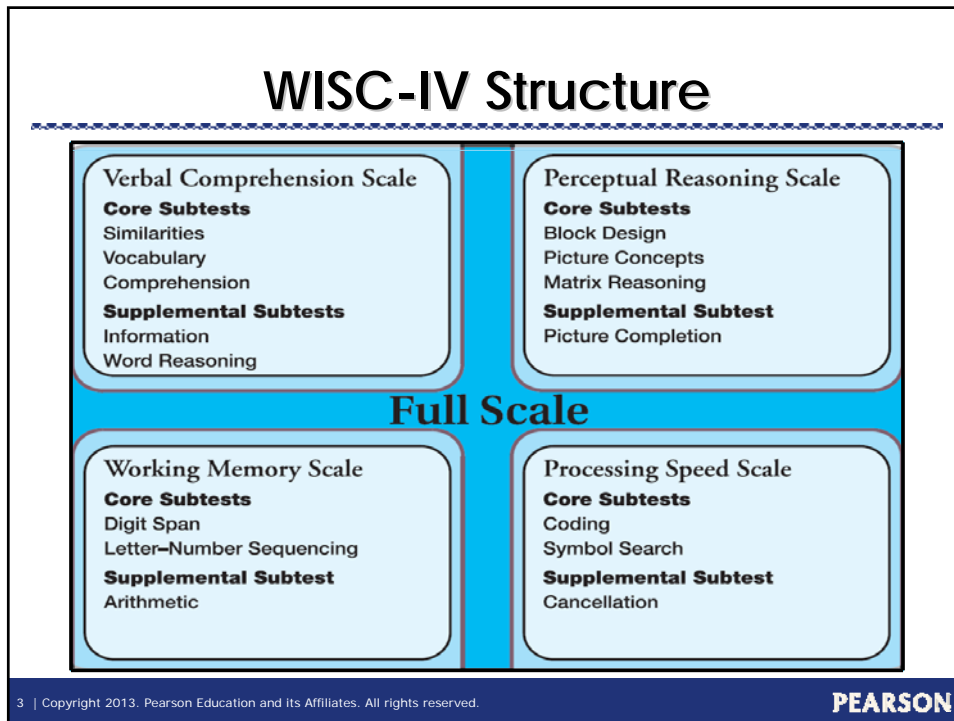
PEARSON

Objectives

- Describe the structure of the WISC-IV.
- Describe the interpretive process.
- Analyze sample data to describe cognitive strengths and weaknesses.
- Discuss instructional implications.

2 | Copyright 2013. Pearson Education and Its Affiliates. All rights reserved.

PEARSON



Perceptual Reasoning Index

Block Design + Matrix Reasoning + Picture Concepts

PRI measures

- Perceptual Reasoning
- Perceptual Organization

All tasks require

- Visual perception and organization
- Reasoning with visually-presented nonverbal material
- Executive functions

Block Design also requires visual-motor coordination and speed

Working Memory Index

Digit Span+ Letter-Number Sequencing

WMI measures

- Attention
- Concentration
- Working Memory

Both tasks require

- Selective and sustained attention
- Mental manipulation
- *Digit Span Forward* and early items of *Letter-Number Sequencing* require only initial registration (not working memory)

Processing Speed Index

Coding + Symbol Search

PSI measures

- Speed of mental processing
- Speed of graphomotor processing

Both tasks require

- Visual perception and organization
- Visual scanning
- Efficient production of multiple motor responses
 - Executive control of attention
 - Sustained effort
 - Speed
- *Coding* performance also dependent on paired-associate learning



Sample Data

Hayley, Age 11 yrs 3 mos

Index/ Subtest	Composite Score/ Scaled Score	Index/ Subtest	Composite Score/ Scaled Score
Verbal Comprehension	112	Perceptual Reasoning	92
Similarities	12	Block Design	9
Vocabulary	13	Matrix Reasoning	9
Comprehension	12	Picture Concepts	8
(Information)	(12)		
Working Memory	102	Processing Speed	91
Digit Span	10	Coding	9
Letter-Number Sequencing	11	Symbol Search	8
(Arithmetic)	(10)	(Cancellation)	9
Full Scale IQ = 101			

9 | Copyright 2013. Pearson Education and Its Affiliates. All rights reserved.

PEARSON

Hypotheses

Cognitive Strengths

Cognitive Weaknesses

10 | Copyright 2013. Pearson Education and Its Affiliates. All rights reserved.

PEARSON

Sue, Grade 3, Age 8 years

Index/ Subtest	Composite Score/ Scaled Score	Index/ Subtest	Composite Score/ Scaled Score
Verbal Comprehension	132	Perceptual Reasoning	115
Similarities	16	Block Design	12
Vocabulary	15	Matrix Reasoning	12
Comprehension	15	Picture Concepts	13
Working Memory	97	Processing Speed	91
Digit Span	10	Coding	8
Letter-Number Sequencing	9	Symbol Search	9
Full Scale IQ = 114			

Hypotheses

Cognitive Strengths

Cognitive Weaknesses

Steven, Grade 6, Age 12 years

Index/ Subtest	Composite Score/ Scaled Score	Index/ Subtest	Composite Score/ Scaled Score
Verbal Comprehension	108	Perceptual Reasoning	112
Similarities	12	Block Design	11
Vocabulary	11	Matrix Reasoning	13
Comprehension	12	Picture Concepts	12
Working Memory	80	Processing Speed	109
Digit Span	6	Coding	10
Letter-Number Sequencing	7	Symbol Search	13
(Arithmetic)	(6)		
Full Scale IQ = 105			

Hypotheses

Cognitive Strengths

Cognitive Weaknesses

Aaron, Grade 5, Age 10 years

Index/ Subtest	Composite Score/ Scaled Score	Index/ Subtest	Composite Score/ Scaled Score
Verbal Comprehension	75	Perceptual Reasoning	100
Similarities	6	Block Design*	5 (W)
Vocabulary	5	Matrix Reasoning	11 (S)
Comprehension	6	Picture Concepts	9
(Information)	(7)	(Picture Completion)*	(10)
(Word Reasoning)	(10)		
Working Memory	74	Processing Speed	85
Digit Span	6	Coding	5
Letter-Number Sequencing	5	Symbol Search	10
(Arithmetic)	(13)	(Cancellation)	(9)
Full Scale IQ = 80			

Hypotheses

Cognitive Strengths

Cognitive Weaknesses



Instructional Implications Verbal Comprehension Index

ALWAYS LEARNING

PEARSON

Receptive Language

- Shorten/simplify language used with student
 - Especially oral instructions
- Repeat instructions after brief pause
- Have child repeat instructions in own words
- Supplement oral instructions with:
 - Written instructions
 - Worked example, illustration, or demonstration
- Have child demonstrate understanding of instructions by working an item

18 | Copyright 2013, Pearson Education and Its Affiliates. All rights reserved.

PEARSON

Expressive Language

- Provide vocabulary list prior to lesson or discussion
- Reduce classroom language demands
 - Cue student ahead of time what s/he'll be asked
 - Allows time to prepare oral response
 - Provide student with response options
 - Allow pointing or demonstration of correct answer
- Reduce language demands in assignments
 - E.g., "matching" responses rather than generating them

Expressive Language

Encourage teachers to wait longer for student responses during discussion

Longer wait time encourages:

- Increased participation
- Longer student responses
- Better task-oriented performance

Receptive & Expressive Language

Consider S&L and/or audiology screening or evaluation, *especially if you observe:*

- Child confuses similar-sounding words on *Vocabulary* and *VCMC* subtests
 - E.g., *Unanimous/Anonymous, Migrate/Migraine*
- Word-finding problems

Retrieval from Long-Term Memory

Use teaching strategies that facilitate retrieval

- Advance organizers
- Linking to prior knowledge
- Mnemonic devices
 - Story mnemonics may be most effective type
- Personal associations to make abstract information more concrete
- Student question generation prior to lesson

Retrieval from Long-Term Memory

Evaluate learning using formats that require cued recall or recognition rather than free recall

- E.g., Multiple choice, matching



Instructional Implications Perceptual Reasoning Index

Visual Perception & Organization

- For younger children:
 - If visuospatial (*"Where"*) skills (and fine motor skills) are especially deficient, consider trial of OT
 - Encourage visual perceptual (*"What"* system) development by having child attend to and name visual details in pictures
- Teach older children to use verbal mediators to improve understanding and learning of visual information

25 | Copyright 2013, Pearson Education and Its Affiliates. All rights reserved.

PEARSON

Visual Perception & Organization

- Teach keyboarding/word processing skills
 - Reduced demands on spatial and fine motor skills
 - Output rate faster and closer to child's thinking
- Provide extra space on worksheets and test papers to accommodate larger writing
- Record answers directly in test booklets

26 | Copyright 2013, Pearson Education and Its Affiliates. All rights reserved.

PEARSON

Executive Functions

- If performance hampered by impulsive responding, try:
 - “Stop and think” protocols
 - Problem-solving analogues
- For deficient strategizing and/or monitoring:
 - Explicit training in strategy selection and implementation, using “think aloud” modeling and practice (top-down vs. bottom-up)
 - Provide strategy or have child determine it before beginning assignments

27 | Copyright 2013, Pearson Education and Its Affiliates. All rights reserved.

PEARSON

Executive Functions

- Ultimate effects of “remediation” uncertain
 - Work toward good compensatory habits
- Use “parts-to-whole” verbal teaching approach
- Present verbal “steps” in correct sequence to encourage learning of generalizable rules
- Explicitly point out “obvious” cause-effect relationships
- Do not expect child to generalize learning without explicit direction and explanation

28 | Copyright 2013, Pearson Education and Its Affiliates. All rights reserved.

PEARSON



Instructional Implications Working Memory Index

ALWAYS LEARNING

PEARSON

WMI – Attention

If part of larger pattern of attentional difficulties, institute modifications and/or accommodations:

- Allow child to work standing up or walking around
- Allow quiet, unobtrusive outlets for fidgeting (e.g., in pocket or desk)
- Short work periods with brief activity breaks

30 | Copyright 2013, Pearson Education and Its Affiliates. All rights reserved.

PEARSON

WMI – Attention

Institute modifications and/or accommodations:

- Use verbal and nonverbal cues to focus attention
 - Verbal - “Listen,” “Look,” “Name”
 - Nonverbal - Eye contact, gentle touch
- Ask child to orally summarize information just presented
- Divide work into smaller, manageable steps
 - Provide immediate feedback and guidance at each step

WMI – Mental Manipulation

- Working memory capacity (and speed) not easily improved, except with stimulant medication
- Encourage use of visual reminders
 - Writing down results of interim steps on multi-step math problems
 - Allow child to maintain list of problem-solving steps; fade use over time
- Teach child to categorize or chunk information

WMI – Mental Manipulation

- Break down assignments into smaller, more manageable steps
 - Provide interim deadlines and rapid feedback
- Utilize assistive technologies:
 - Calculator to complete/check work
 - Digital watch with multiple alarms
 - Timer
 - Teach use for homework sessions with interspersed activity periods



Instructional Implications Processing Speed Index

Processing Speed

- *Coding* and *Symbol Search* both likely to be low
 - Reduced graphomotor output requirement does not improve performance
- Look to confirm with slow performance on tasks with *no* written output requirement
- Remember: Impulsive responding and slow processing can (and often do) co-exist

Processing Speed

- Processing speed not amenable to remediation, but may improve with use of stimulant medication.
- Encourage teachers to structure lessons with regular intervals for clarification, consolidation, and “catch-up.”
 - Frequent repetition of points key to maintaining logical chain of understanding.

Graphomotor Speed

- May try OT with younger children
 - Pencil grips, thick pens helpful for some
- Modifications, accommodations:
 - Extended time for written tasks
 - Allow oral responses, testing rather than written
 - Do not penalize for neatness, legibility
 - Ask for clarification
 - Provide training in keyboarding and word processing ASAP

Summary

1. Consider abilities measured by each index.
2. Identify relative strengths and weaknesses.
3. Analyze report to determine which abilities contributed to relatively lower scores.
4. Determine instructional implications of cognitive strengths and weaknesses.



Customer Service

1-800-627-7271

Questions or Comments

gloria.maccow@pearson.com

ALWAYS LEARNING

PEARSON