

Ch. 10: Wechsler Scales

1414

Psychology 402 - Spring 2023 - Dr. Michael Diehr

Copyright © 2023 Michael Diehr
All Rights Reserved
For use only by students enrolled
in my sections of Psyc 402
through the end of the semester.
May not be posted, shared or uploaded
online without permission.

1415

Psychology 402 - Spring 2023 - Dr. Michael Diehr

Review: IQ : # of Factors

Researcher	# of Factors	Comment
Binet	multiple	for practical reasons, only measured 1
Spearman	g	acknowledged other smaller factors (S _i)
Thurstone (et. al)	g _f , g _c	fluid vs. crystallized
Sternberg	3	analytic, creative, practical
Gardner	8	"multiple intelligences" (MI) theory

1417

Psychology 402 - Spring 2023 - Dr. Michael Diehr

Review: Stanford-Binet IQ Test

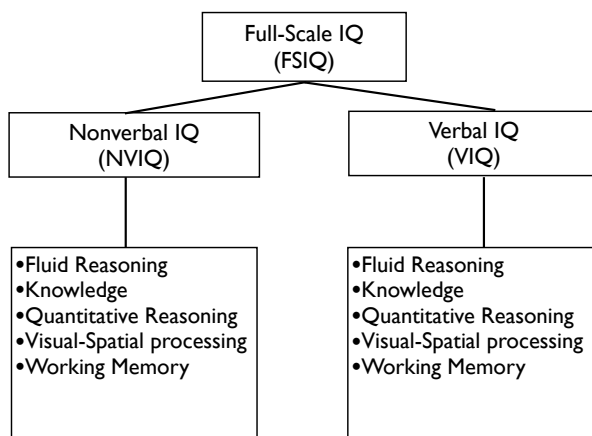
- Structure
 - 5 factors (verbal, non-verbal) = 10 tests
- Psychometrics
 - Reliability: Excellent
 - Validity: ????

1418

Psychology 402 - Spring 2023 - Dr. Michael Diehr

Stanford-Binet 5

1419



Psychology 402 - Spring 2023 - Dr. Michael Diehr

Review: Principles of IQ

- Reification or Nominal fallacy:
 - "Intelligence" is a construct
- Numerical Fallacy:
 - IQ score measures Intelligence
- Ranking Fallacy
 - compare IQ scores, determine worth or value
 - *life-altering* decisions are made

1420

Psychology 402 - Spring 2023 - Dr. Michael Diehr

IQ Test: Sample Question

- Some of the fastest ships can travel at 30 miles per hour. On such a ship, how many days will it take to make the trip between New York and Paris, a trip of 3600 miles?

1421

Psychology 402 - Spring 2023 - Dr. Michael Dohr

Cognitive / Info Processing 1

- What is required to correctly answer a single item on an IQ test?
- Verbal comprehension: understand the instructions you hear or read
- Short term memory: remember the instructions
- Long term memory: retrieve answer or procedure
- Working memory: juggle information, do calculations, etc.
- Judgement / Reasoning : decide between competing answers
- Attention / Concentration: remain focused on task

1423

Psychology 402 - Spring 2023 - Dr. Michael Dohr

Cognitive / Info Processing 2

- Verbal: give reply with voice
- Motor: respond with hands
- Interpersonal: evaluate response of examiner: praise? criticism?
- Intrapersonal / Metacognition: judge performance, adjust strategy accordingly
- Cognitive science believes many of these to be independent processes subsumed by independent brain systems

1424

Psychology 402 - Spring 2023 - Dr. Michael Dohr

Performance Scale

- Declarative (“knowing that”)
 - What is the distance between NYC and Paris?
 - Dependent on Language
 - Trainable? subject to education / culture?
- Procedural (“knowing how”)
 - Riding a bicycle
 - Arrange blocks to form a pattern
 - Long Division: divide 347 by 19
- Early IQ tests focused more on Declarative tasks

1425

Psychology 402 - Spring 2023 - Dr. Michael Dohr

Wechsler Scales

- WAIS-4 : Adult Intelligence Scale (2008)
 - Evolved from Wechsler-Bellevue Intelligence Scale (1937)
 - Designed for Adults
 - Point scale rather than Age scale
 - Added *Performance* items (to fill void left by SB’s reliance on language/verbal skills)
 - Focused on multiple abilities rather than “g”
- WISC-4 : Intelligence Scales for Children
- WPPSI-3 : Preschool and Primary Scale

1426

Psychology 402 - Spring 2023 - Dr. Michael Dohr

David Wechsler

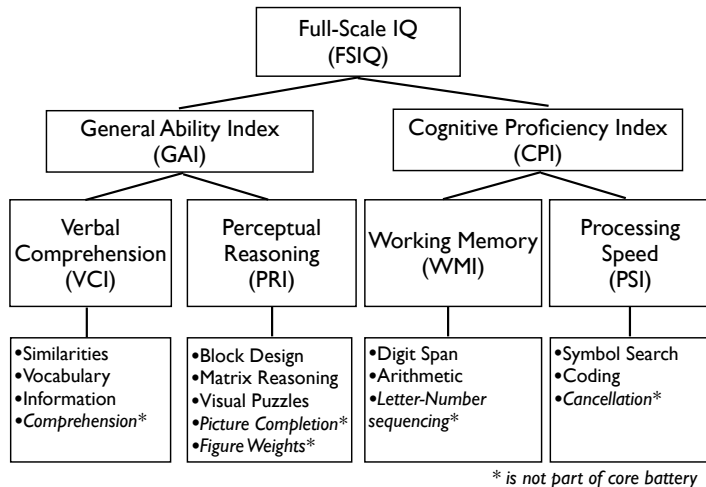
- “[...]Spearman’s theory of general intelligence (g) was too narrow. [It is] an effect rather than a cause[...] Non-intellective factors, such as personality, contribute to the development of each person’s intelligence.”
- “Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment”
- Deviation IQ (DQ) score replaced $IQ = MA/CA$

1427

Psychology 402 - Spring 2023 - Dr. Michael Dohr

WAIS-4

1428



Psychology 402 - Spring 2023 - Dr. Michael Doherty

IQ Terminology

IQ Range (M=100, SD=15)	Stanford-Binet 5	WAIS 4
145-160	Very gifted or highly advanced	Very Superior
130-144	Gifted or very advanced	
120-129	Superior	Superior
110-119	High Average	High Average
90-109	Average	Average
80-89	Low Average	Low Average
70-79	Borderline	Borderline
55-69	Mildly impaired or delayed	Very Low
40-54	Moderately impaired or delayed	

1429

Psychology 402 - Spring 2023 - Dr. Michael Doherty

WAIS-IV General Ability Index (GAI) ¹⁴³⁰

- Verbal Comprehension Index (VCI)
 - Vocabulary
 - Similarities
 - Information
 - *Comprehension
- Perceptual-Reasoning (PRI)
 - Block Design
 - Matrix Reasoning
 - Visual Puzzles
 - *Picture Completion
 - *Figure Weights

Psychology 402 - Spring 2023 - Dr. Michael Doherty

VCI: Verbal Comprehension Index ¹⁴³¹

- Vocabulary
 - "What is a guitar?"
- Similarities
 - "In what way are an apple and a pear alike?"
- Information
 - "How far is it from New York to Paris?"
- Comprehension
 - ...

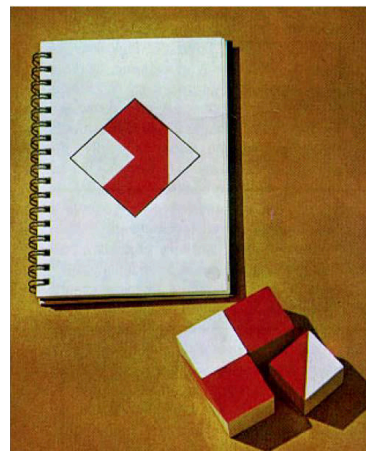
Psychology 402 - Spring 2023 - Dr. Michael Doherty

PRI: Perceptual Reasoning Index ¹⁴³⁴

- Perceptual-Reasoning (PRI)
 - Block Design
 - Matrix Reasoning
 - Visual Puzzles
 - *Picture Completion
 - *Figure Weights

Psychology 402 - Spring 2023 - Dr. Michael Doherty

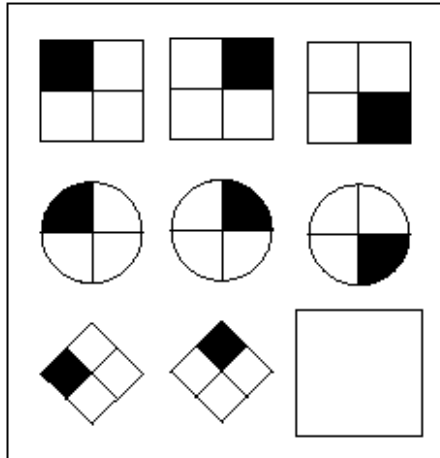
Block Design



1435

Psychology 402 - Spring 2023 - Dr. Michael Doherty

Matrix Reasoning

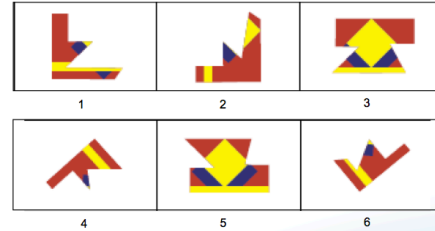


Psychology 402 - Spring 2023 - Dr. Michael Dohr

Visual Puzzles

1437

Which 3 of these pieces go together to make this puzzle?



Psychology 402 - Spring 2023 - Dr. Michael Dohr

Picture Completion

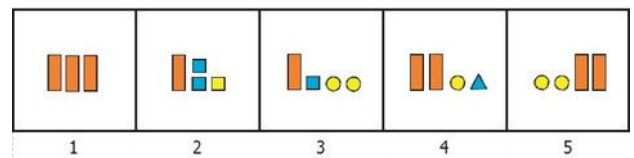
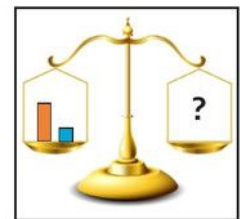
1438



Psychology 402 - Spring 2023 - Dr. Michael Dohr

Figure Weights

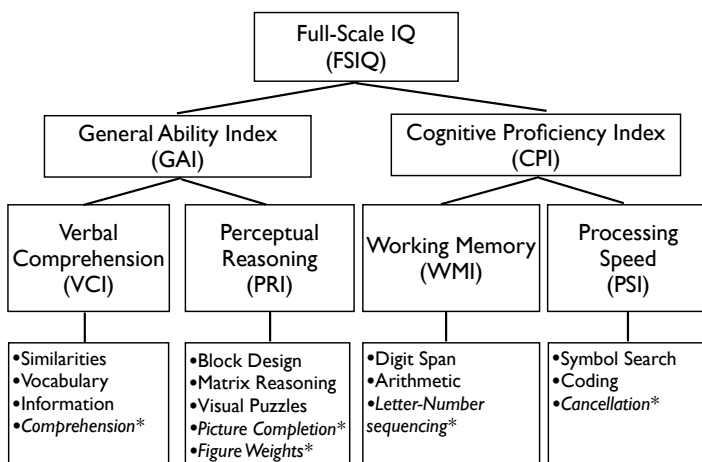
1439



Psychology 402 - Spring 2023 - Dr. Michael Dohr

WAIS-4

1440



* is not part of core battery

Psychology 402 - Spring 2023 - Dr. Michael Dohr

WMI: Working Memory Index

1441

- Digit Span
- Arithmetic
- Letter-Number Sequencing

Psychology 402 - Spring 2023 - Dr. Michael Dohr

Digit Span Example

1442

Psychology 402 - Spring 2023 - Dr. Michael Diehr

Arithmetic

- “How many 45-cent stamps can you buy for a dollar?”

1448

Psychology 402 - Spring 2023 - Dr. Michael Diehr

Letter-Number Sequencing

- Repeat Q-1-B-3-J-2 in numerical and alphabetical order

1449

Psychology 402 - Spring 2023 - Dr. Michael Diehr

PSI: Processing Speed Index

1450

- Symbol Search
- Coding
- Cancellation

Psychology 402 - Spring 2023 - Dr. Michael Diehr

Symbol Search

1451

- Do the two symbols on the left match the symbols on the right?

⇒

∠

↵

∩

↶

∠

∥

YES

NO

±

⊥

⇒

∥

⊥

⊥

⊥

YES

NO

∠

∩

≠

↶

✗

⊖

∠

YES

NO

∩

⊥

∠

∥

∩

∩

≠

YES

NO

∩

⊥

∩

✗

∩

∩

∩

YES

NO

Psychology 402 - Spring 2023 - Dr. Michael Diehr

WAIS-IV: Coding

1452

Digit symbol substitution test

1

2

3

4

5

6

7

8

9

↔

↑

≡

|||

≠

□

Φ

∈

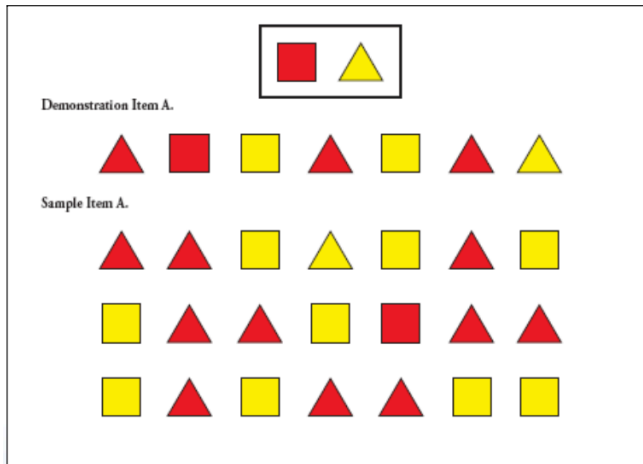
⊃

2	9	2	9	4	9	4	9	1	8	9	3	1	7	2	3	6	4	8	3	1	7	8	2	5
4	7	1	7	5	8	4	1	5	2	6	9	9	5	6	7	6	2	9	4	8	7	2	8	6
8	6	2	8	2	9	4	7	4	8	6	7	3	1	6	2	1	8	7	4	3	1	6	2	9
2	5	4	6	1	6	3	1	2	7	2	6	4	9	1	8	5	7	1	5	4	5	3	9	2
3	9	7	1	7	1	3	5	7	6	1	6	5	9	1	3	1	3	9	8	9	7	3	4	3

Psychology 402 - Spring 2023 - Dr. Michael Diehr

WAIS-IV: Cancellation

1455



Psychology 402 - Spring 2023 - Dr. Michael Dohr

WAIS-4

- Which of these tests are completely “pure” measures of an ability?
 - Verbal / language issues?
 - Cultural bias?
 - Motivation?
 - Expectancy effects?
 - Strategy : speed vs. accuracy?

1454

Psychology 402 - Spring 2023 - Dr. Michael Dohr

WAIS Psychometrics-Reliability

- 11 subtests, 4 index scores
- Full-Scale IQ (FSIQ) $r = .98$
 - Verbal IQ (VIQ) $r = .97$
 - Performance IQ (PIQ) $r = .94$
- FSIQ: SEM = 2.29: 95% of the time a measured score is +/- 4.6 of actual score
- Very good normative sample (n=2450 gender, ethnicity, region, education level)
- Widely researched in many fields (portions of the WAIS are used as neuropsychological tests)

1456

Psychology 402 - Spring 2023 - Dr. Michael Dohr

WAIS Psychometrics-Validity

- Reliability is good, but...
- How can we measure validity?

1457

Psychology 402 - Spring 2023 - Dr. Michael Dohr

WAIS Psychometrics-Validity

- Correlations of .93 with WISC
- What should the Criterion be?

1458

Psychology 402 - Spring 2023 - Dr. Michael Dohr

WAIS Subtest Pattern Analysis

- Can we analyze patterns on subtest scores to make inferences about a person's functioning?
- A person scores highly on a subtest not known to be affected by education (Similarities), but low on a subtest affected by motivation, anxiety and speed (Digit-symbol coding) and low on Information.
- Conclude this person has potential, but has trouble learning or performing in normal situations.
- Issue - test-retest reliabilities are low (.6 to .9) for individual subtests.
- Research supporting Pattern Analysis is weak

1459

Psychology 402 - Spring 2023 - Dr. Michael Dohr

WISC-IV and WPPSI-III

- WISC - Wechsler Intelligence Scale for Children:
- A version of the WAIS, specially adapted and revised to be more appropriate for children aged 6 thru 16
- WPPSI-III - Wechsler Preschool and Primary Scale of Intelligence:
- for children 2-6 years old

1460

Psychology 402 - Spring 2023 - Dr. Michael Dohr

Multiple Intelligences

- Both the SB5 and WAIS-4 test multiple factors of intelligence
- this is not the same thing as multiple intelligences
- Which of Gardner's 8 intelligences are actually measured by the SB5 or WAIS-4?

1461

Psychology 402 - Spring 2023 - Dr. Michael Dohr

Gardner's 8 Intelligences

- logical-mathematical (*)
- verbal-linguistic (*)
- spatial (*)
- musical
- bodily-kinesthetic
- naturalist
- interpersonal
- intrapersonal

1462

Psychology 402 - Spring 2023 - Dr. Michael Dohr