

Ch. 10: Wechsler Scales

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.

1428

Psychology 402 - Fall 2023 - Dr. Michael Diehr

1429

Psychology 402 - Fall 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

1432

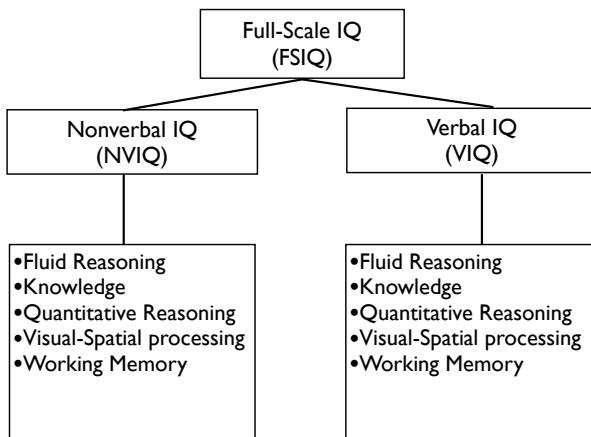
Psychology 402 - Fall 2023 - Dr. Michael Diehr

1433

Psychology 402 - Fall 2023 - Dr. Michael Diehr

Stanford-Binet 5

1434



Psychology 402 - Fall 2023 - Dr. Michael Diehr

Review: Stanford-Binet IQ Test

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

1433

Psychology 402 - Fall 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

1435

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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

1438

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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

1439

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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

1440

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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 (vs. SB which used only language-based items)
 - Multiple factors, rather than “g”
- WISC-4 : Intelligence Scales for Children
- WPPSI-3 : Preschool and Primary Scale

1441

Psychology 402 - Fall 2023 - Dr. Michael Diehr

David Wechsler

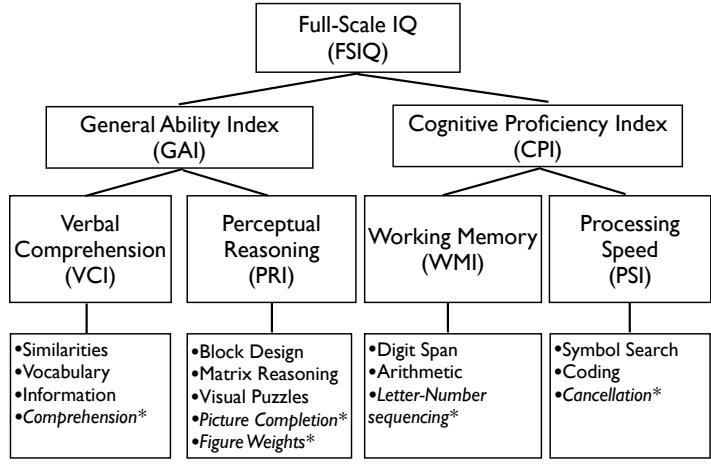
- “[...] Spearman’s theory of general intelligence (g) was too narrow. [It is] an effect rather than a cause [...] Non-intellective factors, such as personality, contribute to the development of each person’s intelligence.”
- “Intelligence is the aggregate or global capacity of the individual to act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

1442

Psychology 402 - Fall 2023 - Dr. Michael Diehr

WAIS-4

1443



Psychology 402 - Fall 2023 - Dr. Michael Diehr

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	
40-54	Moderately impaired or delayed	Very Low

1445

Psychology 402 - Fall 2023 - Dr. Michael Diehr

WAIS-IV General Ability Index (GAI)¹⁴⁴⁶

• Verbal Comprehension Index (VCI)

- Vocabulary
- Similarities
- Information
- *Comprehension

• Perceptual-Reasoning (PRI)

- Block Design
- Matrix Reasoning
- Visual Puzzles
- *Picture Completion
- *Figure Weights

Psychology 402 - Fall 2023 - Dr. Michael Diehr

VCI: Verbal Comprehension Index¹⁴⁴⁷

- 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 - Fall 2023 - Dr. Michael Diehr

Comprehension Example

- “Why is food often sold in sealed containers?”

1448

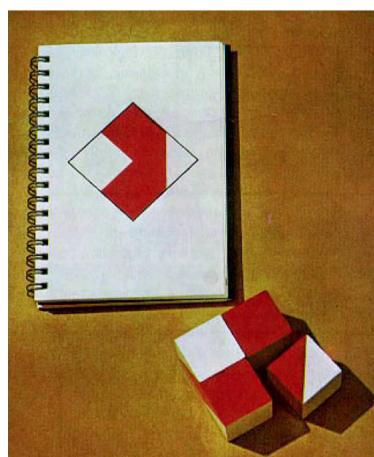
Psychology 402 - Fall 2023 - Dr. Michael Diehr

PRI: Perceptual Reasoning Index¹⁴⁵⁰

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

Psychology 402 - Fall 2023 - Dr. Michael Diehr

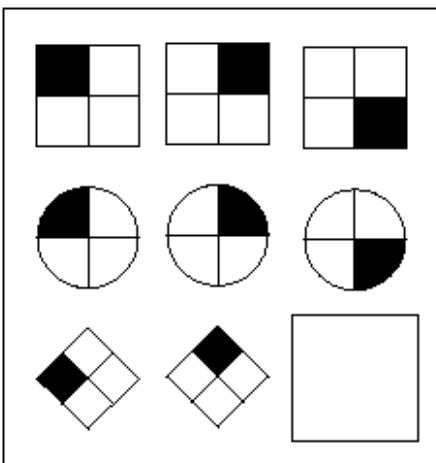
Block Design



1451

Psychology 402 - Fall 2023 - Dr. Michael Diehr

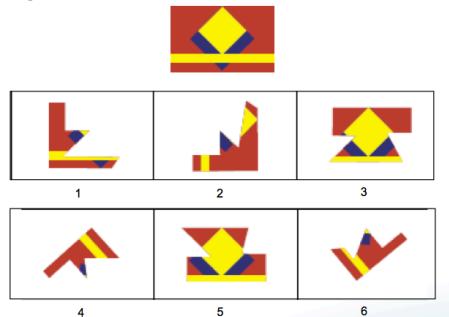
Matrix Reasoning



Psychology 402 - Fall 2023 - Dr. Michael Diehr

Visual Puzzles

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



Psychology 402 - Fall 2023 - Dr. Michael Diehr

Picture Completion

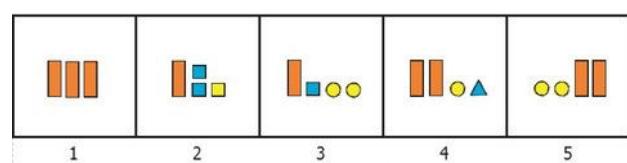
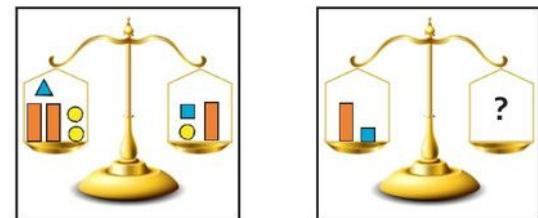
4



Psychology 402 - Fall 2023 - Dr. Michael Diehr

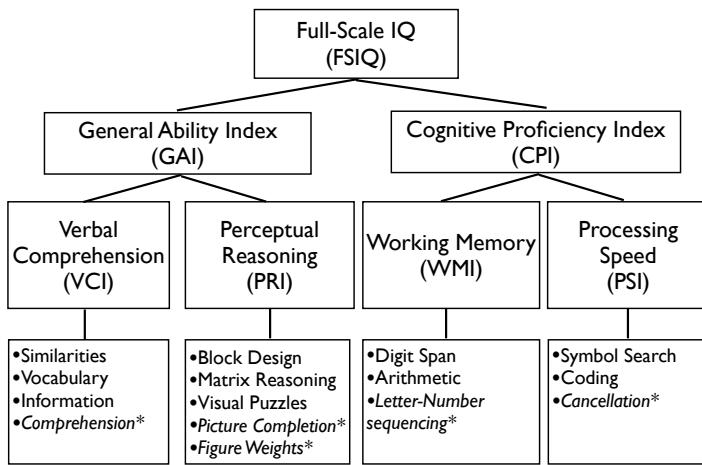
1454

Figure Weights



Psychology 402 - Fall 2023 - Dr. Michael Diehr

WAIS-4



1456

WMI: Working Memory Index

- Digit Span
- Arithmetic
- Letter-Number Sequencing

1457

Psychology 402 - Fall 2023 - Dr. Michael Diehr

Psychology 402 - Fall 2023 - Dr. Michael Diehr

Digit Span Example

1458

Psychology 402 - Fall 2023 - Dr. Michael Diehr

Arithmetic

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

1464

Psychology 402 - Fall 2023 - Dr. Michael Diehr

Letter-Number Sequencing

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

1465

Psychology 402 - Fall 2023 - Dr. Michael Diehr

PSI: Processing Speed Index

1466

- Symbol Search
- Coding
- Cancellation

Psychology 402 - Fall 2023 - Dr. Michael Diehr

Symbol Search

1467

- 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 - Fall 2023 - Dr. Michael Diehr

WAIS-IV: Coding

1468

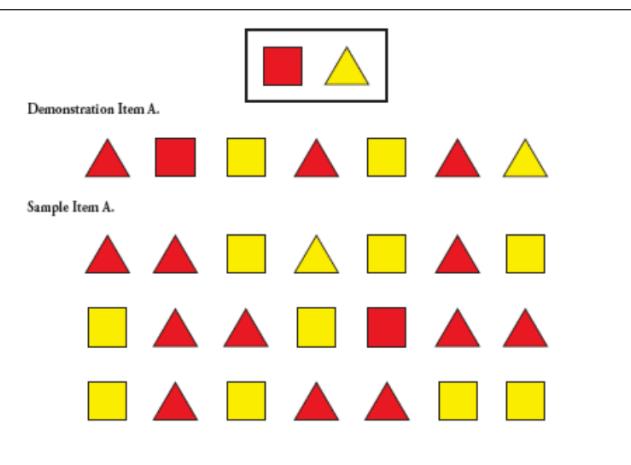
Digit symbol substitution test

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

WAIS-IV: Cancellation

1469



Psychology 402 - Fall 2023 - Dr. Michael Diehr

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?

1470

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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)

1472

Psychology 402 - Fall 2023 - Dr. Michael Diehr

WAIS Psychometrics-Validity

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

1473

Psychology 402 - Fall 2023 - Dr. Michael Diehr

WAIS Psychometrics-Validity

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

1474

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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

1475

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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

1476

Psychology 402 - Fall 2023 - Dr. Michael Diehr

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?

1477

Psychology 402 - Fall 2023 - Dr. Michael Diehr