IQ tests

MANAMA

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Pr I.Maystadt

About 68% of people fall in this range within 15 points of 100

About 95% of people fall in this range within 30 points of 100

Less than 2% of people fall in this range

Less than 2% of people fall in this range

68%

95%

2% | 13.5% | 34% | 34% | 13.5% | 2%

55 70 85 100 115 130 145
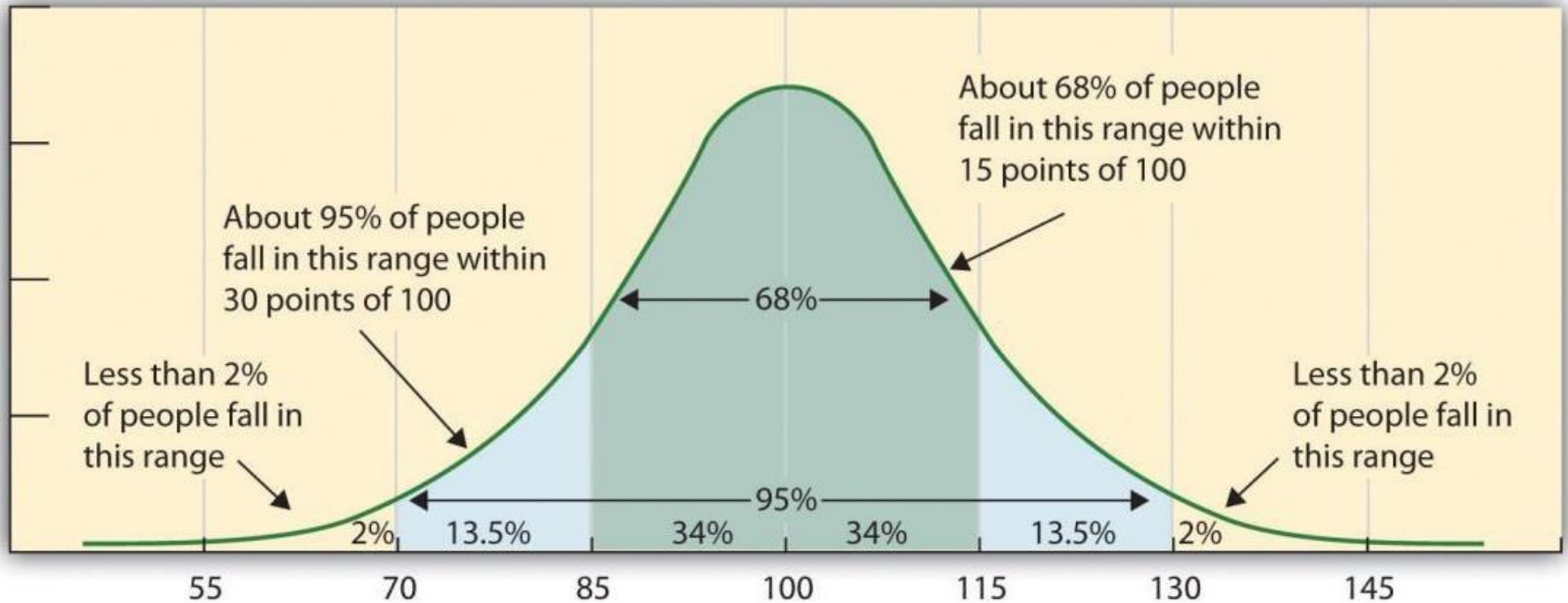
70-130: « normal » IQ
>130: high IQ
<70: intellectual deficiency

Intellectual disability

Severity Category	Approximate Percent Distribution of Cases by Severity	DSM-IV Criteria (severity levels were based only on IQ categories)	DSM-5 Criteria (severity classified on the basis of daily skills)	AAIDD Criteria (severity classified on the basis of intensity of support needed)
Mild	85%	Approximate IQ range 50–69	Can live independently with minimum levels of support.	Intermittent support needed during transitions or periods of uncertainty.
Moderate	10%	Approximate IQ range 36–49	Independent living may be achieved with moderate levels of support, such as those available in group homes.	Limited support needed in daily situations.
Severe	3.5%	Approximate IQ range 20–35	Requires daily assistance with self-care activities and safety supervision.	Extensive support needed for daily activities.
Profound	1.5%	IQ <20	Requires 24-hour care.	Pervasive support needed for every aspect of daily routines.
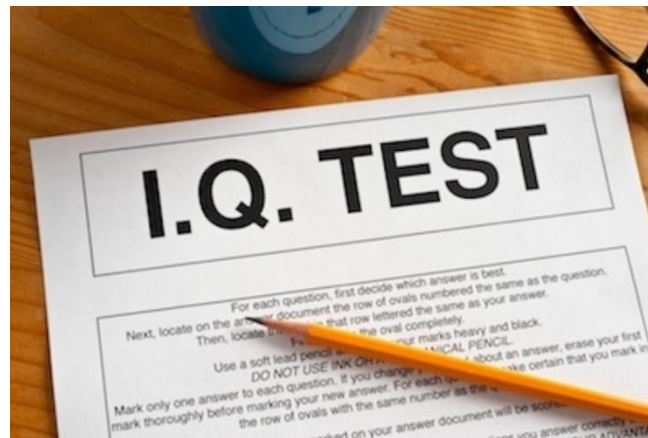
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➢ **WPPSI (2y6m – 7y3m):**
Wechsler Preschool and Primary Scale of Intelligence

➢ **WISC (6y – 16y11m):**
Wechsler Intelligence Scale for Children

➢ **WAIS (> 16y):**
Wechsler Adult Intelligence Scale
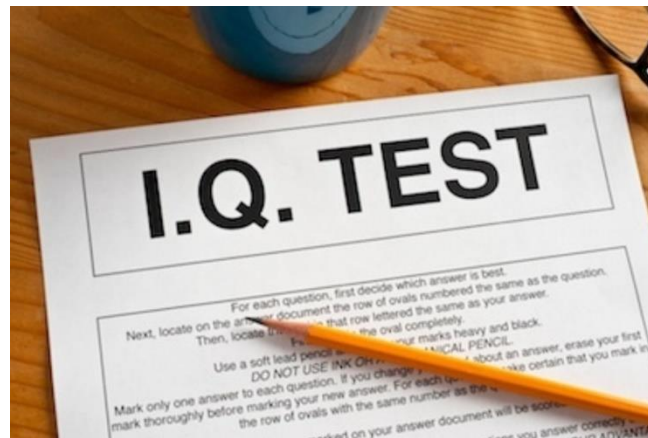
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Wechsler Intelligence Scale for Children
> 2016: WISC-V

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WISC-V: 5 index scores

➢ Verbal comprehension index (VCI)

➢ Visual spatial index (VSI)

➢ Fluid reasoning index (FRI)

Perceptual reasoning index (PRI) in WISC-IV

➢ Working memory index (WMI)

➢ Processing speed index (PSI)

Full Scale

Verbal Comprehension	Visual Spatial	Fluid Reasoning	Working Memory	Processing Speed
Similarities	Block Design	Matrix Reasoning	Digit Span	Coding
Vocabulary	Visual Puzzles	Figure Weights	Picture Span	Symbol Search
Information		Picture Concepts	Letter–Number Sequencing	Cancellation
Comprehension		Arithmetic		

Primary Index Scales

Verbal Comprehension	Visual Spatial	Fluid Reasoning	Working Memory	Processing Speed
Similarities	Block Design	Matrix Reasoning	Digit Span	Coding
Vocabulary	Visual Puzzles	Figure Weights	Picture Span	Symbol Search

Ancillary Index Scales

Quantitative Reasoning	Auditory Working Memory	Nonverbal	General Ability	Cognitive Proficiency
Figure Weights	Digit Span	Block Design	Similarities	Digit Span
Arithmetic	Letter–Number Sequencing	Visual Puzzles	Vocabulary	Picture Span
		Matrix Reasoning	Block Design	Coding
		Figure Weights	Matrix Reasoning	Symbol Search
		Picture Span	Figure Weights	
		Coding		

Complementary Index Scales

Naming Speed	Symbol Translation	Storage and Retrieval
Naming Speed Literacy	Immediate Symbol Translation	Naming Speed Index
Naming Speed Quantity	Delayed Symbol Translation	Symbol Translation Index
	Recognition Symbol Translation	

WISC–V

Figure 1.1   Test Framework for the WISC–V

Full Scale

Verbal Comprehension	Visual Spatial	Fluid Reasoning	Working Memory	Processing Speed
Similarities	**Block Design**	**Matrix Reasoning**	**Digit Span**	**Coding**
Vocabulary	*Visual Puzzles*	**Figure Weights**	*Picture Span*	*Symbol Search*
Information		*Picture Concepts*	*Letter–Number Sequencing*	*Cancellation*
Comprehension		*Arithmetic*		

➢7 obligatory subtests (60-70')

➢9 facultative subtests

Verbal Comprehension Index (VCI)

➢ This score measures the child's ability to **verbalize** meaningful concepts, to understand **verbal information**, and **express himself using words**.

 ✓ **Vocabulary** : give definition of words

   ex: give the definition of « shirk/se dérober/ontlopen »

 ✓ **Similarities**: find the link between two words

   ex: find the link between « socks/chaussettes/soken » and « skirt/jupe/rok »

 ✓ *Information* *(« general culture », ex: what is a thermometer?)*

 ✓ *Comprehension* *(ex: why a child may not drive a car?)*

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Verbal Comprehension Index (VCI)

Word knowledge acquisition

Information retrieval

Ability to reason and solve verbal problems

Communication of knowledge

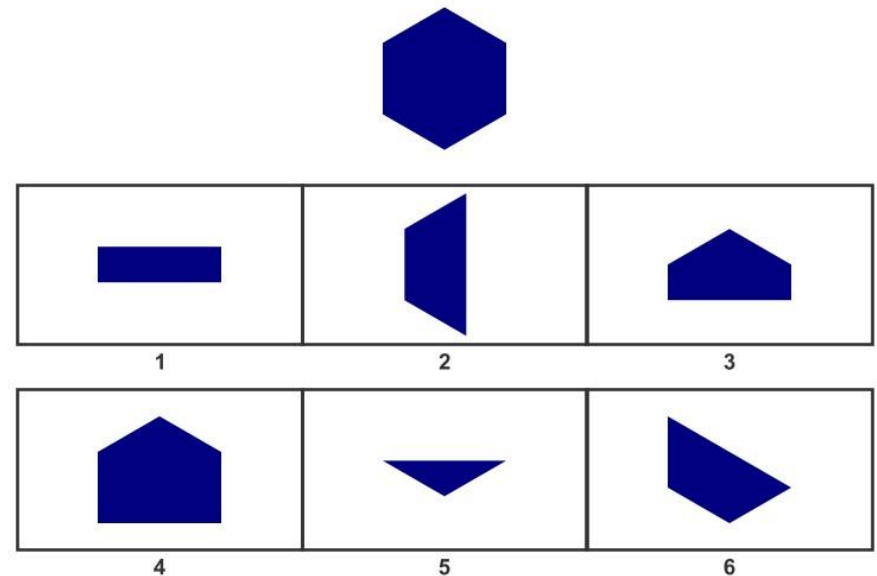« cristallized intelligence »
(based on knowledge/education)

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Visual Spatial Index (VSI)

➢ This score measures the child's ability to evaluate **visual** details and to understand **visuospatial** relationships to construct geometric designs from a model.

✓ **Block design**: reproduce an image with blocks
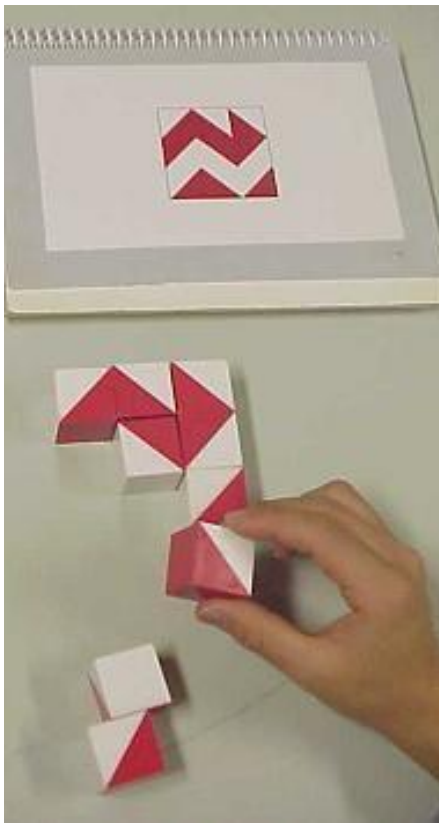
✓ *Visual puzzles:* Choose the pieces to form the image

Visual spatial Index (VSI)

Visual spatial reasoning
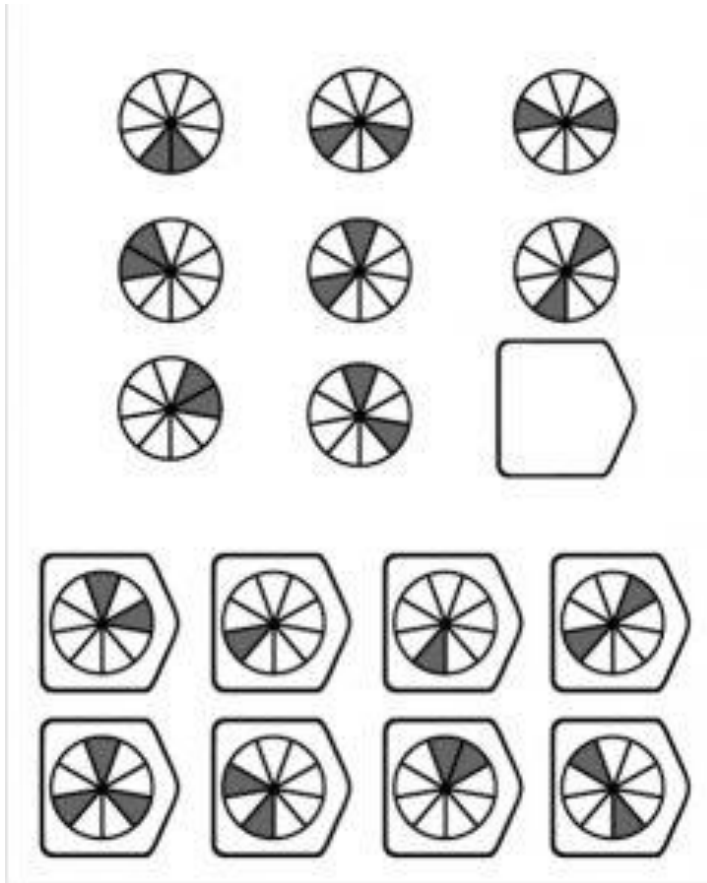
Integration and synthesis of partwhole relationships
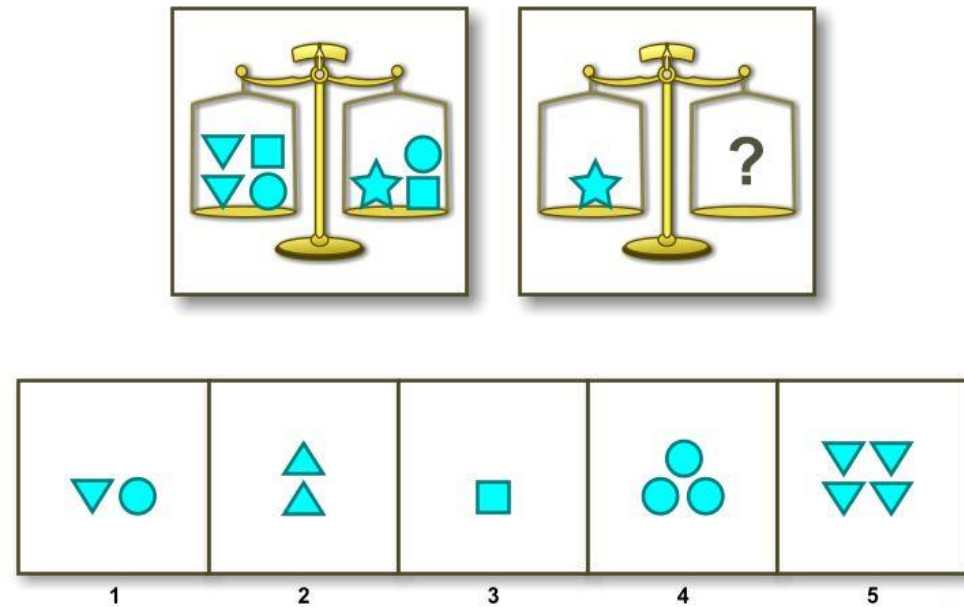
Attentiveness to visual detail

Visuo-motor integration

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Fluid Reasoning Index (FRI)

➢ This score measures a child's ability to detect the underlying underlying <u>conceptual relationship</u> among visual objects and <u>use reasoning</u> to identify and apply rules.

✓ **<u>Matrix reasoning</u>** :
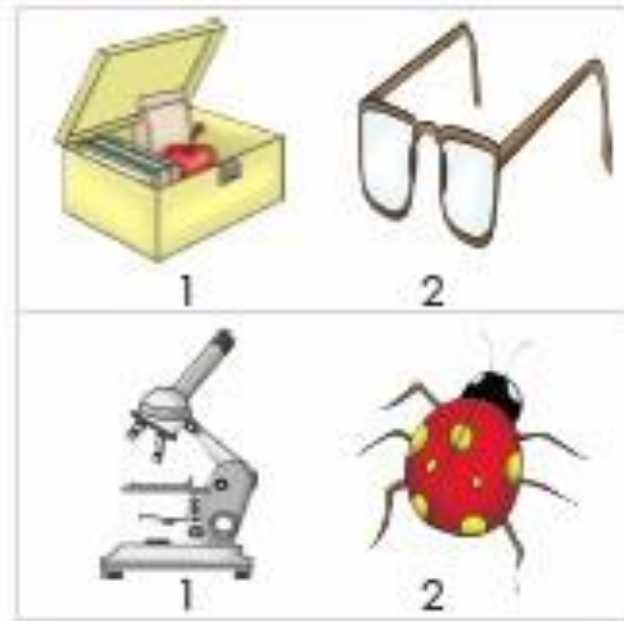find the next image

✓ **<u>Figure weights</u>**:
equilibrate the balance

Fluid Reasoning Index (FRI)

✓ <u>Picture concepts</u>: point a single picture in each row, pictures must share common characteristics

✓ <u>Arithmetic:</u> oral mathematical problems

"the grocer sells 3 boxes of apples in the morning, 12 boxes in the afternoon, and a customer buys him a box just before closing. How many cases did he sell today?"

Fluid Reasoning Index (FRI)

Inductive and quantitative reasoning

Broad visual intelligence

Simultaneous processing

Abstract thinking

« fluid intelligence »
(not based on knowledge, non-verbal)

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Working Memory Index (WMI)

➢ This score measures a child's ability to <u>register, maintain, and manipulate visual and auditory information in conscious awareness</u>.

✓ **<u>Digit span</u>**: memorise 5 digits (given orally, 1 digit per second) and reproduce them
  - In the forward order
  - In the backward order
  - In the sequencial order

✓ <u>*Picture span:*</u> *point to the pictures in the order I showed you*

Response Page

A   B   C   D   E   F

✓ <u>*Letter-number sequencing*</u>: *sequences of numbers and letters*

Working Memory Index (WMI)

Attention

Concentration

Mental control

Visual and auditory memory

Processing Speed Index (PSI)

➢ This score measures the <u>child's speed and accuracy of visual identification, decision-making, and decision implementation</u>.

✓ **<u>Coding</u>**:
reproduce coding signs
in a limited timing

✓ *<u>Symbol search</u>*

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Processing Speed Index (PSI)

✓ *Cancellation:* cross out the green jackets

Processing Speed Index (PSI)

Short-term visual memory

Visuo-motor coordination

Visual discrimination

Visual scanning

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WISC-V: scores calculation

- ➢ Subtests: cotation 1-19

	Verbal Comprehension				Visual Spatial		Fluid Reasoning				Working Memory			Processing Speed		
	SI	VC	IN	CO	BD	VP	MR	FW	PC	AR	DS	PS	LN	CD	SS	CA
	15	16	15	15	12	12	11	11	10	11	9	8	8	9	9	10

Subtest Scaled Score Profile
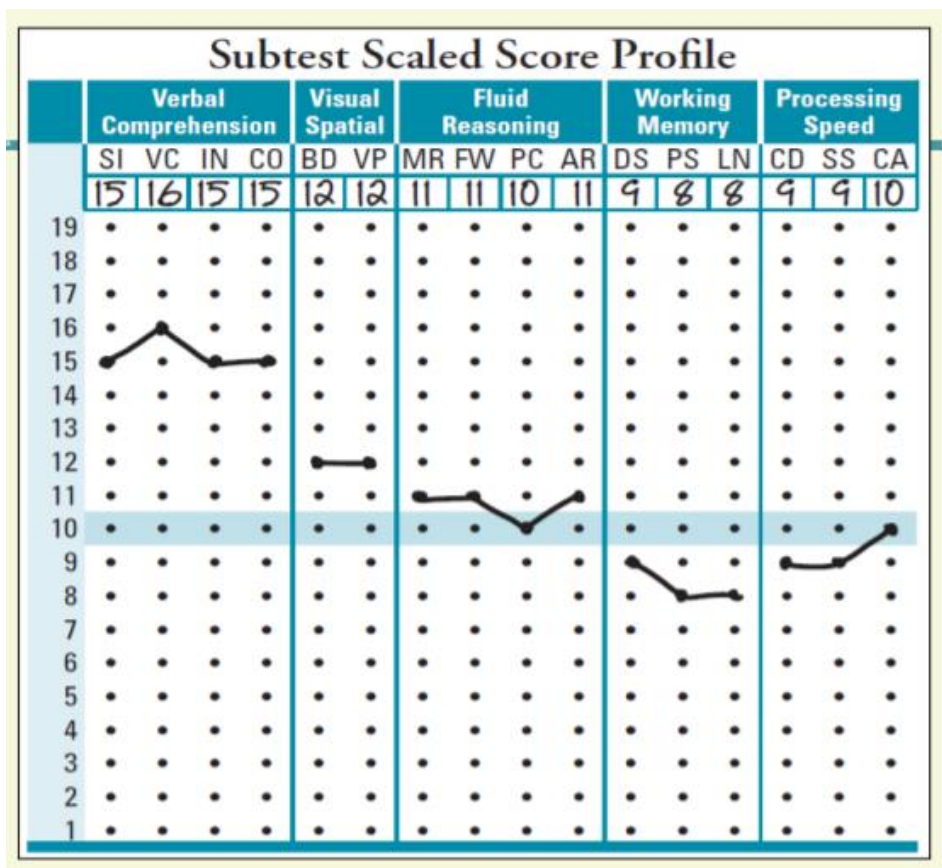
1-6: deficit

7: low

8-12: normal range

13: high

14-19: very high

- ➢ 5 primary index score calculation
  Reference tables with « 100 » being the average score for age-matching children

WISC-V: scores calculation
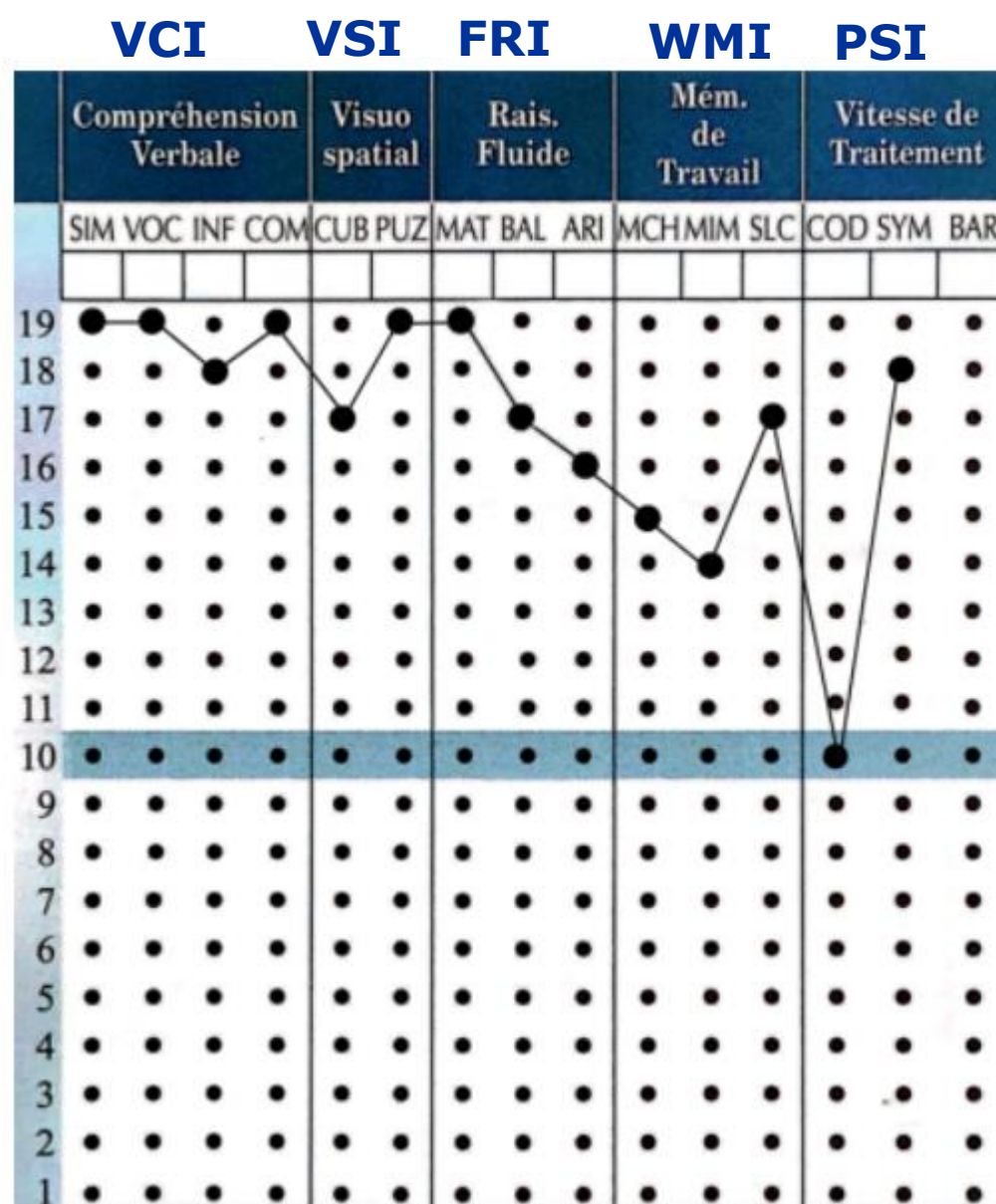
> FSIQ (Full Scale IQ): Composite score profile

Important remarks:

1. Total IQ ≠ addition/average of the 5 index scores (VCI, FRI > VSI,WMI, PSI)

2. Total IQ not valid if heterogeneous profile (> 15 points between 2 index scores)

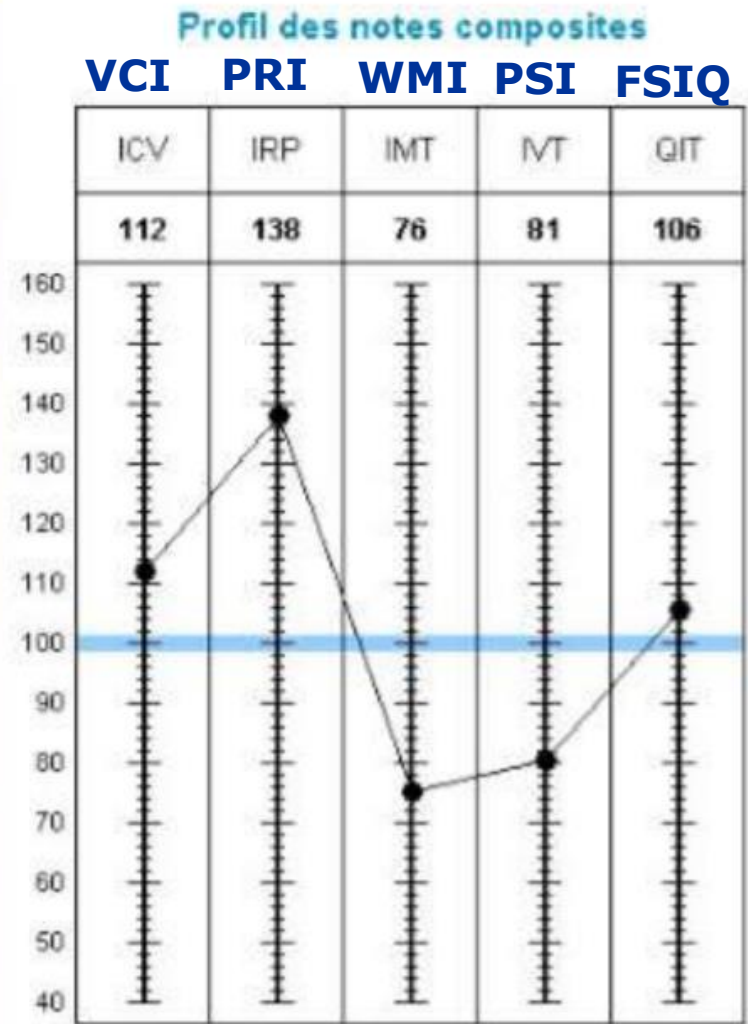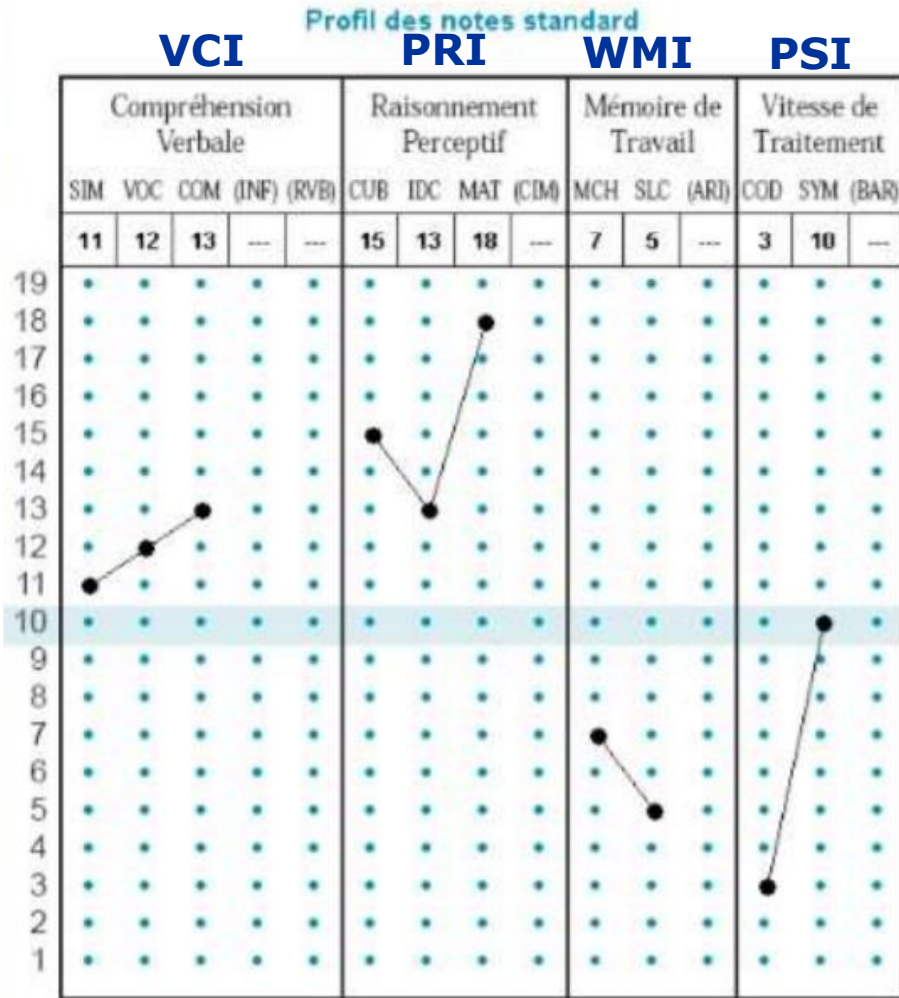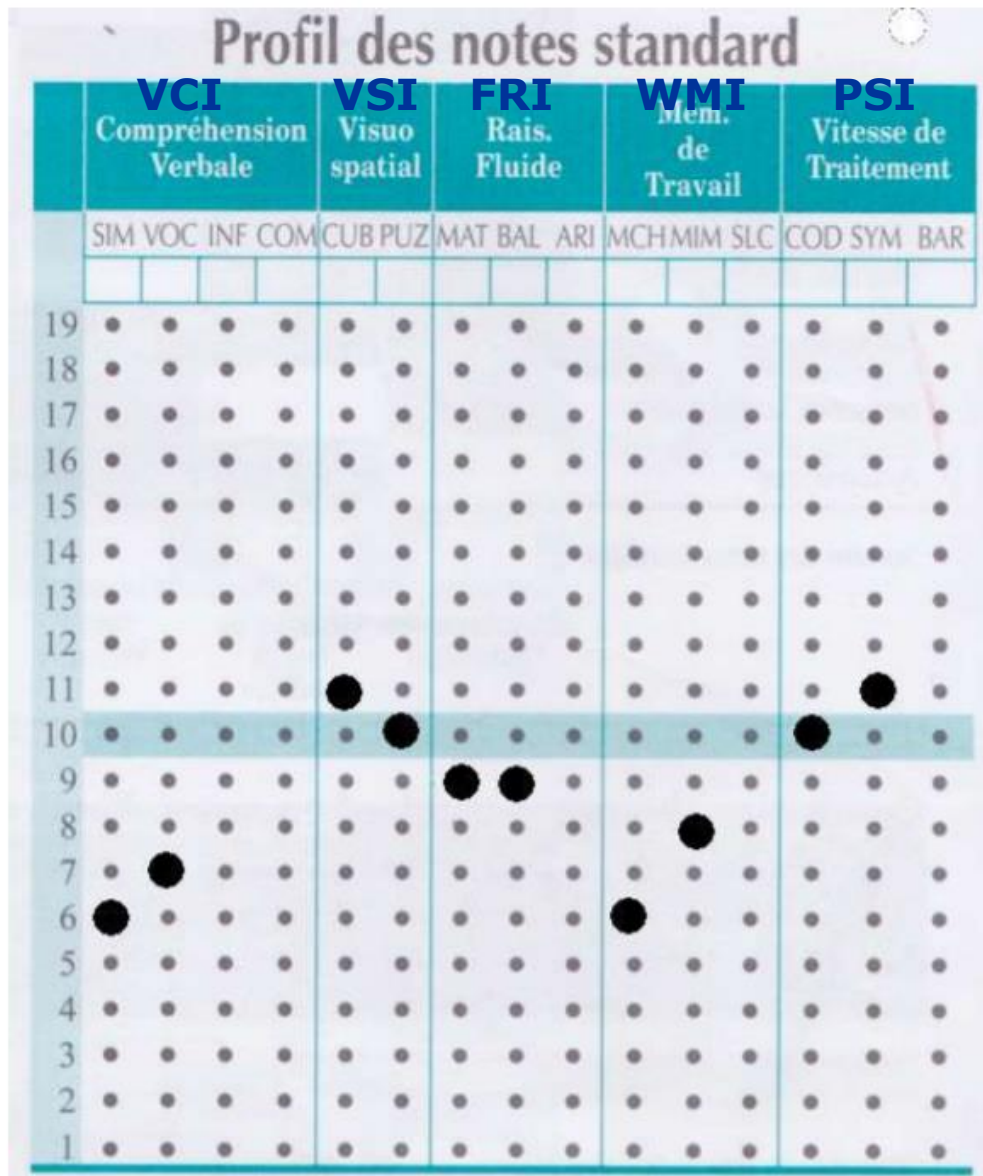|	VCI	VSI	FRI	WMI	PSI	FSIQ
	130	111	106	91	95	113
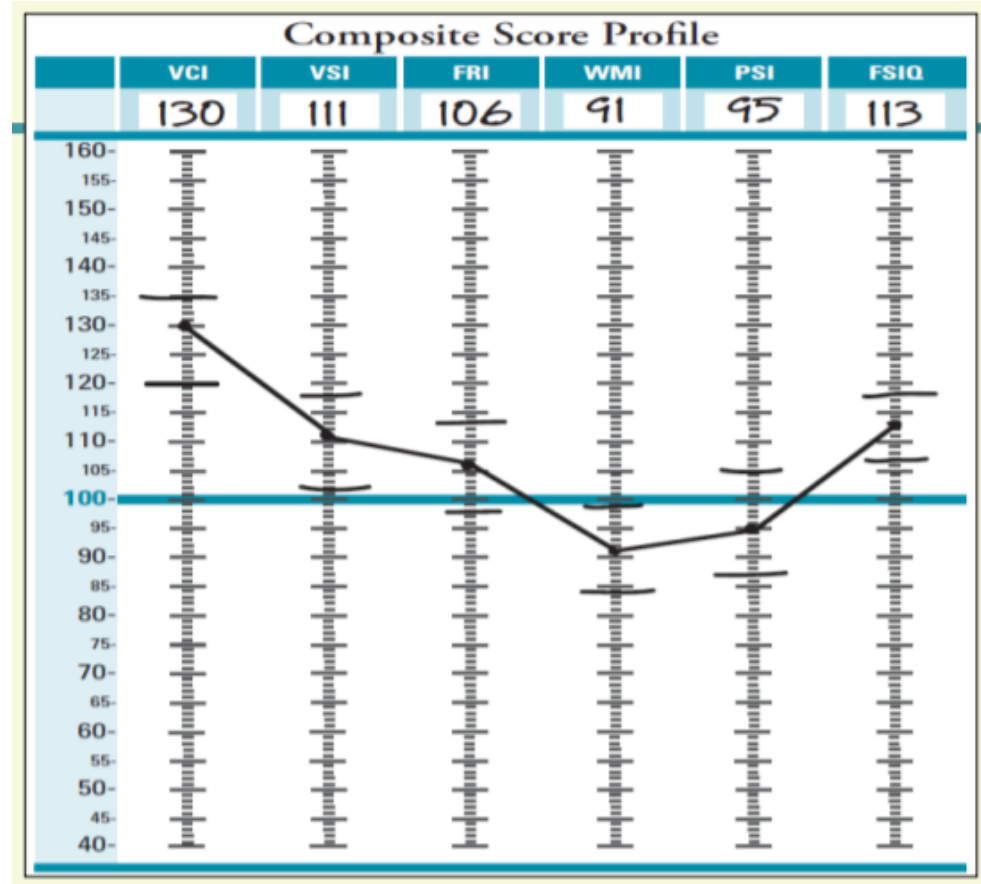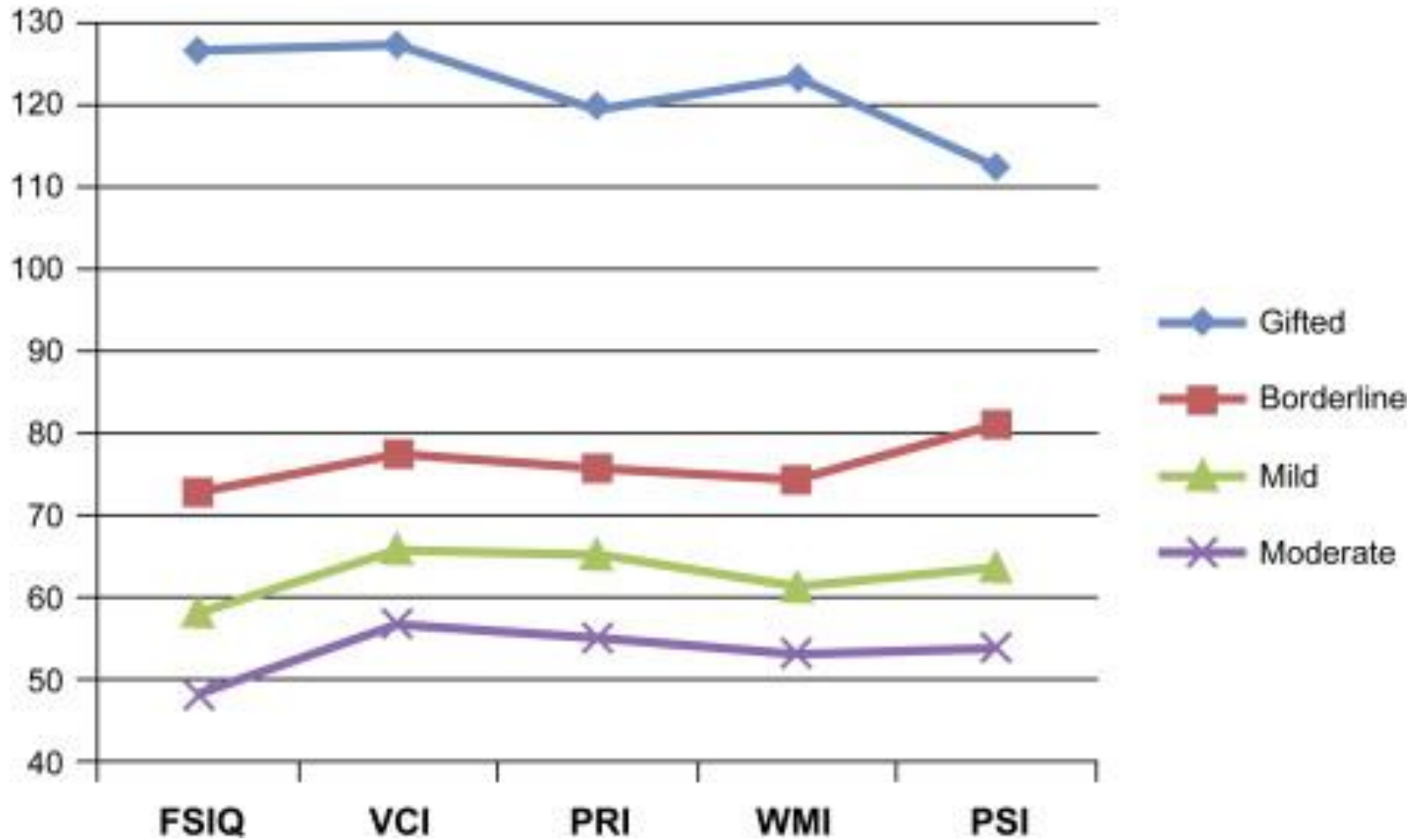
Intellectual deficiency profile
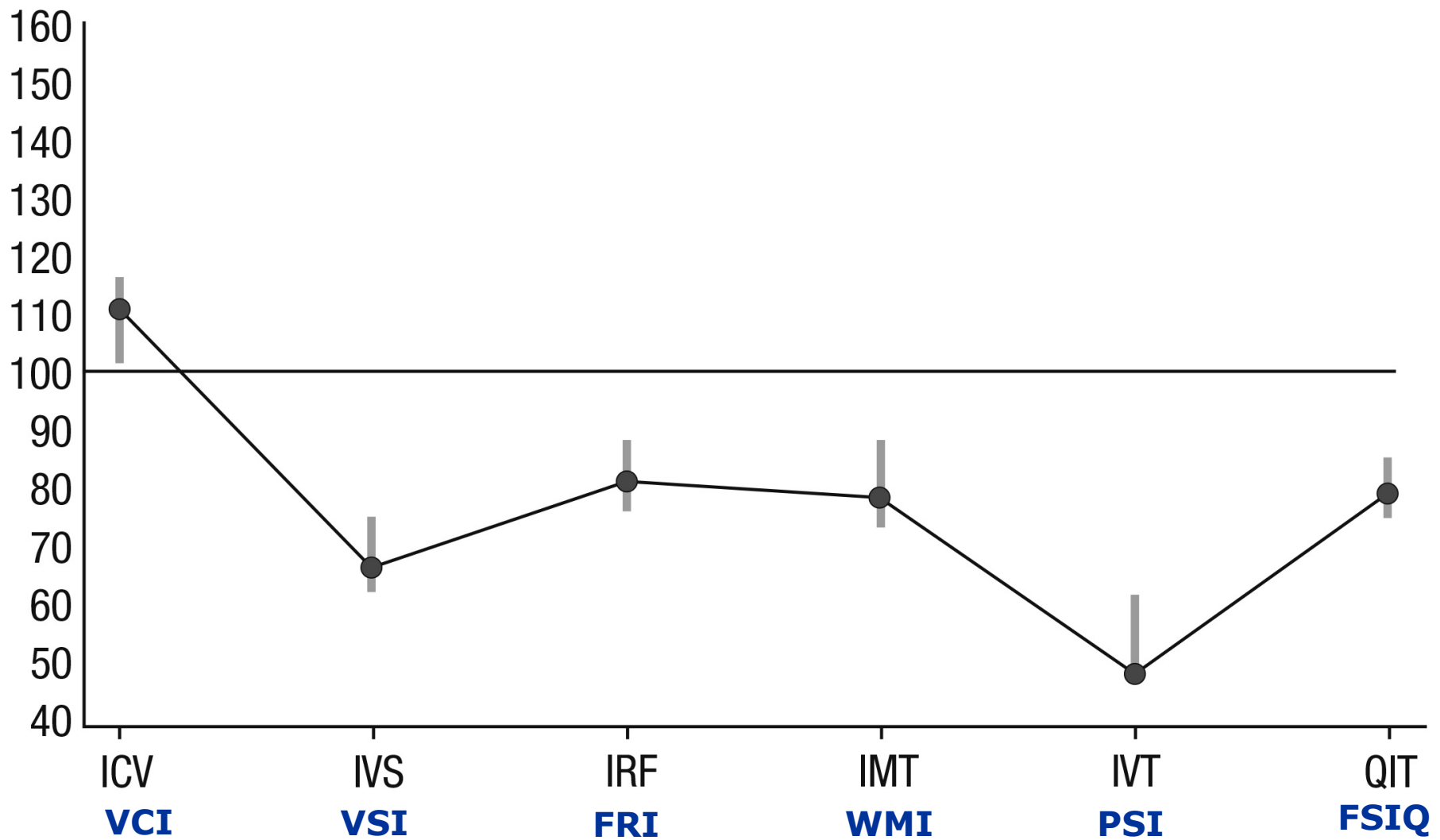
High intellectual potential profile

ADHD (attention-deficit hyperactivity disorder)

Langage disorder (dysphasia, dyslexia)

Visuo-spatial dyspraxia

WNV (4y – 21y11m)
Wechsler Nonverbal scale of ability

Non verbal scale used in case of autism spectrum disorders, traumatic brain injury, speech impairment, hearing problems, non-native speaking patients,…

Two-subtest battery (10-20 minutes)
Ages 4-7
  Matrices
  Recognition
Ages 8-21
  Matrices
  Spatial span

Four-subtest battery (30-45 minutes)
Ages 4-7
  Matrices
  Coding
  Object assembly
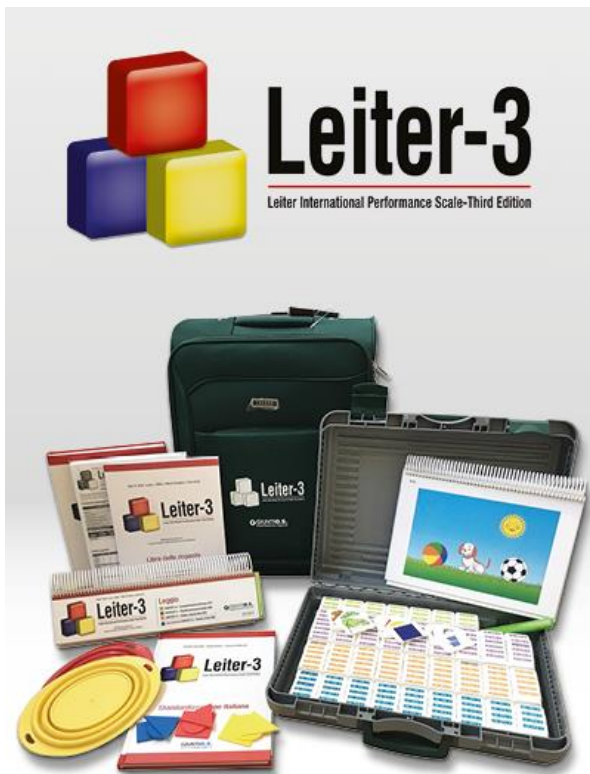 Recognition
Ages 8-21
  Matrices
  Coding
  Spatial span
  Picture arrangement

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➢ **<u>Leiter test (2y – 18y, also > 18y):</u>**
Leiter International Performance Scale

Non verbal scale, only performance scale based on memory and nonverbal reasoning.
Used in case of autism spectrum disorders, traumatic brain injury, speech impairment, hearing problems, non native speaking patients, …

<u>4 domains</u>

- *fluid intelligence*

- *visualization*

- *memory*

- *attention*

Thank you for your attention!