FROM ASSESSMENT TO ACTION:

Understanding and Implementing Neuropsychological Reports and Recommendations for Students with Language-Based Learning Disabilities

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Achieve New England

- Neuropsychological, Psychological, Developmental, and Educational Testing
- Ages 18 months to 26 years old
- Utilize a strengths/weaknesses framework
- Provide diagnostic formulation and "road map"
- Go beyond "above/below/at" grade level

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The Changing Face of Neuropsychology

Old Model

- to determine the area of the brain which may have been damaged following injury or neurological illness
- Imaging has largely replaced this function

New Model

- Testing has moved in the direction of assessing *cognition* and *behavior*
- Integrative approaches now assess cognitive, academic, behavioral, emotional, social, and adaptive domains, as well as contextual circumstances

Examples of Questions from Parents & Teachers

"Why is Jacob such a behavior problem?"

"Is Casey making effective academic progress?"

"What factors underlie Aidan's school refusal?"

"John has always been a little quirky… does he have ASD?"

"Why is Leena so lazy?"

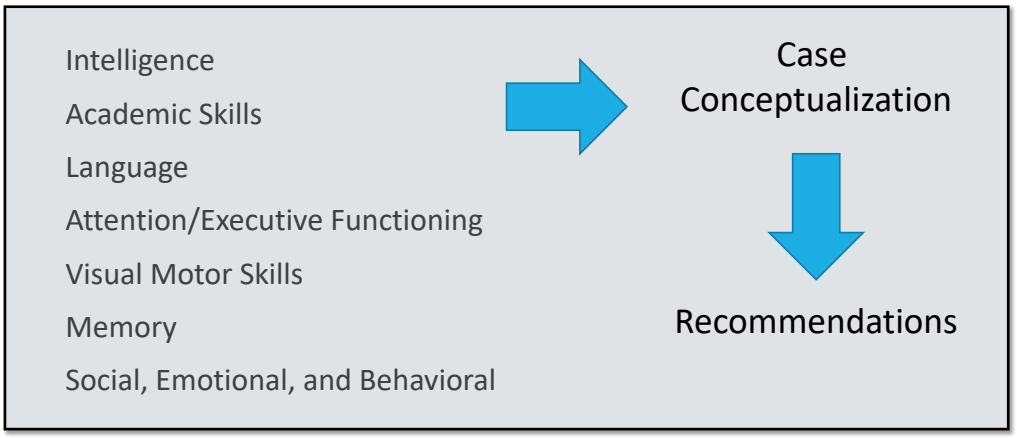
"Does Jeff have a processing problem?"

"Why can't Jessica seem to make social connections?"

"Could Nicole have a learning disability – or is it ADHD?"

"How can we help David's learning?"

Neuropsychological Assessment

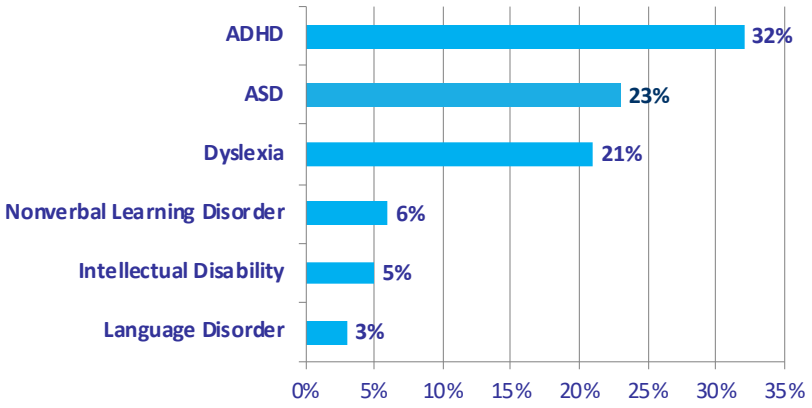


Neuropsychological Assessment

Comprehensive assessments help answer questions such as:

- What are the individual's strengths and weaknesses?
- What kind of progress is being made?
- Are additional emotional or learning challenges interfering with success?
- What supports will be needed to succeed?
- What treatments and supports are needed?

Youth Presenting for Outpatient Assessment



Looking Beyond the Diagnosis

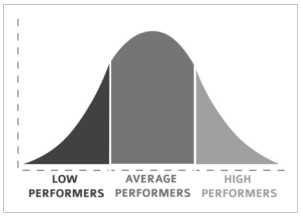
Youth with learning challenges often struggle across multiple domains of life

PRIMARY NEUROPSYCH DIAGNOSIS	PERCENT OF PATIENTS WITH CO-OCCURING CONCERNS IN OTHER DOMAINS				
	Anxiety	Mood	Behavior	Family Stress	Adaptive Skills
Autism Spectrum Disorder	63%	49%	27%	20%	71%
Learning Disorder	48%	41%	23%	17%	66%
ADHD	45%	41%	33%	17%	65%

Neuropsychological Testing

The Basics

- Tests are standardized and normed
- Multiple domains are assessed
- Multiple methods are used
- Tests don't diagnose, clinicians do
- Recommendations based on objective data



Standard Score	Scaled Score	T-Score	Percentile	Descriptor
<70	<4	<30	<2nd	Impaired
70-80	4-6	30 – 36	2nd – 9th	Borderline
81-89	7	37 – 43	10th – 24th	Low Average
90-110	8-12	44 – 56	25th – 75th	Average
111-119	13-14	57 – 63	76th – 90th	High Average
120-129	15	64 – 69	91st – 97th	Superior
>129	>16	>69	>97th	Very Superior

A Typical Assessment Battery

- **Tests of Cognitive Ability and Social Skills**
  - Intelligence (WISC-IV, WAIS-IV)
  - Attention & Executive Functioning (CPT-II, D-KEFS, Wisconsin)
  - Language & Related Functions (EVT-2, PPVT-4, CTOPP)
  - Memory (CVLT-C, WRAML2)
  - Visual-Motor (VMI, Grooved Pegboard)
  - Social functioning (Test of Problem Solving, ADOS-2)
- **Tests of Academic Achievement**
  - WIAT-III, Woodcock-Johnson Tests of Achievement-III
- **Parent & Teacher Questionnaires**
  - Emotional & Behavioral (CBCL, BRIEF, BASC-2)
  - Social (Social Responsiveness Scale)
  - Adaptive (ABAS-II)
- **In some cases, school observations or consultation**

Key Neuropsychological Domains

INTELLIGENCE – ATTENTION – EXECUTIVE FUNCTIONING – LEARNING & MEMORY – LANGUAGE – SPATIAL ABILITIES– MOTOR SKILLS – EMOTIONAL – SOCIAL – ADAPTIVE SKILLS

Intelligence

Intelligence

"Intelligence is the aggregate or global capacity of the individual to **act purposefully**, **think rationally**, and **deal effectively** with his environment."

-David Wechsler, 1944

Intelligence

Intelligence: the ability to acquire and apply knowledge and skill

Critical to understanding a student's *potential*

Common Intelligence Tests:

- Wechsler Intelligence Scales (WPPSI-IV, WISC-V, WAIS-IV, WASI-IV)
- Differential Ability Scales, Second Edition (DAS-II)
- Stanford-Binet Intelligence Test, Fifth Edition (SB-5)
- Kaufman Assessment Battery for Children, Second Edition (KABC-II)

Assess: Verbal, Nonverbal, Spatial, Working Memory, Processing Speed

Intelligence

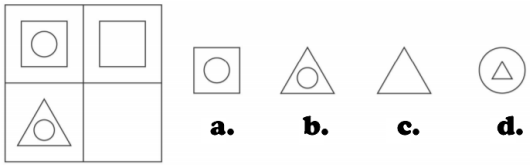
Intellectual Potential (IQ)

Verbal Intellect

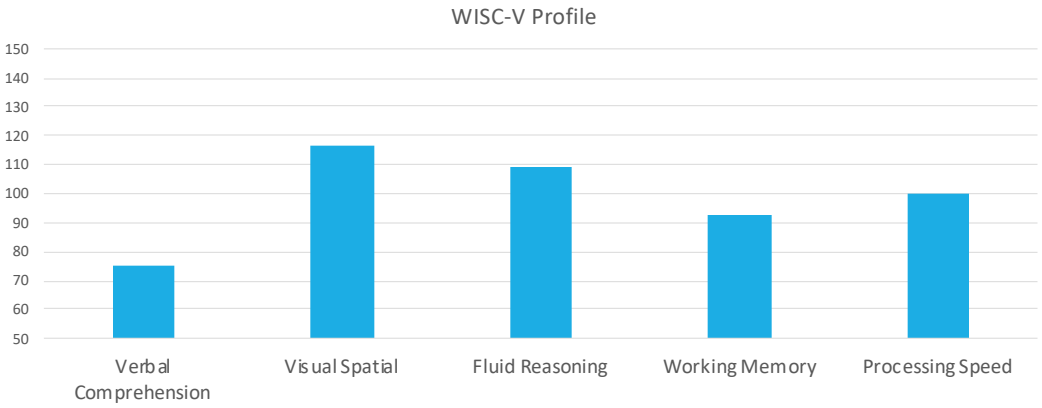
In what way are a window and a telescope alike?

Nonverbal Intellect

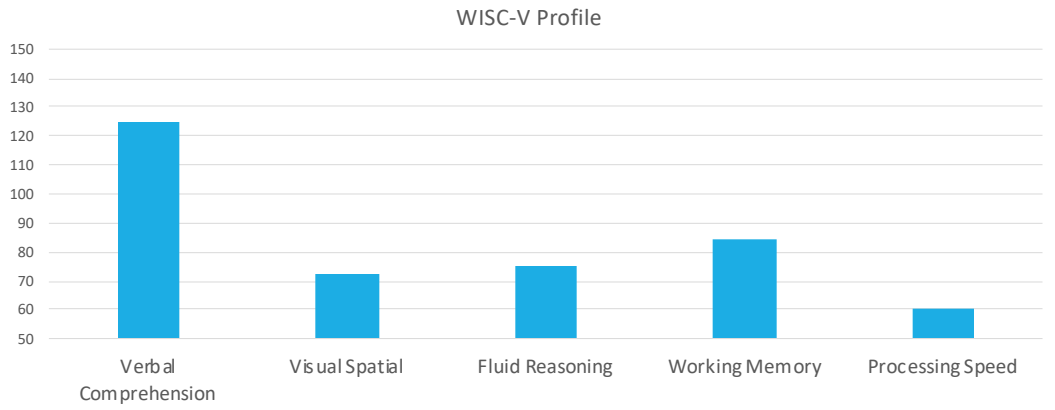
Fill in the missing box.



Intelligence



Intelligence



Attention

Attention

Attention: cognitive process of selectively concentrating on a discrete aspect of information, while ignoring other perceivable information

Sustained *visual* and *auditory* attention

Common Tests of Attention:

- Conners Continuous Performance Test, Third Edition (CPT-3)
- Test of Everyday Attention for Children (TEA-Ch)
- Conners Continuous Auditory Test of Attention (CATA)

Attention

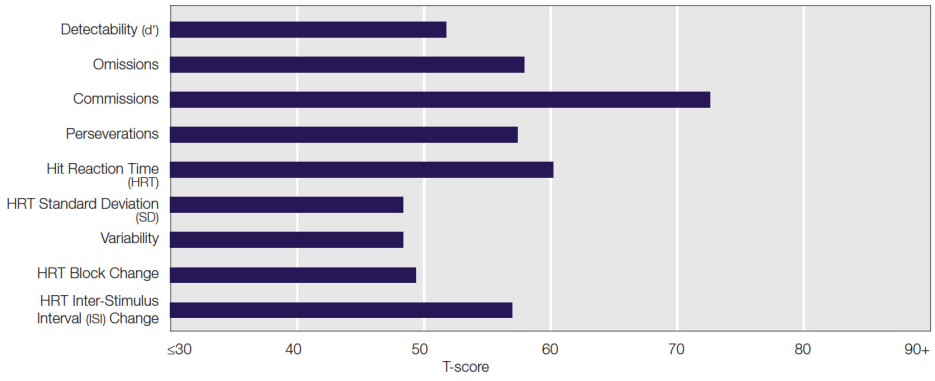
A

Attention

X

Attention

This section provides an overview of Grant's CPT 3 scores.

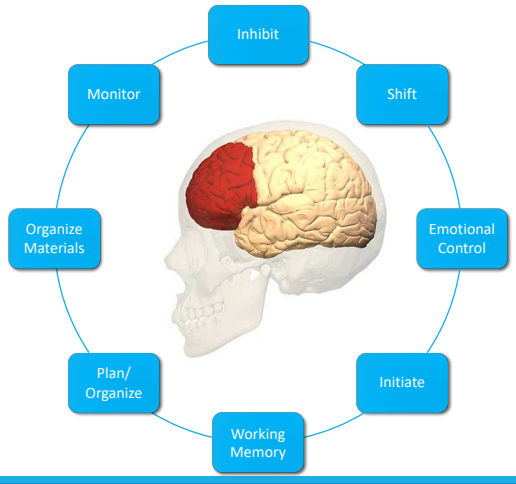


Executive Functioning

Executive Functioning

Executive Functioning: mental processes that enable us to plan, focus attention, remember, and juggle multiple tasks

Executive Functions involve control over thinking and include tasks such as:



Executive Functioning Impairments Across Multiple Childhood Disorders

Executive Functioning Skills Defined

Preschool: tidy playroom, perform simple self-help tasks

K to 2nd grade: bring papers to and from school, follow safety rules

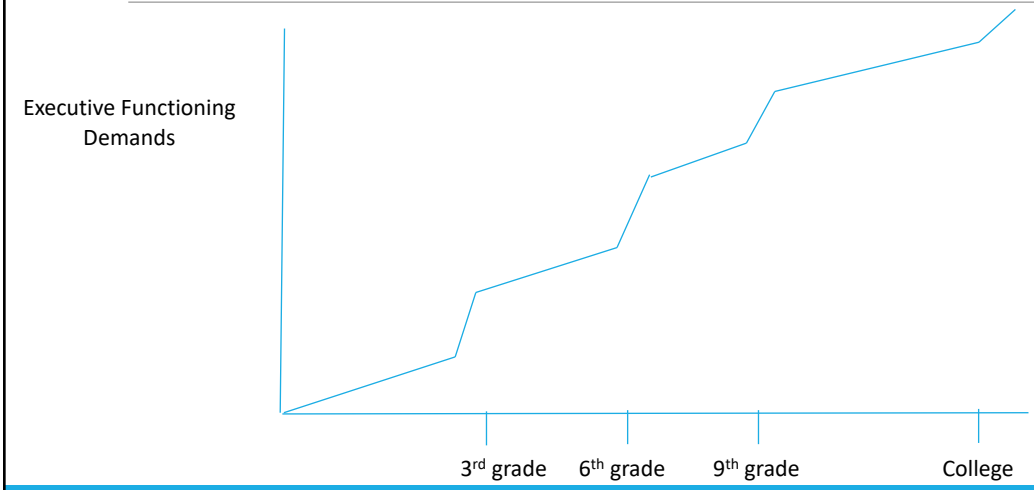
3rd grade to 5th grade: complete homework, track of daily activities

6th grade to 8th grade: plan for big projects, use organization system

9th grade to 12th grade: study for finals/SATs, large group projects

College: manage multiple classes, little professor oversight

"Highs & Lows" of Executive Functioning Demands (in Massachusetts)



Academic Impact of Executive Functioning Weaknesses

Inhibiting

- Starts an activity before waiting for instructions
- Trouble standing still in lines
- Interrupting
- Silliness and "clowning around"

Shifting

- Difficult stopping an activity and moving to the next
- Trouble tolerating a substitute or schedule change
- Becomes "stuck" on a particular line of thinking

Academic Impact of Executive Functioning Weaknesses

Emotional Control
- Frequent outbursts
- Excessively upset over small changes in classroom routine

Initiating
- Difficulty knowing how/where to start on a project
- Trouble coming up with ideas (e.g., ”What should I write about?”)

Working Memory
- Problems following activities with more than one step
- Losing track of what they’re doing in assignments

Academic Impact of Executive Functioning Weaknesses

Planning and Organization
- Waiting until the last minute to start a project
- Underestimating time needed to study
- Getting caught up in details and missing the big picture

Organization of Materials
- Trouble keeping track of belongings
- Messy desk and schoolbag

Self Monitoring
- Difficulty noticing careless errors
- Trouble reflecting on what works and does not work

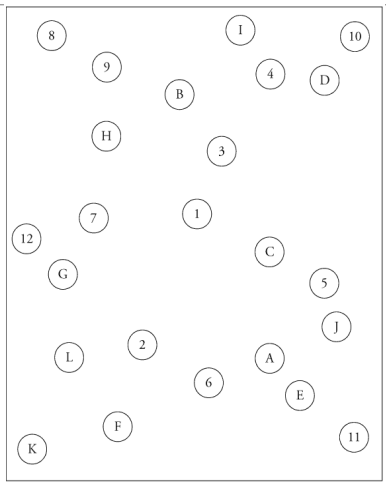
Executive Functioning

Inhibition: The Stroop Test

PURPLE YELLOW RED
BLACK RED GREEN
RED YELLOW ORANGE
BLUE PURPLE BLACK
RED GREEN ORANGE

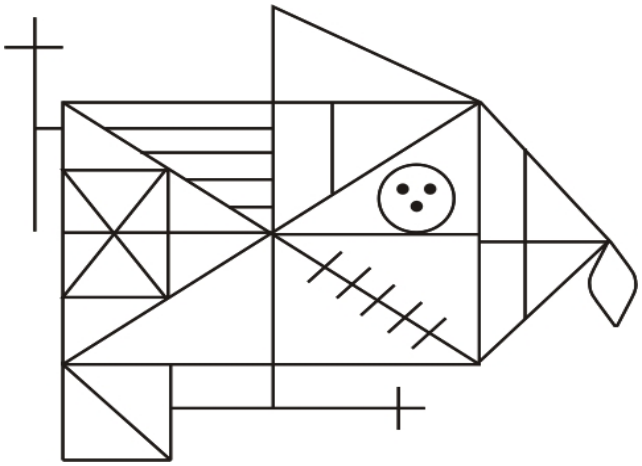
Executive Functioning

Set Shifting: The Trail Making Test



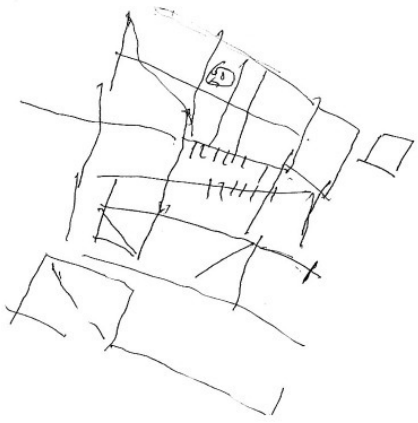
Executive Functioning

Organization & Planning: Rey Complex Figure Test



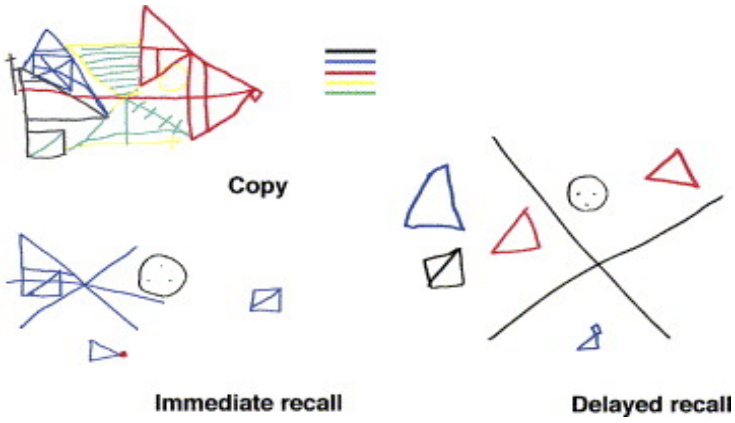
Executive Functioning

Organization & Planning: Rey Complex Figure Test



Executive Functioning

Organization & Planning: Rey Complex Figure Test



Executive Functioning

Retrieval and Fluency: Verbal Fluency Test

In one minute…

-name as many foods as you can

-name as many words as you can that start with the letter k

Memory & Learning

MEMORY & LEARNING

Memory: faculty of the mind by which information is encoded, stored, and retrieved

Aspects of Memory:

- Visual versus Verbal
- Recognition vs Recall
- Encoding, Storage, and Retrieval

Common Tests of Memory:

- Wide Range Assessment of Memory and Learning (WRAML-2)
- California Verbal Learning Test, Children's Version (CVLT-C)
- Children's Memory Scale (CMS)

MEMORY & LEARNING

REY AUDITORY VERBAL LEARNING TEST (RAVLT) *Phase I*

Patient: _____

Age: _____

LIST A	1	2	3	4	5	LIST B	1	LIST A	6	7
DRUM						DESK		DRUM		
CURTAIN						RANGER		CURTAIN		
BELL						BIRD		BELL		
COFFEE						SHOE		COFFEE		
SCHOOL						STOVE		SCHOOL		
PARENT						MOUNTAIN		PARENT		
MOON						GLASSES		MOON		
GARDEN						TOWEL		GARDEN		
HAT						CLOUD		HAT		
FARMER						BOAT		FARMER		
NOSE						LAMB		NOSE		
TURKEY						GUN		TURKEY		
COLOR						PENCIL		COLOR		
HOUSE						CHURCH		HOUSE		
RIVER						FISH		RIVER		
SCORE										

Figure 3 - Rey Auditory Verbal Learning Test (RAVLT)

Language & Related Functions

LANGUAGE & RELATED FUNCTIONS

Language: ability to acquire and use complex systems of communication

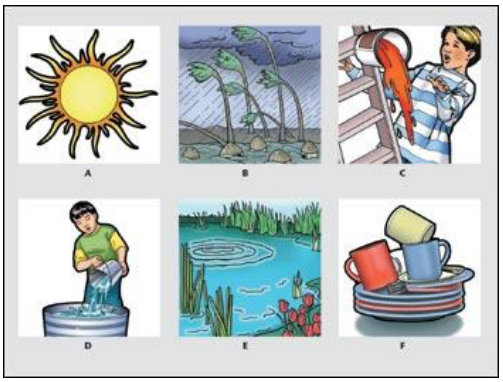
Aspects of Language:
- Phonics, Vocabulary, Grammar/Syntax, Sentence Structure, Pragmatics

Common Tests of Language:
- Clinical Evaluation of Language Fundamentals (CELF-5)
- Peabody Picture Vocabulary Test (PPVT-4)
- Expressive Vocabulary Test (EVT-2)
- Comprehensive Test of Phonological Processing (CTOPP-2)
- Test of Pragmatic Language (TOPL-2)

Language and Related Functions
Receptive and Expressive Vocabulary

Receptive: Point to the one that shows… **SPILL**

Expressive Name the word that goes with each picture.



Dyslexia Explained

What's Dyslexia Again?

Phonics: Dyslexia's Core Deficit

Read this word:

CLAT

What's Dyslexia Again?

Phonics: Dyslexia's Core Deficit

Read this word:

CLATE

What's Dyslexia Again?

Phonics: Dyslexia's Core Deficit

Read this word:

CLATEE

What's Dyslexia Again?

Phonics: Dyslexia's Core Deficit

Write this word:

What's Dyslexia Again?

Phonics: Dyslexia's Core Deficit

Write this word:

PLID

What's Dyslexia Again?

Dyslexia:

"So, what's it like to be dyslexic?"

Simulation Exercise (Understood.org)

Language and Related Functions
Phonological Awareness

Tell me a word that rhymes with **battle**.

Say **pixel**. Now say it again, but don't say **/s/**

What is the third sound in the word "**strip**"?

Language and Related Functions
Symbolic Naming and Rapid Retrieval (Rapid Naming)

Name these letters as quickly as you can.

Y Z Q R J P N

Name these animals as quickly as you can.






Quickly the mathematical value, procedure, or concept associated each symbol.

÷ × − √ = % –

Perceptual & Motor Processing

Perceptual and Motor Processing

Involves the processing of visual, spatial, & motor information (often simultaneously)

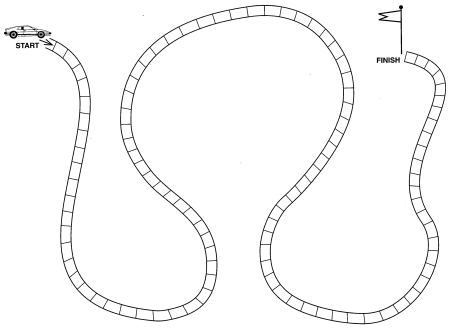
Aspects of Perceptual and Motor Processing:
- Visual and spatial perception
- Integration or manipulation of visual-spatial information
- Fine motor precision and speed
- Integration of visual and motor information

Common Tests of Spatial and Motor Abilities:
- Grooved Pegboard Test
- Wide Range Assessment of Visual Motor Abilities (WRAVMA)
- Visual-Motor Integration Test

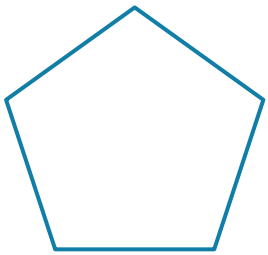
Perceptual and Motor Processing
Fine Motor Precision & Speed

Perceptual and Motor Processing
Visual-Motor Integration

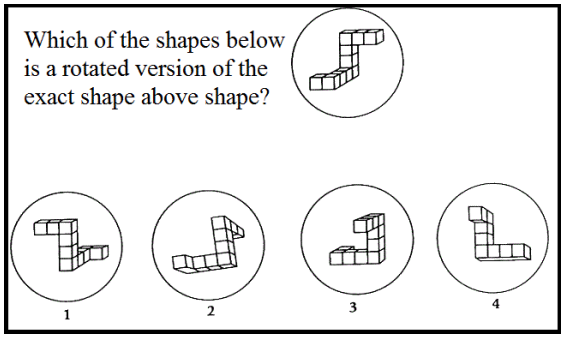
Trace this line as quickly as possible



Copy this shape.



Perceptual and Motor Processing
More complex Visual Spatial Processing



Academic Achievement

Academic Achievement

Academic Testing: assessment of reading, math, spelling, and writing

Common Academic Tests:

- Wechsler Individual Achievement Test, Third Edition (WIAT-III)
- Woodcock-Johnson Tests of Achievement, Fourth Edition (WJ-IV)
- Gray Oral Reading Test, Fifth Edition (GORT-5)

Academic Achievement

Is the student achieving at his/her *potential?*

An Example: Two 12-year-old boys

JEFFREY WISC-IV	Standard	Percentile
Verbal Comprehension	98	45th
Perceptual Reasoning	100	50th
Working Memory	94	34th
Processing Speed	103	58th
Full Scale IQ	99	47th

FRANK WISC-IV	Standard	Percentile
Verbal Comprehension	89	23rd
Perceptual Reasoning	112	79th
Working Memory	88	21st
Processing Speed	100	50th
Full Scale IQ	91	27th

Academic Achievement

Is the student achieving at his/her *potential?*

IQ and Achievement

"Reading achievement…is substantially below that expected given the person's chronological age, measured intelligence, and age-appropriate education."

Simple Difference	Predicted Difference
1 to 1 ½ Standard (14 or 22 points)	Based on statistical analyses of co-normed measures

Academic Achievement

Assessment of achievement is *multi-dimensional*

Examples of Reading Competency

Competency Domain	
Single-Word Reading	warm, almost ocean, people
Decoding & Word Attack	mip huffle hufle
(Phonological Processing)	Say "groaning" without saying "n"
Oral Reading Fluency Silent Reading Rate Reading Comprehension	The dogsled race was about to begin. Julie's team of dogs was lined up at the starting gate. Julie stood behind them. The air was so cold that she could see her breath. Other teams were lined up, too, and the dogs were excited.

Academic Achievement

Is the student reading *at grade level*?

The Controversy of Grade Equivalents

Tanya, age 12, Seventh grade

WIAT-III	Standard	Percentile	Grade Equivalent
Word Reading	76	5th	2:7
Oral Reading Fluency	85	16th	4:8
Reading Rate	96	39th	5:8
Reading Accuracy	74	4th	2:5
Reading Comprehension	82	12th	2:3

Grade equivalents tell you the grade level at which the score obtained is an *average* one.

The number of words that Tanya read correctly is the average number of words read by students in the seventh month of second grade.

Academic Achievement

Is the student reading *at grade level*?

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ball
jump
turn
ready
penguin
tomato
respite
charity
fortitude
parsimonious

Academic Achievement

Is the student reading *at grade level*?

The Controversy of Grade Equivalents

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We CAN say:

- ✓ Her overall score is typical of a second grader
- ✓ She performed worse than 93% of 7th graders

We CANNOT say:

- ✗ Her word reading is "at the second grade level"
- ✗ She is 5 years below grade-level

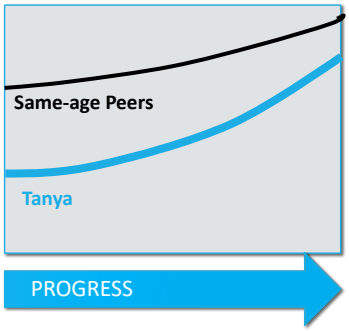
Academic Achievement

Do comparisons over time show *meaningful progress*?

A Few Possible Scenarios

Effective Progress

WIAT-III	Raw Score	Standard Score	Percentile	Grade Equivalent
Word Reading Baseline	32	76	5th	2:7
Word Reading 1-year Follow-up	55	86	18th	5:8



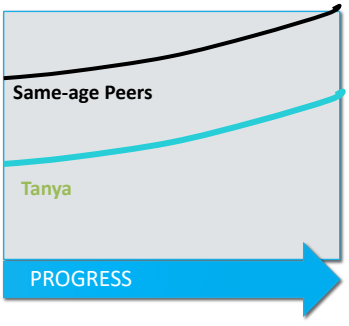
Academic Achievement

Do comparisons over time show *meaningful progress*?

A Few Possible Scenarios

Some Progress but no Meaningful Remediation

WIAT-III	Raw Score	Standard Score	Percentile	Grade Equivalent
Word Reading Baseline	32	76	5th	2:7
Word Reading 1-year Follow-up	43	78	7th	4:5



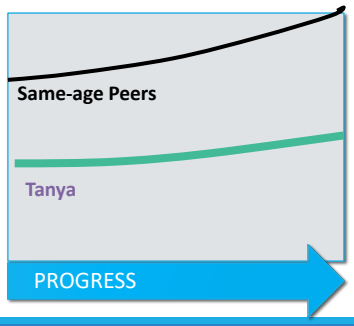
Academic Achievement

Do comparisons over time show *meaningful progress*?

A Few Possible Scenarios

Lack of Progress (falling further behind)

WIAT-III	Raw Score	Standard Score	Percentile	Grade Equivalent
Word Reading Baseline	32	76	5th	2:7
Word Reading 1-year Follow-up	35	71	3rd	3:2



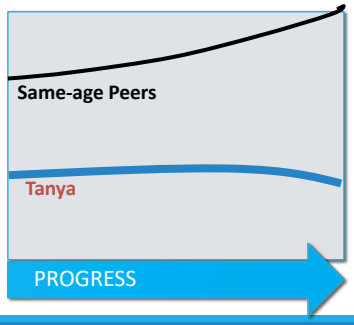
Academic Achievement

Do comparisons over time show *meaningful progress*?

A Few Possible Scenarios

Regression in Skills

WIAT-III	Raw Score	Standard Score	Percentile	Grade Equivalent
Word Reading Baseline	32	76	5th	2:7
Word Reading 1-year Follow-up	28	67	1st	2:2



Emotional and Behavioral Adjustment

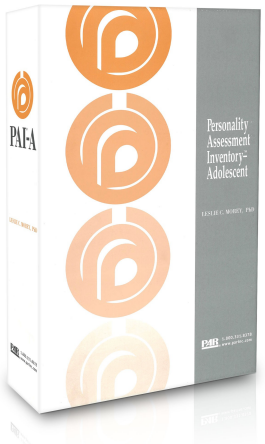
Psychological Testing

Assessment of emotional, social, personality, and behavioral aspects of a child's functioning

Various methods of assessment:

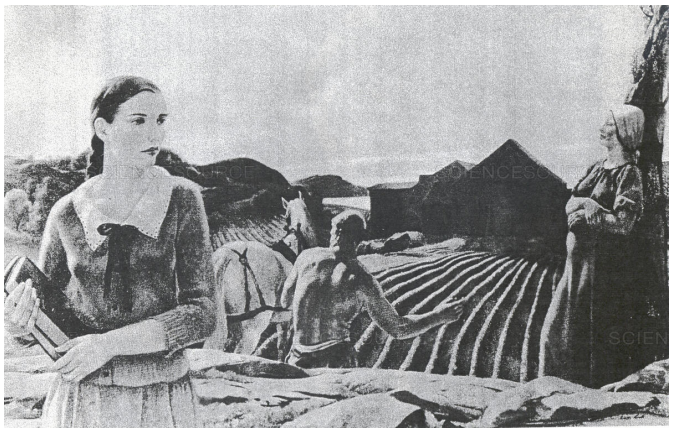
- Clinical Interview (Parent/Child)
- Self-Report Questionnaires
  - e.g., Personality Assessment Inventory, Adolescent Version (PAI-A)
- Standardized Rating Scales (Parent/Teacher)
  - e.g., Behavior Assessment System for Children, Third Edition (BASC-3)
- Projective Assessment
  - e.g., Thematic Apperception Test (TAT)

Psychological Testing



Psychological Testing

Psychological Testing

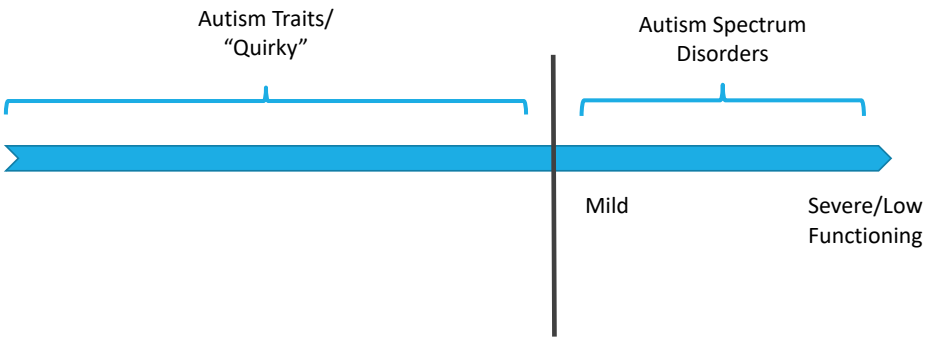


Social Skills

Assessment of Social Skills

- Autism Diagnostic Observation Schedule, Second Edition (ADOS-2)
  - Social affect and restricted/repetitive behaviors
  - Series of planned social occasions which place "presses" on a child's socialization skills
  - Ages 12 mos. To 99 years old
- Extensive training in administration and scoring procedures
- Autism/ASD cut-offs and symptom severity level

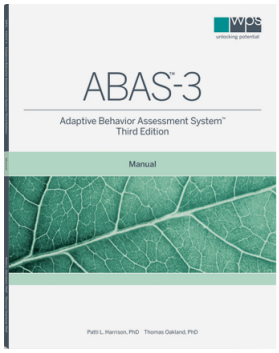
The Autism "Spectrum"

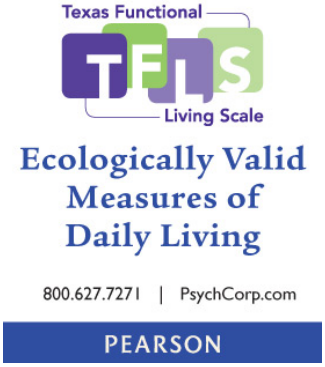


Adaptive Daily Living Skills

Assessment of Adaptive Living Skills

- Adaptive Living Skills
  - Conceptual (e.g., communication, functional academics)
  - Socialization (e.g., leisure time)
  - Practical (e.g., self-care)





Pulling It All Together

Comprehensive Neuropsychological Report

Feedback with family members

School consultation

Follow-up

Supporting Students with Learning Differences

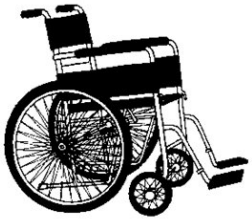
Supporting Students with Learning Differences

The three A's of Supporting Students with Learning Differences

- Accept & Understand
- Accommodate
- Assist with Skill Development

Supporting Students with Learning Differences

Living with a Learning Disability:



Supporting Students with Learning Differences

Accept and Understand

- Assist teachers in developing an strong understanding of learning disabilities
- Analogies/metaphors can be helpful
  - Flashlight for attention
  - Good driving skills for executive functions
  - PC versus Mac for dyslexia
- Communicate with parents
  - Many parents are confused about their child's learning differences
  - Parent-teacher communication systems are critical
  - Consistency, routine, and immediate feedback are key

Supporting Students with Learning Differences

Accommodate

- Allow extra time on tests
- Break down tasks into manageable components
- Provide study outlines prior to exams
- Allow "second chances" to earn back points on missed assignments or when careless errors are evident
- Reduce busy work and overall homework load when possible
- Reduce sources of distraction in the classroom or during testing

Supporting Students with Learning Differences

Assist with Skill Development

- Learning center or academic support lab
- Explicit instruction and support
  - "Time it takes" list
  - Technological tools (30/30, schoology, calendars, reminders)
  - Structures of language (cause/effect, compare/contrast, problem/solutions)
  - Structured Literacy (fact sheet available at www.dyslexiaida.org)

Why Do Learning Interventions Fail?

- Intervention strategies are not linked to external rewards
- Despite support, demands continue to outweigh student capabilities
- Expectations that students will be advocates for themselves
- Inconsistent implementation
- Lack of thorough assessment and screening

Dyslexia Screening Legislation

Federal

- In September 2016, the U.S. Senate passed Resolution 576 which…

  "…designates October 2016 as National Dyslexia Awareness Month, and calls on Congress, schools, and educational agencies to recognize that dyslexia has significant educational implications that must be addressed."

State

- In October 2019, the MA State Legislature approved Chapter 272 of the Acts of 2018. The new law requires the Department of Elementary and Secondary Education (DESE), in consultation with the Department of Early Education and Care (EEC) to

  "…issue guidelines to assist districts in developing screening procedures or protocols for students that demonstrate one or more potential indicators of a neurological learning disability, including, but not limited to, dyslexia."

From Assessment to Action:

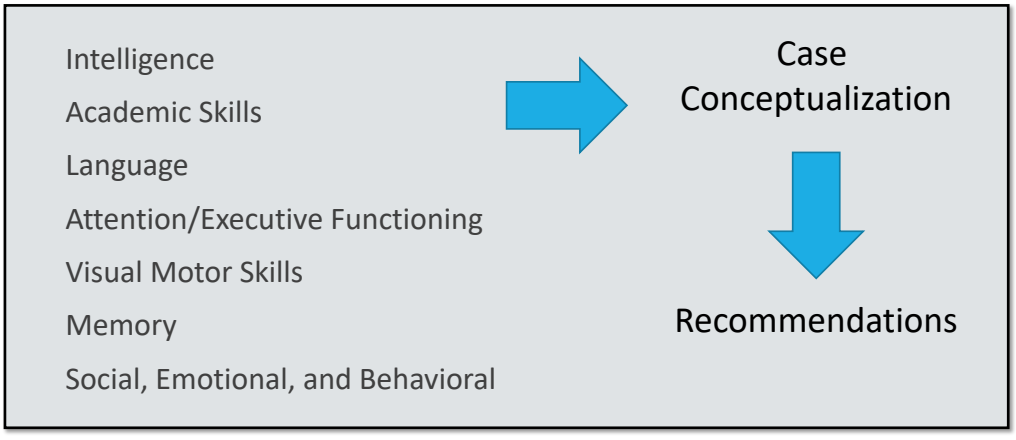
A FRAMEWORK FOR INTERPRETATION

Meet Joseph (age 13, 8th grade)

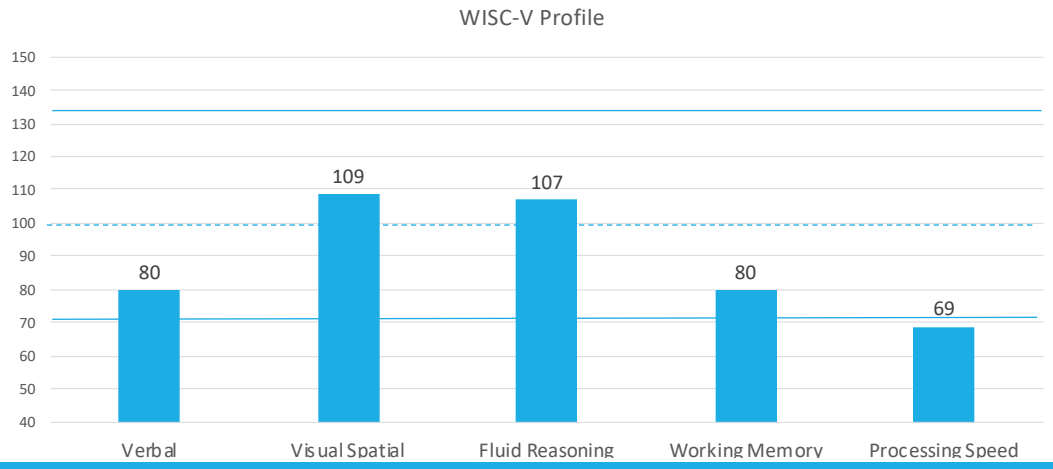
Mom: "I just don't know what's up with Joseph. He is a great kid, but he has struggled in school since the very beginning. He was slow to walk, slow to talk, slow to learn his letters and numbers. Frankly, he's always been a step behind. First grade and second grade were tough, but he had great teachers and we worked a lot with him at home – so he made it through. Since starting middle school, he's really floundered. His reading and spelling aren't up to grade level – and math is even worse. I am not even sure if he even really knows how to add and subtract at this point. And homework time is the worst. It takes him twice a long to get things done, he never knows where to start, and he seems lost and scattered. He'd rather play Minecraft than get his work done. His dad thinks it is just laziness and I'm not even sure what's going on. Maybe it is a learning issue – maybe motivation – maybe some combination of both? His teachers thought testing might be helpful, so that's why we are here."

Hypotheses?

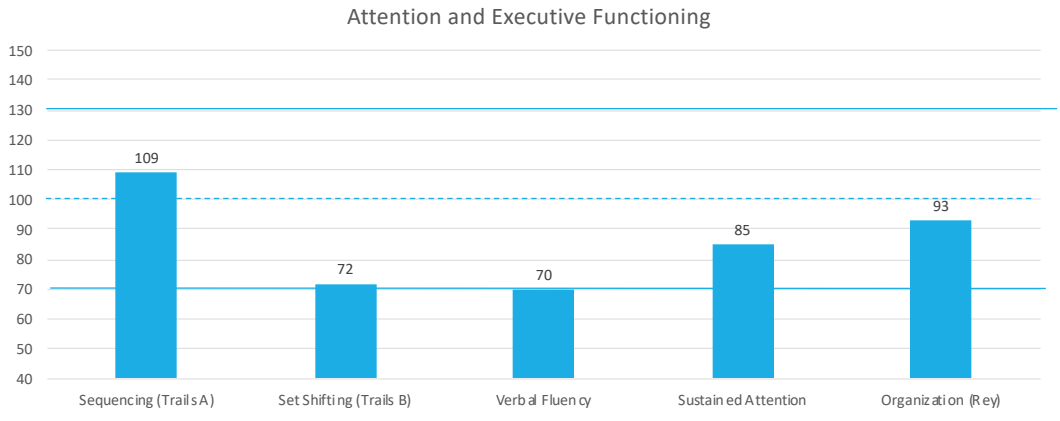
Neuropsychological Assessment



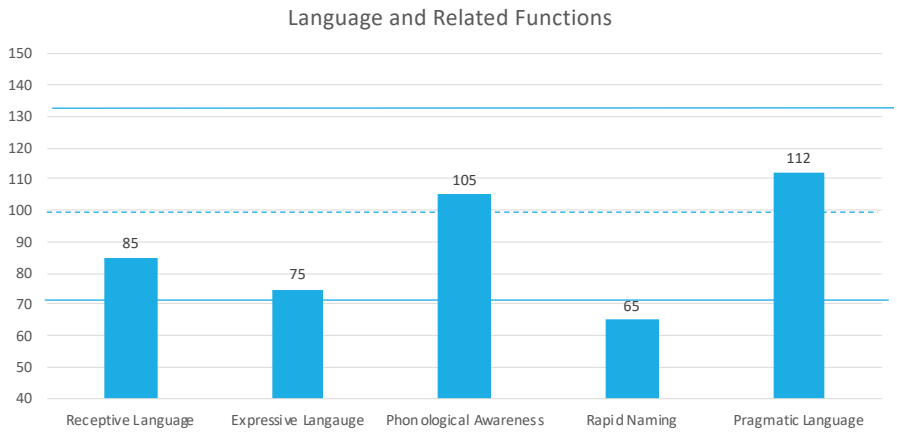
Joseph's Intellectual Testing



Joseph's Attention/Exec. Function Tests

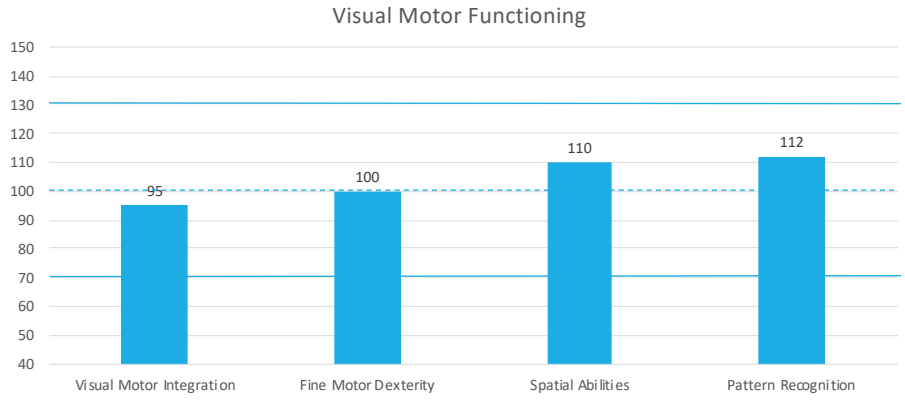


Joseph's Language Test Findings



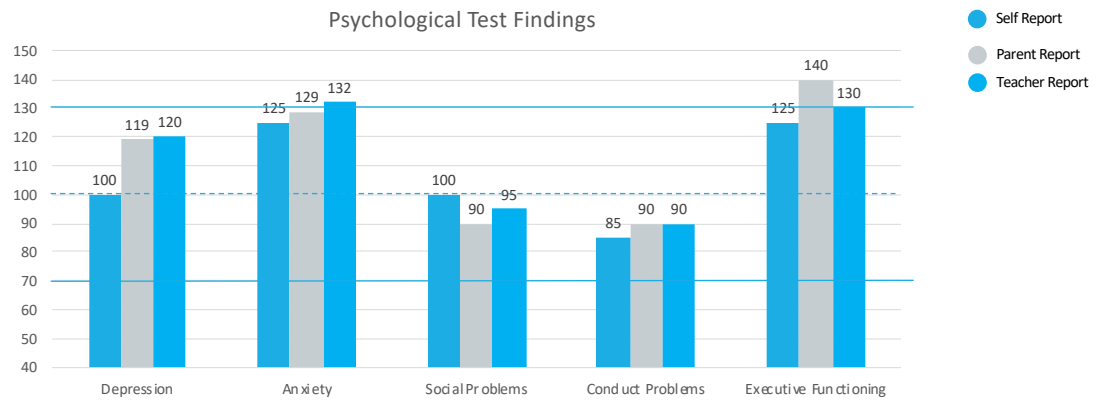
Note:
Does Joseph have Dyslexia?

Joseph's Perceptual and Motor Abilities

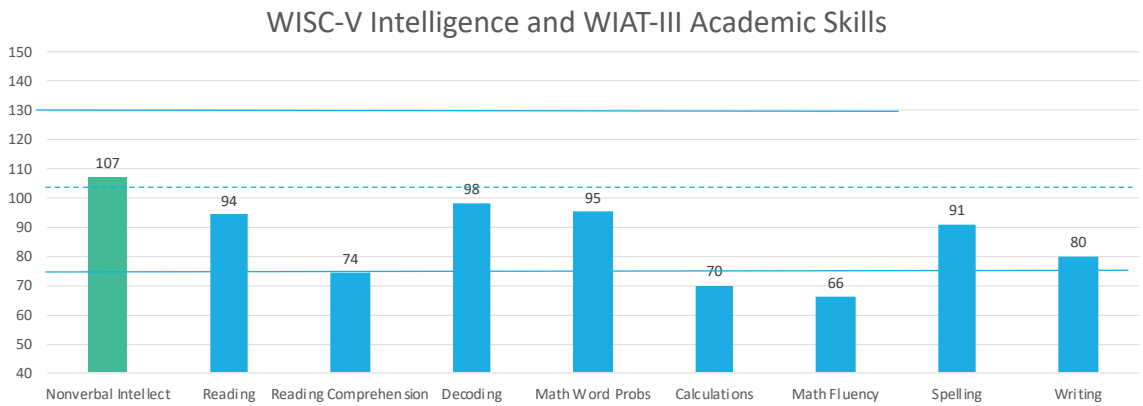


Note:
Joseph's math problems are not a Nonverbal Learning Disability (NLD)

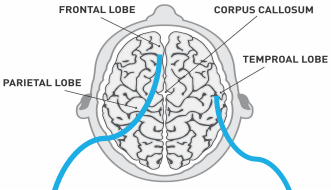
Joseph's Psychological Test Findings



Joseph's Academic Test Results



Joseph: Case Conceptualization



Strengths

- Nonverbal Intelligence
  - Visual Spatial
  - Fluid Reasoning
- Motor and Visual Motor
- Phonics
- Social/personable
- Strong work ethic
- Creative thinker
- Athletically talented

Attention & Executive Functioning

- Poor sustained attention
- Slow processing speed
- Poor working memory
- Trouble shifting sets
- Difficulty retrieving information

Language Skills

- Weak receptive/expressive language

Depressive Symptoms
Anxiety

EMOTIONAL ⟷ ACADEMIC PROBLEMS

Reading Comprehension
Math Calculation
Math Fluency
Writing

Thank you so much for your time!

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