

PASS Theory and the CAS2: The Key To Equitable Assessment, Eligibility Determination and Intervention

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Chester County Intermediate Unit

Thank you
Megan
Kapinos
!

Equitable Assessments

Jack Naglieri, PASS and CAS2
Compiled by Megan Kapinos, MS, Philadelphia College of Osteopathic Medicine



Thinking vs. Knowing

One of the most important tasks of school psychologists is to provide information about the intellectual status of a student, how that relates to current academic performance, and what interventions are needed to promote student achievement. This makes fair and unbiased intelligence testing a key part of any comprehensive assessment. However, Jack Naglieri argues that weaknesses in modern intelligence tests, require psychologists to have a more realistic view of these tests. He believes there is a need to redefine the construct of intelligence. (Naglieri, 2020)

According to Naglieri (2020), modern intelligence tests such as the WISC-V, CB-5, DASH, and WJIV rely on verbal and quantitative tests to measure ability. These tests include questions that are similar to those found in achievement tests and are dependent upon knowledge rather than ability. Many subtests require an understanding of verbal directions and expressive language. Naglieri posits that an ability test should measure Thinking not Knowing. Naglieri (2020) argues that achievement laden ability tests lead to lower scores for individuals from culturally and linguistically diverse backgrounds and those who have not had adequate opportunity to learn.

Naglieri's goal is, "to provide a new way of defining ability based on a cognitive and neuropsychological theory." (Naglieri, 2020) He and his colleague, J.D. Das, conceptualized intelligence using the PASS theory, which stands for Planning, Attention, Simultaneous and Successive processing. Together, they worked to develop a test to measure basic psychological processes.

P

PLANNING

Thinking about how to solve problems

A

ATTENTION

Focusing with resistance to distractions

S

SIMULTANEOUS

Working with things or ideas: the form a whole

S

SUCCESSIVE

Working with things or ideas in sequence

Cognitive Assessment System-Second Edition (CAS2) Fact Sheet

Population: Children and Adolescents Ages 5-18

Total Subtests: 13 subtests - Extended Battery (2 are age dependent)

Administration Time: 40 mins. (Core Battery) and 60 mins. (Extended Battery)

Subject Domains: Planning, Attention, Simultaneous and Successive

Full Scale Score: Based on 8 subtests (Core Battery) and 12 subtests (Extended Battery)

Supplemental Composite Scores: Executive Functioning Without Working Memory, Executive Functioning With Working Memory, Working Memory, Verbal Content and Nonverbal Content

Pass Scale Reliability: Ranging between .86 and .93

The PASS theory is rooted in the work completed by A.R. Luria on the functional aspects of the brain. It is a way of defining thinking and serves as the framework for the development of Das and Naglieri's Cognitive Assessment System (CAS and CAS2), which measures student ability.

PASS theory defines Planning as the neuro-cognitive function that is similar to metacognition or executive functioning. It is used for setting goals, making decisions, impulse control, strategy use and retrieval of knowledge (Naglieri, 2020). Attention is defined as the psychological process needed to focus on select stimuli and focus cognitive activity. According to the PASS theory, Simultaneous processing is used to integrate stimuli into groups or "getting the big picture". It involves recognizing patterns and relationships and is needed for academic tasks such as reading comprehension, geometry, math word problems and whole language. Successive processing is used to manage stimuli in a specific serial order. It is required for recall, decoding, phonological tasks and understanding written instructions.

Using PASS theory, Das and Naglieri developed the CAS2 to measure "thinking and not knowing". According to Naglieri the CAS2 measures basic psychological processes rather than vocabulary, arithmetic, etc. He argues that this makes the CAS2 a more equitable assessment for individuals from diverse populations and those with limited educational opportunities. The CAS2 can be administered as an 8 subtest core battery or 12 subtest extended battery. Scoring and narrative reports are obtained through an online program. According to Naglieri and Otero (2017), PASS scores are strongly correlated with achievement tests and show a pattern of strengths and weaknesses.

JACK NAGLIERI
Research Professor, University of Virginia and Senior Research Scientist, Devereux Center for Resilient Children and Emeritus Professor of Psychology at George Mason University



Dr. Naglieri has worked in the field of school psychology for 45 years. He is the author or co-author of more than 300 scholarly papers, books, and tests. Jack authored the Naglieri Nonverbal Ability Test and the Naglieri Tests of General Ability. He is also well known for his PASS neurocognitive theory as measured with the Cognitive Assessment System 2nd Edition and the instructional handouts. He authored the book *Helping Children Learn* 2nd Edition. He also authored the *Autism Spectrum Rating Scale, Comprehensive Executive Function Inventory-Child and Adult, the Diverse Elementary Student Strengths Assessment (DESSA)*, and the *DESSA-mini*. Dr. Naglieri has consistently emphasized the role tests play in accurate diagnosis, relevance to classroom intervention, and equitable assessment based on sound theory.

How Are You Feeling?



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Ready?

Mindful Breathing

**Let's Get
Ready to
Learn**



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Resources

FOR MORE INFORMATION, PLEASE GO TO
WWW.JACKNAGLIERI.COM
WWW.NAGLIERIGIFTEDTESTS.COM

Naglieri & Otero Disclosures

Core Group Discussion → Deeper Learning

- Coach – Help the group decide what to do
- Organizer – Have your group discuss the case of Manuel
- Recorder – Keep notes and speak for the group
- Energizer – Focus the group !



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The BIG picture

- The content of our intelligence tests have barely changed in the last 100 years – that limits our ability help students learn.
- We want intelligence tests to
 - Be unbiased AND equitable for students from diverse populations
 - Help us understand *WHY* a student fails
 - Be consistent with IDEA and state regulations regarding SLD determination
 - Inform us about the correspondence of processing and academic Patterns of Strengths & Weaknesses related to instructional interventions
- These goals can be achieved if we use second-generation intelligence tests that measure the way students THINK
 - The definition of THINKING should be based on BRAIN function
 - PASS theory is a way of defining THINKING
 - The Cognitive Assessment System-2nd Edition measures a student's ability to think



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Ideas to Consider



A Professional Journey

- An Awakening About Traditional Intelligence Tests

A Theory Based on Brain Function

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

Research Update

- PASS and Equity & Use in California
- To *g* or not to *g*

Administration and Interpretation

- Test order, subtest interpretation, etc.

Connecting PASS and EF

- CEFI and PASS

PASS Profiles SLD ADHD and ASD

- PASS and ASRS PSW for ASD

Conclusions

- Reasons To Change

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Traditional IQ and Achievement Tests

- Working as a school psychologist in 1975 I noticed that items on the WISC we were VERY similar to parts of the achievement tests
 - In fact the *Peabody Individual Achievement Test* (1970) had a General Information and Arithmetic subtests JUST LIKE THE WISC!
 - THAT DID NOT MAKE SENSE
 - In 1977 → UGA for Ph.D. With Alan Kaufman who said VIQ=achievement
 - THAT made sense!



1975 Charles Champagne Elementary, Bethpage, NY

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How and Why...

- First job as assistant professor at Northern Arizona University - 1979
 - Lecture on Navajo Native Americans
 - Then testing students in Supai Village, AZ



How and Why...

Test Results and Interpretations:

On the WISC-R, Amanda earned a Performance IQ of 95±7 which falls in the average range of intelligence and at the 37th percentile rank in comparison to the children her age in the standardization sample. In contrast to this score of average non-verbal intelligence was her Verbal IQ of 52±7. This score is quite low and indicates that her level of facility with the English language falls at about the 1st percentile rank. This score can NOT be considered an estimate of verbal intelligence because Amanda speaks mostly Supai and little English. Due to the large difference between these scores, no Full Scale IQ was computed.

Within the WISC-R a clear pattern emerged: Amanda performed well on tasks that required little or no English language comprehension or expression, and poorly on all tasks which did require these linguistic skills. In fact, even if a task was visual and non-verbal, but required English language comprehension of instructions, she performed more poorly.

WISC-R

Wechsler Intelligence Scale
for Children—Revised

NAME _____ AGE _____ SEX _____

ADDRESS _____

PARENT'S NAME _____

SCHOOL _____ GRADE _____

PLACE OF TESTING _____ TESTED BY _____

REFERRED BY _____

WISC-R PROFILE

Clinicians who wish to draw a profile should first transfer the child's scaled scores to the row of boxes below. Then mark an X on the dot corresponding to the scaled score for each test, and draw a line connecting the X's.

Scaled Score	VERBAL TESTS					PERFORMANCE TESTS					Scaled Score	
	Information	Similarities	Arithmetic	Vocabulary	Comprehension	Digit Span	Picture Completion	Picture Arrangement	Block Design	Object Assembly		Coding
19												
18												
17												
16												
15												
14												
13												
12												
11												
10												
9												
8												
7												
6												
5												
4												
3												
2												
1												

*See Chapter 4 in the manual for a discussion of the significance of differences between scores on the tests.

NOTES $\bar{x} = 9.4$

Date Tested	Year	Month	Day
	81	8	74
Date of Birth	74	4	26
Age	7	4	18

	Raw Score	Scaled Score
VERBAL TESTS		
Information	3	3
Similarities	0	2
Arithmetic	4	4
Vocabulary	0	1
Comprehension	2	2
(Digit Span)	2	2
Verbal Score	12	
PERFORMANCE TESTS		
Picture Completion	10	8
Picture Arrangement	5	5
Block Design	18	12
Object Assembly	17	11
Coding	17	11
(Mazes)	17	11
Performance Score		
Scaled Score		
Verbal Score	12	52
Performance Score	47	95
Full Scale Score	59	72

*Pooled from 4 tests, if necessary.

How and Why...

- **First Research Article**
 - Naglieri, J. A. (1982). Does the WISC-R measure verbal intelligence for non-English speaking children? *Psychology in the Schools, 19*, 478-479.
- **Tests and books**
 - Matrix Analogies Tests Individual and Group administrations (1985)
 - NNAT - 1997
 - CAS – 1997
 - Essentials of CAS Assessment 1999
 - Helping All Gifted Students Learn (Naglieri, Brulles & Lansdowne, 2009)



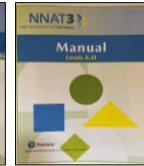
1985 MAT
Short and
Expanded
Forms



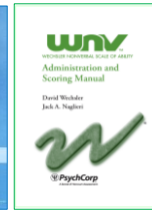
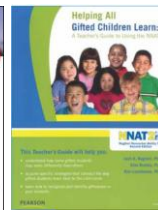
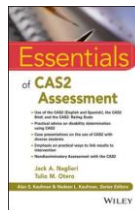
Naglieri
Nonverbal
Ability Test in
1997



NNAT -2
published in
2008



NNAT -3
published in
2016



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Why do we measure intelligence the way we do?

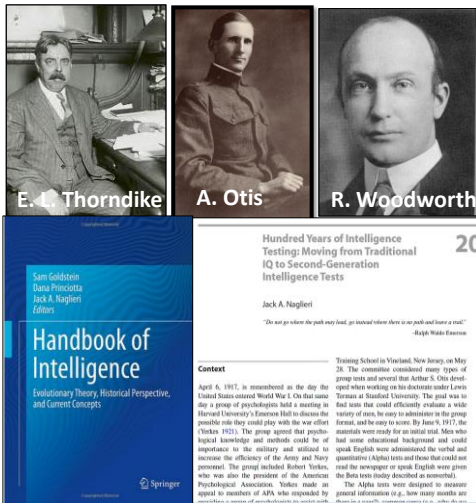
The History of IQ tests



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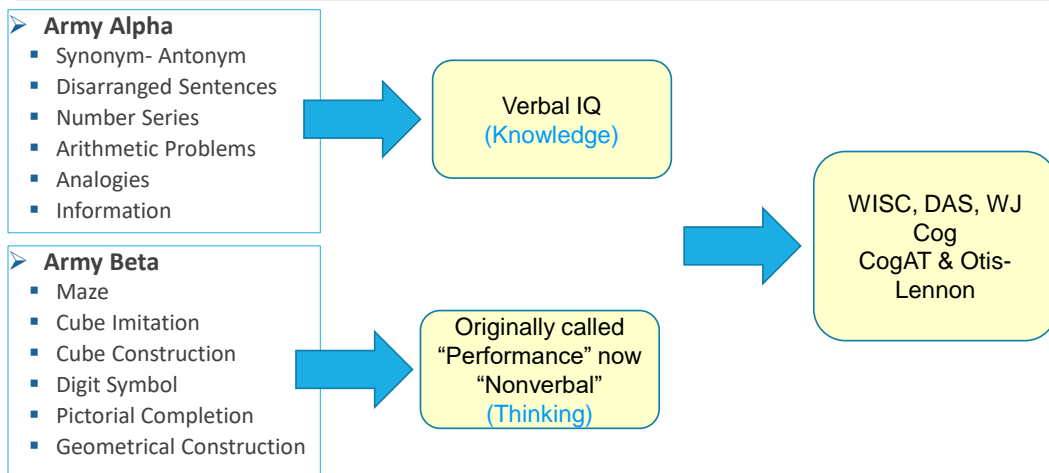
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Evolution of IQ <http://www.jacknaglieri.com/cas2.html>



- A group of psychologists met at Harvard in April of 1917 to construct an ability test to help the US military evaluate recruits (WWI)
- By July 1917 their research showed that the Army Alpha (Verbal & Quantitative) and Beta (Nonverbal) tests could “aid in segregating and eliminating the mentally incompetent, classify men according to their mental ability; and assist in selecting competent men for responsible positions” (p. 19, Yerkes, 1921).
- This was the foundation of the Wechsler Scales – Verbal, Performance (Nonverbal) and Quantitative subtests as well as the Otis-Lennon and CogAT

From Alpha & Beta to Wechsler IQ



1920 Army Testing (Yoakum & Yerkes)

Note there is no mention of measuring verbal and nonverbal intelligences – **they saw a social justice issue...and today in the era a BLM the need is even more urgent**

METHODS AND RESULTS

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Why Beta?

Men who fail in alpha are sent to beta in order that injustice by reason of relative unfamiliarity with English may be avoided. Men who fail in beta are referred for individual examination by means of what may appear to be the most suitable and altogether appropriate procedure among the varied methods available. This reference for careful individual examination is yet another attempt to avoid injustice either by reason of linguistic handicap or accidents incident to group examining.

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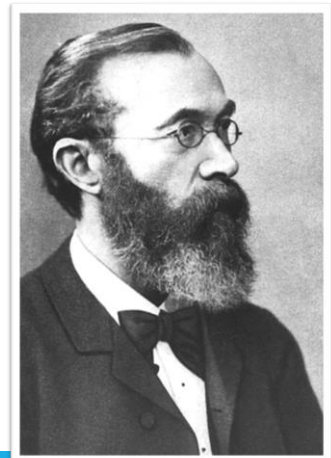
CONCEPT OF GENERAL INTELLIGENCE 61

The Criteria of a Test of Intelligence. — Influenced both by the theoretical discussion of general intelligence and by the empirical work of testing, we have arrived at certain requirements for a good test of intelligence, which we may discuss under the four following headings:

1. *Tests must be relatively new.* — A good intelligence test must avoid as much as possible anything that is commonly learned by the subjects tested. In a broad sense this rests upon a differentiation between knowledge and intelligence. To use as a test of intelligence something that is commonly taught in school is not desirable, because those children who have reached the particular grade in which this is generally taught have memorized this fact, whereas other children of equal or greater intelligence may have had no opportunity to learn this same fact, simply because they may not have reached this particular grade in their school work. To ask the question, "Who discovered America?" would be indicative of the school progress or general cultural environment of the child rather than of his general intelligence. Failure to answer might indeed be due to lack of intelligence in the case of school children of a certain grade in which this had been a matter of instruction, but on the other hand a very intelligent child might fail to answer owing to the fact of his not being in the grade in which this was taught.

Pintner (Intelligence Testing, 1923)

- This is a social justice issue for those from disadvantaged communities and those with limited education



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WJ-IV Items from Cognitive and Achievement Tests:

Cognitive: Oral Vocabulary Subtest 1

Sample Items

Point to near on subject's page and say: **Another word that means near is close** (pronounced kloh, not kloz).

A. Point to big on subject's page and say: **Tell me another word for big.**

▲ **Correct:** large, gigantic, huge

◆ **A: Error or No Response**
Score item 0. Say: **Another word for big is large.** Repeat Sample Item A.

B. Point to nap and say: **Tell me another word for nap.**

▲ **Correct:** sleep, rest, snooze

◆ **B: Error or No Response**
Score item 0. Say: **Another word for nap is sleep.** Repeat Sample Item B.

Recall

Very Similar Items on "Different" Tests

Achievement: Reading Vocabulary-Synonyms Subtest 17

Sample Items

Point to street on subject's page and say: **Another word that means street is road.**

A. Point to large on subject's page and say: **Tell me another word for large.**

▲ **Correct:** big, enormous, gigantic, huge

◆ **A: Error or No Response**
Score item 0 and say: **Another word for large is big.** Repeat Sample Item A.

B. Point to sleep and say: **Tell me another word for sleep.**

▲ **Correct:** nap, doze, rest, snooze

◆ **B: Error or No Response**
Score item 0 and say: **Another word for sleep is nap.** Repeat Sample Item B.

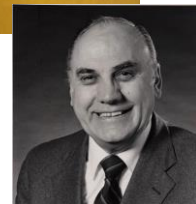
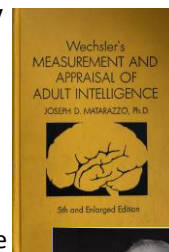
Do not read any other items or tell subject any other words during this test.

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The Problem with Verbal and Quantitative tests

- When English is required in a vocabulary test of general ability this disadvantages ELL students and those with limited educational opportunity.
- Matarazzo (1972) wrote about the Wechsler Scales
 - "...Vocabulary is necessarily influenced by ... education and cultural opportunities (p. 218)"
 - when referring to the Arithmetic subtest, "...its merits are lessened by the fact that it is influenced by education (p. 203)."
- The tests we use vary based on the amount of English language skills, and general verbal knowledge, required
- What about the Army Beta test (i.e. NONVERBAL) ?



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Knowledge is Included in “Ability” Tests

Stanford-Binet-5	WISC-V	WJ-IV	KABC-II	OLSAT	CogAT
<ul style="list-style-type: none"> • Verbal • Knowledge • Quantitative Reasoning • Vocabulary • Verbal Analogies 	<ul style="list-style-type: none"> • Verbal Comprehension Vocabulary, Similarities, Information & Comprehension • Fluid Reasoning Figure Weights, Arithmetic 	<ul style="list-style-type: none"> • Comprehension Knowledge: Vocabulary & General Information • Fluid Reasoning: Number Series & Concept Formation • Auditory Processing: Phonological Processing 	<ul style="list-style-type: none"> • Knowledge / GC • Riddles, • Expressive Vocabulary, • Verbal Knowledge 	<ul style="list-style-type: none"> • Verbal • Following directions • Verbal Reasoning • Quantitative • Verbal Arithmetic Reasoning 	<ul style="list-style-type: none"> • Verbal Scale • Analogies • Sentence Completion • Verbal Classification • Quantitative • 45 pages of oral instructions

Race and Ethnic Differences in Group & Individually Administered Ability Tests

Note: Even though traditional tests may not show psychometric bias (Worrell, 2019) they still do not achieve equity.

Mean Score Differences in Group and Individually Administered Intelligence Test Scores by Race & Ethnicity.

	Race	Ethnicity
Tests that require knowledge		
Otis-Lennon School Ability Test (school system)	13.6	
Stanford-Binet IV (normative sample)	12.6	
WISC-V (normative sample)	11.6	9.1
WJ- III (normative sample)	10.9	10.7
CogAT7 (Nonverbal scale)	11.8	7.6
WISC-V (statistical controls normative sample)	8.7	5.4
Average Across All Tests	11.5	8.2
Tests that require minimal knowledge		
KABC-2 (matched samples)	5.0	
CAS-2 (normative sample)	6.3	4.5
CAS-2 (statistical controls normative sample)	4.5	1.8
NNAT (matched samples)	4.2	2.8
CAS2: Brief (normative samples)	2.0	2.8
Average Across All Tests	4.4	3.0

Traditional Ability Tests' Average Differences

Second Generation Ability Tests' Average Differences

Citations: Otis-Lennon School Ability Test by Avant and O'Neal (1986); Stanford-Binet IV from Wasserman & Becker (2000); Woodcock-Johnson III race differences from Edwards & Oakland (2006) and ethnic differences from Sotelo-Dynerga, Ortiz, Flanagan & Chaplin (2013); CogAT7 from Carman, Walther and Bartsch (2018); WISC-V from Kaufman, Ralford & Coalson (2016); Kaufman Assessment Battery for Children-II from (Lichenberger, Sotelo-Dynerga & Kaufman, 2009); CAS-2 and CAS2: Brief from Naglieri, Das & Goldstein, 2014a & 2014b; Naglieri Nonverbal Ability Test (Naglieri & Ronning, 2000).
 From: Brulles, D. Lansdowne, K. & Naglieri, J. A. (2022). *Ensuring Equity: Identifying and Serving All Gifted Students Using the Naglieri General Ability Tests*. Minneapolis, MN: Free Spirit Publishing.

How Psychometric Bias is Studied (e.g., Jensen's Bias in Mental Tests)

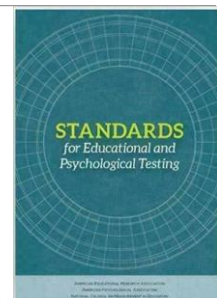
- reliability of internal consistency of items
- reliability of test/retest scores
- rank order of item difficulties
- item intercorrelations
- factor structure of test
- magnitude of the factor loadings
- slope & intercept of the regression line
- correlation of raw scores with age
- item characteristic curve
- frequencies of choice of error distracters
- interaction of test items by group membership

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Differences in Mean Scores = Impact

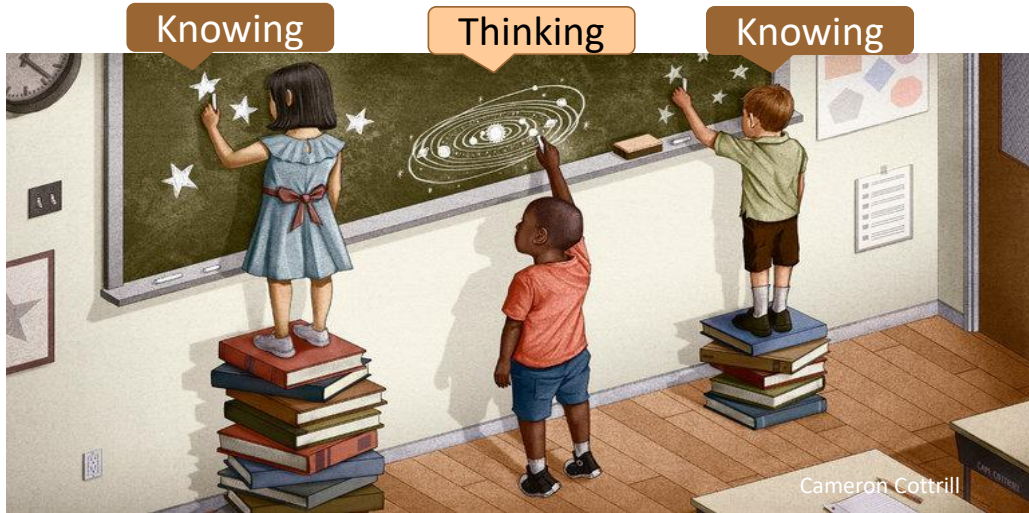
- According to the *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 2014), **equitable assessment** provides examinees *an equal opportunity to display one's ability* and ...
- And ... **if a person has had limited opportunities to learn the content in a test of intelligence, that test may be considered unfair** if it penalizes students for not knowing the answers **even if the norming data do not demonstrate test bias.**



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The Solution? Measure Thinking not Knowing



Why Talented Black and Hispanic Students Can Go Undiscovered
By SUSAN DYNARSKI APRIL 8, 2016

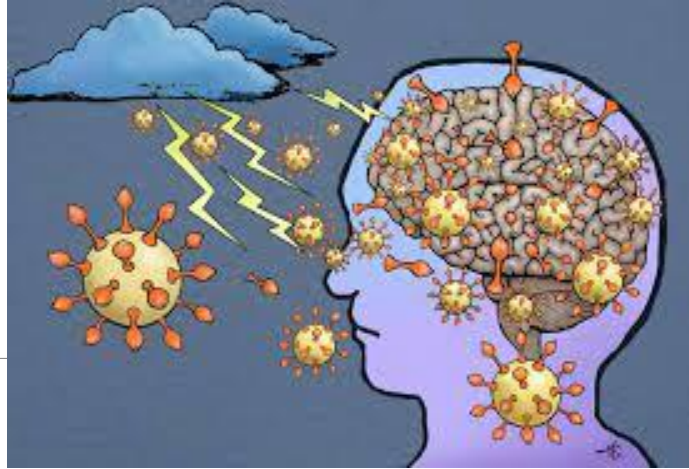
Then there is the little complication in 2020 and 2021



A Pandemic!!!!



Learning loss due to school closures during the COVID-19 pandemic



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Inequality in learning is a major concern after school closures

- Overall learning delay is clear
- Children of very low-educated parents suffer more from school closure than children from more-educated backgrounds.
- The learning delay is much stronger in schools with a higher share of disadvantaged children.



van de Werfhorst, H. G. (2021). Inequality in learning is a major concern after school closures. *Proceedings of the National Academy of Sciences*, 118(20).

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Ideas to Consider



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Administration and Interpretation

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Connecting PASS and EF

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PASS Profiles SLD ADHD and ASD

- PSW for ASD

Conclusions

- Reasons To Change

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PASS Theory

- The PASS Theory is operationalized using the CAS and CAS2
- This is the only test of its kind that was explicitly developed according to a THEORY of ability (intelligence)
- The theory is based on neuropsychology and cognitive psychology so we use the term “neurocognitive”
- The section that follows provides an explanation of each of these basic psychological processes, an example of how the neurocognitive process is measured and case studies

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Intelligence as Neurocognitive Functions

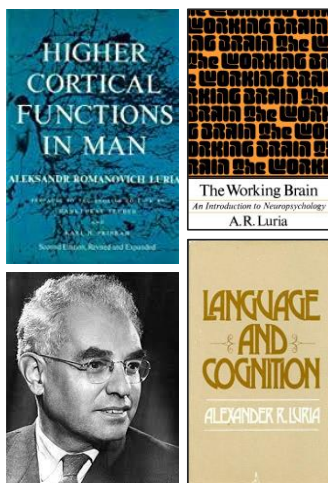
- In my first working meeting with JP Das (February 11, 1984) we proposed that intelligence was better REinvented as neurocognitive processes and we began development of the **Cognitive Assessment System** (Naglieri & Das, 1997).
- We conceptualized intelligence as Planning, Attention, Simultaneous, and Successive (PASS) neurocognitive processes based on Luria's concepts of brain function.



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PASS Neurocognitive Theory



- **P**lanning = THINKING ABOUT HOW YOU DO WHAT YOU DECIDE TO DO
 - **A**ttention = BEING ALERT AND RESISTING DISTRACTIONS
 - **S**imultaneous = GETTING THE BIG PICTURE
 - **S**uccessive = FOLLOWING A SEQUENCE
- PASS** = 'basic psychological processes'

NOTE: Easy to understand concepts!

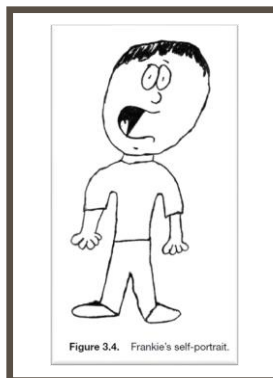
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PASS constructs are easy to explain, especially to the student

The first step in the PASS intervention Protocol is to explain the four PASS processes to the STUDENT

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Frankie at age 11 years

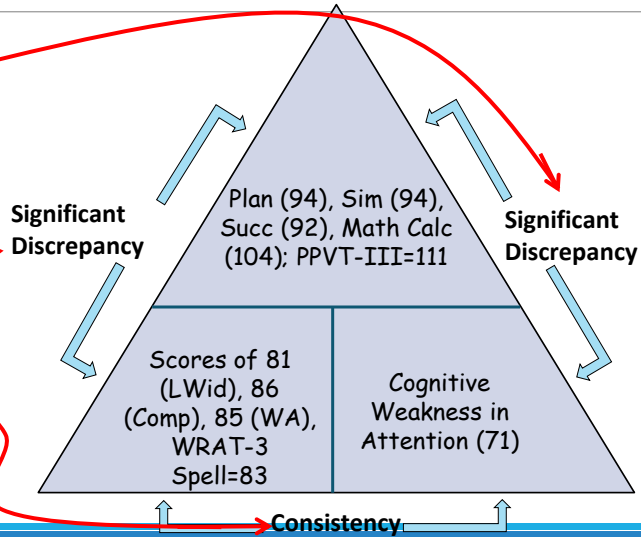
- Referred by parents (at age 11) after a history of reading and self esteem problems
- High level of anxiety
 - he was too anxious to look closely at the words, and he would rather get the task completed and move on.
 - Frankie could not attend to the details of the sequence of letters for correct spelling, and the order of sound–symbol associations

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Frankie Discrepancy Consistency Results

- **Discrepancy** between high and low processing scores
- **Discrepancy** between high processing and low achievement
- **Consistency** between low processing and low achievement



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Frankie

- Help Frankie better manage his attention problem by using his **STRENGTHS**
- His good **PLANNING** helps him be aware of possible ways manage his **ATTENTION** issue
- His good **PLANNING** also helps him recognize when to use **SIMULTANEOUS** or **SUCCESSIVE** processes based on the demands of the task

Overcoming Problems with Inattention

Attention is the process a person uses to focus thinking on a particular stimulus while ignoring others. Throughout a school day, a student must pay attention to the teacher, the instructions being given, what must be done, and what specific materials are needed, while ignoring other students talking, students playing outside the window, and a cart rolling by in the hall. Attention processes allow a child to selectively focus on things heard or seen and resist being distracted by irrelevant sights and sounds. Focused attention is direct concentration on something, such as a specific math problem. Selective attention involves the resistance to distraction, such as listening to the teacher and not the cart in the hall. Sustained attention is continued focus over time.

Some children have difficulty with focused thinking and resisting distractions. These children fit the description of attention-deficit/hyperactivity disorder (ADHD), predominantly inattentive type (American Psychiatric Association, 2000). Children with the inattentive type of ADHD are different from those with the predominantly hyperactive-impulsive type of ADHD, which is described by Barkley and Murphy (1999) as a delay in the development of inhibition, disturbed self-regulation, and poor organization over time. Children with ADHD, hyperactive-impulsive type cannot control their behavior and have inattention problems that are related to a failure in the process of planning on the Cognitive Assessment System (CAS; Naglieri, 1999).

How to Help a Child Overcome Problems with Inattention

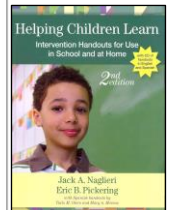
The first step is to help the child understand the nature of his or her Attention problems, including

1. Concepts such as Attention, resistance to distraction, and control of Attention
2. Recognition of how Attention affects daily functioning
3. Recognition that the deficit can be overcome
4. Basic elements of the control program

Second, teachers and parents can help the child improve his or her motivation and persistence:

1. Promote success via small steps.
2. Ensure success at school and at home.
 - Allow for oral responses to tests.
 - Circumvent reading whenever possible.
3. Teach rules for approaching tasks.
 - Help the child to define tasks accurately.
 - Assess the child's knowledge of problems.
 - Encourage the child to consider all possible solutions.
 - Teach the child to use a correct test strategy (Pressley & Woloshyn, 1995).

Helping Children Learn: Intervention Handouts for Use in School and at Home, Second Edition by Jack A. Naglieri & Eric B. Pickering
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Frankie as an ADULT

- I informed Frankie of his PASS scores, and everything changed
- CONTEXT: He was given hope – that he could succeed
- Frankie graduated High School and went to college
- Is married and has a few children
- He is a graphic designer
- He uses his knowledge + Planning + Simultaneous + Successive to manage any obstacles he may still have with attention

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PASS Provides a Common Language

- Psychologists, teachers, parents, and students can all use a common language to describe abilities without the esoteric terms we have used for years – NO psychobabble

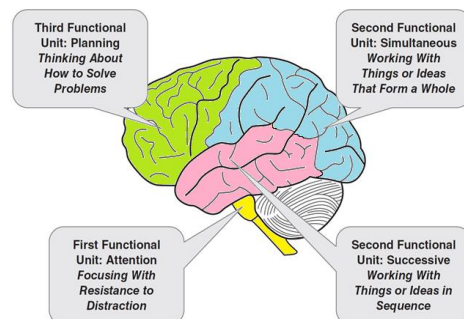


Figure 1.2 Three Functional Units and Associated Brain Structures

From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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Core Group Activity

- **QUESTION:** Are you willing to accept the idea that traditional intelligence tests have subtests which require too much knowledge?
- **What to do?**



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Neuropsychological Correlates of PASS

Naglieri, J. A., & Otero, T. M. Redefining Intelligence as the PASS Theory of Neurocognitive Processes.

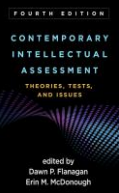
CHAPTER 6

Redefining Intelligence with the Planning, Attention, Simultaneous, and Successive Theory of Neurocognitive Processes

Practitioners and test authors have become increasingly conscious of the need for theory-based intelligence tests. Although several theories of intelligence have been attached to traditional ability tests such as the Wechsler scales (Plucker & Esping, 2014), one theory first described by Das, Kirby, and Jarman (1979), was used explicitly to develop a new way to construct an intelligence test. In 1997, Naglieri and Das (1997a) published the Cognitive Assessment System (CAS), which was based on a neurocognitive theory called planning, attention, simultaneous, and successive (PASS) processing. These authors argued that a neurocognitive theory of intelligence provides the foundation necessary for test construction and is equally important for test interpretation. They also suggested that traditional IQ tests, which were based largely on the work of the U.S. military (see Naglieri, 2015), were too limited and could be improved if the constructs that were measured were related to brain functions. Naglieri and Das anticipated that the PASS neurocognitive approach would yield better diagnostic information, have relevance to instructional decision making, and be more appropriate for diverse populations (Naglieri & Otero, 2011, 2017).

the four PASS processes. PASS theory has been most recently operationalized in the Cognitive Assessment System—Second Edition (CAS2; Naglieri, Das, & Goldstein, 2014a), the CAS2: Español (Naglieri, Moreno, & Otero, 2017), the CAS2: Brief (Naglieri, Das, & Goldstein, 2014b), and the CAS2: Rating Scale (Naglieri, Das, & Goldstein, 2014c). We describe these measures comprehensively in Chapter 15 of this book. In this chapter, we focus on the PASS theory and the measures that are based on it.

The PASS theory and neurocognitive perspective from that of traditional but in part, subtests requiring knowledge). These batteries the Army mental testing program and Yerkes (1920) at PASS theory, an operational CAS2, has created an open field of intelligence and also emphasizing (1) that a test be based on a theory of intelligence and (2) that the test should measure processes defined by the theory, not the content of the



28 Cognitive Assessment System: Redefining Intelligence From a Neuropsychological Perspective

Jack A. Naglieri and Tulio M. Otero

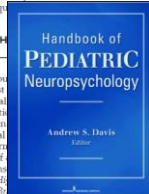
INTRODUCTION

Pediatric neuropsychology has become an important field for understanding and treating developmental, psychiatric, psychosocial, and learning disorders. By addressing both brain functions and environmental factors intrinsic in complex behaviors, such as thinking, reasoning, planning, and the variety of executive capacities, clinicians are able to offer needed services to children with a variety of learning, psychiatric, and developmental disorders. Brain-behavior relationships are investigated by neuropsychologists by interpreting several aspects of an individual's cognitive, language, emotional, social, and motor behavior. Standardized instruments are used by neuropsychologists to collect information and derive inferences about brain-behavior relationships. Technology, such as magnetic resonance imaging (MRI), functional MRI (fMRI), positron emission tomography, computerized tomography, and diffusion tensor imaging, has reduced the need for neuropsychological tests to localize and assess brain damage. Neuropsychological tests, however,

Such tools should not only evaluate the underlying processes necessary for efficient thinking and behavior but also provide for the development of effective interventions and address the

FROM NEUROPSYCHOLOGY TO ASSESSMENT

Luria's theoretical account perhaps one of the most influential conceptual models of brain-behavior relationships that the clinician orders that the clinician the brain, the functional syndromes and impairments and clinical methods of theoretical formulations labeled in works such as (1980) and *The Working Brain* as a functional mosaic, the parts of which interact in dif-



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PASS Theory Based on Brain Function – Planning

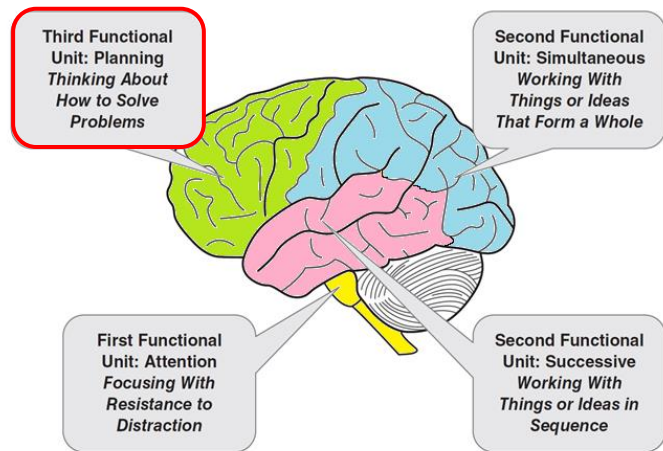


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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PASS Theory: Planning

- Planning is a term used to describe a neurocognitive function similar to metacognition and executive function
- Planning is needed for setting goals, making decisions, predicting the outcome of one's own and others actions, impulse control, strategy use and retrieval of knowledge
- Planning helps us make decisions about how to solve any kind of a problem from academics to social situations and life in general
- Math calculation, written expression, etc

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CAS2: Rating Scale Planning

Directions for Items 1–10. These questions ask how well the child or adolescent decides how to do things to achieve a goal. They also ask how well a child or adolescent thinks before acting and avoids impulsivity. Please rate how well the child or adolescent creates plans and strategies to solve problems.

During the past month, how often did the child or adolescent . . .

	Never	Rarely	Sometimes	Frequently	Always
1. produce a well-written sentence or a story?	0	1	2	3	4
2. evaluate his or her own actions?	0	1	2	3	4
3. produce several ways to solve a problem?	0	1	2	3	4
4. have many ideas about how to do things?	0	1	2	3	4
5. have a good idea about how to complete a task?	0	1	2	3	4
6. solve a problem with a new solution when the old one did not work?	0	1	2	3	4
7. use information from many sources when doing work?	0	1	2	3	4
8. effectively solve new problems?	0	1	2	3	4
9. have well-described goals?	0	1	2	3	4
10. consider new ways to finish a task?	0	1	2	3	4

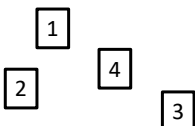
— + — + — + — + — =

Planning Raw Score

Planning Subtests

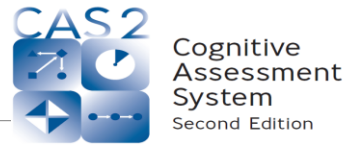
Planned Codes

Planned Connections



Planned Number Matching

5176	5761	5167	1576	5176	1567
------	------	------	------	------	------



Examiner Record Form
Jack A. Naglieri J. P. Das Sam Goldstein

Subtest	Raw Score	Scaled Score				FS
		PLAN	SIM	ATT	SUC	
Planned Codes (PGJ)						
Planned Connections (PCN)						
Planned Number Matching (PNM)						
Matrices (MAT)						
Verbal-Spatial Relations (VSR)						
Figure Memory (FM)						
Expressive Attention (EA)						
Number Detection (ND)						
Receptive Attention (RA)						
Word Series (WS)						
Sentence Repetition/Questions (SR/SQ)						
Visual Digit Span (VDS)						
Sum of Subtest Scaled Scores		+	+	+	+	
PASS Composite Index Scores						
Percentile Rank						
Upper % Confidence Interval						
Lower						

A	B	C	D
X O	O O	X X	O X

A	B	C	D	A
X O	O O	X X		
A	B	C	D	A
X O	O O			
A	B	C	D	A
X O	O O			
A	B	C	D	A
X O	O O			

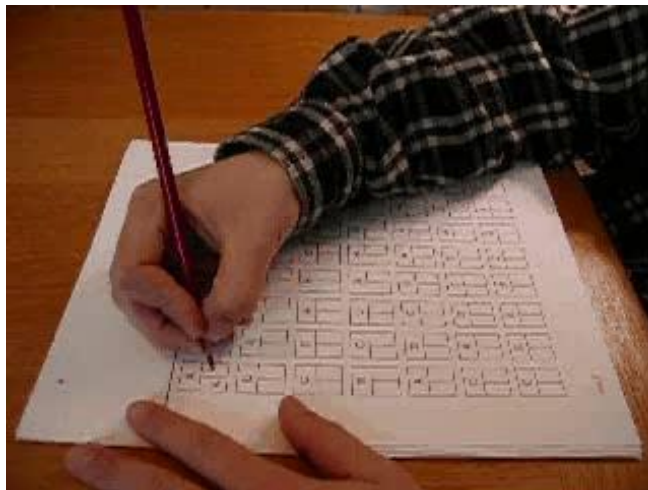
Planned Codes Page 1

- ▶ Jack Jr. at age 5
- ▶ Child fills in the codes in the empty boxes
- ▶ After being told the test requirement, examinees are told: "You can do it any way you want"

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Planned Codes Page 2 Jack Jr age 10



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A 13 month old's Plan At 19 months Planning & Knowledge

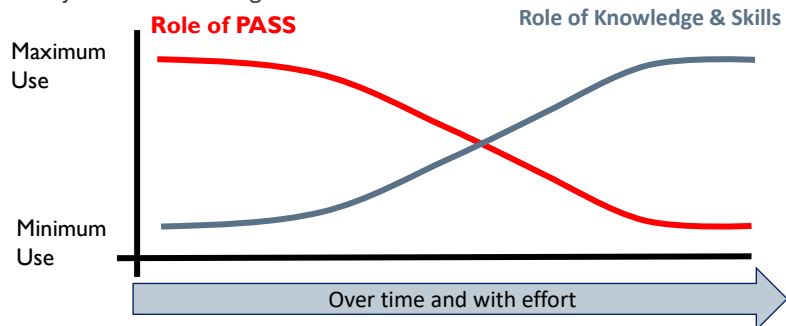


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Planning Learning Curves

- Learning depends upon many factors especially PASS
- When a task is practiced and learned it requires less thinking (PASS) and becomes a skill
- At first, PASS plays a major role in learning



Note: A **skill** is the ability to do something well with minimal effort (thinking)

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Planning (EF) and Skills

- Given that Planning (EF) demands intentionality, that means that planning processing is something that occurs over time and with effort.
- Skills are things we do with very little thinking. Automatic actions do not afford the time for thinking (planning) but rather immediate responding.
- Therefore, Planning and EF should not be described as ‘skills’
- Your thoughts?

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Math strategies stimulate thinking

Name _____

Doubles and Near Doubles

double How many are there? near double

$8 + 8 = 16$ $8 + 9 = 17$

Ring the double. Add

1. $6 + 6 = 12$ $5 + 5 = 10$
 $6 + 7 = 13$ $5 + 6 = 11$

3. $7 + 7 = 14$ $4 + 4 = 8$
 $7 + 8 = 15$ $4 + 5 = 9$

CHECK If you know the sum of $8 + 8$, how can you find $8 + 9$?

three hundred thirty-five 335

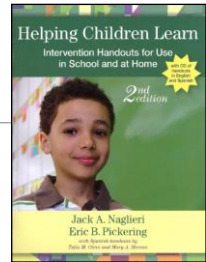
This work sheet encourages the child to use strategies (plans) in math such as: “If $8 + 8 = 16$, then $8 + 9$ is 17”

Note to the Teacher: When we teach children skills by helping them use strategies and plans for learning, we are teaching both knowledge and processing. Both are important.

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Intervention Protocol: Be Intentional and Transparent



- Explain PASS scores to the students:
 - For example: The part of your brain that makes learning challenging for you is the part that PLANS (PFC).
 - We're going to work on using your strength(s) so you can do better.
- Give STUDENTS the PASS handouts
 - For example: *"The test showed that your brain is strong in seeing the BIG PICTURE (Simultaneous Processing) and recognizing sequences. (Successive Processing) Does that make sense to you?"*
 - **YOU CAN** do better if you **THINK SMART** and use your strengths to manage what is hard for you.

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Intervention Protocol (Naglieri & Kryza, 2019)

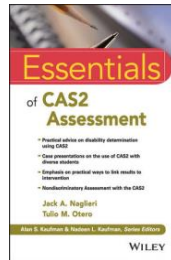
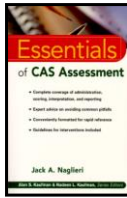
1. Help child understand their PASS strengths and challenges (be intentional & transparent)
2. Encourage Motivation & Persistence (student's mindset)
3. Encourage strategy use (build skill sets)
4. Encourage independence and self efficacy (metacognition, self assessment & self correction)

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Discrepancy Consistency Method (DCM)

- ...first introduced in 1999 (most recently in 2017)



Pattern of Strengths and Weaknesses Using the Discrepancy/Consistency Method for SLD Determination

Three methods for detecting a pattern of strengths and weaknesses (PSW) that can be used as part of the process of identifying a student with a specific learning disability (SLD) have been suggested by Naglieri in 1999, Hale and Fiorello in 2004, and by Flanagan, Ortiz, and Alfonso in 2007. These authors share the same goal: to present a procedure to detect a PSW in scores that can be used

DON'T FORGET 3.5

The essence of the Discrepancy/Consistency Method is two discrepancies and one consistency.

Discrepancy 1:

Significant variability among the PASS scores indicating a weakness in one or more of the basic psychological processes

Discrepancy 2:

Significant difference between high PASS scores and low achievement test scores

Consistency:

No significant difference between low PASS scores and low achievement

to identify an SLD (sometimes referred to as a third option; Zirkel & Thomas, 2010). Despite differences in the composition of the scores used and the definitions of what constitutes a basic psychological process, these methods all rely on finding a combination of differences as well as similarities in scores across academic and cognitive tests. Our approach to operationalizing a PSW is called the Discrepancy/Consistency Method (DCM) for the identification of SLD. Determining SLD is essentially based on the combination of PASS and achievement test scores. The method involves a systematic examination of variability of PASS and academic achievement test scores, which has

two main ingredients. First, there must be evidence of a PASS cognitive weakness as described in Step 1 of this chapter, and, second, achievement test scores should show substantial variability that aligns with the high and low PASS scores. What

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Discrepancy Consistency Method

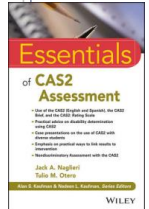
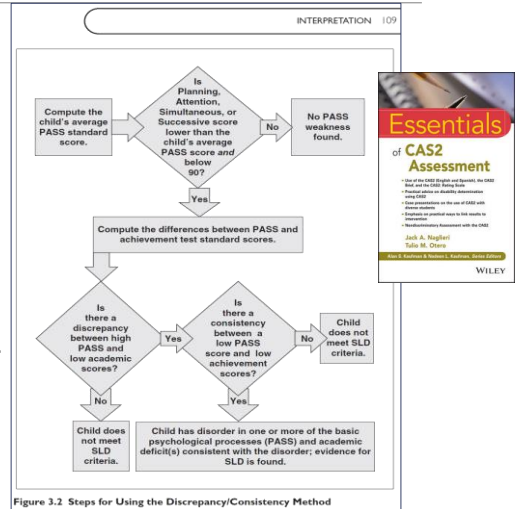
- The Discrepancy Consistency Method is used to determine if there is evidence of “a disorder in 1 or more of the basic psychological processes ... which manifests itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.”
- The disorder in 1 or more basic psychological processes is found when a student shows a pattern of strengths and weaknesses in basic psychological processes, and...
- The imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations is found when a student shows a pattern of strengths and weaknesses in achievement
- The result is two discrepancies and a consistency

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Discrepancy Consistency Method (Naglieri & Otero, 2017)

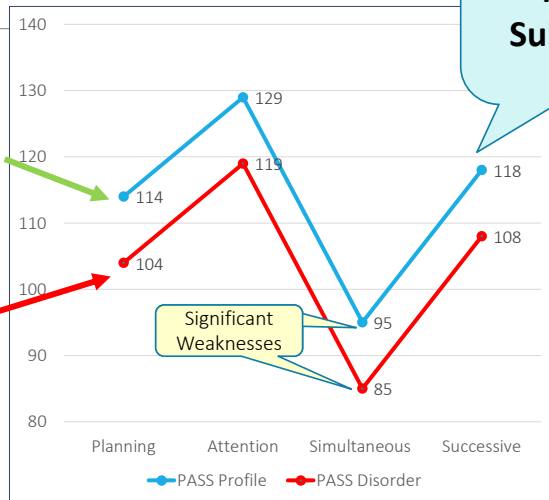
1. Determine if the PASS scores vary significantly from the examinee's average PASS score and the lowest score is below average (<90) (Table 3.5)
2. Determine if the high PASS scores are significantly different from the low achievement scores (Appendix A-F)
3. Determine if the LOW PASS score is or is not significantly different from the low achievement scores (Appendix A-F)



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How to Determine a Disorder

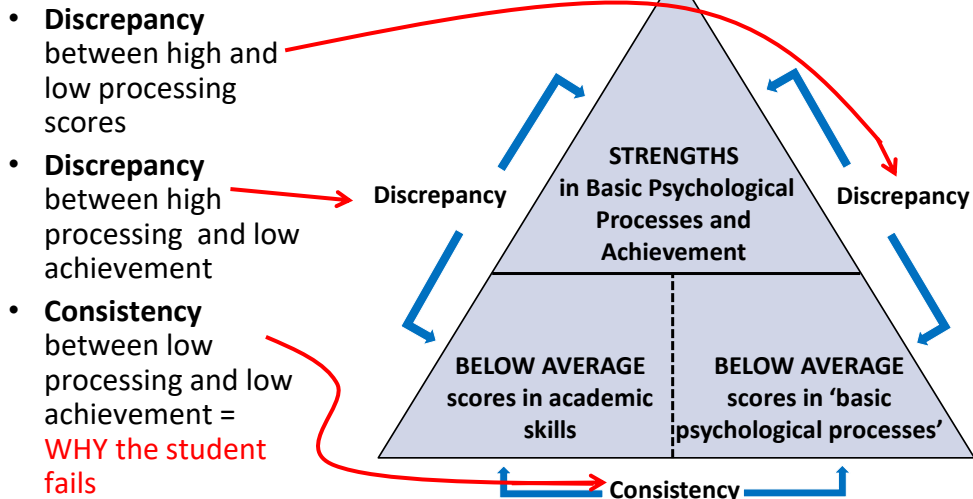
- Two sets of PASS scores were studied
 - Significant variation in relation to student's average has *instructional relevance*
 - Significant variation in relation to student's average AND a standard score less than 90 (< 25th %tile) *supports designation as SLD*



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Discrepancy Consistency Method (DCM)



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<https://www.pattan.net/getmedia/56d1bb3c-2e53-4cce-bfd4-821ee333871b/RtII-SLD>

- “..a pattern of strengths and weaknesses, relative to intellectual ability as defined by a severe discrepancy between intellectual ability and achievement
- Academic areas as defined

Eligibility Criteria for Specific Learning Disability (SLD)

- Adequate achievement:** Does the child achieve adequately for the child's age or meet state-approved grade level standards?
 - oral expression
 - listening comprehension
 - written expression
 - basic reading skill
 - reading fluency skill
 - reading comprehension
 - mathematics calculation
 - mathematics problem solving
- Choose one of two options:**
 - a process that examines whether a child exhibits a pattern of strengths and weaknesses, relative to intellectual ability as defined by a severe discrepancy between intellectual ability and achievement, or relative to age or grade
 - or
 - RtII: lack of progress in response to scientifically-based instruction

3. Rule out:

- vision, hearing, or motor problems
- mental retardation
- emotional disturbance
- cultural and/or environmental issues
- limited English proficiency

4. Rule out lack of instruction by documenting:

- appropriate instruction by qualified personnel
- repeated assessments

Exclusionary

Specific Disability

In the guidelines document, which may be found at [www.pattan.net](#), the SLD identification process must submit an application and procedures are outlined in the PennLink/ Special with Specific Learning Disabilities using the Response to Intervention to seek assistance through the Pennsylvania Department of Education or their intermediate unit.

9/10

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<https://www.pattan.net/getmedia/56d1bb3c-2e53-4cce-bfd4-821ee333871b/RtII-SLD>

➤ Each PASS neurocognitive ability can interfere with any academic area, but use these suggestions as a starting point

		Planning	• oral expression
Attention	Simultaneous		• listening comprehension
Simultaneous	Planning		• written expression
Attention	Successive		• basic reading skill
	Simultaneous		• reading fluency skill
Planning	Simultaneous		• reading comprehension
Successive	Attention	Planning	• mathematics calculation
Attention	Simultaneous	Planning	• mathematics problem solving

1. Adequate achievement: Does the child achieve adequately for the child's age or meet state-approved grade level standards?

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FREE CAS2 PSW Analyzer for FAR, FAM, & FAW, WJ4, KTEA3, WIAT4

Discrepancy Consistency Method (DCM) for comparing PASS scores from the Cognitive Assessment System (CAS2; Extended & Core battery) with the Feifer Assessment of Reading (FAR) and Feifer Assessment of Math (FAM)
Jack A. Naglieri & Steve Feifer 9.18.18

HOW TO USE THIS WORKBOOK:
1. Click on tab for the CAS2 Extended (12-subtests) or Core (8-subtests) with the FAR or FAM.
2. Enter the PASS scores in the column labeled "Standard Scores" in BOX #1.
3. Enter the FAR and/or FAM standard scores in BOX #2.

Note: Once the PASS and FAR or FAM scores are entered the discrepancies and consistencies between neurocognitive and achievement scores will be noted. Follow the Flow-Chart (see Figure 3.2 included here which is from Essentials of CAS2 Assessment) for more guidance.

The information contained in this spreadsheet is taken in part from *Essentials of CAS2 Assessment* by Jack A. Naglieri & Tulo M. Otero (2017). See that book for more information on the interpretation of the CAS2 measures of PASS neurocognitive processes. The values needed for significance between the CAS2 with the FAR and FAM appear in Appendix D and E of the CAS2 Essentials book, respectively, as is a discussion of the methodology used and related topics.

Discrepancy Consistency Method (DCM)

- Discrepancy #1: between high and low processing scores.
- Discrepancy #2: between high processing and low achievement.
- Consistency: between low processing and low achievement.

Flowchart for Using the Discrepancy/Consistency Method:

```

    graph TD
        Start([Compute the child's average PASS and academic scores.]) --> D1{Is there a discrepancy between high PASS and low academic scores?}
        D1 -- No --> NoPASS[No PASS weakness found.]
        D1 -- Yes --> D2{Is there consistency between a low PASS score and low achievement scores?}
        D2 -- No --> NoSLD[Child does not meet SLD criteria.]
        D2 -- Yes --> SLD[Child has disorder in one or more of the basic psychological processes (PASS) and academic/achievement scores with the disorder evidence for SLD is found.]
    
```

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CAS2, FAR & FAM PSW Analyzer

- CAS2 Extended and FAR analysis on Page 2
 - Enter PASS and FAR standard scores in the yellow boxes

CAS2 12-Subtest Extended Battery

BOX #1: Is there a PASS Pattern of Strengths and Weaknesses (Discrepancy 1)?

Differences Between PASS Scale Standard Scores and the Student's Average PASS Score (p = .05 for the CAS2 12-Subtest EXTENDED battery)

Cognitive Assessment System	PASS Mean & Differences	Significantly Different (at p = .05) from PASS Mean?	Strength or Weakness
PASS Scales	Standard Score		
Planning	88	yes	
Simultaneous	111	yes	Strength
Attention	102	yes	
Successive	79	yes	Weakness

Notes:

1. A Weakness is defined as PASS standard score that is significantly below the child's average PASS score (positive comparison at the .05 level) and the PASS score is below 90 (i.e. below the Average range).
2. A Strength is defined as PASS standard score that is significantly above the child's average PASS score (positive comparison at the .05 level) and the PASS score is above 100 (i.e. above the Average range).
3. See Essentials of CAS2 Assessment Interpretation Chapter for more details and examples. Note: Comparisons at p = .05.

BOX #2: Are High PASS scores significantly different from low achievement scores (Discrepancy 2)? Are low PASS scores similar to low achievement scores (Consistency)?

PASS Scores from CAS2

	Planning	Simultaneous	Attention	Successive
Planning	88	111	102	79

Faller Assessment of READING

Standard Score	PI: Phonological Index	PIA: Phonemic Awareness	NWD: Nonsense Word Decoding	IRF: Irregular Word Reading Fluency	ORF: Oral Reading Fluency	PS: Reading Speed	PI: Fluency Index	RAI: Rapid Automatic Naming	VF: Verbal Fluency	VP: Visual Perception	RR: Irregular Word Reading Fluency	OP: Orthographic Processing	MI: Mixed Index	CI: Comprehension Index	SC: Semantic Concepts	WR: Word Recall	PK: Prior Knowledge	MP: Morphological Processing	SRF: Silent Reading Fluency	CR: Comprehension	TR: Total Index	
77	Discrepant	Discrepant	Discrepant	Consistent																		

CAS2, FAR & FAM PSW Analyzer

- CAS2 Extended and FAR analysis on Page 2
 - Enter PASS and FAR standard scores in the yellow boxes

CAS2 12-Subtest Extended Battery

BOX #1: Is there a PASS Pattern of Strengths and Weaknesses (Discrepancy 1)?

Cognitive Assessment System	PASS Mean & Differences	Significantly Different (at p = .05) from PASS Mean?	Strength or Weakness
PASS Scales	Standard Score		
Planning	88	yes	
Simultaneous	111	yes	Strength
Attention	102	yes	
Successive	79	yes	Weakness

Notes:

1. A Weakness is defined as PASS standard score that is significantly below the child's average PASS score (positive comparison at the .05 level) and the PASS score is below 90 (i.e. below the Average range).
2. A Strength is defined as PASS standard score that is significantly above the child's average PASS score (positive comparison at the .05 level) and the PASS score is above 100 (i.e. above the Average range).
3. See Essentials of CAS2 Assessment Interpretation Chapter for more details and examples. Note: Comparisons at p = .05.

BOX #2: Are High PASS scores significantly different from low achievement scores (Discrepancy 2)? Are low PASS scores similar to low achievement scores (Consistency)?

PASS Scores from CAS2

	Planning	Simultaneous	Attention	Successive
Planning	88	111	102	79

Faller Assessment of READING

Standard Score	PI: Phonological Index	PIA: Phonemic Awareness	NWD: Nonsense Word Decoding	IRF: Irregular Word Reading Fluency	ORF: Oral Reading Fluency	PS: Reading Speed	PI: Fluency Index	RAI: Rapid Automatic Naming	VF: Verbal Fluency	VP: Visual Perception	RR: Irregular Word Reading Fluency	OP: Orthographic Processing	MI: Mixed Index	CI: Comprehension Index	SC: Semantic Concepts	WR: Word Recall	PK: Prior Knowledge	MP: Morphological Processing	SRF: Silent Reading Fluency	CR: Comprehension	TR: Total Index	
77	Discrepant	Discrepant	Discrepant	Consistent																		

Average & Above PASS Scores

Planning 88
Simultaneous 111
Attention 102
Successive 79
PI 77
PIA 69
NWD 71
IRF 79
PS 80
WR 83

FREE - on www.jacknaglieri.com

CAS2 PSW Analyzer for WJ4, KTEA3, FAR, FAM

- Enter PASS and Achievement test standard scores and all comparisons are calculated

BOX #1: Is there a PASS Pattern of Strengths and Weaknesses (Discrepancy)?
 Differences Between PASS Scale Standard Scores and the Student's Average PASS Score (p < .05) from PASS Mean?
 Cognitive Assessment System? PASS Mean & Difference Significantly Different (p < .05) from PASS Mean? Strength or Weakness

PASS Scales	Standard Score	Mean	Difference	Significantly Different	Strength or Weakness
Planning	88	87.5	0.5	no	
Simultaneous	111	113.5	-2.5	yes	Strength
Attention	102	8.8	93.2	no	
Successive	79	18.5	80.5	yes	Weakness

BOX #2: Are high PASS scores significantly different from low achievement scores (Discrepancy)?
 Are low PASS scores similar to low achievement scores (Consistency)?

PASS Scores from CAS2	Planning	Simultaneous	Attention	Successive
Mean	88	111	102	79

Palfer Assessment of READING

Standard Scores	Phonological Index	Phonics Awareness	Automatic Word Decoding	Strategic Word Decoding	Oral Reading Fluency	Reading Comprehension
77	Discrepant	Discrepant	Discrepant	Consistent		
69	Discrepant	Discrepant	Discrepant	Consistent		
71	Discrepant	Discrepant	Discrepant	Consistent		
79	Discrepant	Discrepant	Discrepant	Consistent		
80	Discrepant	Discrepant	Discrepant	Consistent		
82	Discrepant	Discrepant	Discrepant	Consistent		
84	Discrepant	Discrepant	Discrepant	Consistent		
86	Discrepant	Discrepant	Discrepant	Consistent		
88	Discrepant	Discrepant	Discrepant	Consistent		
90	Discrepant	Discrepant	Discrepant	Consistent		
92	Discrepant	Discrepant	Discrepant	Consistent		
94	Discrepant	Discrepant	Discrepant	Consistent		
96	Discrepant	Discrepant	Discrepant	Consistent		
98	Discrepant	Discrepant	Discrepant	Consistent		
100	Discrepant	Discrepant	Discrepant	Consistent		
102	Discrepant	Discrepant	Discrepant	Consistent		
104	Discrepant	Discrepant	Discrepant	Consistent		
106	Discrepant	Discrepant	Discrepant	Consistent		
108	Discrepant	Discrepant	Discrepant	Consistent		
110	Discrepant	Discrepant	Discrepant	Consistent		
112	Discrepant	Discrepant	Discrepant	Consistent		
114	Discrepant	Discrepant	Discrepant	Consistent		
116	Discrepant	Discrepant	Discrepant	Consistent		
118	Discrepant	Discrepant	Discrepant	Consistent		
120	Discrepant	Discrepant	Discrepant	Consistent		
122	Discrepant	Discrepant	Discrepant	Consistent		
124	Discrepant	Discrepant	Discrepant	Consistent		
126	Discrepant	Discrepant	Discrepant	Consistent		
128	Discrepant	Discrepant	Discrepant	Consistent		
130	Discrepant	Discrepant	Discrepant	Consistent		
132	Discrepant	Discrepant	Discrepant	Consistent		
134	Discrepant	Discrepant	Discrepant	Consistent		
136	Discrepant	Discrepant	Discrepant	Consistent		
138	Discrepant	Discrepant	Discrepant	Consistent		
140	Discrepant	Discrepant	Discrepant	Consistent		
142	Discrepant	Discrepant	Discrepant	Consistent		
144	Discrepant	Discrepant	Discrepant	Consistent		
146	Discrepant	Discrepant	Discrepant	Consistent		
148	Discrepant	Discrepant	Discrepant	Consistent		
150	Discrepant	Discrepant	Discrepant	Consistent		
152	Discrepant	Discrepant	Discrepant	Consistent		
154	Discrepant	Discrepant	Discrepant	Consistent		
156	Discrepant	Discrepant	Discrepant	Consistent		
158	Discrepant	Discrepant	Discrepant	Consistent		
160	Discrepant	Discrepant	Discrepant	Consistent		
162	Discrepant	Discrepant	Discrepant	Consistent		
164	Discrepant	Discrepant	Discrepant	Consistent		
166	Discrepant	Discrepant	Discrepant	Consistent		
168	Discrepant	Discrepant	Discrepant	Consistent		
170	Discrepant	Discrepant	Discrepant	Consistent		

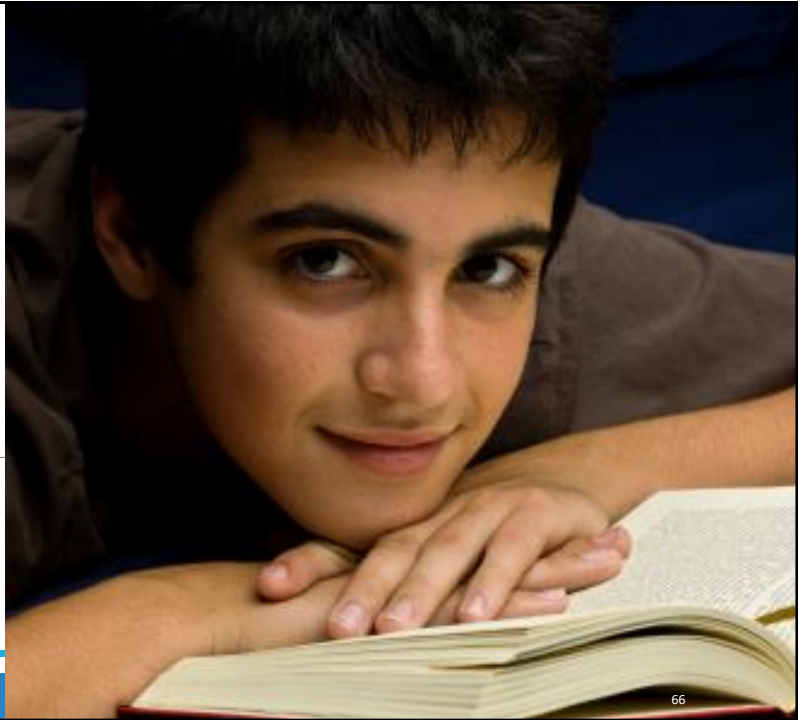
Diagram Data:
 Average & Above PASS Scores: Planning 88, Simultaneous 111, Attention 102
 Strength: P1 77, P4 69, NWD 71, ISO 79
 Successive: 79
 PASS 80
 WR 83
 Achievement Weaknesses: WR 83
 PASS Weaknesses: Successive 79

CAS2 Analyzers

- Other free CAS2 Analyzers are available for the WIAT-3, WJ-4, and KTEA-3 on www.jacknaglieri.com
- But WHY do I suggest the combination of PASS scores from CAS2 with the FAR and FAM?
 - FAR and FAM are elegantly inter-related to the CAS2 because PASS processes underlie reading and math skills
 - For example, when you determine if a student is using a strategy when doing reading comprehension on the FAR you can tie that to the CAS2 Planning score
 - Or when a student struggles with decoding words you can connect that to the CAS2 Successive processing score
 - The connection between low scores on the FAR and/or FAM with PASS is so important because it explains WHY student struggles AND what to do about it

The Case of Rocky

Strengths with Specific
Learning Disability and
ADHD



66

The case of Rocky

- ▶ Rocky¹ went to school in a large middle-class district
- ▶ In first grade Rocky was significantly below grade benchmarks in reading, math, and writing.
 - He received group reading instruction weekly and six months of individual reading instruction but minimal progress →retained
- ▶ By the middle of his second year in first grade he still struggling
 - decoding, phonics, and sight word vocabulary; math problems, addition, problem solving activities and focusing and paying attention."
- ▶ After two years of special team meetings and special reading instruction he is now working two grade levels below his peers in reading, writing, and math

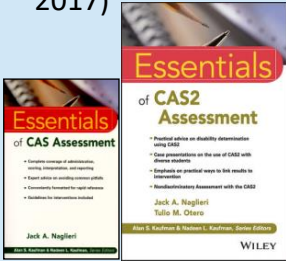
Note: This child's name and other potentially revealing data have been changed to protect his identity.

67

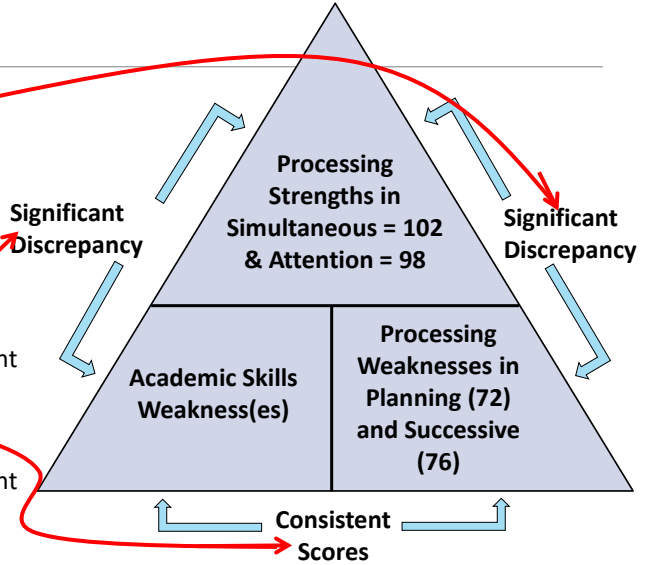
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Answering the Question: Why the student fails?

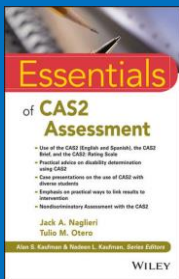
• The Discrepancy Consistency Method (DCM) was first introduced in 1999 (most recently in 2017)



- Discrepancy between high and low processing scores
- Discrepancy between high processing and low achievement
- Consistency between low processing and low achievement

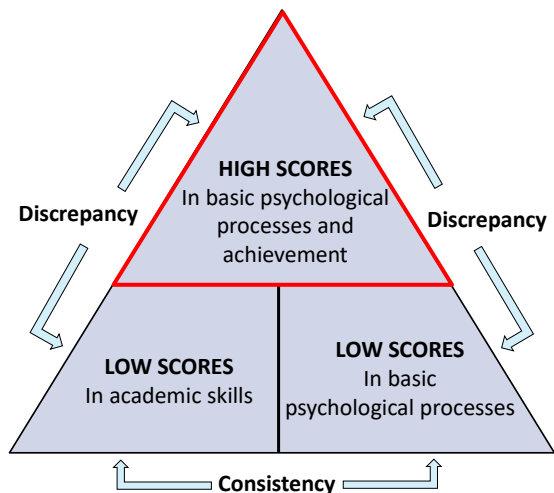


Discrepancy Consistency Method for SLD Determination Naglieri & Otero (2017) Pattern of Strengths and Weaknesses



this IS A Strength Based Method

Knowing a student's GOOD scores is just as important as knowing their LOW scores



Interventions for Rocky

Using Plans to Overcome Anxiety

Some children feel very anxious when they approach a new situation, and they are not sure what

Graphic Organizers for Connecting and Remembering Information

Remembering and relating information is a common part of learning and daily life. Students are often expected to learn large amounts of new and unfamiliar information. Learning facts requires the student to see how information is connected or related. Students often remember this infor

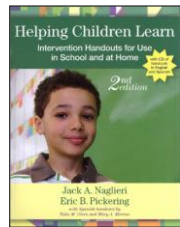
Segmenting Words for Reading/Decoding and Spelling

Decoding a written word requires the person to make sense out of printed letters and words and to translate letter sequences into sounds. This demands understanding the sounds that letters

Chunking for Reading/Decoding

Reading/decoding requires the student to look at the sequence of the letters in words and understand the organization of specific sounds in order. Some students have difficulty with long sequences of letters and may benefit from instruction that helps them break the word into smaller, more manageable units, called *chunks*. Sometimes the order of the sounds in a word is more easily organized if the entire word is broken into these units. These chunks can be combined into

- Helping Children Learn Intervention Handouts for Use in School and at Home, *Second Edition*
By Jack A. Naglieri, Ph.D., & Eric B. Pickering, Ph.D.,
- Spanish handouts by
- Tulio Otero, Ph.D., &
- Mary Moreno, Ph.D.



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A Cognitive Strategy Instruction to Improve Math Calculation for Children With ADHD and LD: A Randomized Controlled Study

Jackie S. Iseman¹ and Jack A. Naglieri¹

Abstract

The authors examined the effectiveness of cognitive strategy instruction based on PASS (Planning, Attention, Simultaneous, Successive) given by special education teachers to students with ADHD randomly assigned by classroom. Students in the experimental group were exposed to a brief cognitive strategy instruction for 10 days, which was designed to encourage

Planning Facilitation for Math Calculation

Math calculation is a complex activity that involves recalling basic math facts, following procedures, working carefully, and checking one's work. Math calculation requires a careful (i.e., planful) approach to follow all of the necessary steps. Children who are good at math calculation can move on to more difficult math concepts and problem solving with greater ease than those who are having problems in this area. For children who have trouble with math calculation, a technique that helps them approach the task planfully is likely to be useful. Planning facilitation is such a technique.

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reas the comparison group received-
ievement were given at pretest. All
dized achievement tests (*Woodcock-
ed Achievement Test, Second Edition*,
ency was also administered at 1 year
up but not the comparison group on
ations (0.40 and -0.14, respectively).
on group. These findings suggest that
nsfer to standardized tests of math
nd continued advantage 1 year later

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Instructional Sessions

- Math lessons were organized into “instructional sessions” delivered over 13 consecutive days
- Each instructional session was 30-40 minutes
- Each instructional session was comprised of three segments as shown below

10 minutes	10-20 minutes	10 minutes
10 minute math worksheet	Planning Facilitation or Normal Instruction	10 minute math worksheet

Experimental Group

19 worksheets with Planning Facilitation

Vs.

Control Group

19 worksheets with Normal Instruction

72

72

Planning Facilitation: Asking vs. Telling



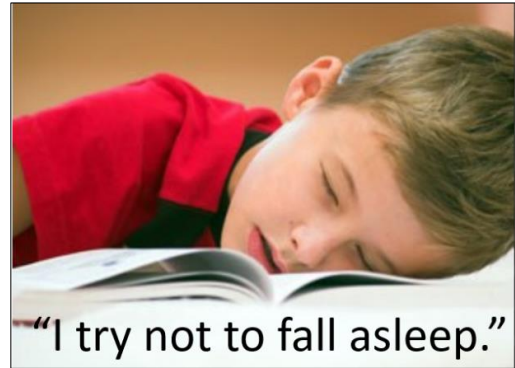
- Teachers facilitated discussions to help students become more self-reflective about use of strategies
- Teachers asked questions like:
 - What was your goal?
 - Where did you start the worksheet?
 - What strategies did you use?
 - How did the strategy help you reach your goal?
 - What will you do again next time?
 - What other strategies will you use next time?

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Student Comments During Planning Facilitation

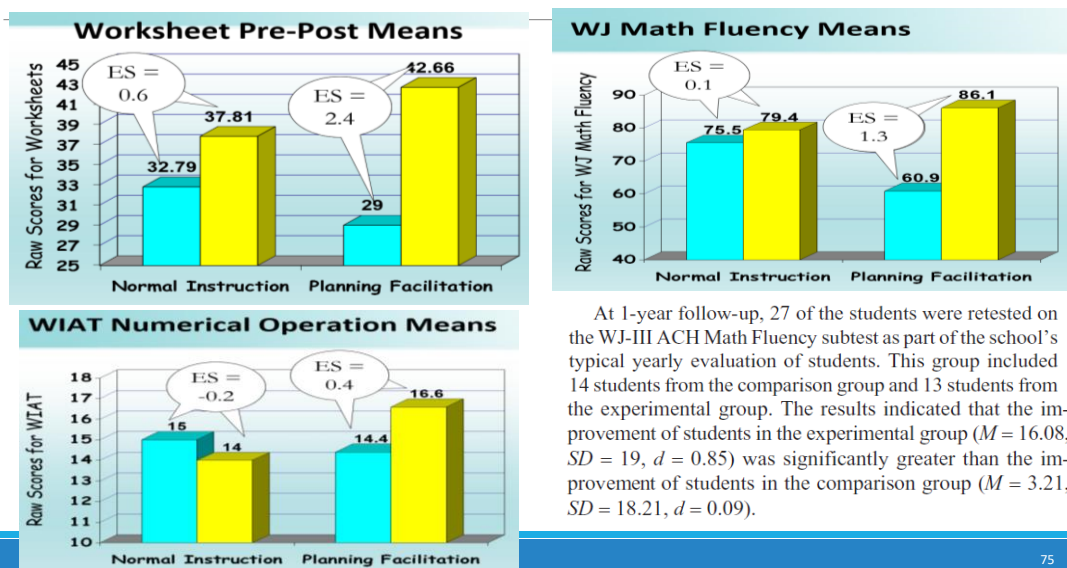
- My goal was to do all of the easy problems on every page first, then do the others.
- I do the problems I know, then I check my work.
- The problems that have more steps take more time, so I skip them
- I did all the problems in the brain-dead zone first.



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Pre-Post Means and Effect Sizes for the Students with LD and ADHD

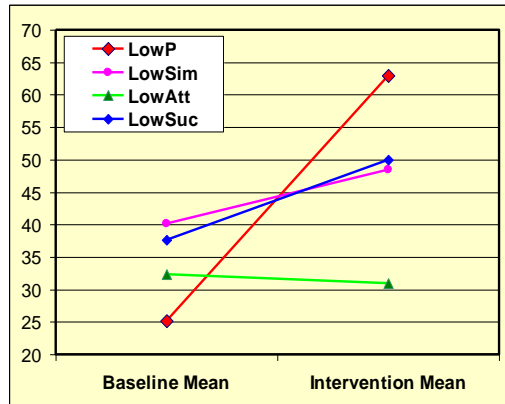


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Pre-Post Changes for the Students with LD and ADHD

- The students with a weakness in Planning, Simultaneous or Successive processing scales benefited from the Planning Facilitation method
- Importantly, the students with a weakness in Planning improved the most
- This has been the case in all the studies of Planning Facilitation
- **COGNITION PREDICTS RESPONSE TO INTERVENTION**



Summary of PASS Intervention Research in Essentials of CAS2

Effectiveness of a Cognitive Strategy Intervention in Improving Arithmetic Computation Based on the PASS Theory

Jack A. Naglieri and Deanne Johnson

Abstract

The purpose of this study was to determine if an instruction designed to facilitate planning, given by teachers to their class as a group, would have differential effects depending on the specific Planning, Attention, Simultaneous, Successive (PASS) cognitive characteristic of each child. A cognitive strategy instruction that encouraged planning was provided to the group of 19 students with learning disabilities and mild mental impairments. All students completed math worksheets during 7 baseline and 14 intervention sessions. During the intervention phase, students engaged in self-reflection and verbalization of strategies about how the arithmetic computation worksheets should be completed. The sample was sorted into one experimental and four control groups after the experiment was over. Four groups with a cognitive weakness in each PASS scale from the Cognitive Assessment System and one of the worksheets completed math worksheets throughout the experimental phase. Standardized Johnson Tests of Achievement, Third Edition, Math Fluency and Wechsler Individualized Achievement Test (WIAT-III) Numerical Operations) were administered pre- and post-intervention, and Math Fluency was also administered at 1 year follow-up. Large pre-post effect sizes were found for students in the experimental group but not the comparison group on math worksheets (0.85 and 0.26), Math Fluency (1.17 and 0.09), and Numerical Operations (0.40 and -0.14, respectively). At 1 year follow-up, the experimental group continued to outperform the comparison group. These findings suggest that students with ADHD evidenced greater improvement in math worksheets, but transfer to standardized tests of math (which measured the skill of generalizing learned strategies to other similar tasks), and continued advantage 1 year later when provided the PASS-based cognitive strategy instruction.

REMEDYING READING COMPREHENSION DIFFICULTIES: A COGNITIVE PROCESSING APPROACH

SHAMITA MAHAPATRA
Christi College, Coraick, Orissa, India

J. P. DAS, HOLLY STACK-CUTLER, and RAJNO PARRILA
Department of Educational Psychology, University of Alberta, Edmonton, Alberta, Canada

Abstract

The efficacy of a cognitive-based remediation program was investigated with 14 English-as-a-second-language (ESL) poor readers in Grade 4 who had significant difficulty in comprehension and 14 normal ESL readers in Grade 4 who achieved no remediation. Both groups were selected from 2 English-medium schools in India. The effectiveness of two reading intervention programs (phonics-based and inductive learning) was investigated with 63 First Nations children identified as poor readers in Grades 3 and 4 in Study 1, whereas in Study 2, the efficacy of booster sessions for inductive learning or PREP (PASS Reading Enhancement Program) was examined. The major dependent variables in Study 1 were percent in perfect change following intervention on reading tests for word reading and word decoding. Other variables compared tests of phonological awareness, rapid

Mathematics Instruction and PASS Cognitive Processes: An Intervention Study

Jack A. Naglieri and Suzanne H. Gotting

Abstract

The purpose of this study was to determine if an instruction designed to facilitate planning, given by a group, would have differential effects depending on the specific cognitive characteristics of the individual instruction that facilitated planning was provided to a group of 12 students with learning disabilities. All work sheets during 7 sessions of baseline and 21 sessions of intervention (when the instruction designed provided). During the intervention phase, students engaged in self-reflection and verbalization of strategy problems were completed. The class was sorted according to planning scores, obtained using the Cog which is based on Planning, Attention, Simultaneous, Successive (PASS) theory and low- and high-planning identified. The results, consistent with previous research, showed that teaching content and regulated beneficial effects for all students but was especially helpful for those who were poor in planning, as do implications of these findings are provided.

PLANNING FACILITATION AND READING COMPREHENSION: INSTRUCTIONAL RELEVANCE OF THE PASS THEORY

Frederick A. Haddad
Kyrene School District, Tempe, Arizona

Y. Evie Garcia
Northern Arizona University

Jack A. Naglieri
George Mason University

Michelle Grinditch, Ashley McAndrews, Jane Eubanks
Kyrene School District, Tempe, Arizona

Abstract

The purpose of this study was to evaluate whether instruction designed to facilitate planning would have differential benefits on reading comprehension depending on the specific Planning, Attention, Simultaneous, and Successive (PASS) cognitive characteristics of each child. A sample of 45 fourth-grade general education children was sorted into three groups based on each PASS scale on worksheets (n = 25; effect size = .50) or a Successive weakness (n = 11; effect size of .60) not benefits to math. These results support previous research suggesting that PASS profiles are relevant to instruction.

Essentials of CAS2 Assessment

Jack A. Naglieri
Talia M. Orvaschel

WILEY

Jessica

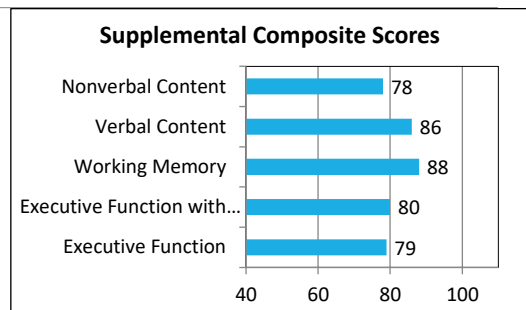
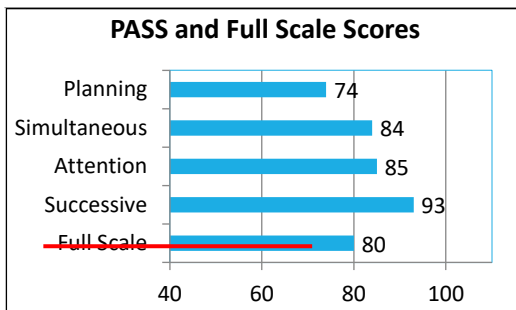
- Previous diagnoses of ADHD, ODD, Anxiety and Depression.
- Received OT since 1st grade.
- Since 3rd grade the OT focus was helping the teacher to teach strategies for self monitoring, attention, visual sequencing, and organization
- Problems following verbal directions, inefficient work, struggles to work in a noisy setting, is distractable, fiddles with objects, inflexible, and frustrates easily.
- She receives speech and language services for language processing issues.
- Currently takes medications to manage her diagnoses, she takes Clonidine 0.2 mg to help with sleep and anger issues. She also takes Ritalin 40 mg ER in the am and 10 mg booster at lunch time.



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Jessica 4th grade



Composite/Subtest	Standard Scores	Percentile Rank	Descriptive Category
Reading Composite	74	4	Below average
Letter & Word Recognition	73	4	Below average
Reading Comprehension	76	5	Below average
Math Composite	68	2	Low
Math Concepts & Applications	65	1	Low
Math Computation	74	4	Below average
Written Language Composite	-	-	-
Spelling	66	1	Low

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PASS and KTEA-III Score Analyzer

CAS2 12-Subtest Extended Battery

BOX #1 Is there a PASS Pattern of Strengths and Weaknesses (Discrepancy 1)?

Differences Between PASS Scale Standard Scores and the Student's Average PASS Score (p < .05) for the CAS2 12-Subtest EXTENDED battery.

Cognitive Assessment	Standard Score	PASS Mean & Differences	Significantly Different (p < .05) from PASS Mean?	Strength or Weakness
System-2				
Planning	74	-10.0	yes	Weakness
Simultaneous	84	0.0	no	
Attention	85	1.0	no	
Successive	93	9.0	no	

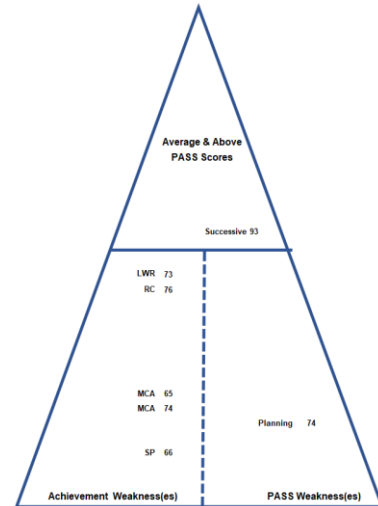
Notes:
 1. A weakness is defined as PASS standard score that is significantly below the child's average PASS score (p < .05 level) and the PASS score is below 90 (i.e. below the Average range).
 2. A strength is defined as PASS standard score that is significantly above the child's average PASS score (p < .05 level) and the PASS score is above 109 (i.e. above the Average range).
 3. See Essentials of CAS2 Assessment Interpretation Chapter for more details and examples. Note: Comparisons at p < .05.

BOX #2 Are high PASS scores significantly different from low achievement scores (Discrepancy 2)? Are low PASS scores similar to low achievement scores (Consistency)?

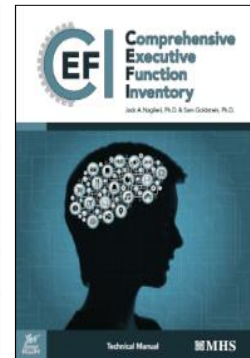
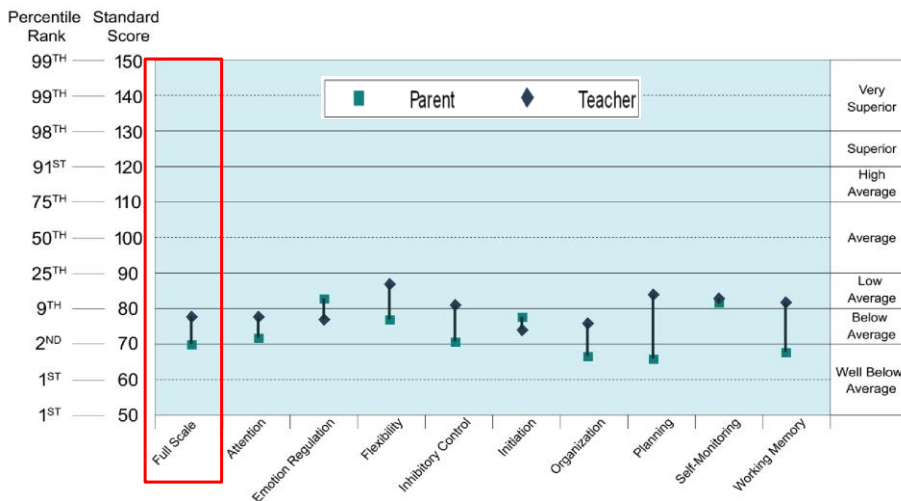
PASS Scores from CAS2				
	Planning	Simultaneous	Attention	Successive
	74	84	85	93

Kaufman Test of Educational Achievement 3rd Edition

Standard Scores		Consistent	Consistent	Consistent	Discrepant
73	LWR Letter & Word Recognition	Consistent	Consistent	Consistent	Discrepant
76	RC Reading Comprehension	Consistent	Consistent	Consistent	Discrepant
	NWD Nonsense Word Decoding				
	IPP Phonological Processing				
	WRP Word Recognition Fluency				
	DF Decoding Fluency				
	SRF Silent Reading Fluency				
	RV Reading Vocabulary				
85	MCA Math Concepts and Applications	Consistent	Consistent	Consistent	Discrepant
74	MCA Math Computation	Consistent	Consistent	Consistent	Discrepant
	MF Math Fluency				
	WE Written Expression				
66	SP Spelling	Consistent	Consistent	Consistent	Discrepant
	WF Writing Fluency				
	LC Listening Comprehension				
	OE Oral Expression				
	AF Associational Fluency				
	OHF Object Naming Facility				
	LNF Letter Naming Facility				



Comprehensive Executive Function Inventory Comparative Results



Impressions (Tulio Otero)

- This case is an example of the behaviors (CEFI) that are consistent with a low planning score on CAS2.
- Based on the data and teacher reports/observations, I see her low performance is driven by Low planning (EF) and Attention. She often can't get to the point where she can fully recruit Simultaneous and Successive processes to be successful.

82

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PASS Theory Based on Brain Function — Attention

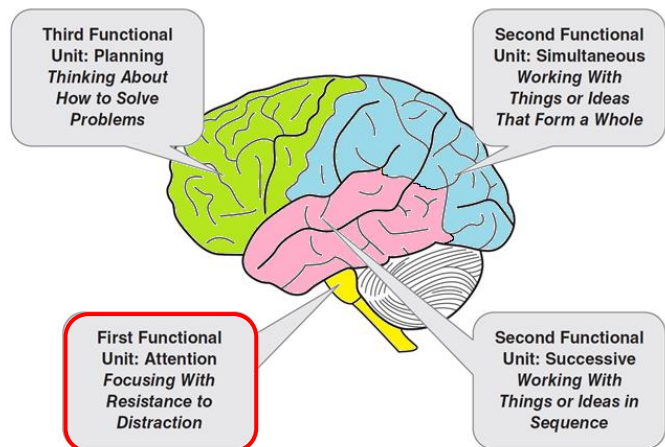


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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Cognitive Assessment System
Second Edition

Examiner Record Form

Jack A. Naglieri J. P. Das Sam Goldstein

Attention Subtests

Expressive Attention

Number Detection

Receptive Attention

Find the numbers that look like this: 1 2

1	5	1	4	2	2	5
---	---	---	---	---	---	---

N n	T r	b t
TR	n b	A a

Section 2. Subtest and Composite Scores

Subtest	Raw Score	Scaled Score				
		PLAN	SIM	ATT	SUC	
Planned Codes (PGd)						
Planned Connections (PCn)						
Planned Number Matching (PNM)						
Matrices (MAT)						
Verbal-Spatial Relations (VSR)						
Figure Memory (FM)						
Expressive Attention (EA)						
Number Detection (ND)						
Receptive Attention (RA)						
Word Series (WS)						
Sentence Repetition/Questions (SR/SQ)						
Visual Digit Span (VDS)						
		PLAN	SIM	ATT	SUC	FS
Sum of Subtest Scaled Scores		+	+	+	+	
PASS Composite Index Scores						
Percentile Rank						
Upper						
% Confidence Interval						
Lower						

PASS Theory: Attention


- Attention is a basic psychological process we use to
 - selectively attend to some stimuli and ignores others
 - Focus our cognitive activity
 - Selective attention
 - Resistance to distraction
 - Listening, as opposed to hearing

RED	RED	BLUE
YELLOW	YELLOW	RED
BLUE	RED	YELLOW
BLUE	BLUE	BLUE
YELLOW	BLUE	YELLOW

BLU VERDE GIALLO
VERDE ROSSO BLU

빨강 파랑 초록 노랑

11. A 3:15 A.M.
 B 3:30 P.M.
 C 3:15 P.M.
 D 3:15 A.M.



leave school

11. 3:15 p.m.

12. Trent began studying at 5:00 P.M. and finished 1 hour and 22 minutes later. What time did he finish?

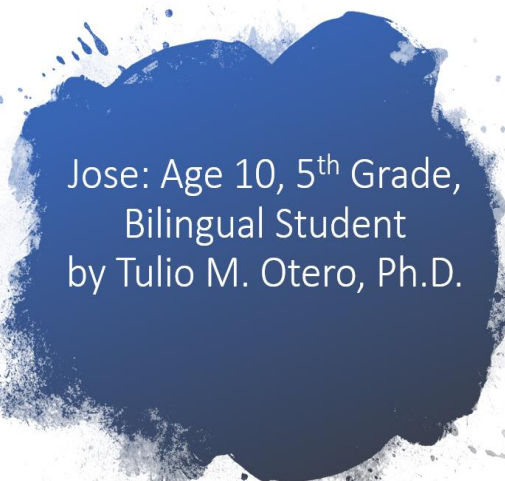
A 6:22 A.M. B 5:22 P.M. C 6:10 P.M. D 6:22 P.M.

13. Maura began basketball practice at 3:00 P.M. and finished 50 minutes later. What time did she finish?


A 3:50 P.M. B 3:05 A.M. C 4:05 P.M. D 4:50 A.M.

Attention

READING COMPREHENSION IS DIFFICULT BECAUSE OF THE SIMILARITY OF THE OPTIONS



Jose: Age 10, 5th Grade,
 Bilingual Student
 by Tulio M. Otero, Ph.D.



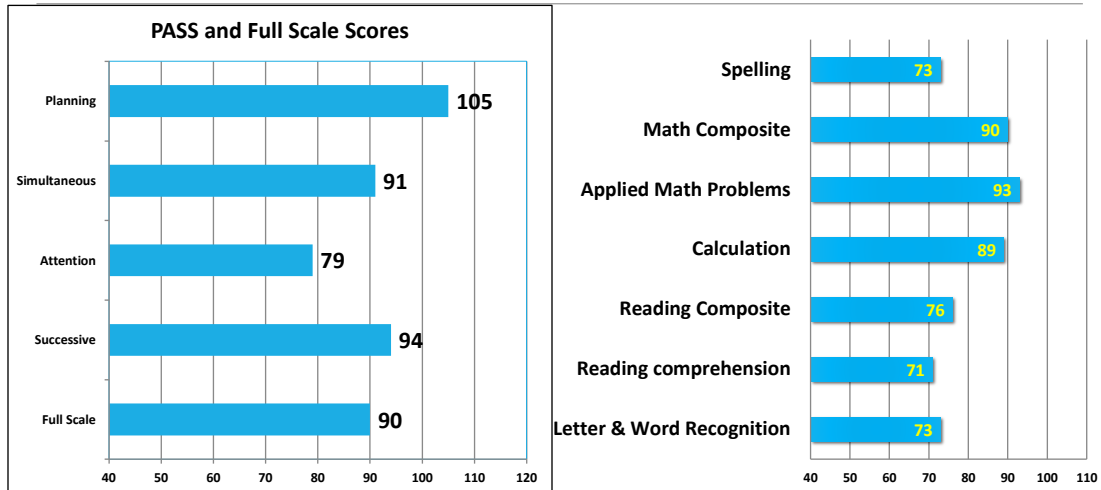
Jose's teachers' concerns:

phonemic awareness, reading fluency, reading comprehension math problem-solving, spelling, written expression

Jose also receives ELL services and his current ACCESS scores are as follows: Listening 5.8, Speaking 1.9, Reading 2.8, Writing 3.5.

2018 WISC4 Spanish : VCI 55, PRI 92, WM 86, PS 91

CAS2 and KTEA-III Scores (January 2020)



88

88

Jose was given this simple intervention

Remember to check how well you are attending. If you are having a problem, use a plan and look at this (taped to his desk).



**Think smart
and look
at the details!**



From: Naglieri, J. A., & Pickering, E. B. (2010). *Helping Children Learn: Intervention Handouts for Use at School and Home (Second Edition)*. Baltimore, MD: Brookes Publishing.

Figure 1. A graphic that reminds students to focus on information being discussed.

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Two weeks later!

- Teacher reported that José has increased his reading accuracy by at least 80%.
- He read 16 words correctly out of a list of 20.
- He has done this over the last 3 sessions.



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CASE by Tulio Otero: ALEJANDRO (C.A. 7-0 GRADE 1)

REASON FOR REFERRAL

- Does he have ID?
- Academic:
 - Could not identify letters/sounds
 - October. Could only count to 39
 - All ACCESS scores of 1
- Behavior:
 - Difficulty following directions
 - Attention concerns
 - Refusal/defiance

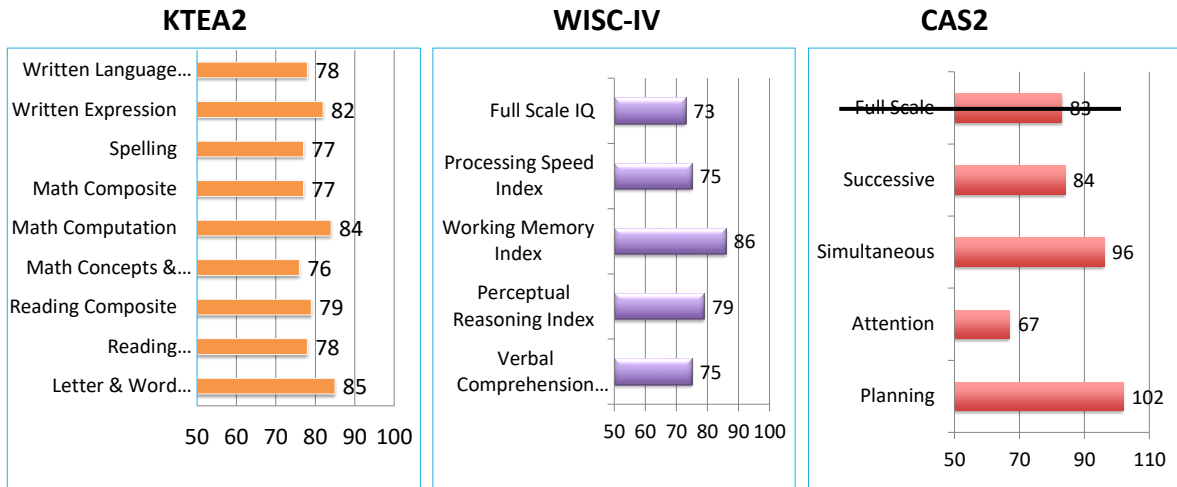


Note: this is not a picture of Alejandro

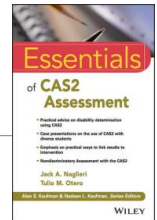
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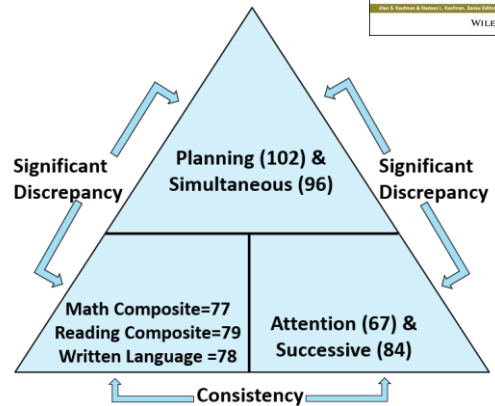
WISC-IV ASSESSMENT



Alejandro and PASS (by Dr. Otero)



- ▶ Alejandro is not a slow learner.
- ▶ He has good processing scores:
 - ▶ Simultaneous = 96 and Planning = 102
- ▶ He has a “disorder in one or more of the basic psychological processes”
 - Attention = 67 and Successive = 84
- ▶ Using the Discrepancy Consistency Method (1999, 2017) he meets criteria for SLD (see Naglieri & Otero, 2017).



Intervention Protocol (Naglieri & Kryza, 2019)

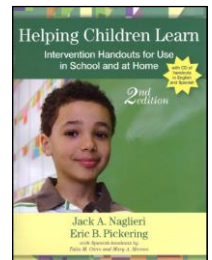
1. Help child understand their PASS strengths and challenges (be intentional & transparent)
2. Encourage Motivation & Persistence (student's mindset)
3. Encourage strategy use (build skill sets)
4. Encourage independence and self efficacy (metacognition, self assessment & self correction)

94

94

Be Intentional and Transparent

- Give Alejandro the PASS handouts
 - *"The test showed that your brain is strong in seeing the BIG PICTURE (Simultaneous Processing) and recognizing sequences. (Successive Processing) Does that make sense to you?"*
- Explain to him the PASS areas that are challenges for him
 - The part of your brain that makes learning challenging for you is the part that PLANS (PFC).
 - We're going to work on using your strengths and helping you develop your PLANNING skills.



95

95

PASS Theory Based on Brain Function - Simultaneous Processing

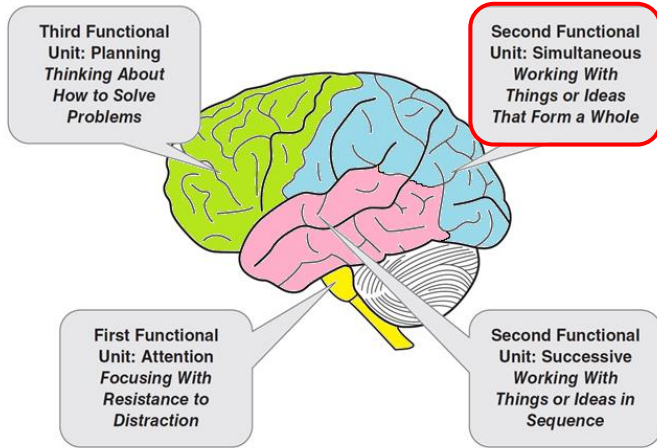
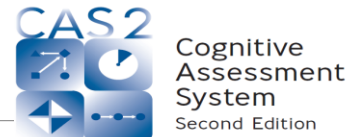


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017



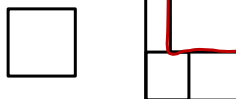
Examiner Record Form
Jack A. Naglieri J. P. Das Sam Goldstein

Simultaneous Subtests

Matrices

Verbal Spatial Relations

Figure Memory



Subtest	Raw Score	Scaled Score				
		PLAN	SIM	ATT	SUC	
Planned Codes (PCJ)						
Planned Connections (PCN)						
Planned Number Matching (PNM)						
Matrices (MAT)						
Verbal-Spatial Relations (VSR)						
Figure Memory (FM)						
Expressive Attention (EA)						
Number Detection (ND)						
Receptive Attention (RA)						
Word Series (WS)						
Sentence Repetition/Questions (SR/SQ)						
Visual Digit Span (VDS)						
		PLAN	SIM	ATT	SUC	FS
Sum of Subtest Scaled Scores		+	+	+	+	
PASS Composite Index Scores						
Percentile Rank						
Upper						
% Confidence Interval						
Lower						

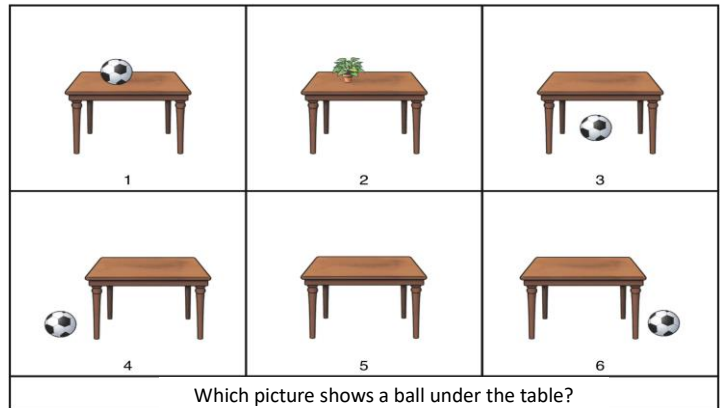
PASS Theory: Simultaneous

➤ **Simultaneous** processing is used to integrate stimuli into groups

- Each piece must be related to the other
- Stimuli are seen as a whole

➤ Academics:

- Reading comprehension
- geometry
- math word problems
- whole language
- verbal concepts

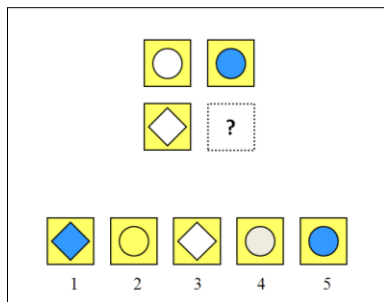


98

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Thinking vs Knowing

Solving these analogies demands the same kind of thinking



Girl is woman as boy is to ____?

3 is to 6 as 4 is to ____?

C⁷ is to F as E⁷ is to ____?

99

99

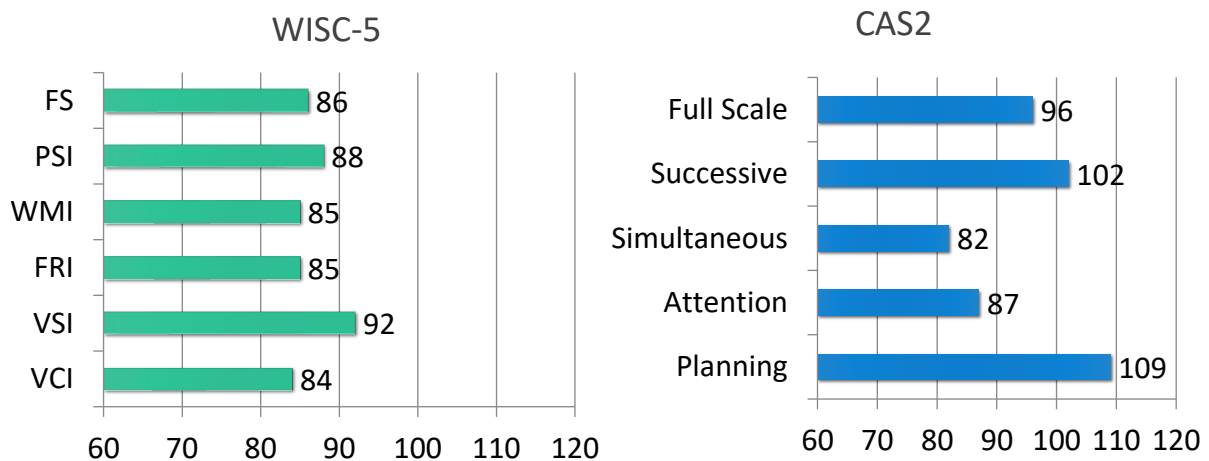
Case of Alexandra (Tulio Otero)



- Alex is 8-years-old in the 3rd grade.
- Her home language is primarily Spanish, although she speaks English with siblings
- Alex has difficulty when encountering most reading and written language tasks.
- Alex was previously evaluated for special education
 - The test results indicated her overall cognitive abilities were in the Low Average range (WISC5).
 - Significant difficulty with reading fluency and automatic word recognition skills
 - Has strong decoding and phonological skills.
 - Spanish literacy achievement results in word reading and spelling fell within the Average range.
 - Her struggles were ascribed to attention problems stemming from ADHD and not a specific learning disability.
- She continues to have significant reading and writing difficulties, limited self-confidence, and struggles to complete her work.

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Case of Alexandra



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Case of Alexandra - SLD

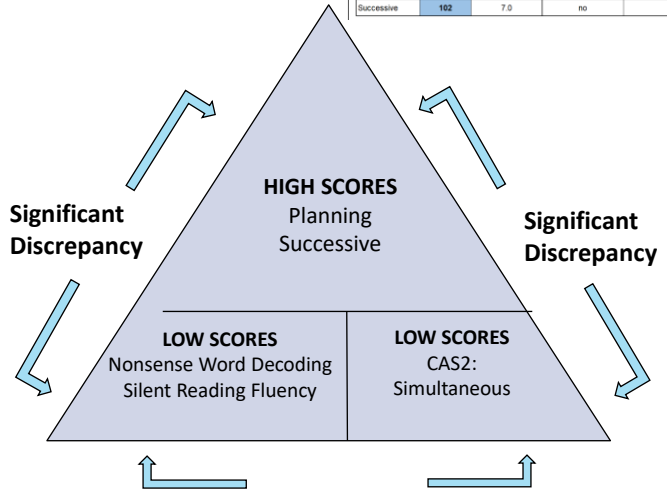
Composite/Subtest	Standard	Percentile
	Scores	Rank
Reading Composite	105	63
Letter & Word Recognition	111	77
Reading Comprehension	99	47
Nonsense Word Decoding	80	9
Silent Reading Fluency	82	12
Math Composite	90	25
Math Concepts & Applications	88	21
Math Computation	95	37
Spelling	98	45

CAS2 8-Subtest CORE Battery

BOX #1 Is there a PASS Pattern of Strengths and Weaknesses (Discrepancy 1)?

Differences Between PASS Scale Standard Scores and the Student's Average PASS Score (p = .05) for the CAS2 CORE battery.

Cognitive Assessment System-2	PASS Mean & Differences:	Significantly Different (at p = .05) from PASS Mean?	Strength or Weakness	
PASS Scales	Standard Score			
Planning	109	14.0	yes	
Simultaneous	82	-13.0	yes	Weakness
Attention	87	-8.0	no	
Successive	102	7.0	no	



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PASS Theory Based on Brain Function – Successive Processing

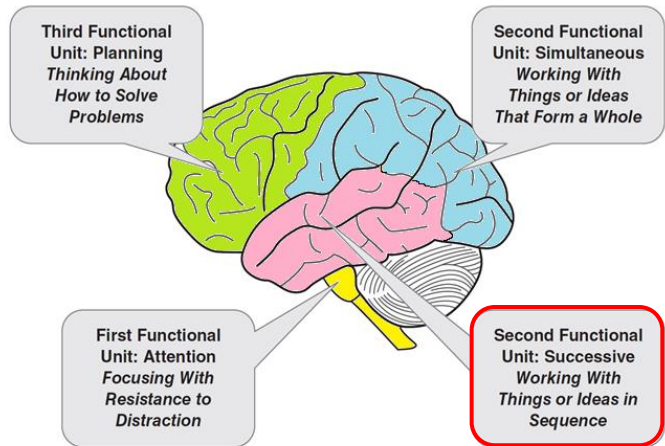


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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Successive Subtests



Cognitive
Assessment
System
Second Edition

Examiner Record Form

Jack A. Naglieri J. P. Das Sam Goldstein

Word Series

Sentence Repetition or
Sentence Questions

Visual Digit Span

Subtest	Raw Score	Scaled Score				
		PLAN	SIM	ATT	SUC	
Planned Codes (PGd)						
Planned Connections (PLc)						
Planned Number Matching (PNM)						
Matrices (MAT)						
Verbal-Spatial Relations (VSR)						
Figure Memory (FM)						
Expressive Attention (EA)						
Number Detection (ND)						
Receptive Attention (RA)						
Word Series (WS)						
Sentence Repetition/Questions (SR/SQ)						
Visual Digit Span (VDS)						
		PLAN	SIM	ATT	SUC	FS
Sum of Subtest Scaled Scores		+	+	+	+	
PASS Composite Index Scores						
Percentile Rank						
Upper						
% Confidence Interval						
Lower						

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Successive and Syntax

➤ Sentence Repetition

- Child repeats sentences exactly as stated by the examiner such as:
- ***The red greened the blue with a yellow.***

➤ Sentence Questions

- Child answers a question about a statement made by the examiner such as the following:
- ***The red greened the blue with a yellow. Who got greened?***

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PASS Theory: Successive

- ▶ **Successive** processing is a basic psychological process we use to manage stimuli in a specific serial order
 - Stimuli form a chain-like progression
 - Recall a series of words
 - Decoding words
 - Letter-sound correspondence
 - Phonological tasks
 - Understanding the syntax of sentences
 - Comprehension of written instructions

Recall of Numbers in Order
Successive Processing

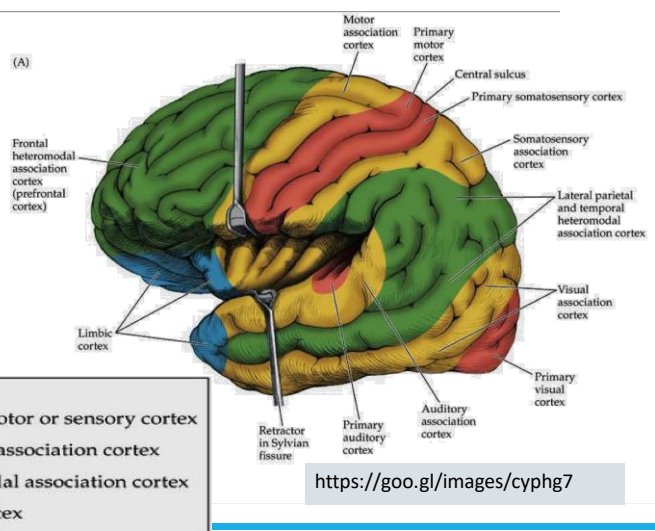
4 3 8 6 1

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Heteromodal Association Cortex (Goldberg, 2006)

- ▶ Our brains ***merge stimuli*** coming in from the senses (unimodal association cortex) into one stream of information in the **Heteromodal association cortex**
- ▶ (green areas)



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CAS2: Rating Scale Successive

Directions for Items 31–40. These questions ask how well the child or adolescent remembers things in order. The questions ask about working with numbers, words, or ideas in a series. The questions also ask about doing things in a certain order. Please rate how well the child or adolescent works with things in a specific order.

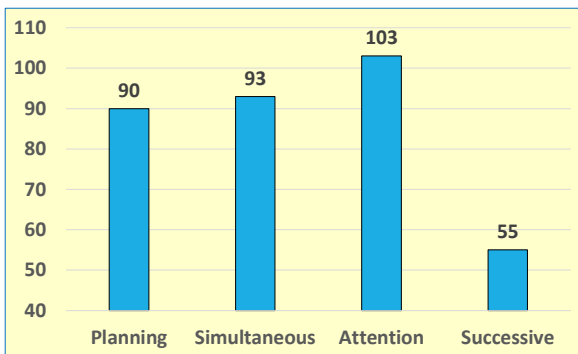
During the past month, how often did the child or adolescent . . .

	Never	Rarely	Sometimes	Frequently	Always
31. recall a phone number after hearing it?	0	1	2	3	4
32. remember a list of words?	0	1	2	3	4
33. sound out hard words?	0	1	2	3	4
34. correctly repeat long, new words?	0	1	2	3	4
35. remember how to spell long words after seeing them once?	0	1	2	3	4
36. imitate a long sequence of sounds?	0	1	2	3	4
37. recall a summary of ideas word for word?	0	1	2	3	4
38. repeat long words easily?	0	1	2	3	4
39. repeat sentences easily, even if unsure of their meaning?	0	1	2	3	4
40. follow three to four directions given in order?	0	1	2	3	4

+ + + + =
 Successive Raw Score

PASS and Handwriting

➤ Acquisition of handwriting demands Successive processing



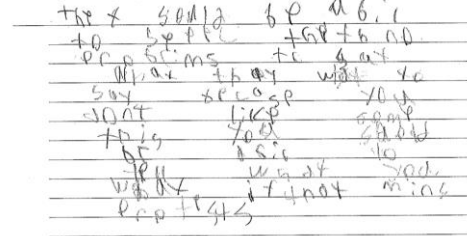
The First Amendment, 1791

"Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press, or the right of the people peaceably to assemble, and the petition the government for a redress of grievances."

Prompt:

After reading the Case Background and the First Amendment – Do you think the school has the right to censor symbolic speech or do people have the right to use symbolic speech to protest government?

Please support your answer with cited evidence from the Case Background, and complete a 3 paragraph response to the prompt.



Case of Paul: gr. 4 Dyslexia (Steve Feifer)

- **Case of Paul** -A 9-year-old in 4th grade
 - Problems in reading and math
 - Can't remember the sequence of steps when doing math and math facts
 - Good memory for details
 - Can't sound out words
 - Poor spelling
 - Poor reading comprehension



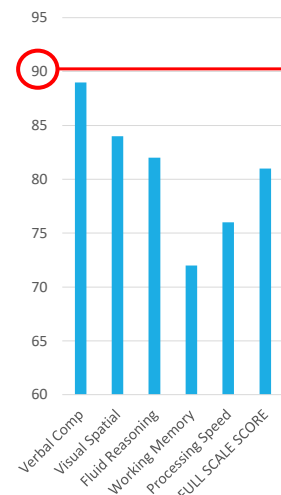
110

110

Paul – age 9 years

Presenting Concerns: Reading, Math Word Problems, Anxiety

WISCV	COMPOSITE SCORE	RANGE	PERCENTILE RANK
Verbal Comprehension	89	Below Average	23%
Visual Spatial	84	Below Average	14%
Fluid Reasoning	82	Below Average	12%
Working Memory	72	Very Low	3%
Processing Speed	76	Very Low	6%
FULL SCALE SCORE	81	Below Average	10%
WIAT III Reading	87	Below Average	19%
WIAT III Math	90	Average	25%
WIAT III Writing	94	Average	34%



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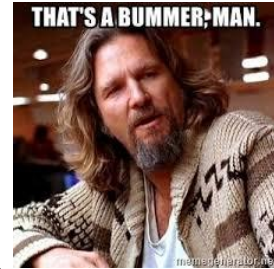
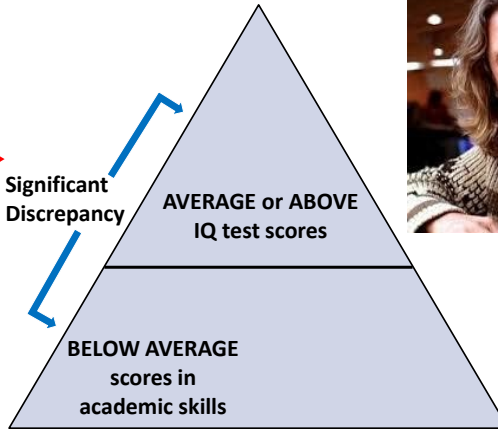
111

Traditional Discrepancy Approach



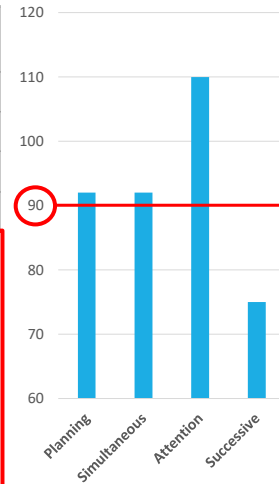
- **Discrepancy** between high IQ and low achievement test scores is NOT there
- So Paul does not qualify as SLD

Significant Discrepancy



Paul - age 9 years

CAS-2	STANDARD SCORE	Classification
Planning	92	Average
Simultaneous	92	Average
Attention	110	Average
Successive	75	Very Low



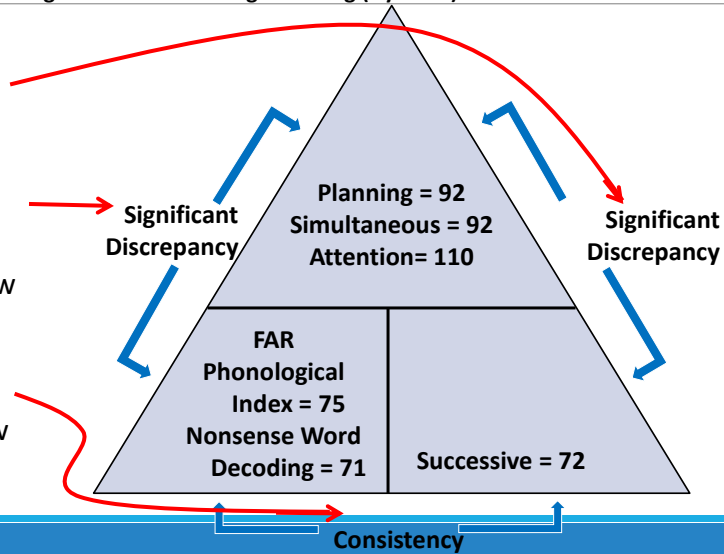
Differences Between PASS Scale Standard Scores and the Student's Average PASS Score Required for Significance for the CAS2 12-Subtest EXTENDED battery AGES 8-18 Years.

Ages 8-18 YEARS	Cognitive Assessment System - 2		Difference from PASS Mean of: 92.3	Significantly Different (at $p < .05$) from	Strength or Weakness
	PASS Scales	Standard Score			
	Planning	92	-0.3	no	
	Simultaneous	92	-0.3	no	
	Attention	110	17.8	yes	Strength
	Successive	75	-17.3	yes	Weakness

Discrepancy Consistency Method - Paul

Poor Successive + Poor Phonological = SLD in Reading Decoding (Dyslexia)

- Discrepancy between high and low processing scores
- Discrepancy between high processing and low achievement
- Consistency between low processing and low achievement



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Achievement and PASS Processes

	FAR index	Standard score (95% CI)	Percentile	Qualitative descriptor	
Requires Successive Processing	Phonological Index	75	5%	Moderately Below Average	
	Fluency Index	92	30%	Average	
	Mixed Index	81	10%	Below Average	
	Comprehension Index	97	42%	Average	
	FAR Total Index	84	14%	Below Average	
KEY INTERPRETATION			Score	Percentile	Descriptor
Requires Successive Processing	Nonsense Word Decoding - requires the student to decode a series of nonsense words presented in order of increasing difficulty.		71	3%	Moderately Below Average
Requires Simultaneous Processing	Irregular Word Reading Fluency - the student reads a list of phonologically irregular words arranged in order of increasing difficulty in 60 seconds.		95	37%	Average

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CAS2 FAR Analyzer Shows PSW for Paul

CAS2 12-Subtest Extended Battery				
BOX #1: Is there a PASS Pattern of Strengths and Weaknesses (Discrepancy 1)?				
Differences Between PASS Scale Standard Scores and the Student's Average PASS Score (p < .05) for the CAS2 12-Subtest EXTENDED Battery.				
Cognitive Assessment System	PASS Mean & Differences	Significantly Different (at p < .05) from PASS Mean?	Strength or Weakness	
PASS Scores	Standard Score			
Planning	92	-0.3	no	
Simultaneous	110	-0.3	no	
Attention	110	17.8	yes	Strength
Successive	75	-17.3	yes	Weakness

BOX #2: Are high PASS scores significantly different from low achievement scores (Discrepancy 2)? Are low PASS scores similar to low achievement scores (Consistency)?				
PASS Scores from CAS2				
	Planning	Simultaneous	Attention	Successive
	92	92	110	75

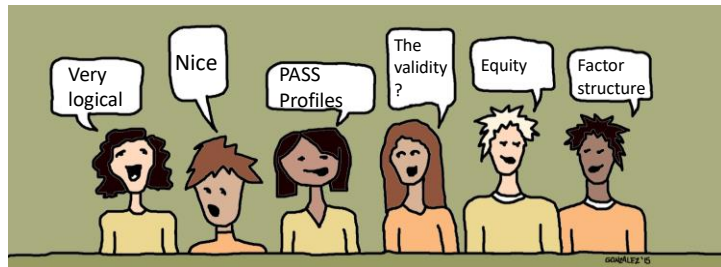
Feifer Assessment of READING						
Standard Scores	PI	Phonological Index	Discrepant	Discrepant	Discrepant	Consistent
75	PI	Phonemic Awareness	Discrepant	Discrepant	Discrepant	Consistent
71	NWD	Nonsense Word Decoding	Discrepant	Discrepant	Discrepant	Consistent
	ISD	Isolated Word Reading Fluency				
	ORF	Oral Reading Fluency				
	PS	Pushing Sounds				
92	FI	Fluency Index				
	RAI	Rapid Automatic Naming				
	VF	Verbal Fluency				
	VP	Visual Perception				
95	IRR	Irregular Word Reading Fluency				
	OP	Orthographical Processing				
81	MI	Mixed Index	Discrepant	Discrepant	Discrepant	Consistent
97	CI	Comprehension Index				
	SC	Semantic Concepts				
	WR	Word Recall				
	PK	Print Knowledge				
	MP	Morphological Processing				
	MP	Silent Reading Fluency/Comprehension				
84	MP	Total Index		Discrepant	Discrepant	Consistent

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Core Group Activity

QUESTION:

- What thoughts do you have about PASS processes?
- What questions do you have?



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Ideas to Consider



A Professional Journey

- An Awakening About Traditional Intelligence Tests

A Theory Based on Brain Function

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

Research Update

- PASS and Equity & Use in California
- To g or not to g

Administration and Interpretation

- Test order, subtest interpretation, etc.

Connecting PASS and EF

- CEFI and PASS

PASS Profiles SLD ADHD and ASD

- PSW for ASD

Conclusions

- Reasons To Change

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CAS2 Revision Goals

- CAS2 would continue to be based on PASS theory
 - Emphasis on equity (no achievement laden subtests)
 - We made a few changes to the format of subtests (Planning and Attention tasks had more pages for calculation of reliability)
 - We built the test out to provide tools for specific purposes
- We added a 4-subtest CAS2: Brief for re-evaluations by school psychologists and for educational planning by teachers who have training in assessment
- We added a PASS Rating Scale
- We are about to add CAS2: Online



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CAS2 Measures Thinking (PASS) not Knowing

➤ What does the student have to **know** to complete a task?

- This is dependent on educational opportunity (e.g., Vocabulary, Arithmetic, phonological skills, etc.)



How does the student have to **think** to complete a task?

This is dependent on the brain's neurocognitive processes

I need a PLAN !



Six Ways to Measure PASS

- CAS2 Core & Extended English & Spanish for comprehensive Assessment
- CAS2 Brief for re-evaluations, instructional planning, gifted screening
- CAS2 Rating Scale for teacher ratings



CAS2 Online Score & Report

<http://www.proedinc.com/customer/ProductView.aspx?ID=7277>

- ▶ Enter data at the subtest level or enter subtest raw scores
- ▶ Online program converts raw scores to standard scores, percentiles, etc. for all scales.
- ▶ A narrative report with graphs and scores is provided

CAS2: Online Scoring and Report System (1-Year Base Subscription) (14311)
This product requires a check of customer qualifications. Click here to download qualification form. TO ORDER, CALL: 800-987-3302.

Price: \$199.00

NEW

NOW AVAILABLE!

Age: 5 through 18 years
Testing Time: 40 to 60 minutes
Administration: Individual

The new PC, Mac™, and iPad™-compatible CAS2 Online Scoring and Report System program is an efficient and easy way to obtain CAS2 scores and corresponding narrative.

ORDERING OPTIONS:

- CAS2: Online Scoring and Report System (Add-on 5-User License) \$69.00
- CAS2: Online Scoring and Report System (Annual Renewal) \$69.00

Use CAS2 Online Scoring and Report System for:

- converting CAS2 subtest raw scores into standard scores, percentile ranks, descriptive terms, and age equivalents;
- generating PASS and Full Scale composite scores;
- comparing CAS2 subtest and PASS scale scores to identify significant intra-individual differences;
- providing a pdf report of CAS2 performance; and
 - Sample Interpretive Report
 - Sample Score Summary
- providing intervention options.

Ordering options:

- CAS2 Online Scoring and Report System first-time base subscription provides one-year unlimited online scoring and report access for up to 5 users.
- Annual base subscription renewal provides one-year unlimited online scoring and report access for up to 5 users.

CAS2 Online Score & Report

- ▶ Narrative report can be obtained in Word or PDF

CAS2 Cognitive Assessment System
Second Edition

Scoring and Interpretive Report
 Jack A. Naglieri

Name: Jack Nag
 Age: 8
 Gender: Male
 Date of Birth: 07-12-2005
 Grade: 5
 School: East Lake

This computerized report is intended for use by qualified individuals. Additional information can be found in the CAS2 Interpretive Manual.

FULL SCALE

Jack earned a Cognitive Assessment System, Second Edition (CAS2) Full Scale score of 105, which is within the Average classification and is a percentile rank of 63. This means that his performance is equal to or greater than that of 63% of children his age in the standardization group. There is a 90% probability that Jack's true Full Scale score falls within the range of 101 to 109. The CAS2 Full Scale score is made up of separate scales called Planning, Attention, Simultaneous, and Successive cognitive processing. Because there was significant variation among the PASS scales, the Full Scale will sometimes be higher and other times lower than the four scales in this test. The Attention Scale was found to be a significant cognitive strength. This means that Jack's Attention score was a strength both in relation to his average PASS score and when compared to his peers. This cognitive strength has important implications for instructional and educational programming.

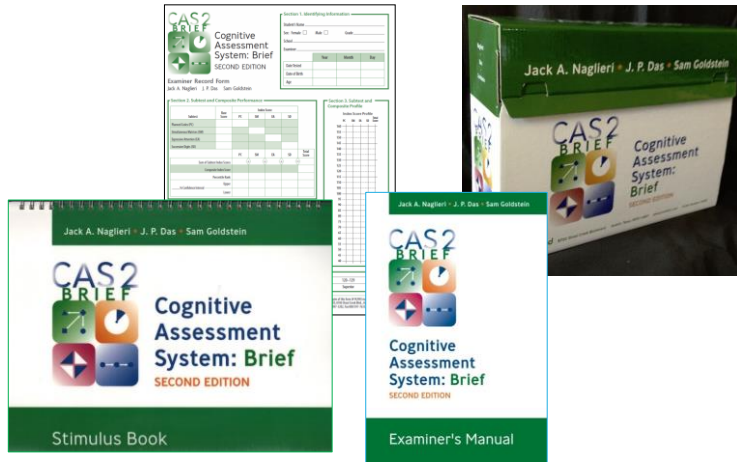
PASS and Full Scale Scores

Scale	Score
Planning	102
Simultaneous	106
Attention	112
Successive	97
Full Scale	105

CAS2: Brief for Ages 4-18 years

For special educators and others with some assessment training

- 4 subtests (20 minutes)
- PASS and Total Scales provided



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Cognitive Assessment System: Brief
SECOND EDITION

Examiner Record Form
Jack A. Naglieri · J. P. Das · Sam Goldstein

Section 1. Identifying Information

Student's Name: Tommy

Sex: Female Male

School: Parkview Elementary

Examiner: R. Dunham, PhD

Date Tested	2014	11	11
Date of Birth	2008	11	22
Age	6	6	9

Section 2. Subtest and Composite Performance

Subtest	Raw Score	Index Score				Total Score
		PC	SM	EA	SD	
Planned Codes (PC)	16	112				
Simultaneous Matrices (SM)	16		100			
Expressive Attention (EA)	9			96		
Successive Digits (SD)	7				82	
Sum of Subtest Index Scores		112	100	96	82	390
Composite Index Score						96
Percentile Rank	74	50	40	12	40	
90% Confidence Interval	Upper	118	111	107	96	104
	Lower	105	89	86	72	88

Section 3. Subtest and Composite Profile

Section 4. Subtest Comparisons

Compare each subtest standard score to the student's mean subtest score using Tables D.1 and D.2 of the Examiner's Manual.

Subtest	Index Score	d value	Significance	Strength	Weakness	% in sample
Planned Codes (PC)	112	14.5	NS	ST	WK	15.1
Simultaneous Matrices (SM)	100	2.5	NS	ST	WK	82.8
Expressive Attention (EA)	96	-1.5	NS	ST	WK	87.8
Successive Digits (SD)	82	-15.5	NS	ST	WK	16.2
Subtest mean	91.5					

Section 5. Descriptive Terms

Index Scores	<70	70-79	80-89	90-109	110-119	120-129	≥130
Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior

CAS2: Brief


- Give in 20 minutes
- Yields PASS and Total standard scores (Mn 100, SD 15)
- All items are different from CAS2
 - Planned Codes
 - Simultaneous Matrices
 - Expressive Attention
 - Successive Digits (forward only)

Figure 3.1. Example of page 1 of the CAS2: Brief Examiner Record Form, completed for Tommy.

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CAS2: Brief

- Successive Digits uses numbers (not words as in CAS2)
- NOTE: "Provide additional help if necessary" 

Successive Digits

Administration:

Age-related entry points, apply ceiling (ceiling of 4; basal of 2, if needed)

Materials:

#2 pencils

Objective:

The examinee's task is to repeat a series of digits in the same order in which the examiner says them. The examiner should say the digits in a uniform pitch at the rate of one digit per second. The voice should drop when the last digit of the series is spoken so that the examinee knows it is the end of the series.

Entry Points: Begin with Item 1 for ages 4–7 and Item 3 for ages 8–18.

Discontinue Rule: Discontinue after the examinee misses four consecutive items.

Directions for All Ages:

Use the table below to administer the series of digits and to record responses. Record a score of 1 in the Score column if the examinee recalls the series in the correct order. Record a score of 0 in the Score column if the examinee recalls incorrect or out-of-order digits.

Example—Say, I'm going to say some numbers. Listen carefully. When I finish, I want you to say them just as I did. Listen. Say, "3, 5." If the examinee's response is correct, say, That is right. If the response is incorrect, say, I said, "3, 5" so you should say, "3, 5." Provide additional help if necessary.

Directions for Examinees Ages 4–7:

Item 1—Say, Listen again. Say, "6, 1." Record and score the examinee's response. If the response is correct, say, That is right. If incorrect, say, I said "6, 1," so you should say, "6, 1." Provide additional help if necessary.

Items 2 to 28—Use the following directions, as needed, for Items 2 to 30. Say, Say what I said. Provide no additional help.

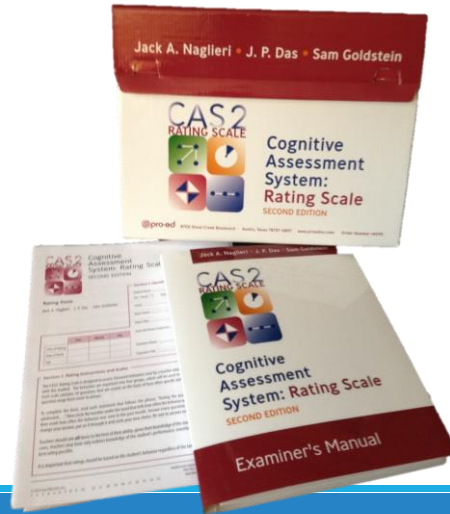
Item	Score (1 or 0)
Example	3 ___ 5 ___
1	6 ___ 1 ___
2	7 ___ 4 ___
3	6 ___ 2 ___ 4 ___
4	1 ___ 7 ___ 3 ___
5	5 ___ 2 ___ 8 ___
6	4 ___ 7 ___ 2 ___
7	9 ___ 6 ___ 1 ___ 3 ___
8	6 ___ 8 ___ 5 ___ 9 ___

Alternative High School Students' PASS scores from CAS2 Brief

		CAS2: Brief Standard Scores			
>114	<86	Planning	Attention	Simultaneous	Successive
Strength		133	91	103	125
	WEAKNESS	94	82	94	78
	WEAKNESS	61	91	90	100
	WEAKNESS	91	92	97	100
	WEAKNESS	70	83	100	70
	WEAKNESS	65	75	66	50
	WEAKNESS	40	89	68	80
	WEAKNESS	87	87	87	85
	WEAKNESS	89	85	90	70
	WEAKNESS	96	103	101	85
	WEAKNESS	59	61	62	55
Strength		99	98	105	125
	WEAKNESS	56	82	92	85
	WEAKNESS	103	83	92	80
Strength		97	99	100	115
	WEAKNESS	94	89	99	90
Strength		95	76	97	122
	WEAKNESS	81	98	70	75
	WEAKNESS	96	105	100	95
	WEAKNESS	75	89	98	55
	WEAKNESS	81	79	104	110
	WEAKNESS	77	85	100	80
	WEAKNESS	52	81	80	65
	WEAKNESS	94	82	82	100
Strength		56	145	106	115
	WEAKNESS	86	95	75	80
	WEAKNESS	80	74	82	75
Strength		134	89	107	85
	WEAKNESS	96	83	85	100
	WEAKNESS	88	79	73	80
Strength		64	129	98	121
Strength		98	118	85	75
	WEAKNESS	85	97	75	80
	WEAKNESS	98	107	102	83
	WEAKNESS	64	91	90	65
	WEAKNESS	83	91	93	60
M		83.8	91.2	90.2	86.5
SI		20.1	15.6	12.4	20.4

CAS2 Rating Scales (Ages 4-18 yrs.)

- The CAS2: Rating measures behaviors associated with PASS constructs
- Completed by teachers and can be used by psychologists, special educators and regular educators



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CAS2 Rating Scales

- The CAS2: Rating form contains 40 items
- 10 items for each PASS scale
- PASS and Total scales are set to have a mean of 100 and standard deviation of 15

This image shows a detailed view of the CAS2 Rating Form. It is divided into several sections:

- Section 1: Identifying Information** - Includes fields for Student's Name, Sex (Male/Female), Grade, School, Room's Name, Room's Size, and Ratee's Name. It also has checkboxes for 'Ratee has Access to Internet' and 'Ratee has Access to Computer'.
- Section 2: Rating Instructions and Scales** - Contains instructions for how to use the form, including a note that the CAS2 Rating Scale is designed to assess classroom behaviors. It lists 20 items to be rated, such as 'work well with partners and groups?' and 'use the links among several things?'. Each item has a rating scale from 1 to 5.
- Section 3: Summary** - Includes a 'Planning New Scales' section with checkboxes for 'PASS', 'PASS-1', 'PASS-2', 'PASS-3', 'PASS-4', 'PASS-5', 'PASS-6', 'PASS-7', 'PASS-8', 'PASS-9', 'PASS-10', 'PASS-11', 'PASS-12', 'PASS-13', 'PASS-14', 'PASS-15', 'PASS-16', 'PASS-17', 'PASS-18', 'PASS-19', 'PASS-20', 'PASS-21', 'PASS-22', 'PASS-23', 'PASS-24', 'PASS-25', 'PASS-26', 'PASS-27', 'PASS-28', 'PASS-29', 'PASS-30', 'PASS-31', 'PASS-32', 'PASS-33', 'PASS-34', 'PASS-35', 'PASS-36', 'PASS-37', 'PASS-38', 'PASS-39', 'PASS-40', 'PASS-41', 'PASS-42', 'PASS-43', 'PASS-44', 'PASS-45', 'PASS-46', 'PASS-47', 'PASS-48', 'PASS-49', 'PASS-50', 'PASS-51', 'PASS-52', 'PASS-53', 'PASS-54', 'PASS-55', 'PASS-56', 'PASS-57', 'PASS-58', 'PASS-59', 'PASS-60', 'PASS-61', 'PASS-62', 'PASS-63', 'PASS-64', 'PASS-65', 'PASS-66', 'PASS-67', 'PASS-68', 'PASS-69', 'PASS-70', 'PASS-71', 'PASS-72', 'PASS-73', 'PASS-74', 'PASS-75', 'PASS-76', 'PASS-77', 'PASS-78', 'PASS-79', 'PASS-80', 'PASS-81', 'PASS-82', 'PASS-83', 'PASS-84', 'PASS-85', 'PASS-86', 'PASS-87', 'PASS-88', 'PASS-89', 'PASS-90', 'PASS-91', 'PASS-92', 'PASS-93', 'PASS-94', 'PASS-95', 'PASS-96', 'PASS-97', 'PASS-98', 'PASS-99', 'PASS-100'.

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Online Scoring and Report Writer

PASS Scale Comparisons

	Index Score	d value	Sig/NS	Strength Weakness	% in sample
Planning	100	25.7	Sig		0.6
Simultaneous	70	-4.3	NS		71.2
Attention	50	-24.3	Sig	W	1.4
Successive	77	2.7	NS		79.1
PASS Mean	74.3				

Supplemental Composite Scores

Subtest	EF WJ	EF WJ	WJ	VC	NSC
Planning	100	100	100	100	100
Simultaneous	70	70	70	70	70
Attention	50	50	50	50	50
Successive	77	77	77	77	77

Visual-Auditory Comparison

Subtest	Score
Visual	8
Verbal	2
Off-diagonal	6
Significance	Significant

PASS and Full Scale Scores

Sam earned a Planning Scale score of 100, which was significantly higher than the average Planning score of 74.3.

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PASS SCORE ANALYZERS

THESE FREE EXCEL SPREADSHEETS CALCULATE THE DIFFERENCES AMONG THE FOUR PASS SCORES AND THE DIFFERENCES BETWEEN THE FOUR PASS SCORES AND ACHIEVEMENT TEST SCORES.

- CAS2, CAS2 Brief, CAS2 Rating Scale Analyzer (xlsx) [Download]
- CAS2 Brief and Rating Scale Analyzers (xlsx) [Download]
- CAS2 FAR FAM PSW Analyzer (xlsx) [Download]
- CAS2 WJ4 PSW Analyzer (xlsx) [Download]
- CAS2 WIAT3 PSW Analyzer (xlsx) [Download]
- CAS2 Batería4 PSW Analyzer (xlsx) [Download]
- CAS2 KTEA3 PSW Analyzer (xlsx) [Download]

PASS Score Analyzers (no cost)

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CAS2 PSW Analyzer for WJ4, KTEA3, FAR, FAM, Bateria

- Enter PASS and Achievement test standard scores and all comparisons are evaluated

Strengths

Average & Above PASS Scores

Strength: Planning 88, Simultaneous 111, Attention 102

WR 83

PASS Scores from CAS2

	Planning	Simultaneous	Attention	Successive
88	111	102	78	

Palfer Assessment of READING

Standard Scores	Discrepant	Discrepant	Discrepant	Consistent
77 P1 Phonological Index	Discrepant	Discrepant	Discrepant	Consistent
69 P4 Fluency, Automatic	Discrepant	Discrepant	Discrepant	Consistent
71 NWD Nonword Decoding	Discrepant	Discrepant	Discrepant	Consistent
79 ISO Isolated Word Reading Fluency	Discrepant	Discrepant	Discrepant	Consistent
80 CWP Oral Reading Fluency				
82 P2 Reading Comprehension	Discrepant	Discrepant	Discrepant	Consistent
108 P1 Planning Index				
89 P4B Rapid Automatic Naming				
88 P4C Verbal Fluency				
111 P4D Visual Fluency				
102 P4E Spatial Processing				
102 P4F Imaginal Word Reading Fluency				
102 P4G Orthographic Processing				
91 P4H Word Index				
108 P4I Comprehension Index				
108 P4J Semantic Concepts				
83 P4K Word Retrieval	Discrepant	Discrepant	Consistent	
89 P4L Prior Knowledge				
88 P4M Weighted Reading Comprehension				
108 P4N Reading Comprehension				
108 P4O				
108 P4P				
108 P4Q				

PASS Strengths & Weaknesses Identified

Discrepancies & consistencies Identified

PASS and Achievement Weaknesses

Achievement Weaknesses

PASS Weaknesses

FREE – on www.jacknaglieri.com

Your Thoughts and Questions...



Ideas to Consider



A Professional Journey

- An Awakening About Traditional Intelligence Tests

A Theory Based on Brain Function

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

Research Update

- PASS and Equity & Use in California
- To *g* or not to *g*

Administration and Interpretation

- Test order, subtest interpretation, etc.

Connecting PASS and EF

- CEFI and PASS

PASS Profiles SLD ADHD and ASD

- PSW for ASD

Conclusions

- Reasons To Change

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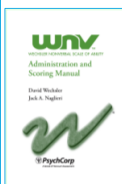
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Wechsler's View of General ability

- Wechsler “believed that his Verbal and Performance Scales represented different ways to access *g* (general ability)”, but he never believed [in verbal and] nonverbal intelligence as being separate from *g*. Rather he saw the Performance Scale as the most sensible way to measure the general intelligence of people with ... limited proficiency in English. (Kaufman, 2008)



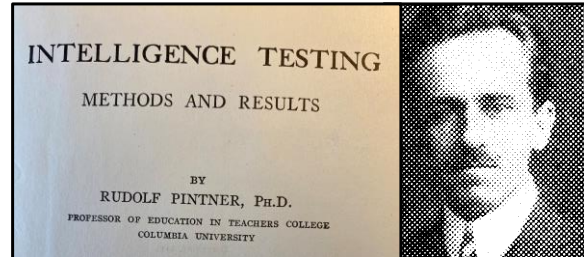
“The aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment (1939)”



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General Ability Definitions

- “we did not start with a clear definition of general intelligence... [but] borrowed from every-day life a vague term implying all-round ability and... we [are] still attempting to define it more sharply and endow it with a stricter scientific connotation” (p. 53, Pintner, 1923)”.

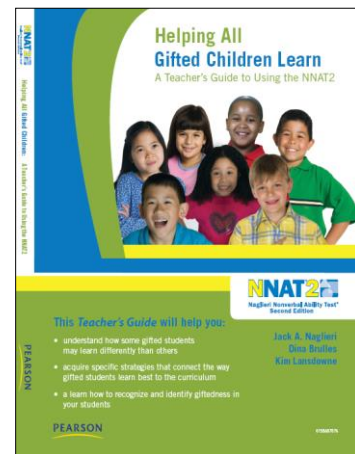


1. *Tests must be relatively new.* — A good intelligence test must avoid as much as possible anything that is commonly learned by the subjects tested. In a broad sense this rests upon a differentiation between knowledge and intelligence.

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General ability (Naglieri, Brulles & Lansdowne, 2009)

- General ability is what allows us to solve many different kinds of problems which may involve
 - reasoning, memory, sequencing, verbal and math skills, patterning, connecting ideas across content areas, insights, making connections, drawing inferences, analyzing simple and complex ideas.
- The key is to measure general ability in a way that is not confounded by knowledge



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Thoughts on Interpretation

- Reading ABILITY or reading SKILLS?
- We should not use the word ability when they are discussing academic skills (i.e. John's reading ability is ...)
- Abilities are mostly brain based and dependent on the functioning of your neurocognitive machinery
- If we emphasize that PASS processes brain based, then they are something other than a skill

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PASS Scores for Hispanics

Naglieri, Rojahn, Matto (2007)



Available online at www.sciencedirect.com
ScienceDirect
 Intelligence 35 (2007) 568–579

INTELLIGENCE

Hispanic and non-Hispanic children's performance on PASS cognitive processes and achievement²⁷

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 Available online 8 January 2007

Abstract

Hispanics have become the largest minority group in the United States. Hispanic children typically come from working class homes with parents who have limited English language skills and educational training. This presents challenges to psychologists who assess these children using traditional IQ tests because of the considerable verbal and academic (e.g., quantitative) content. Some researchers have suggested that intelligence conceptualized on the basis of psychological processes may have utility for assessment of children from culturally and linguistically diverse populations because verbal and quantitative skills are not included. This study examined Hispanic children's performance on the Cognitive Assessment System (CAS; [Naglieri, J.A., and Das, J.P. (1997). Cognitive Assessment System. Itasca, IL: Riverside.] which is based on the Planning, Attention, Simultaneous, and Successive (PASS) theory of intelligence. The scores of Hispanic children (N=1956) on the four PASS components and the CAS Full Scale were compared to scores of White children (N=1956) on the four PASS components and the CAS Full Scale. Small differences

Hispanic White difference on CAS Full Scale of **4.8**

WJ-III and ELL Hispanic Students

(Sotelo-Dynega, Ortiz, Flanagan & Chaplin, 2013)

Table 1
 WJ III GIA and Test Performance Differences Between LEPs and the WJ III Standardization Sample Mean

WJ III Test	Sample		WJ III Sample		Difference	t	d
	M	SD	M	SD			
General Intellectual Ability	89.34	11.78	100	15	-10.64	-7.07**	-.90
Verbal Comprehension	80.38	14.09	100	15	-19.62	-10.87***	-1.40
Concept Formation	87.16	12.20	100	15	-12.84	-8.22***	-1.05
Numbers Reversed	95.23	12.46	100	15	-4.77	-2.96*	-0.38
Visual-Auditory Learning	95.62	14.56	100	15	-4.38	-2.35*	-0.30
Sound Blending	97.82	11.57	100	15	-2.18	-1.47	-0.19
Visual Matching	98.83	9.66	100	15	-1.17	-0.85	-0.11
Spatial Relations	98.83	9.66	100	15	-1.17	-0.85	-0.10

*p < .05. **p < .01. ***p < .001.

Table 2
 Differences Among the NYSESLAT Proficiency Group's WJ III, GIA Mean Score, and the WJ III Standardization Sample Mean

NYSESLAT Proficiency Group	Sample		WJ III Sample	
	M	SD	M	SD
Beginner	71.75	3.95	100	15
Intermediate	82.29	8.66	100	15
Advanced	89.55	9.17	100	15
Proficient	101	9.23	100	15

*p < .001.

11-point mean score difference in GIA

As English skills go down so does the GIA

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PASS scores – English and Spanish

Bilingual Hispanic Children's Performance on the English and Spanish Versions of the Cognitive Assessment System

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Brianna DeLauder
George Mason University

Holly Matto
Virginia Commonwealth University

School Psychology Quarterly
2007, Vol. 22, No. 3, 432–448



This study compared the performance of referred bilingual Hispanic children on the Planning, Attention, Simultaneous, Successive (PASS) theory as measured by English and Spanish versions of the Cognitive Assessment System (CAS; Naglieri & Das, 1997a). The results suggest that students scored similarly on both English and Spanish versions of the CAS. Within each version of the CAS, the bilingual children earned their lowest scores in Successive processing regardless of the language used. No differences were noted between the Simultaneous and Successive processing scores. Specific subtests were found to contribute to differences between the two versions of the CAS. Comparisons on both versions of the CAS revealed that the sixty percent of the children with weaknesses in Successive processing were also weak in the Spanish version of the CAS.

Keywords: bilingual assessment, non-biased assessment

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DOI: 10.1080/21622965.2012.670547

Psychology Press
Taylor & Francis Group

The Neurocognitive Assessment of Hispanic English-Language Learners With Reading Failure

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This study examined the performance of referred Hispanic English-language learners (N = 40) on the English and Spanish versions of the Cognitive Assessment System (CAS; Naglieri & Das, 1997). The CAS measures basic neuropsychological processes based on the Planning, Attention, Simultaneous, and Successive (PASS) theory (Naglieri & Das, 1997). The results of this study suggest that students scored similarly on both English and Spanish versions of the CAS. Within each version of the CAS, the bilingual children earned their lowest scores in Successive processing regardless of the language used. No differences were noted between the Simultaneous and Successive processing scores. Specific subtests were found to contribute to differences between the two versions of the CAS. Comparisons on both versions of the CAS revealed that the sixty percent of the children with weaknesses in Successive processing were also weak in the Spanish version of the CAS. These findings suggest that students and that the CAS may be a useful measure in identifying students with underdeveloped English-language skills.

Very similar scores in English and Spanish versions of CAS
>90% agreement between PASS weakness & strengths using English and Spanish CAS in BOTH studies

CAS in Italy

Using US norms, Italian sample (N = 809) CAS Full Scale was 100.9 and matched US sample (N = 1,174) was 100.5 and factorial invariance was found



Psychological Assessment

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1040-3590/12/\$12.00 DOI: 10.1037/a0029828

Multigroup Confirmatory Factor Analysis of U.S. and Italian Children's Performance on the PASS Theory of Intelligence as Measured by the Cognitive Assessment System

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Stefano Taddei

University of Florence

Kevin Williams

Multi-Health Services, Toronto, Ontario, Canada

This study examined Italian and U.S. children's performance on the English and Italian versions, respectively, of the Cognitive Assessment System (CAS; Naglieri & Conway, 2009; Naglieri & Das, 1997), a test based on a neurocognitive theory of intelligence entitled PASS (Planning, Attention, Simultaneous, and Successive; Naglieri & Das, 1997; Naglieri & Otero, 2011). CAS subtest, PASS scales, and Full Scale scores for Italian (N = 809) and U.S. (N = 1,174) samples, matched by age and gender, were examined. Multigroup confirmatory factor analysis results supported the configural invariance of the CAS factor structure between Italians and Americans for the 5- to 7-year-old (root-mean-square error of approximation [RMSEA] = .038; 90% confidence interval [CI] = .033, .043; comparative fit index [CFI] = .96) and 8- to 18-year-old (RMSEA = .036; 90% CI = .028, .043; CFI = .97) age groups. The Full Scale standard scores (using the U.S. norms) for the Italian (100.9) and U.S. (100.5) samples were nearly identical. The scores between the samples for the PASS scales were very similar, except for the Attention Scale (d = 0.26), where the Italian sample's mean score was slightly higher. Negligible mean differences were found for 9 of the 13 subtest scores, 3 showed small d-ratios (2 in favor of the Italian sample), and 1 was large (in favor of the U.S. sample), but some differences in subtest variances were found. These findings suggest that the PASS theory, as measured by CAS, yields similar mean scores and showed factorial invariance for these samples of Italian and American children, who differ on cultural and linguistic characteristics.

Illinois School District U-46

Main question: Does the District's gifted program unlawfully discriminate against Hispanic Students?

The district with 42% Hispanics but only 2% of students in gifted were Hispanic.

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

DANIEL, DINAH and DEANNA MCFADDEN,)
minors, by their parent and next friend, Tracy)
McFadden; KAREN, RODOLFO and KIARA)
TAPIA, minors, by their parent and next friend,)
Mariela Montoya; JOCELYN BURCIAGA, minor,)
by her parent and next friend, Griselda Burciaga;)
and KASHMIR IVY, minors, by their parent)
and next friend, Beverly Ivy; KRISTIANNE)
SIFUENTES, minors, by her parent and next)
friend, Irma Sifuentes,))
)
Plaintiffs,) No. 05 C 0760
v.))
) Judge Robert W. Gettleman
BOARD OF EDUCATION FOR ILLINOIS)
SCHOOL DISTRICT U-46,)
)
Defendant.)

On July 11, 2013, Judge Robert Gettleman issued a decision holding that District U-46 intentionally discriminated against Hispanic students specific in their gifted programming (placement), and found problems with policies and instruments for screening and identification, (c) use of both verbal and math scores at arbitrary designated levels for screening and for identification, (d) use of weighted matrix, as well as content and criteria in weighted matrices that favored achievement and traditional measures, (e) too little reliance on a nonverbal test (Naglieri Nonverbal Ability Test) for admission to

Measuring Thinking using CAS

- **White** children earned similar scores on the Verbal and Performance scales
- **Black** children earned lower VIQ than PIQ scores due to language / achievement tasks → low Full Scale
- **Black** children earned **higher** Full Scale scores on CAS than whites
- **Fewer** Black children would be identified as having intellectual disability based on Full Scale scores using CAS than WISC-III
- **THIS IS A SOCIAL JUSTICE ISSUE.**

American Journal on Mental Retardation, 2001, Vol. 106, No. 4, 359-367

Intellectual Classification of Black and White Children in Special Education Programs Using the WISC-III and the Cognitive Assessment System

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George Mason University

Johannes Rojahn
The Ohio State University



Journal Information
Journal TOC

PsycoARTICLES: Journal Article

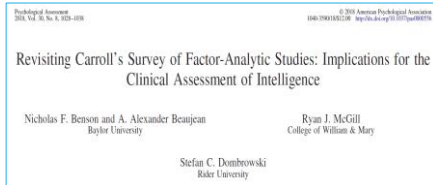
Structural validity of the Wechsler Intelligence Scale for Children–Fifth Edition: Confirmatory factor analyses with the 16 primary and secondary subtests.

© Request Permissions

Canivez, Gary L., Watkins, Marley W., Dombrowski, Stefan C., Canivez, G. L., Watkins, M. W., & Dombrowski, S. C. (2017). Structural validity of the Wechsler Intelligence Scale for Children–Fifth Edition: Confirmatory factor analyses with the 16 primary and secondary subtests. *Psychological Assessment*, 29(4), 458–472. <https://doi.org/10.1037/pas0000358>

- ...The small portions of variance uniquely captured by [subtests]... render the group factors [scales] of questionable interpretive value independent of g (FSIQ general intelligence)
- Present CFA results confirm the EFA results (Canivez, Watkins, & Dombrowski, 2015); Dombrowski, Canivez, Watkins, & Beaujean (2015); and Canivez, Dombrowski, & Watkins (2015).

Support for 'g'



- The results of this study indicate that most **cognitive abilities specified in John Carroll's three-stratum theory have little-to-no interpretive relevance above and beyond that of general intelligence.**

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Factor Analytic Models of Intelligence

- CHC is a statistical model that is not consistent with brain functioning (*i.e. modularity vs. gradiental*)
- It fails to account for the frontal lobes (*i.e. executive functions*),
- Assumes 69 specific narrow abilities!
- Can lead to "over-testing" of students.
- Does not always intuitively correlate with academic performance and therefore can be problematic in generating interventions (*i.e. The cluster score for reading on WIIV includes number-pattern matching?*)

Cattell-Horn-Carroll's three stratum

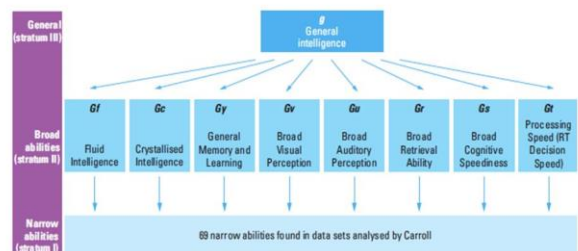


Figure 11.14 Carroll's three-stratum theory of cognitive abilities

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Research Supports ‘g’ but little More

Watkins, M. W., & Canivez, G. L. (2021). Assessing the psychometric utility of IQ scores: A tutorial using the Wechsler intelligence scale for children–fifth edition. *School Psychology Review*, 1-15.

Benson, N. F., Beaujean, A. A., McGill, R. J., & Dombrowski, S. C. (2018). Revisiting **Carroll’s Survey of Factor-Analytic Studies**: Implications for the Clinical Assessment of Intelligence. *Psychological Assessment*, 30, 8, 1028–1038.

Canivez, G. L., Watkins, M. W., & Dombrowski, S. C. (2017). Structural validity of the **Wechsler Intelligence Scale for Children–Fifth Edition**: Confirmatory factor analyses with the 16 primary and secondary subtests. *Psychological Assessment*, 29, 458-472.

Canivez, G. L., & McGill, R. J. (2016). Factor structure of the **Differential Ability Scales–Second Edition**: Exploratory and hierarchical factor analyses with the core subtests. *Psychological Assessment*, 28, 1475-1488. <http://dx.doi.org/10.1037/pas0000279>

Canivez, G. L., & McGill, R. J. (2016). Factor structure of the **Differential Ability Scales–Second Edition**: Exploratory and hierarchical factor analyses with the core subtests. *Psychological Assessment*, 28, 1475–1488. <https://doi.org/10.1037/pas0000279>

Canivez, G. L. (2008). Orthogonal higher order factor structure of the **Stanford-Binet Intelligence Scales-Fifth Edition** for children and adolescents. *School Psychology Quarterly*, 23, 533–541.

Dombrowski, S. C., **Canivez, G. L.**, & Watkins, M. W. (2017, May). Factor structure of the 10 **WISC–V** primary subtests across four standardization age groups. *Contemporary School Psychology*. Advance online publication.

Dombrowski, S. C., McGill, R. J., & Canivez, G. L. (2017). Exploratory and hierarchical factor analysis of the **WJ IV Cognitive** at school age. *Psychological Assessment*, 29, 394-407.

McGill, R. J., & **Canivez, G. L.** (2017, October). Confirmatory factor analyses of the **WISC–IV Spanish** core and supplemental Subtests: Validation evidence of the Wechsler and CHC models. *International Journal of School and Educational Psychology*. Advance online publication.

Watkins, M. W., Dombrowski, S. C., & **Canivez, G. L.** (2017, October). Reliability and factorial validity of the **Canadian Wechsler Intelligence Scale for Children–Fifth Edition**. *International Journal of School and Educational Psychology*.

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A case for only “g”

Watkins, M. W., & Canivez, G. L. (2021). Assessing the psychometric utility of IQ scores: A tutorial using the Wechsler intelligence scale for children–fifth edition. *School Psychology Review*, 1-15.

Dombrowski, S. C., Watkins, M. W., McGill, R. J., Canivez, G. L., Holingue, C., Pritchard, A. E., & Jacobson, L. A. (2021). Measurement Invariance of the Wechsler Intelligence Scale for Children, 10-Subtest Primary Battery: Can Index Scores be Compared across Age, Sex, and Diagnostic Groups?. *Journal of Psychoeducational Assessment*, 39(1), 89-99.

Watkins, M. W., Canivez, G. L., Dombrowski, S. C., McGill, R. J., Pritchard, A. E., Holingue, C. B., & Jacobson, L. A. (2021). Long-term stability of Wechsler Intelligence Scale for Children–fifth edition scores in a clinical sample. *Applied Neuropsychology: Child*, 1-7.

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Journal of Psychology Quarterly
11, Vol. 26, No. 4, 305-317

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1045-3830/11/\$12.00 DOI: 10.1037/a00

Hierarchical Factor Structure of the Cognitive Assessment System Variance Partitions From the Schmid-Leiman (1957) Procedure

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Orthogonal higher-order factor structure of the Cognitive Assessment System (CAS; Naglieri & Das, 1997a) for the 5-7 and 8-17 age groups in the CAS standardization sample is reported. Following the same procedure as recent studies of other prominent intelligence tests (Dombrowski, Watkins, & Brogan, 2009; Canivez, 2008; Canivez & Watkins, 2010a, 2010b; Nelson & Canivez, 2011; Nelson, Canivez, Lindstrom, & Hatt, 2007; Watkins, 2006; Watkins, Wilson, Kotz, Carbone, & Babula, 2006), three- and four-factor CAS exploratory factor extractions were analyzed with the Schmid and Leiman (1957) procedure using MacOrtho (Watkins, 2004) to assess the hierarchical factor structure by sequentially partitioning variance to the second- and first-order dimensions as recommended by Carroll (1993, 1995). Results showed that greater portions of total and common variance were accounted for by the second-order, global factor, but compared to other tests of intelligence CAS subtests measured less second-order variance and greater first-order Planning, Attention, Simultaneous, and Successive (PASS) factor variance.

Keywords: CAS, construct validity, hierarchical exploratory factor analysis, Schmid-Leiman higher-order analysis, structural validity

Support for PASS Scales

- "...compared to the WISC-IV, WAIS-IV, SB-5, RIAS, WASI, and WRIT, the CAS subtests had less variance apportioned to the higher-order general factor (g) and greater proportions of variance apportioned to first-order (PASS...) factors.
- This is consistent with the subtest selection and construction in an attempt to measure PASS dimensions linked to PASS theory ... and neuropsychological theory (Luria)." (p. 311)

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PASS



- Given that PASS scales CAN be interpreted it is important to know
 - if these scales yield PROFILES that can be used in a Pattern of Strengths and Weaknesses approach to eligibility determination AND
 - do PASS scores relate to achievement more than traditional intelligence tests?

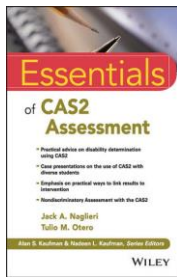
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Intelligence Tests and Prediction

- Intelligence tests are one of the primary tools for identifying children with Intellectual disability, specific learning disabilities, and giftedness
 - The goal is to determine if there is a cognitive explanation for academic successes or failure
- The correlations between intelligence and achievement tests and the profiles of scores these tests measure tell us the value these test scores have for both predication and explanation of specific academic success and failure

Correlations: We can do better!

Average correlations between IQ Scales with total achievement scores from *Essentials of CAS2 Assessment* Naglieri & Otero (2017)



Correlations Between Ability and Achievement			Average Correlation	
			All Scales	Scales without achievement
WISC-V	Verbal Comprehension	.74	.53	.47
WIAT-III N = 201	Visual Spatial	.46		
	Fluid Reasoning	.40		
	Working Memory	.63		
	Processing Speed	.34		
WJ-IV COG	Comprehension Knowledge	.50	.54	.50
WJ-IV ACH N = 825	Fluid Reasoning	.71		
	Auditory Processing	.52		
	Short Term Working Memory	.55		
	Cognitive Processing Speed	.55		
	Long-Term Retrieval	.43		
KABC	Sequential/Gsm	.43	.53	.48
WJ-III ACH N = 167	Simultaneous/Gv	.41		
	Learning/Glr	.50		
	Planning/Gf	.59		
CAS	Knowledge/GC	.70	.59	
WJ-III ACH N=1,600	Planning	.57		
	Simultaneous	.67		
	Attention	.50		
	Successive	.60		

Note: WJ-IV Scales Comp-Know= Vocabulary and General Information; Fluid Reasoning = Number Series and Concept Formation; Auditory Processing = Phonological processing.

Note: All correlations are reported in the ability tests' manuals. Values were averaged within each ability test using Fisher z transformations.

PASS Research

- “The results clearly show that when CAS Full Scale is used it correlates **.60 with reading** and **.61 with mathematics**.”
- “**These correlations are significantly stronger ... than the correlations reported in previous meta-analysis for other measures of intelligence** (e.g., Peng et al., 2019; Roth et al., 2015)...(e.g., WISC) that include tasks (e.g., Arithmetic, Vocabulary)...”
- “if we **conceptualize intelligence as ... cognitive processes that are linked to the functional organization of the brain**” it leads to significantly higher relations with academic achievement.”
 - “and these processes have direct implications for instruction and intervention...”

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PASS theory of intelligence and academic achievement: A meta-analytic review

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ARTICLE INFO **ABSTRACT**

Keywords:
 Intelligence
 Mathematics
 Meta-analysis
 PASS processes
 Reading

Although Planning, Attention, Simultaneous and Successive (PASS) processing theory of intelligence has been argued to offer an alternative look at intelligence and PASS processes – operationalized with the Cognitive Assessment System – have been used in several studies, it remains unclear how well the PASS processes relate to academic achievement. Thus, this study aimed to determine their association by conducting a meta-analysis. A random-effects model analysis of data from 62 studies with 93 independent samples revealed a moderate-to-strong relation between PASS processes and reading, $r = 0.409$, 95% CI = [0.363, 0.454], and mathematics, $r = 0.461$, CI = [0.405, 0.517]. Moderator analyses further showed that (1) PASS processes were more strongly related to math accuracy and problem solving than math fluency, (2) Simultaneous processing was more strongly related to problem solving than Attention, and (3) Planning was more strongly related to math fluency than Simultaneous processing. Age, grade level, and sample characteristics did not influence the size of the correlations. Taken together, these findings suggest that PASS cognitive processes are significant correlates of academic achievement, but their relation may be affected by the language in which the study is conducted and the type of mathematics outcome. They further support the use of intervention programs that stem from PASS theory for the enhancement of reading and mathematics skills.

Georgiou, G., Guo, K., Naveenkumar, N., Vieira, A. P. A., & Das, J. P. (2019) PASS theory of intelligence and academic achievement: A meta-analytic review. *In press Intelligence*.

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**WE CAN DO
 BETTER**

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What are thoughts do you have about measuring EF?

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Ideas to Consider



A Professional Journey

- An Awakening About Traditional Intelligence Tests

A Theory Based on Brain Function

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

Research Update

- PASS and Equity & Use in California
- To *g* or not to *g*

Administration and Interpretation

- Test order, subtest interpretation, etc.

Connecting PASS and EF

- CEFI and PASS

PASS Profiles SLD ADHD and ASD

- PSW for ASD

Conclusions

- Reasons To Change

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Administration Details

- Core Battery is the first 2 subtests in each of the PASS scales
- Order of administration is IMPORTANT
 - Why is Planning first and Successive last?
- Should you use parts of the CAS2?
- Demonstration, Example, and Provide Help option

Table 1.2 Structure of the CAS Scales and Subtests in Order of Administration

Scale	Subtests
Planning	Matching Numbers (MN) Planned Codes (PGd) Planned Connections (PCn)
Simultaneous	Nonverbal Matrices (NvM) Verbal-Spatial Relations (VSR) Figure Memory (FM)
Attention	Expressive Attention (EA) Number Detection (ND) Receptive Attention (RA)
Successive	Word Series (WS) and or Sentence Repetition (SR) Speech Rate (SPR, ages 5–7 years) or Sentence Questions (SQ, ages 8–17 years)

Expose Example A and say,

Look at this page (point to the page). Draw a line from the number 1 to the number 2, 2 to 3, 3 to 4, and 4 to 5. Provide help if necessary.

With Example A still exposed, say,

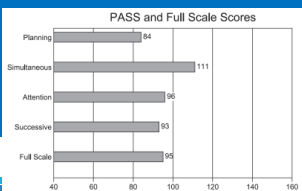
I'm going to give you some more of these to do. You should always start from the number 1 (point to the number 1 in the bold box in Example A) and draw a line from one number to the next until you get to the last number (point to the number 5). Work as quickly as you can without making a mistake, and tell me when you're finished.

Ready? (Provide a brief explanation if necessary.)

Interpretation Details

Full Scale – Is misleading if there is PASS scale variability

You may want to exclude the Full Scale completely



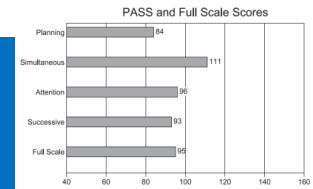
FULL SCALE

Tony earned a Cognitive Assessment System, Second Edition (CAS2) Full Scale score of 95, which is within the Average classification and is a percentile rank of 37. This means that his performance is equal to or greater than that of 37% of children his age in the standardization group. There is a 90% probability that Tony's true Full Scale score falls within the range of 91 to 99. The CAS2 Full Scale score is made up of separate scales called Planning, Attention, Simultaneous, and Successive cognitive processing. Because there was significant variation among the PASS scales, the Full Scale will sometimes be higher and other times lower than the four scales in this test. The Planning Scale was found to be a significant cognitive weakness. This means that Tony's Planning score was a weakness both in relation to his average PASS score and when compared to his peers. This cognitive weakness has important implications for diagnosis, eligibility determination, therapeutic and educational programming. The Simultaneous Scale was found to be a significant cognitive strength. This means that Tony's Simultaneous score was a strength both in relation to his average PASS score and when compared to his peers. This cognitive strength has important implications for instructional and educational programming.

INTERPRETATION 123

FULL SCALE

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Interpretation Details

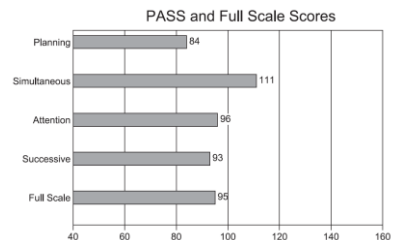
PASS SCALE – IPSATIVE AND NORMATIVE COMPARISONS

124 ESSENTIALS OF CAS2 ASSESSMENT

PLANNING SCALE

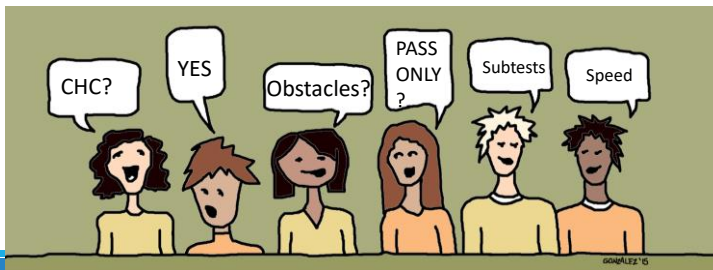
Tony's Planning score was significantly lower than his average PASS score and below the average range. This means that Tony performed particularly poorly on tests that required strategies for solving the problems on the Planning tests. He had trouble with development and use of good strategies, control of behavior, self-monitoring, and self-correction when completing these tests. Tony earned a CAS2 Planning Scale score of 84 which is within the Below Average classification and is a percentile rank of 14. The percentile rank indicates that Tony did as well as or better than 14% of others his age in the standardization group. There is a 90% probability that Tony's true Planning score is within the range of 79 to 92. This cognitive weakness has important implications for diagnosis, eligibility determination, and educational and therapeutic programming because children who are weak on the Planning Scale often have problems with tasks requiring strategies, completing schoolwork and other tasks on time, impulse control, self-monitoring, and social situations. There was no significant variation among his three subtest scores in the Planning Scale.

Interpretation Details



Core Group Activity

- Plz discuss this question: “Are there any administration and interpretation issues that warrant discussion?”



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Ideas to Consider



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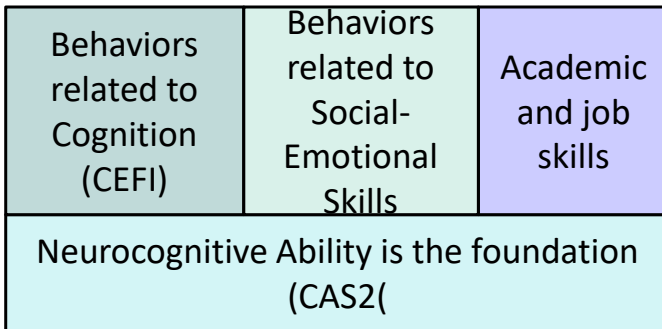
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Connecting the CAS2 EF Scale score with the behavioral results from the CEFI

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CAS2

➤ Supplementary Scale Executive Function



Supplemental Composite Scores

Subtest	Scaled Score					
	EF w/o WM	EF w/ WM	WM	VC	NvC	
Planned Codes					7	
Planned Connections	8	8				
Matrices					10	
Verbal-Spatial Relations		11	11	11		
Figure Memory					10	
Expressive Attention	9	9				
Receptive Attention				9		
Sentence Repetition/Questions		7	7	7		
	EF w/o WM	EF w/ WM	WM	VC	NvC	
Sum of Subtest Scaled Scores	17	35	18	27	27	
Composite Index Scores	91	91	94	93	92	
Percentile Rank	27	27	34	32	30	
% Confidence Interval	Upper	101	99	101	101	99
	Lower	84	85	88	87	86

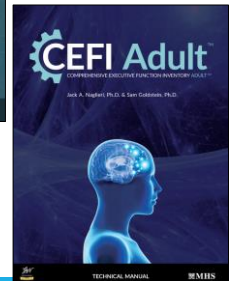
Note: EF w/o WM = Executive Function without Working Memory; EF w/WM = Executive Function with Working Memory; WM = Working Memory; VC = Verbal Content; NvC = Nonverbal Content.

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CEFI and the CEFI Adult

- **Strength based** EF measures
- Items are **positively** worded
- Higher scores = **good** behaviors related to EF
- Scores set at mean of **100**, SD of **15**
- CEFI: Ages 5-18 years rated by a parent, teacher, or the child/youth
- CEFI Adult: Ages 18+ years rated by the adult or an observer



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CEFI Scales

CEFI

(Naglieri & Goldstein, 2012)



CEFI Adult

(Naglieri & Goldstein, 2017)



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Executive Function(s)

- There is no formal excepted definition of EF
- Goldstein, Naglieri, Princiotta, & Otero (2013) found more than 30 definitions of EF !
 - EF is a **unitary** construct
 - EF is a **unitary** construct with **many parts**
 - EF has **three components**: inhibitory control, set shifting (flexibility), and working memory
 - EF is a multidimensional model with many independent abilities
- We did a study to answer the question: Is EF a unitary or multidimension concept when measured by observable behavior using my two EF rating scales?



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CEFI Exploratory Factor Analysis

- **Item Level Analysis**
 - For the **first half** of the normative sample (Parent, Teacher and Self ratings') **item scores** (90 items) used in factor analysis
 - Nationally representative samples aged 5 to 80 years (N = 6,700)
- **Scale Level Analysis**
 - Using the **second half** of the normative sample EFA was conducted using raw scores for the following scales:
 - Attention
 - Emotion Regulation
 - Flexibility
 - Inhibitory Control
 - Initiation
 - Organization
 - Planning
 - Self-Monitoring
 - Working Memory

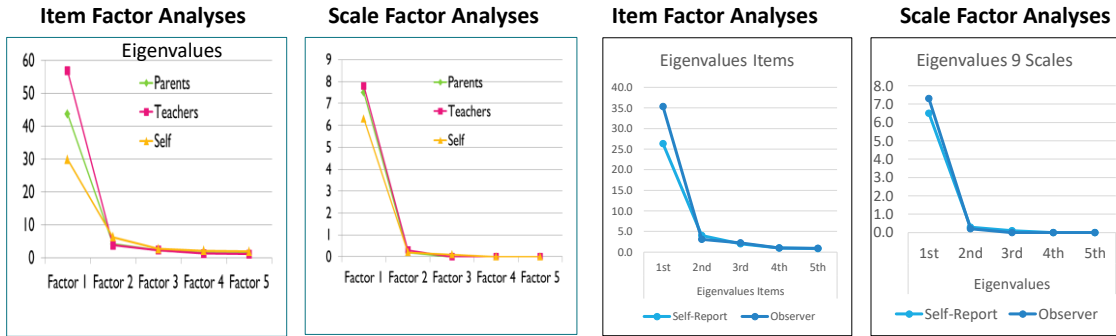
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CEFI Parent (N=1,400),
Teacher (N=1,400) and Self (N=700)

CEFI Adult Self (N = 1,600)
& Observer (N = 1,600)

- Factor analytic studies using the CEFI and CEFI-Adult nationally representative standardization samples (N = 6,700)

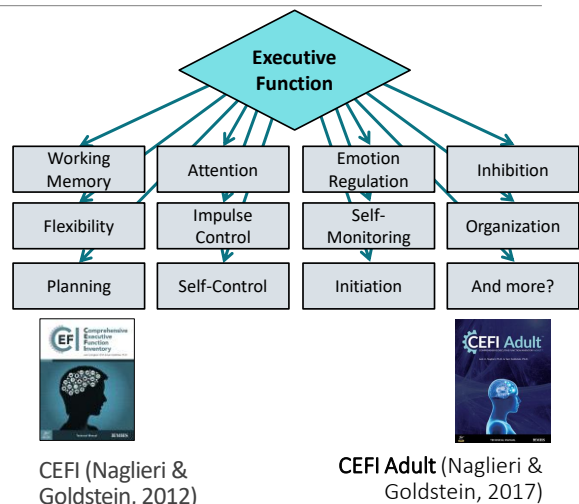


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Executive Function or Functions

- Factor analyses also conducted by gender, race, ethnicity, clinical vs nonclinical status – same findings
- This means EF behaviors are best seen as **one construct**
- **“How you do what you decide to do”**
- **But WHY does this matter?**



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EF, WISC-IV, CAS, Achievement

- ASRS Manual provides evidence of the relationships between CAS and CEFI
- Children given the WISC-IV (N = 43), CAS (N = 62), and the WJIII achievement (N = 58) as part of the typical test battery

Table 8.26. Demographic Characteristics of the CAS, WISC-IV, and WJ III ACH Validity Samples

Demographic	Sample						
	CAS		WISC-IV		WJ III ACH		
	N	%	N	%	N	%	
Gender	Male	38	61.3	29	67.4	36	62.1
	Female	24	38.7	14	32.6	22	37.9
Race/Ethnic Group	Hispanic	1	1.6	1	2.3	1	1.7
	Asian	2	3.2	2	4.7	2	3.4
	White	55	88.7	38	88.4	52	89.7
	Other	4	6.5	2	4.7	3	5.2
Parental Education Level	High school diploma or less	1	1.6	0	0.0	1	1.7
	Some college or associate's degree	21	33.9	12	27.9	18	31.0
	Bachelor's degree or higher	36	58.1	26	60.5	34	58.7
	Missing information	4	6.5	5	11.6	5	8.6
Diagnostic or Educational Group	ADHD	24	38.7	15	34.9	20	34.5
	Anxiety	15	24.2	9	20.9	14	24.1
	ASD	7	11.3	5	11.6	7	12.1
	LD	3	4.8	3	7.0	3	5.2
	Mood	4	6.5	3	7.0	5	8.6
	Other	9	4.8	8	4.6	9	5.1
Total	62	100.0	43	100.0	58	100.0	
Age <i>M (SD)</i>	10.4 (2.9)		10.2 (2.6)		10.5 (2.7)		

Note. ADHD = Attention-Deficit/Hyperactivity Disorder; Anxiety = Anxiety Disorder; ASD = Autism Spectrum Disorder; LD = Learning Disorder; Mood = Mood Disorder.

CEFI, WISC-IV, WJ & CAS

- 1. CEFI is correlated with academic achievement
- 2. Has highest correlation with WISC-IV Verbal
- 3. Has highest correlation with CAS Planning

	CAS				
	FS	Plan	Sim	Att	Suc
CEFI Full Scale	.45	.49	.43	.37	.32

	WISC-IV				
	FS	VC	PR	WM	PS
CEFI Full Scale	.39	.44	.27	.30	.34

	WJ-III Achievement Tests			
	Total	Broad Reading	Broad Math	Broad Written Language
CEFI Scales Full Scale	.51	.48	.49	.47

CEFI Full Scale and Treatment Scores

- First CEFI case we obtained from Goldstein's clinic
- Overall results: EF is OK - Average range
- Weakness in Emotion Regulation

Chapter 4: Interpretation

Figure 4.1. Illustration of Executive Function Weakness and Strengths on the CEFI (5-18 Years) Teacher Form

CEFI Scales	Standard Score	Difference From Youth's Average	Statistically Significant? (Yes/No)	Executive Function Strength/Weakness	90%/95% (circle one) Confidence Interval	Percentile Rank	Classification
Attention (AT)	95	- 6.7	Yes	-	90 to 100	37	Average
Emotion Regulation (ER)	82	- 19.7	Yes	Weakness	77 to 90	12	Low Average
Flexibility (FX)	112	10.3	Yes	Strength	103 to 118	79	High Average
Inhibitory Control (IC)	99	- 2.7	No	-	93 to 105	47	Average
Initiation (IT)	120	18.3	Yes	Strength	112 to 125	91	Superior
Organization (OG)	99	- 2.7	No	-	93 to 105	47	Average
Planning (PL)	101	- 0.7	No	-	96 to 106	53	Average
Self-Monitoring (SM)	102	0.3	No	-	95 to 109	55	Average
Working Memory (WM)	105	3.3	No	-	99 to 111	63	Average
Sum of Standard Scores	915	=	101.7	Youth's Average			

Note. Differences from the Child's/Youth's Average are significant at $p < .10$.

- Should we say there IS an EF problem because of Emotion Regulation score?
 - No, because the Total CEFI score is Average
- Further evaluation showed that the student had an Anxiety Disorder

Comprehensive Assessment of EF

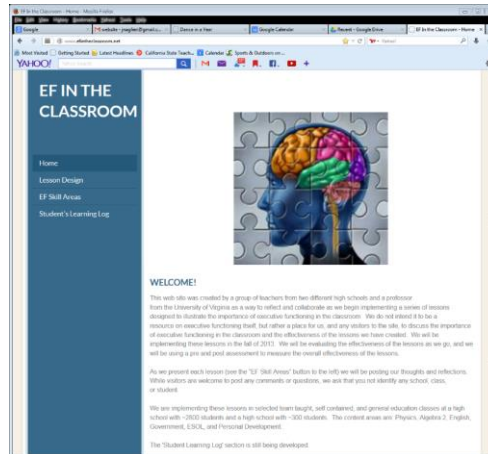
- I suggest that if a person's frontal lobes are impaired that person would likely get low scores on:
 1. Behaviors related to Executive Function
 2. Performance measures Executive Function
 3. Rating scales of Social
 4. Academic tasks that require HOW to do things
- If a person has problems in all of the above except cognitive processes related to EF, the cause is likely an environmental issue

High School Lessons

www.efintheclassroom.net

FREE USE

➤ **Start with Awareness of thinking about thinking**



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EF in the Classroom Lesson on PLANNING

Planning Lesson

Phrase of the week: What is your plan?

<http://www.youtube.com/watch?v=bQLCZOG202k>

1. What had to happen so that the people could dance together in this video?
2. What are the parts of a good plan?
3. How do you know if a plan is any good?
4. What should you do if a plan isn't working?
5. How do we use planning in this class?

Go to student learning log and create a plan for the week.

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Students watched a Flash Mob at Antwerp train Station (2009)



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Planning Lesson: Teacher Probes & Student Responses



What would you have to plan?

- They had to learn the dance steps (knowledge)
- Someone had to start dancing (initiation)

What are the parts of a good plan?

- Think of possible problems (strategy generation)
- Organize the dance (organization)

What should you do if a plan isn't working?

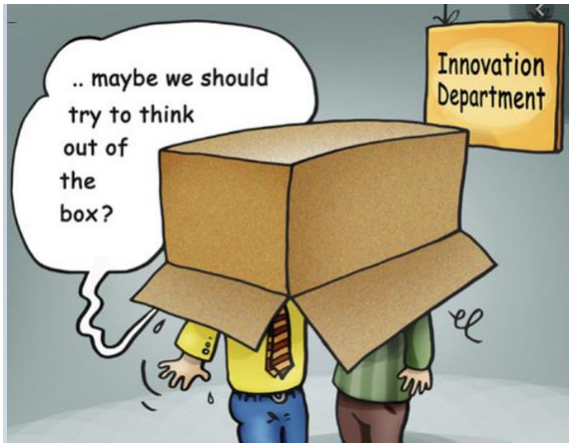
- Fix it. (self-correction)
- Go home! (a bad plan)

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Planning Lesson: Teacher Probes & Student Responses



How do you use planning in this class?

1. We don't plan in this class
2. Mrs. X does all the planning in this class so you don't have to think about planning

To encourage EF we have to stress thinking about *how to do what you decide to do ... That is THINK out of the box*


Ben's School Behaviors

- A 3rd grade student who is
 - fits in well socially at school
 - good at turning in his work on time
 - liked by his teachers
 - popular with his peers
 - Worked hard (but got poor grades)
- Ben has trouble
 - following verbal directions
 - expressing his ideas in a logical order
 - remembering the order of events provided in a paragraph
 - with basic math facts
 - remembering phone numbers and the combination for the lock on his bike
 - findings words in a dictionary

Ben: A Student with Dyslexia and Good EF

32 Helping Children Learn

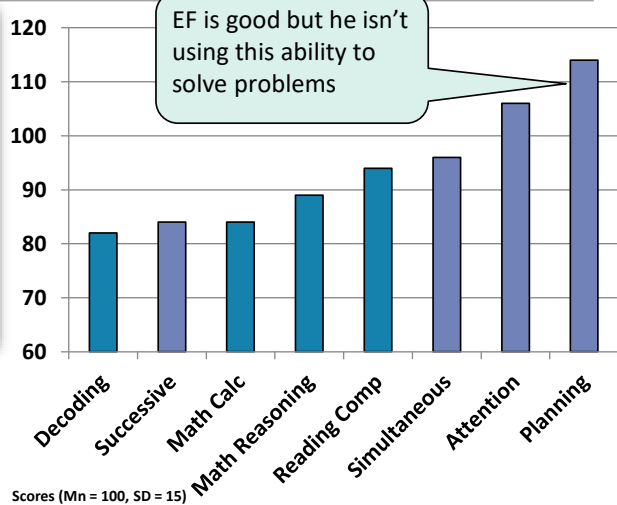
Ben's Problem with Successive Processing



Ben was an energetic but frustrated third-grade student who liked his teachers, was popular with his peers, and fit in well socially at school. However, Ben said he did not like school at all, particularly schoolwork. Ben was good at turning in all of his work on time, and he worked hard, but he earned poor grades. He appeared to be getting more and more frustrated at school.

In general, Ben struggled to perform well because he had a lot of trouble following directions that were not written down, his writing often did not make sense, and he did not appear to comprehend what he read. Ben's teachers noticed that when directions for assignments and projects were given orally in class, he often only finished part of the task. Ben's teacher described an assignment in which students had to collect insects, label them, organize them into a collection, and then give a brief presentation about each insect. Unlike any other student, Ben chose to make the labels for the insects first and then go look for the insects. He found only a few of the insects he had made labels for, and when he put them in the collection, they were not in the order that had been specified. He also had trouble with the spelling of the scientific names of the insects and made many errors in the sequence of letters in the words.

Reading decoding failure and related problems working with information in order. CAS2 reveals low Successive processing with good scores on Planning and Attention (EF)



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Intervention Protocol (Naglieri & Kryza, 2019)

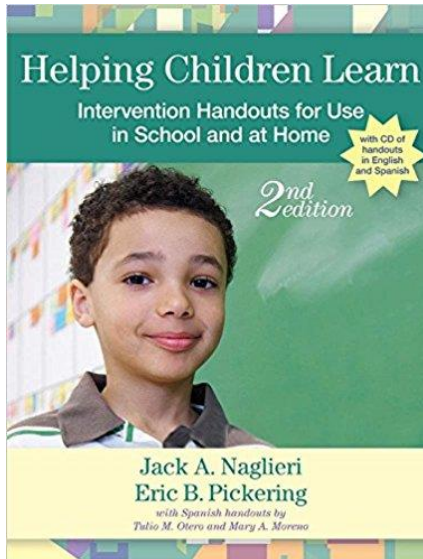
1. Help child understand their strengths and challenges (be intentional & transparent)
2. Encourage Motivation & Persistence (student's mindset)
3. Encourage strategy use (build skill sets)
4. Encourage independence and self efficacy (metacognition, self assessment & self correction)

You can find this protocol at www.jacknaglieri.com

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Teach Children about their Abilities

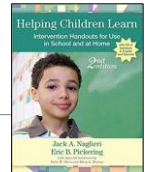
- Helping Children Learn Intervention Handouts for Use in School and at Home, *Second Edition* (Naglieri, & Pickering, 2011)
- Spanish handouts by Tulio Otero & Mary Moreno

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How to Use Ben's EF Strength

Explicitly teach him about his strength in EF (Planning) and why it is so important



How Can You Be Smarter?

You can be smarter if you PLAN before doing things. Sometimes people say, "Look before you leap," "Plan your work and work your plan," or "Stop and think." These sayings are about using the ability to plan. When you stop and think about *how* to study, you are using your ability to plan.

You will be able to do more if you remember to use a plan. An easy way to remember to use a plan is to look at the picture "Think smart and use a plan" (Figure 1). You should always use a plan for reading, vocabulary, spelling, writing, math problem solving, and science.

Do you have a favorite plan for learning spelling words? Do you use flashcards or go on the Internet to learn? Do you ask the teacher or another student for help? You can learn more by using a plan for studying that works best for you.

Think smart and use a plan!



It is smart to have a plan for doing all schoolwork. When you read, you should have a plan. One plan is to look at the questions you have to answer about the story first. Then read the story to find the answers. Another plan is to make a picture of what you read so that you can see all the parts of the story. When you write you should also have a plan. Students who are good at writing plan and organize their thoughts first. Then they think about what they are doing as they write. Using a plan is a good way to be smarter about your work!

How to Be Smart: Planning

When we say people are smart, we usually mean that they know a lot of information. But being smart also means that someone has a lot of ability to learn new things. Being smart at learning new things includes knowing and using your *thinking abilities*. There are ways you can use your abilities *better* when you are learning.

What Does Being Smart Mean?

One ability that is very important is called *Planning*. The ability to *plan* helps you figure out *how to do things*. When you don't know how to solve a problem, using Planning ability will help you figure out how to do it. This ability also helps you control what you think and do. It helps you to stop before doing something you shouldn't do. Planning ability is what helps you wait until the time is right to act. It also helps you make good decisions about what to say and what to do.

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Use Ben's EF Strength to Overcome Weakness

Teach him to recognize sequences and solve the task by using a PLAN

How to Teach Successive Processing Ability

The first step in teaching children about their own abilities is to explain what Successive processing ability is. In Figure 1 (which is included in the PASS poster on the CD), we provide a fast and

1. Teach children that most information is presented in a specific sequence so that it makes sense.
2. Encourage children by asking, "Can you see the sequence of events here?" or "Did you see how all of this is organized into a sequence that must be followed?"
3. Remind the students to think of how information is sequenced in different content areas, such as reading, spelling, and arithmetic, as well as in sports, playing an instrument, driving a car, and so forth.
4. Teach children that the sequence of information is critical for success.
5. Remind students that seeing the sequence requires careful examination of the serial relationships among the parts.

Segmenting Words for Reading/Decoding and Spelling

Decoding a written word requires the person to make sense out of printed letters and words and to translate letter sequences into sounds. This demands understanding the sounds that letters represent and how letters work together to make sounds. Sometimes words can be segmented into parts for easier and faster reading. The word into is a good example because it contains two words that a child may already know: in and to. Segmenting words can be a helpful strategy for reading as well as spelling.

How to Teach Segmenting Words

Segmenting words is an effective strategy to help students read and spell. By dividing the words into groups, students also learn about how words are constructed and how the parts are related to one another. Students should be taught that words can be broken down into segments or

Chunking for Reading/Decoding

Reading/decoding requires the student to look at the sequence of the letters in words and understand the organization of specific sounds in order. Some students have difficulty with long sequences of letters and may benefit from instruction that helps them break the word into smaller, more manageable units, called chunks. Sometimes the order of the sounds in a word is more easily organized if the entire word is broken into these units. These chunks can be combined into units for accurate decoding. Chunking for reading/decoding is a strategy designed to do that.

How to Teach Chunking for Reading/Decoding

Teachers should first teach the children what it means to chunk or group information so that it can be remembered more easily. Use number sequences and letters for illustration (e.g., how telephone numbers are grouped). Then introduce words to be read and break the words into units, such as remember-ber or remember or car-per for carpet. Try to organize the groups of letters in the word in a way that are natural

Plan	Action
Look at the word. Find the chunks. Read out the chunk.	"I see the word beginning." "I see the chunks given in the middle." "I see..."

How to Think Smart: Planning (EF)

- The ability to plan (pre-frontal cortex) helps you figure out "how to do things you choose to do"
- You can be smarter if you PLAN **before** doing things
- THINK SMART and use a PLAN when **doing** things!
- **After** your done, think about how to do it better next time
- Use EF to engage Attention, Successive and Simultaneous basic psychological processes
- Remember that when you are scared, tired or doing too many things you might forget to plan so say to yourself "Stop and use a plan".

How to Be Smart: Planning

When we say people are smart, we usually mean that they know a lot of information. But being smart also means that someone has a lot of ability to learn new things. Being smart at learning new things includes knowing and using your thinking abilities. There are ways you can use your abilities better when you are learning.

What Does Being Smart Mean?

One ability that is very important is called Planning. The ability to plan helps you figure out how to do things. When you don't know how to solve a problem, using Planning ability will help you figure out how to do it. The ability also helps you control what you think and do. It helps to stop before doing something you shouldn't do. Planning ability to what helps you wait until the time is right to act. It also helps you make good decisions about when to say what you want to do.

How Can You Be Smarter?

You can be smarter if you PLAN before doing things. Sometimes people say, "Look before you leap." That's your work and work your plan." Or "Think and then." These sayings are about using the ability to plan. When you stop and think about how to do things, you are using your ability to plan. You will be able to do more if you remember to use a plan. An easy way to remember to use a plan is to look at the picture. There smart and use a plan! Figure 1. You should always use a plan for reading, vocabulary, spelling, writing, math problem solving, and science.

Do you have a favorite plan for learning spelling words? Do you use flashcards or go on the Internet to learn? Do you ask the teacher or another student for help? You can learn more by using a plan for studying that works best for you.

Think smart and use a plan!

I learned how to do it.

Use a plan.

It is smart to have a plan for doing all schoolwork. When you meet, you should have a plan. One plan is to look at the questions you have to answer about the story first. Then read the story to find the answers. Another plan is to make a list of what you need to do that you can have all the parts of the story. When you write you should also have a plan. One plan is to write out all the words and organize your thoughts first. Then you think about what they are doing in the world. Using a plan in a good way is to remember about your work!

You can also be better in math if you use a plan. Think about the problem, choose a way to solve it, see if that plan works, change plans if necessary, and check the final answer carefully. Use a plan to draw a diagram of the problem so that you understand the question. Using a plan is a good way to be smart!

How Can You Interact Smartly with Other People?

You should always use a plan with the people in your life. Think about how you want to behave if and if you are doing a lot of work, plan for another way to reach your goal. Think about what you can do and what you can't do. You can also use a plan to help you understand what other people understand you better, and you will understand them better, too. Using a plan with other people is another way to be smart!


Remembering to Plan.

Remember that sometimes when you are scared, tired, or just doing too many things at one time, you might forget to plan. This is a bad way to do things. When you see that you are not using a plan, say to yourself, "Stop and use a plan." Use a plan, and you will be a lot smarter!



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Ideas to Consider



- A Professional Journey
 - An Awakening About Traditional Intelligence Tests
- A Theory Based on Brain Function
 - Thinking vs Knowing and Social Justice
- From PASS to CAS2
 - A Different View of People
- Research Update
 - PASS and Equity & Use in California
 - To *g* or not to *g*
- Administration and Interpretation
 - Test order, subtest interpretation, etc.
- Connecting PASS and EF
 - CEFI and PASS
- PASS Profiles SLD ADHD and ASD
 - PSW for ASD
- Conclusions
 - Reasons To Change

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PSW Demands the Right Ingredients

It is not reasonable to expect OLD intelligence tests measure what we need to measure for a Pattern of Strengths and Weaknesses approach to identification of students with a Specific Learning Disability

PASS Scales can be Interpreted and SHOULD be: Profiles



CHAPTER 1

PSYCHOLOGICAL ASSESSMENT BY SCHOOL PSYCHOLOGISTS: OPPORTUNITIES AND CHALLENGES OF A CHANGING LANDSCAPE

Jack A. Naglieri

The reliability and validity of information obtained from any psychological test is dependent on the scope and psychometric attributes of the instrument used. As in all areas of science, what psychologists discover depends on the quality of the instruments used and the information they provide as well as skillful interpretation of the test results. Better conceptualized instruments yield more accurate and informative data than do weaker instruments. Instruments that uncover more useful information about the individual being examined are more valid and ultimately better inform both researchers and clinicians. The tools school psychologists choose for diagnostic decision making substantially influence the reliability and validity of the information they obtain and the decisions they make. Simply put, the better the tool is, the more valid and reliable the decisions, the more useful the information obtained is, the better the services provided. In this chapter, some important issues concerning quality and efficacy in school psychological practice, as described by the National Association of School Psychologists (2010). The goal of this chapter is not to summarize all the changes that have recently occurred or to predict the outcomes of these changes but rather to summarize the important issues related to the current state of the field and the apparent strengths and weaknesses of the various options.

INTELLIGENCE AND SPECIFIC LEARNING DISABILITIES

Controversy is not new to the construct of intelligence and its measurement (see Jensen, 1998). Arguments have raged about the nature of intelligence—is it one factor or multiple factors, are intelligence tests biased or not, what are the best ways to interpret test results, do children with specific disabilities have distinctive ability profiles, and do intelligence test scores have relevance beyond diagnostic classifica-

CHAPTER 6

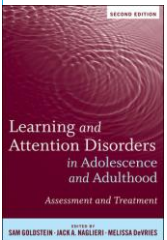
Assessment of Cognitive and Neuropsychological Processes

JACK A. NAGLIERI
SAM GOLDSTEIN

INTRODUCTION

Assessment of intelligence plays an important role in the process of determining if an adolescent or adult has a disability. For those suspected of having a Specific Learning Disability (SLD), the intelligence test provides an important reference point to compare to levels of achievement. For those who may have Attention Deficit/Hyperactivity Disorder (ADHD), the measure of intelligence is used to rule out other disabilities that may better explain the person's behavior. Intelligence tests have and will continue to provide a critical component of any comprehensive assessment needed to determine the presence of disabilities, such as SLD and ADHD. Their importance, however, demands a thorough understanding of the strengths and limitations of these tests of ability, an appreciation of the research on their effectiveness, and an examination of modern views of assessing intelligence. The goal of this chapter is to address these issues.

This chapter reexamines intelligence as measured by traditional IQ tests with special attention to the utility such tests have for diagnosis. In order to achieve this goal, the chapter includes a brief overview of the history and definitions of intelligence and examines examples of measures of intelligence more closely. Emphasis will be placed on the importance of understanding how intelligence is conceptualized and measured by different tests and the implications this has for assessment. The chapter also provides a conceptual model of assessment of basic psychological processes and how that information can aid in the diagnostic process and treatment of adolescents and adults.



Naglieri & Goldstein (2011)

GROUP PROFILES BY ABILITY TEST

Because ability tests play such an important role in the diagnostic process, it is crucial to understand the sensitivity each test may have to any unique characteristics of those with an SLD or attention deficit. Clinicians need to know if an adolescent or adult has a specific deficit in ability that is related to a specific academic learning problem. There has been considerable research on, for example, Wechsler subtest profile analysis, and most researchers conclude that no profile has diagnostic utility for individuals with SLD or ADHD (Kavale & Forness, 1995). The failure of subtest profiles has led some to argue (e.g., Naglieri, 1999) that scale, rather than subtest, variability should

1. We need to know if intelligence tests yield distinctive profiles

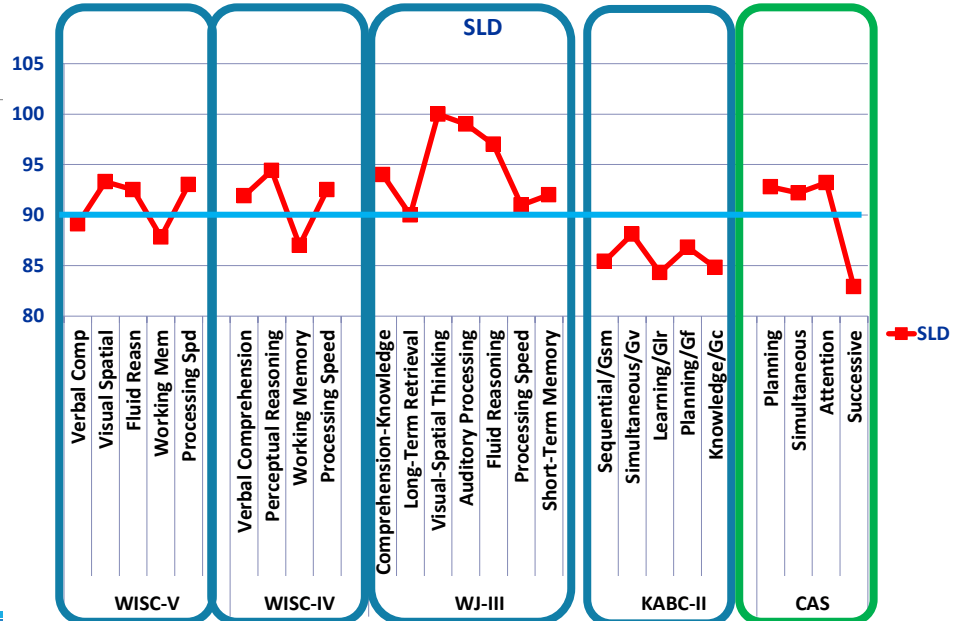
2. Subtest profile analysis is UNSUPPORTED so use scale profiles instead

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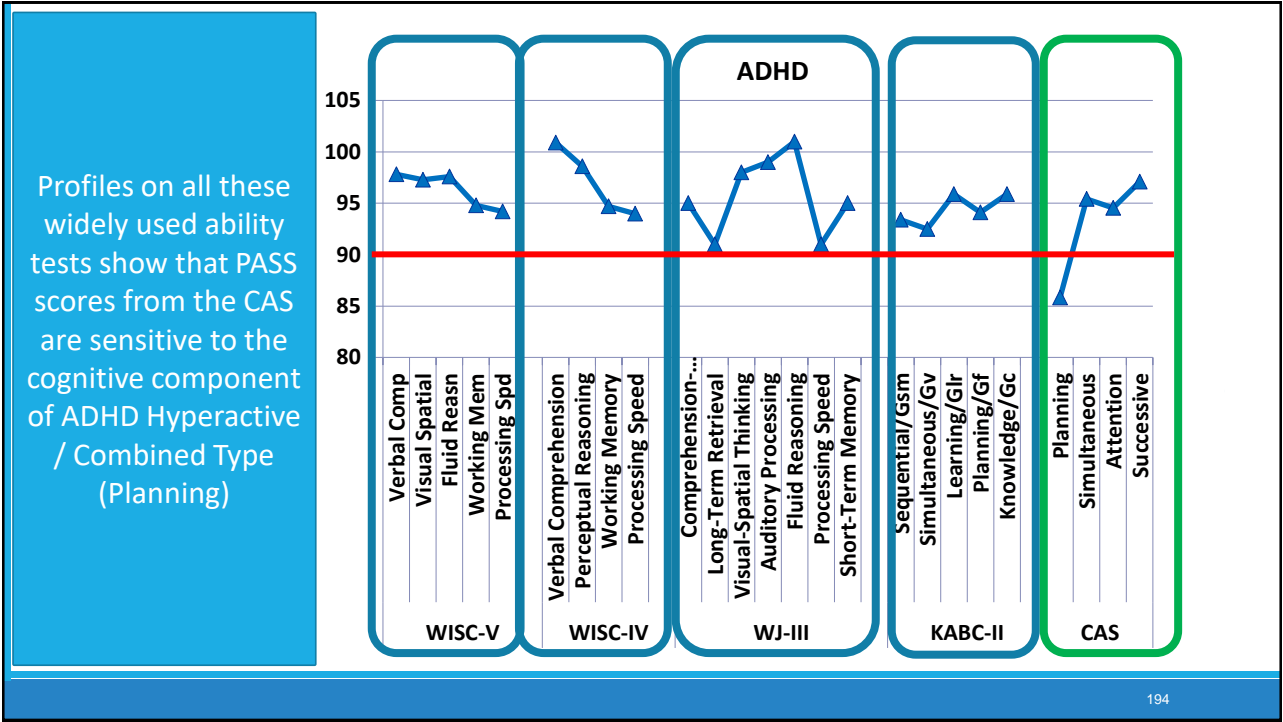
Profiles for SLD (reading decoding)

Profiles on all these widely used ability tests show that PASS scores from the CAS are sensitive to the cognitive component that underlies READING DECODING failure (Successive Processing)

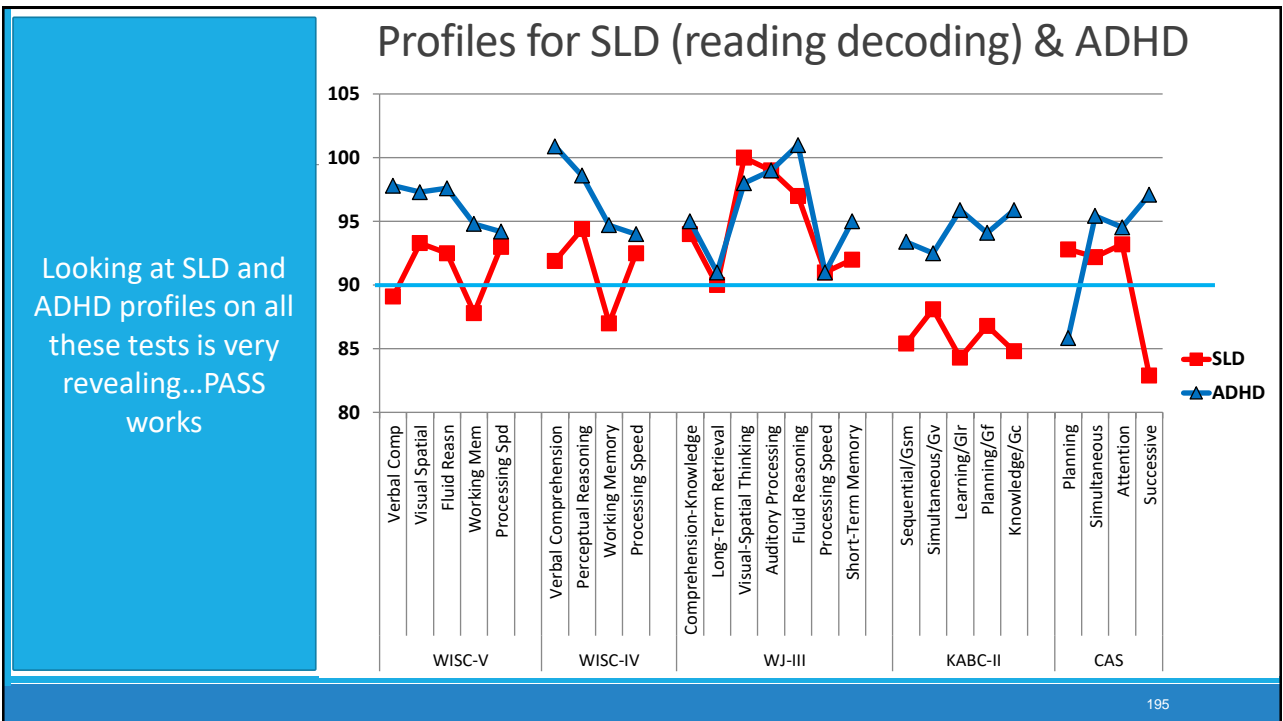


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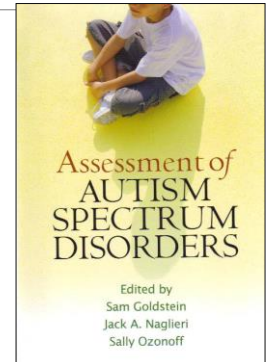
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ASRS & Attention Difficulty

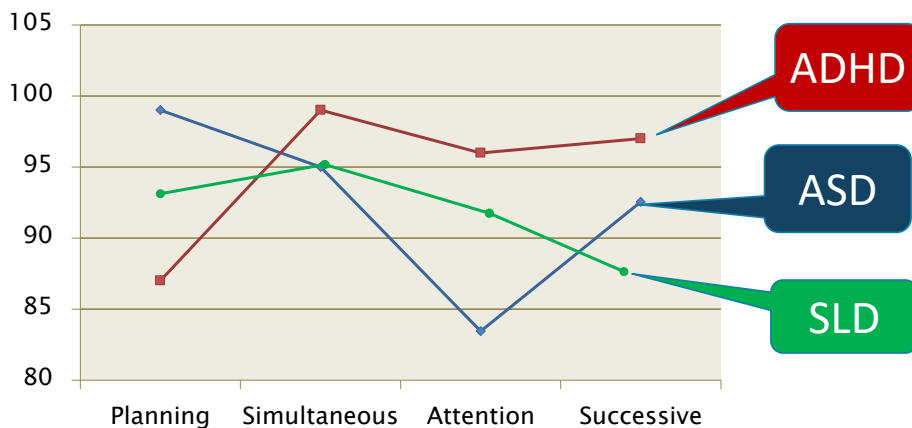
- Individuals with ASD have been described as having “**difficulties in disengaging and shifting attention**” (p. 214) (see Klinger, O’Kelley, & Mussey’s chapter 8 in *Assessment of Autism Spectrum Disorders* (Goldstein, Naglieri, & Ozonoff, 2009)
- the ASRS (6–18 Years) and Cognitive Assessment System (CAS; Naglieri & Das, 1997) was administered to children diagnosed with an ASD



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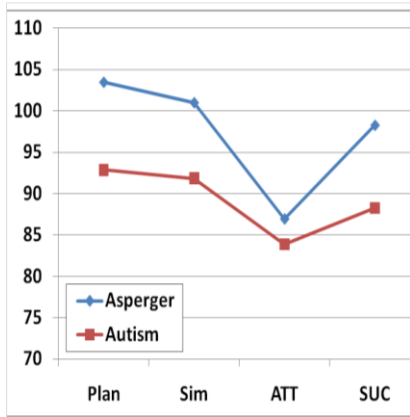
ASRS & Attention Difficulty



INTERPRETIVE HANDBOOK

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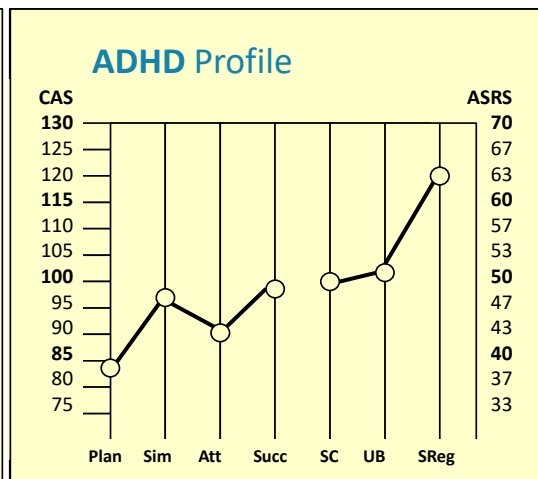
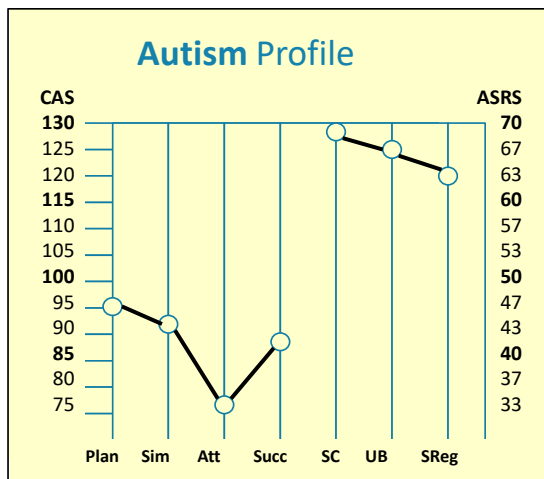
Autism vs Asperger 6-18



Descriptive Statistics and Comparisons Between Individuals with Autism ($n = 20$) and Asperger Syndrome ($n = 23$).

		<i>Mn</i>	<i>SD</i>	<i>F</i>	<i>Sig</i>	<i>d -ratio</i>
PLAN	Asperger	103.5	31.6	1.71	.20	0.40
	Autism	92.9	19.2			
SIM	Asperger	101.0	15.3	3.33	.08	0.54
	Autism	91.9	17.5			
ATT	Asperger	86.9	17.7	0.30	.59	0.17
	Autism	83.9	18.8			
SUC	Asperger	98.3	15.7	2.46	.12	0.47
	Autism	88.3	25.6			

Differential Diagnosis: ADHD vs ASD



Research on PASS Profiles

Students receiving special education were more than four times as likely to have at least one PASS weakness and a comparable academic weakness than those in regular education

Identifying Students With Learning Disabilities: Composite Profile Analysis Using the Cognitive Assessment System

Leesa V. Huang¹, Achilles N. Bardos², and Rik Carl D'Amato²

Abstract

The detection of cognitive patterns in children with learning disabilities (LD) has been a priority in the identification process. Subtest profile analysis from traditional cognitive assessment has drawn sharp criticism for inaccurate identification and weak connections to educational planning. Therefore, the purpose of this study is to use a new generation of cognitive tests with megaculter analysis to augment diagnosis and the instructional process. The Cognitive Assessment System uses a contemporary theoretical model in which composite scores, instead of subtest scores, are used for profile analysis. Ten core profiles from a regular education sample ($N = 1,692$) and 12 profiles from a sample of students with LD ($N = 367$) were found. The results of the LD profiles

School Psychology Quarterly, Vol. 15, No. 4, 2000, pp. 419-433

Can Profile Analysis of Ability Test Scores Work? An Illustration using the PASS Theory and CAS with an Unselected Cohort

Jack A. Naglieri
George Mason University

A new approach to ipsative, or intraindividual, analysis of children's profiles on a test of ability was studied. The Planning, Attention, Simultaneous, and Successive (PASS) processes measured by the Cognitive Assessment System were used to illustrate how profile analysis could be accomplished. Three methods were used to examine the PASS profiles for a nationally representative sample of 1,597 children from ages 5 through 17 years. This sample included children in both regular ($n = 1,453$) and special ($n = 144$) educational settings. Children with significant ipsatized PASS scores, called Relative

“Ten core profiles from a regular education sample ($N = 1,692$) and 12 profiles from a sample of students with LD ($N = 367$) were found.

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Research on PASS Profiles

- “the CAS...yields information that contributes to the differential diagnosis of students suspected of having a **learning disability in writing**”

Cognitive Assessment System Construct and Diagnostic Utility in Assessing ADHD

Gary L. Canivez
Eastern Illinois University

Allison R. Gaboury
Puyallup School District, Puyallup, WA

Paper presented at the 2010 Annual Convention of the American Psychological Association, San Diego, CA

Correspondence concerning this paper should be addressed to Gary L. Canivez, Ph.D., Department of Psychology, Eastern Illinois University, 600 Lincoln Avenue, Charleston, IL 61920-3099. Dr. Canivez can also be contacted via E-mail at gcanivez@eiu.edu or the World Wide Web at <http://www.eiu.edu/~gcanivez/>. This handout is based on a manuscript presently submitted for publication so please do not reference without permission.

Journal of Psychoeducational Assessment
2005, 21, 180-195

DISCRIMINANT VALIDITY OF THE COGNITIVE ASSESSMENT SYSTEM FOR STUDENTS WITH WRITTEN EXPRESSION DISABILITIES

Judy A. Johnson
University of Houston - Victoria
Achilles N. Bardos
University of Northern Colorado
Kandi A. Tayebi
Sam Houston State University

This study explored the PASS cognitive processing theory in junior high students (aged 11-15 years) with and without written expression disabilities. Ninety-six students with ($n = 48$) and without ($n = 48$) written expression disabilities were administered the Das-Naglieri Cognitive Assessment System (DN-CAS, 1997) and the writing subtests of the Wechsler Individual Achievement Test (WIAT, 1998). Discriminant analyses were utilized to identify the DN-CAS subtests and composites that contributed to group differentiation. The Planning composite was found to be the most significant contributor among the four composite scores. Subsequent efficiency of classification analyses provided strong support for the validity of the obtained discriminant functions in that the four DN-CAS composite scale scores correctly identified 85% of the students as members of their respective groups.

- “the present study demonstrated the potential of the CAS to correctly identify students who **demonstrated behaviors consistent with ADHD diagnosis.**”

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Ideas to Consider



A Professional Journey

- An Awakening About Traditional Intelligence Tests

A Theory Based on Brain Function

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

Research Update

- PASS and Equity & Use in California
- To *g* or not to *g*

Administration and Interpretation

- Test order, subtest interpretation, etc.

Connecting PASS and EF

- CEFI and PASS

PASS Profiles SLD ADHD and ASD

- PSW for ASD

Conclusions

- Reasons To Change

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Summary: PASS theory and CAS2 (see Naglieri & Otero, 2017)

1. The PASS scales on the CAS2 measure *thinking* (i.e. basic psychological processing) rather than *knowing* (e.g., vocabulary, arithmetic etc.), making the test good for assessment of diverse populations and those with limited educational opportunity – the MOST EQUITABLE intelligence test.
2. PASS scores can be easily obtained in 20 minutes (using the 4-subtest **CAS2 Brief**), 40 minutes (using the **8-subtest Core Battery**) or 60 minutes (using the **12-subtest Extended Battery**), scored and a narrative reports provided using the **online program**. (Digital CAS2 is in final stages of development.)
3. PASS results are easy for teachers, parents and the students themselves to understand because the concepts can be explained in non-technical language.
4. The PASS theory and the CAS2 provide a way to both define and assess ‘basic psychological processes’ so that practitioners can obtain scores that are consistent with state and federal IDEA guidelines.
5. The PASS scores are strongly correlated to achievement, show distinct patterns of strengths and weaknesses, are very useful for intervention planning.
6. The CAS2 in combination with achievement provides examiners with a reliable and defensible Discrepancy Consistency Method to identify students with SLD.
7. Research has shown that PASS scores have relevance to instruction and intervention.

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Presentation Description

- Drs. Naglieri and Otero will review the current state of the art in intellectual Assessment and emphasize the value of the neurocognitive processing approach - **Planning Attention, Simultaneous and Successive (PASS)** – as measured by the Cognitive Assessment System-Second Edition (CAS2), both English and Spanish versions, as well as the CAS2: Brief and CAS2: Rating Scale.
- Cases will be shown which illustrate the value of the CAS2 for eligibility determination and intervention and the alignment of PASS scores to academic achievement test scores. The Discrepancy Consistency Method will be used to identify students with SLD including Dyslexia, their cognitive processing strengths which are used to manage their weakness, and identify interventions all within the context of equitable assessment
- Topics will include blending of PASS theory with behavioral evaluation of Executive Functioning (using the Comprehensive Executive Function Inventory; CEFI). The overall intervention goal is to engage students in the solutions to any learning challenges that they may have and ensure that teachers and parents understand the relationships between PASS and academic achievement.

COGNITIVE ASSESSMENT SYSTEM - 2




**PUSD
PRO GROW**
09/27/21
9:00 - 3:00


Drs. Naglieri and Otero will review the current state of the art in intellectual assessment and emphasize the value of the neurocognitive processing approach - **Planning Attention, Simultaneous and Successive (PASS)** – as measured by the Cognitive Assessment System-Second Edition (CAS2), both English and Spanish versions, as well as the CAS2: Brief and CAS2: Rating Scale.

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Jack A. Naglieri, Ph.D. is Research Professor of the University of Texas at Dallas where he is the director of the Center for the Study of Intelligence. He has published over 100 articles in peer-reviewed journals and is the author of several books. He has also served as the director of the Center for the Study of Intelligence at the University of Texas at Dallas. He is also the author of the book "The Discrepancy Consistency Method" which is used to identify students with SLD including Dyslexia.



Salim Otero, Ph.D. is a faculty member of Columbia Southern University and teaches courses in Cross Cultural Communication, Organizational Behavior, and Management since 1998. He has worked in the field of organizational behavior, human resources, and organizational development with a variety of large groups with a variety of organizational structures. He has published articles in peer-reviewed journals and is the author of the book "The Discrepancy Consistency Method" which is used to identify students with SLD including Dyslexia.

INFO
PUSD PRO GROW
Meeting ID: 518 524 8538
Passcode: 849696222
SEP 27, 2021
9:00 AM



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Twice Exceptional

- Tests of general ability are **not** sufficient for assessment of students who may be gifted and have a specific learning disability (SLD), autism, ADHD, etc.
- Most defensible way to assess for a SLD, for example, is to use the *Cognitive Assessment System-Second Edition (CAS2)* for the following reasons
 - CAS2 measures ‘basic psychological processes’ – the key to uniting the definition of SLD with the method of detecting it, it yields the smallest race difference, yields profiles for special populations, predicts achievement better than any other tests and has implications for instruction

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A Study of Gifted Students

- N = 142
 - Similar numbers of girls and boys in Grade 4, 5 and 6.
 - all native speakers of English
 - came from families of middle to upper-middle socioeconomic background
- Identified according to this definition:
 - “Giftedness is exceptional potential and/or performance across a wide range of abilities in one or more of the following areas: general intellectual, specific academic, creative thinking, social, musical, artistic and kinesthetic” (Alberta Education, 2012, p. 6).

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A Study of Gifted Students

- Tests given
 - WASI –II (Vocabulary and Matrix Reasoning)
 - Woodcock-Johnson III (WJ-III; Woodcock, McGrew, & Mathers, 2001) Broad Reading score from: Letter-Word Identification, Reading Fluency, and Passage Comprehension
 - Cognitive Assessment System (CAS; Naglieri & Das, 1997) to measure PASS neurocognitive processes

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A Study of Gifted Students

WASI-II FSIQ slightly higher than CAS FS - but CAS shows more variability

- Average WASI-III Full Scale and CAS Full scale were similar but CAS standard deviation and range was higher

Table 1

Descriptive Statistics for WASI-II, WJ-III Achievement, and Cognitive Assessment System (CAS) Scores ($N = 142$)

Variable	Mean	SD	Min	Max
WJ-III Achievement				
Broad Reading	125	14	97	166
Broad Math	116	13	91	162
Mean WJ	117	10	94	152
WASI-II FSIQ	123	8	105	145
CAS Full Scale	118	12	91	148
Planning	110	12	77	146
Simultaneous	121	16	88	152
Attention	113	13	79	141
Successive	111	11	81	137

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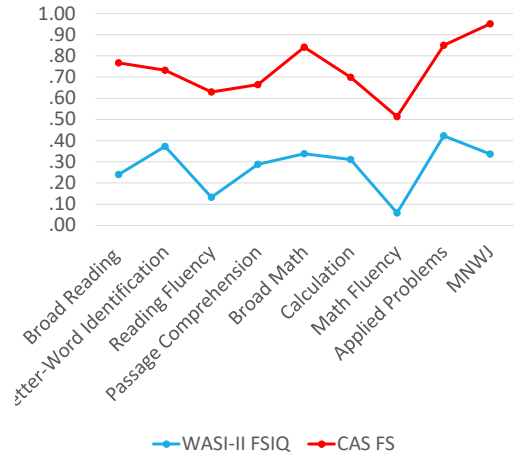
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A Study of Gifted Students

CAS Full Scale scores correlated significantly higher with WJ-III achievement scores than the WASI-II

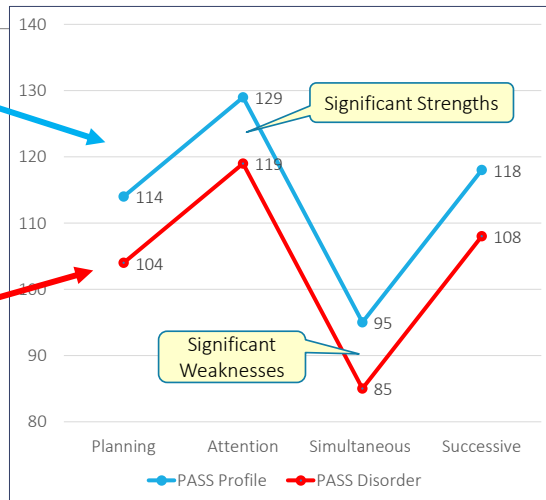
Table 2
Pearson Correlations of WASI-II FSIQ, Cognitive As

	WASI-II FSIQ	CAS FS
Broad Reading	.24	.53
Broad Math	.34	.50
Mean WJ-III	.34	.62



Two Types of PASS Profiles

- Two sets of PASS scores were studied
 - Significant variation in relation to student's average has instructional relevance
 - Significant variation in relation to student's average AND a standard score less than 90 (< 25th %tile) supports designation as SLD



A Study of Gifted Students

- 54% of gifted students had a PASS score that was significantly different from that student’s average PASS score
 - That means the students has a specific neurocognitive processing strength or weakness (i.e., learning profile)

Table 3.

Percentages of Gifted Students with Significant Variability in PASS Standard Scores (N = 142).

		Planning	Simultaneous	Attention	Successive	PASS
PASS Weakness	n	25	6	18	28	77
	%	18%	4%	13%	20%	54%
PASS Strength	n	7	58	13	12	90
	%	5%	41%	9%	8%	63%

A Study of Gifted Students

- The number of gifted students who have a PASS score that is significantly different from that student’s average PASS score AND the score is < 90; and with low achievement score.

Percentages of Gifted Students with Significant Variability in PASS and Achievement Test Scores (N = 142).

		Planning	Simultaneous	Attention	Successive	PASS
PASS <90	n	4	0	4	4	12
	%	3%	0%	3%	3%	8%
PASS & Skills <90	n	3	0	2	1	6
	%	2%	0%	1%	1%	4%

These students have a specific PASS processing weakness less than 90; suggesting instructional modifications

These students with low PASS scores AND low WJ-III achievement indicates a Specific Learning Disability