

PASS Theory & Cognitive Assessment System-2nd Edition

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Assessment Tools for Psychologists and Educators

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This site was created to provide tools and resources for both psychologists and educators alike.

Jack A. Naglieri, PhD, is a Research Professor at the University of Virginia, Senior Research Scientist at the Devereux Center for Resilient Children, and Emeritus Professor of Psychology at George Mason University. With J.P. Das, he is well known for the PASS theory of intelligence and its application using the Cognitive Assessment System and Cognitive Assessment System-Second Edition.

WHAT'S NEW?

<p>Today's Handout</p>  <p><small>Download today's handout from recent presentations.</small></p>	<p>PASS Case Studies</p>  <p><small>Case studies that illustrate ways to identify different processing disorders and interventions that can make a difference.</small></p>	<p>10-Minute Solutions</p>  <p><small>Short published papers that describe applications of PASS theory to identify disabilities such as Dyslexia.</small></p>
<p>CAS2 Speed/Fluency Scale</p>  <p><small>New FREE Speed/Fluency Scale for the CAS2.</small></p>	<p>Article Library</p> 	<p>Videos</p>  <p><small>Video library of interviews and webinars on</small></p>

Resources

FOR MORE INFORMATION
PLEASE GO TO MY WEB PAGE

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Disclosures



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The BIG picture

- The comprehensive assessments we provide can alter the course of a student's life; making this one of the most important tasks we have.
- We want Intellectual assessment that
 - Is consistent with IDEA and state regulations regarding SLD determination
 - Helps us understand WHY a student fails
 - Informs us about academic strengths & weaknesses and interventions
 - Is fair for students from diverse populations
- These goals can be achieved if we use second-generation tests that measure the way students THINK to LEARN
 - The definition of THINKING should be based on BRAIN function
 - PASS theory is a way of defining THINKING and the Cognitive Assessment System-2nd Edition measures a student's ABILITY to think

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Ideas to Consider



My 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 – Measure Thinking not Knowing
- To *g* or not to *g*

Eligibility Determination

- What to use

Reasons To Change

- Validity of PASS Theory

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Introduction

- Interest in intelligence and instruction
- Experiences as a school Psychologist



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Traditional IQ and Achievement Tests

- When I started working as a school psychologist in 1975...I noticed that parts of the intelligence tests we used 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! We noticed that parts of the WISC we were administering was VERY similar to parts of the achievement tests
- THAT DID NOT MAKE SENSE



1975 Charles Champagne Elementary, Bethpage, NY

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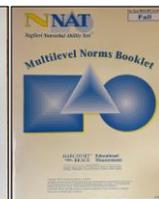
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1980 – First Academic Job @ NAU

- Lecture on Navajo Indians
 - Havasupai Reservation
- My work in equitable assessment began in 1982



1985 MAT Short and Expanded Forms



Naglieri Nonverbal Ability Test in 1997

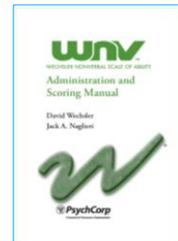


NNAT -2 published in 2008



NNAT -3 published in 2016

- First Research
 - Naglieri, J. A. (1982). Does the WISC-R measure verbal intelligence for non-English speaking children? *Psychology in the Schools, 19*, 478-479.
- First Test
 - Matrix Analogies Tests Individual and Group administrations (1985)
- First Book on Gifted
 - Helping All Gifted Students Learn (Naglieri, Brulles & Lansdowne, 2009)



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Tests Created with Equity as a Goal

1. Naglieri, J. A. (1985). *Matrix Analogies Test - Expanded Form*. San Antonio: The Psychological Corporation.
2. Naglieri, J. A. (1985). *Matrix Analogies Test - Short Form*. San Antonio: The Psychological Corporation.
3. Naglieri, J. A. (1997). *Naglieri Nonverbal Ability Test*. San Antonio, TX: The Psychological Corporation.
4. Naglieri, J. A., & Bardos, A. N. (1997). *General Ability Scale for Adults (GAMA)* San Antonio, TX: Pearson.
5. Naglieri, J. A., & Das, J. P. (1997). *Cognitive Assessment System*. Austin: ProEd.
6. Naglieri, J. A. (2003). *Naglieri Nonverbal Ability Test - Individual Form*. San Antonio, TX: Pearson.
7. Wechsler, D., & Naglieri, J. A. (2006). *Wechsler Nonverbal Scale of Ability*. San Antonio, TX: Pearson.
8. Naglieri, J. A. (2008). *Naglieri Nonverbal Ability Test – 2nd Edition*. San Antonio, TX: Pearson.
9. Naglieri, J. A., Das, J. P., & Goldstein, S. (2014). *Cognitive Assessment System Second Edition*. Austin, TX: ProEd.
10. Naglieri, J. A. (2016). *Naglieri Nonverbal Ability Test – Third Edition*. San Antonio, TX: Pearson.
11. Naglieri, J. A., Moreno, M. A., & Otero, T. M. (2017). *Cognitive Assessment System – Español*. Austin, TX: ProEd.
12. Naglieri, J. A. (2021). *Naglieri Ability Test: Nonverbal*. Markham, Canada: Multi-Health Systems.
13. Naglieri, J. A. & Brulles, D. (2021). *Naglieri Ability Test: Verbal*. Markham, Canada: Multi-Health Systems.
14. Naglieri, J. A. & Lansdowne, K. (2021). *Naglieri Ability Test: Quantitative*. Markham, Canada: Multi-Health Systems.

9

9

Neil
deGrasse
Tyson



One of the great challenges in this world is knowing
enough about a subject to think your right;
but not enough about the subject to know your wrong!

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Why do we measure intelligence the way we do?

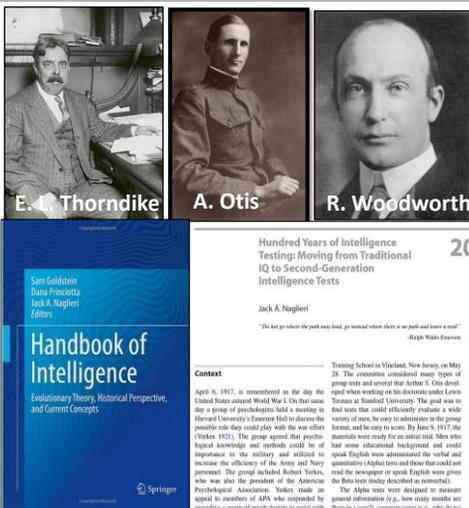
The History of IQ tests



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

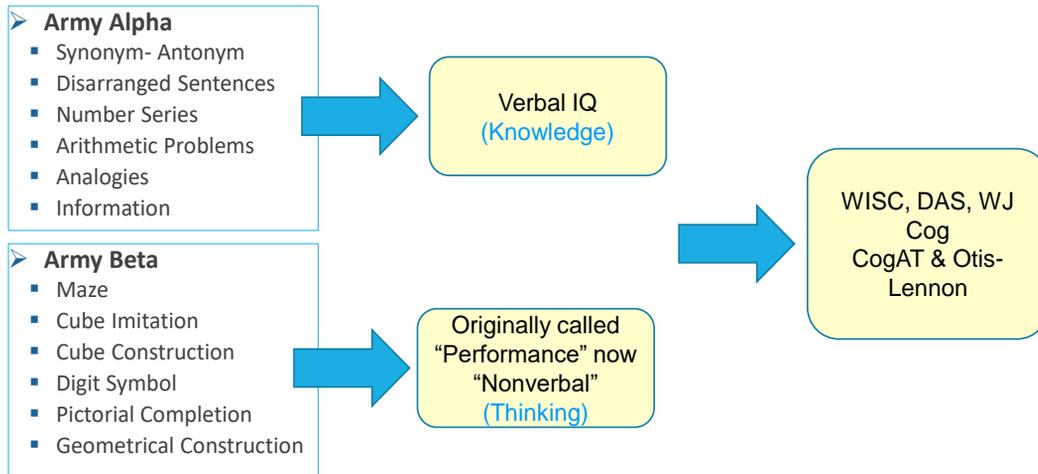


- A group of psychologists met at Harvard in April of 1917 to construct an ability test to help the US military evaluate recruits (WWI)
- By July 1917 their research showed that the Army Alpha (Verbal & Quantitative) and Beta (Nonverbal) tests could “aid in segregating and eliminating the mentally incompetent, 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

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From Alpha & Beta to Wechsler IQ



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Our Tests Demand Knowledge

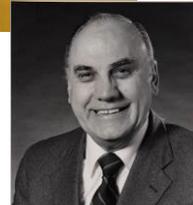
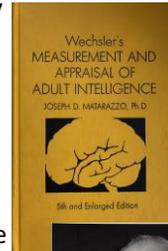
Stanford-Binet 5	WISC-V	WJ-IV and Bateria-IV (including Cross Battery)	K-ABC-II
<ul style="list-style-type: none"> • Verbal • Knowledge • Quantitative Reasoning • Vocabulary • Verbal Analogies 	<ul style="list-style-type: none"> • Verbal Comprehension: Vocabulary, Similarities, Information & Comprehension • Fluid Reasoning: Figure Weights, Picture Concepts, 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

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The Problem with Verbal and Quantitative tests

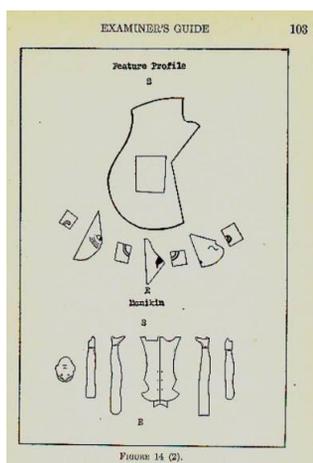
- When English is required in a vocabulary test of general ability this disadvantages ELL students and those with limited educational opportunity.
- Matarazzo (1972) wrote about the Wechsler Scales
 - "...Vocabulary is necessarily influenced by ... education and cultural opportunities (p. 218)"
 - when 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) ?



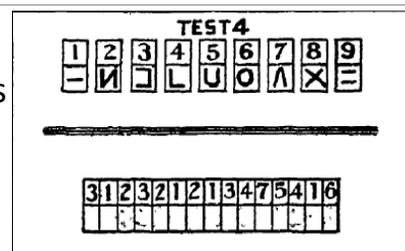
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The US Army Beta Test (Nonverbal)



- Wechsler's Performance tests were taken from the Army Beta
- **BUT WHY were nonverbal test included?**



Test 7.—Digit Symbol

E. shows S. the record sheet, points to blank below 2 in the sample, then to symbol for 2 at top of page, writes in symbol, proceeds in the same way with the other parts of the sample, then gives S. pencil, points to space below 3 in the test, and nods affirmatively.

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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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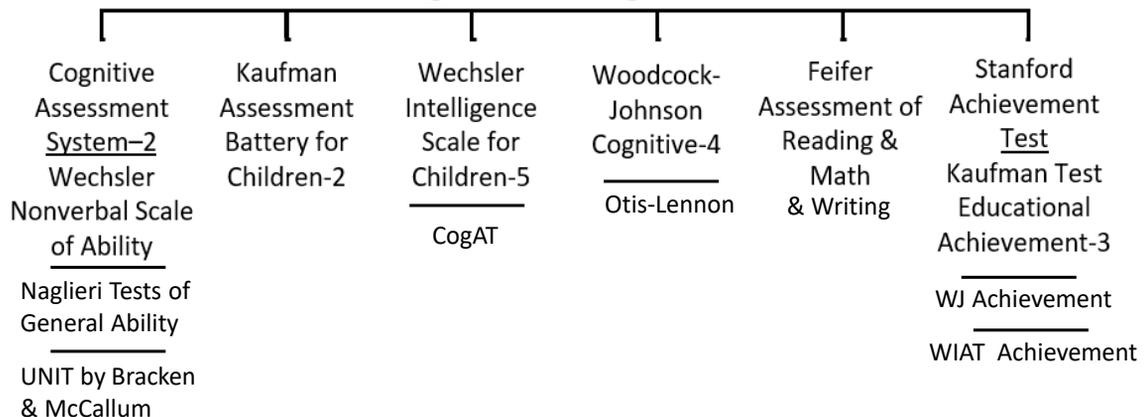
Why Beta?

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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Thinking and Knowing Continuum



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WE CAN DO BETTER

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My 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 – Measure Thinking not Knowing
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Eligibility Determination

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Reasons To Change

- Validity of PASS Theory



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Shift from Traditional To Second Generation Intelligence Tests

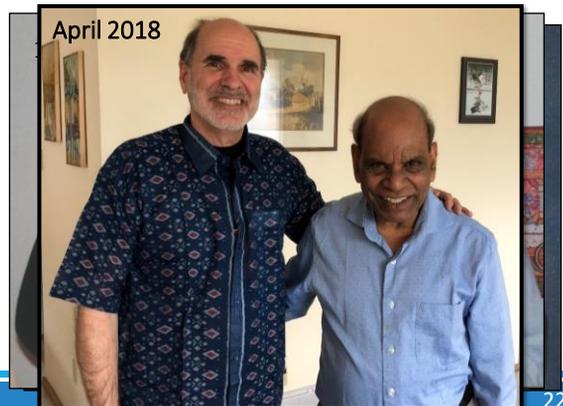
→ Wechsler, et al

→ Cognitive Assessment
System 2nd Edition

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Intelligence as Neurocognitive Functions

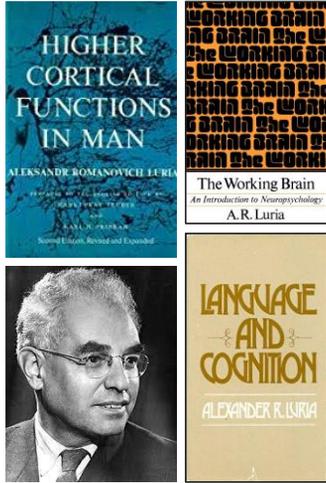
- In my first working meeting with JP Das (February 11, 1984) we proposed that intelligence was better REinvented as neurocognitive processes and we began development of the **Cognitive Assessment System** (Naglieri & Das, 1997).
- We conceptualized intelligence as Planning, Attention, Simultaneous, 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!

Neuropsychological Correlates of PASS

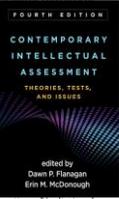
Naglieri, J. A., & Otero, T. M. Redefining Intelligence as the PASS Theory of Neurocognitive Processes.

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 (Pucker & 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 instruments briefly in Chapter 15 of this book. The PASS theory and measures are based on a neurocognitive perspective from that of traditional but in part, subsets requiring knowledge). These batteries the Army mental testing program and Yerkes (1920) PASS theory, an operational CAS2, has created an open field of intelligence and emphasizing (1) that a test be based on a theory of intelligence and the processes defined by the test, not the content of the test, and (2) that the test be based on a theory of intelligence and the processes defined by the test, not the content of the test.



28 Cognitive Assessment System: Redefining Intelligence From a Neuropsychological Perspective

Jack A. Naglieri and Tulio M. Otero

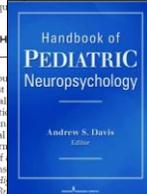
INTRODUCTION

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 access 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 specific needs of the individual.

FROM NEUROPSYCHOLOGY TO ASSESSMENT

Luria's theoretical approach 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 *HI* (1980) and *The Working Brain* as a functional mosaic, the parts of which interact in dif-



PASS Theory Based on Luria's Concept of Functional Units

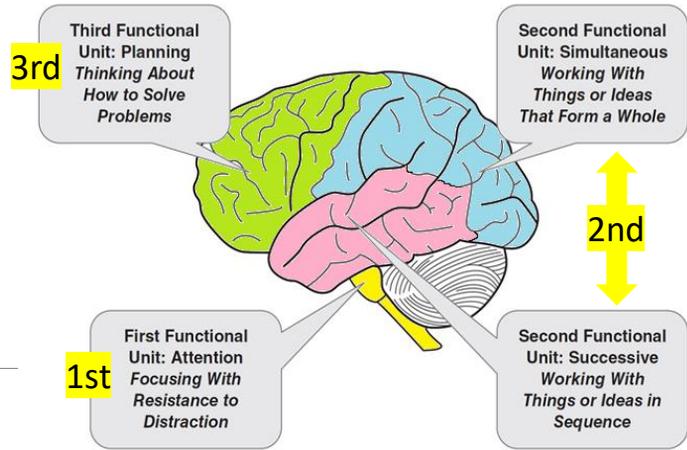


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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PASS Theory Based on Brain Function – Planning

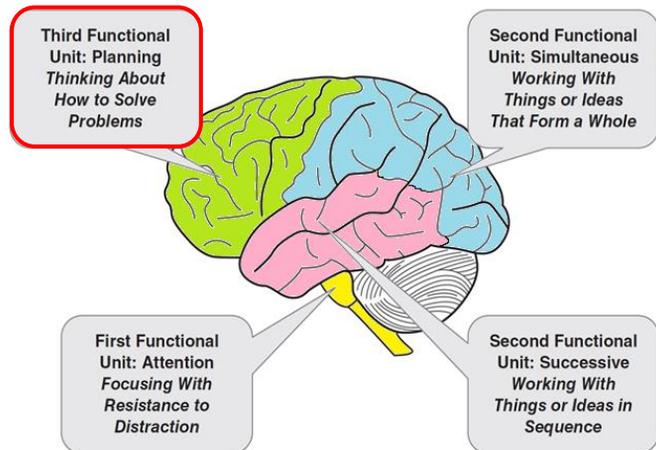


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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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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Planned Codes Page 1

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						

- 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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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

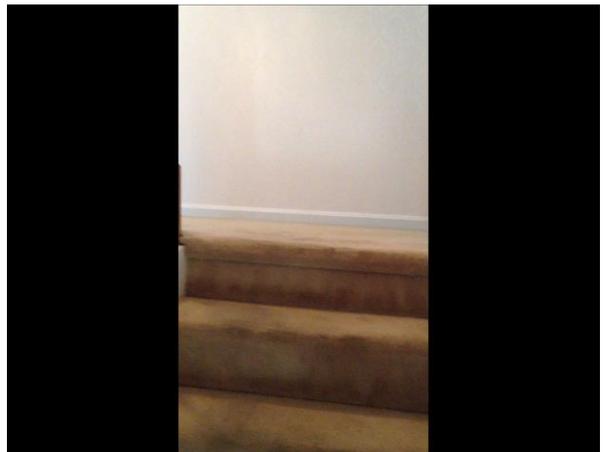
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Planning Raw Score

29

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

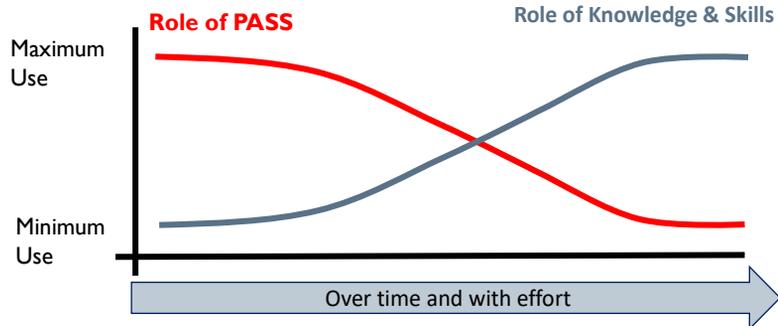


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Planning Learning Curves

- 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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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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PASS Theory Based on Brain Function — Attention

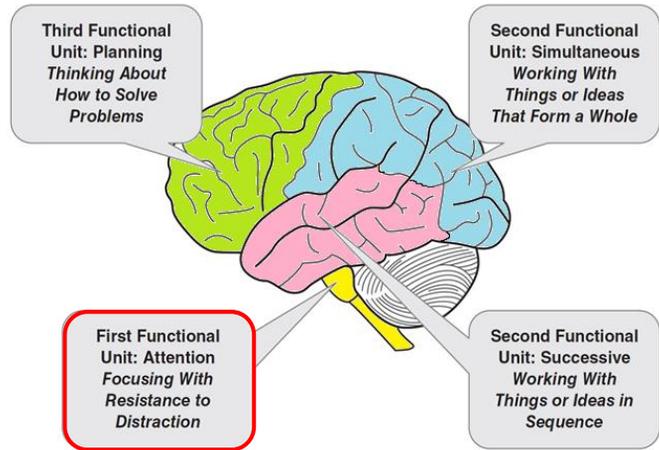


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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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

34

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Expressive Attention – Italian and Korean versions

ROSSO	BLU	VERDE	GIALLO
GIALLO	VERDE	ROSSO	BLU
ROSSO	GIALLO	VERDE	BLU
BLU	VERDE	ROSSO	GIALLO
VERDE	GIALLO	ROSSO	BLU

빨강	파랑	초록	노랑
노랑	초록	빨강	파랑
빨강	노랑	노랑	초록
초록	파랑	초록	빨강
초록	노랑	빨강	노랑

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CAS2: Rating Scale Attention

Directions for Items 21–30. These questions ask how well the child or adolescent pays attention and resists distractions. The questions also ask about how well someone attends to one thing at a time. Please rate how well the child or adolescent pays attention.

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

	Never	Rarely	Sometimes	Frequently	Always
21. work well in a noisy area?	0	1	2	3	4
22. stay with one task long enough to complete it?	0	1	2	3	4
23. not allow the actions or conversations of others to interrupt his or her work?	0	1	2	3	4
24. stay on task easily?	0	1	2	3	4
25. concentrate on a task until it was done?	0	1	2	3	4
26. listen carefully?	0	1	2	3	4
27. work without getting distracted?	0	1	2	3	4
28. have a good attention span?	0	1	2	3	4
29. listen to instructions or directions without getting off task?	0	1	2	3	4
30. pay attention in class?	0	1	2	3	4

— + — + — + — + — =
Attention Raw Score

36

36

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.

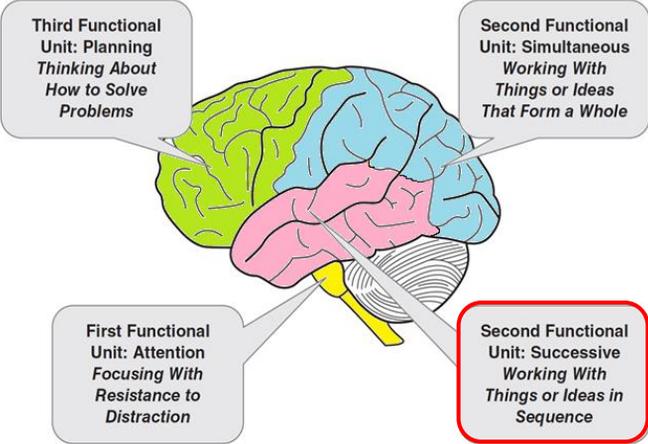
12. 6:22 p.m.

13. 3:50 p.m.

Attention

READING COMPREHENSION IS DIFFICULT BECAUSE OF THE SIMILARITY OF THE OPTIONS

PASS Theory Based on Brain Function – Successive Processing



Third Functional Unit: Planning
Thinking About How to Solve Problems

Second Functional Unit: Simultaneous
Working With Things or Ideas That Form a Whole

First Functional Unit: Attention
Focusing With Resistance to Distraction

Second Functional Unit: Successive
Working With Things or Ideas in Sequence

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

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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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?***

40

40

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



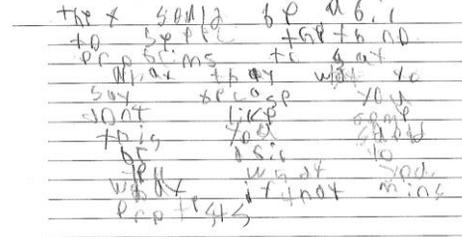
The First Amendment, 1791

"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, of 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.



PASS Theory Based on Brain Function - Simultaneous Processing

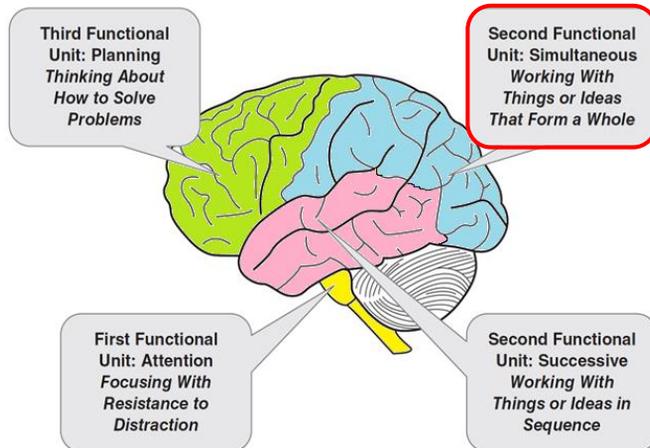


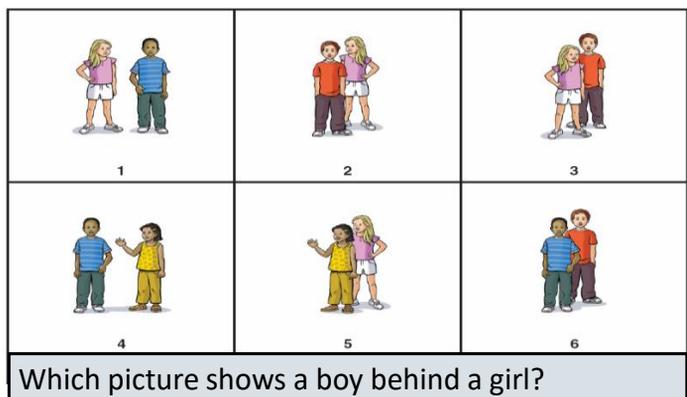
Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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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



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CAS2: Rating Scale Simultaneous

Directions for Items 11–20. These questions ask how well the child or adolescent sees how things go together. They also ask about working with diagrams and understanding how ideas fit together. The questions involve seeing the whole without getting lost in the parts. Please rate how well the child or adolescent visualizes things as a whole.

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

	Never	Rarely	Sometimes	Frequently	Always
11. like to draw designs?	0	1	2	3	4
12. figure out how parts of a design go together?	0	1	2	3	4
13. classify things into groups correctly?	0	1	2	3	4
14. work well with patterns and designs?	0	1	2	3	4
15. see how objects and ideas are alike?	0	1	2	3	4
16. work well with physical objects?	0	1	2	3	4
17. like to use visual materials?	0	1	2	3	4
18. see the links among several things?	0	1	2	3	4
19. show interest in complex shapes and patterns?	0	1	2	3	4
20. recognize faces easily?	0	1	2	3	4

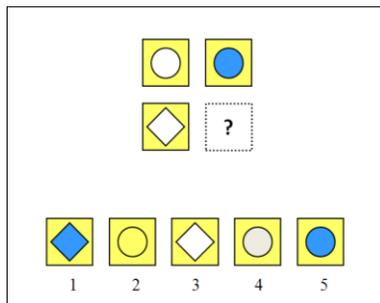
— + — + — + — + — =
Simultaneous Raw Score

45

45

Thinking vs Knowing

Solving these analogies demands the same kind of thinking



Girl is woman as boy is to ____?

C⁷ is to F as E⁷ is to ____?

3 is to 6 as 4 is to ____?

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And Consider this...

Why do
different tasks
use the *same*
PASS process?



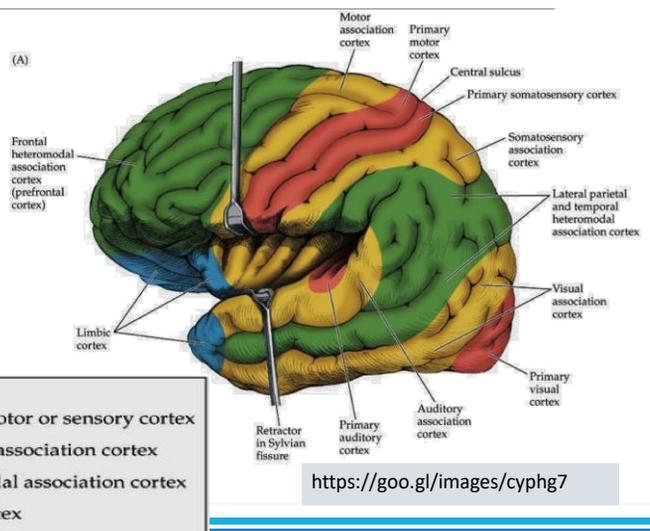
- Even though the tasks were different in content (shapes, words, numbers & musical notations) and modality (auditory and visual), they required **Simultaneous** processing!

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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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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

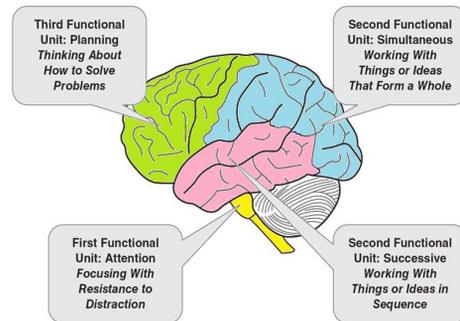


Figure 1.2 Three Functional Units and Associated Brain Structures

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

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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 !



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PASS → CAS2



My 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 – Measure Thinking not Knowing
- To *g* or not to *g*

Eligibility Determination

- What to use

Reasons To Change

- Validity of PASS Theory

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PASS Comprehensive System

(Naglieri, Das, & Goldstein, 2014)

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

<p>CAS2 Rating Scale (4 subtests)</p>	<p>CAS2 Brief (4 subtests 20 minutes)</p>	<p>CAS2 Core (8 subtests 40 minutes)</p>	<p>CAS2 Extended (12 subtests 60 minutes)</p>
<p>Total Score Planning Simultaneous Attention Successive</p>	<p>Total Score Planning Simultaneous Attention Successive</p>	<p>Full Scale Planning Simultaneous Attention Successive</p>	<p>Full Scale Planning Simultaneous Attention Successive Supplemental Scales Executive Function Working Memory Verbal / Nonverbal Visual / Auditory Speed / Fluency</p>
			

CAS2 for (Ages 5-18 yrs.)



NEW! CAS2 Digital(English and Spanish) coming in 2021 with integrated scoring and narrative report

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 qualifications form. TO ORDER, CALL: 800-897-3202.

Price: \$199.00

NEW

NOW AVAILABLE!

Ages: 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.

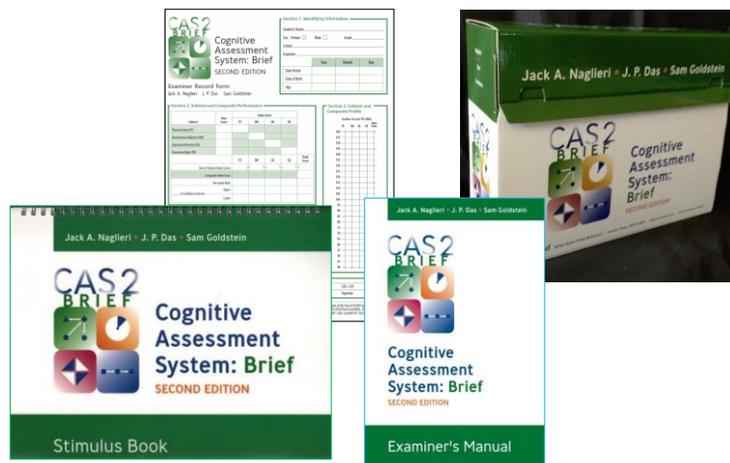
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CAS2: Brief for Ages 4-18 years

For special educators and others with some assessment training

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



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CAS2 BRIEF
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 Grade: 1st
School: Parkview Elementary
Examiner: R. Durham, PhD

Date Tested	Year	Month	Day
2/25/19	19	2	25

Date of Birth	Year	Month	Day
2/09	09	2	09

Age: 9

Section 2. Subtest and Composite Performance

Subtest	Raw Score	Index Score				Total Score
		PC	SM	EA	SD	
Planned Codes (PC)	68	112				
Simultaneous Matrices (SM)	16		100			
Expressive Attention (EA)	33			96		
Successive Digits (SD)	7				82	
Sum of Subtest Index Scores		112	100	96	82	390
Composite Index Score						96
Percentile Rank		71	50	40	12	40
90% Confidence Interval		Upper: 118	111	107	96	104
		Lower: 105	84	84	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 B.1 and B.2 of the Examiner's Manual.

Subtest	Index Score	Z-value	Strength	Weakness
Planned Codes (PC)	112	14.5	100%	15.1
Simultaneous Matrices (SM)	100	2.5	50%	82.8
Expressive Attention (EA)	96	-1.5	50%	87.8
Successive Digits (SD)	82	-15.5	50%	14.2
Subtest mean	97.5			

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

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

CAS2: Brief

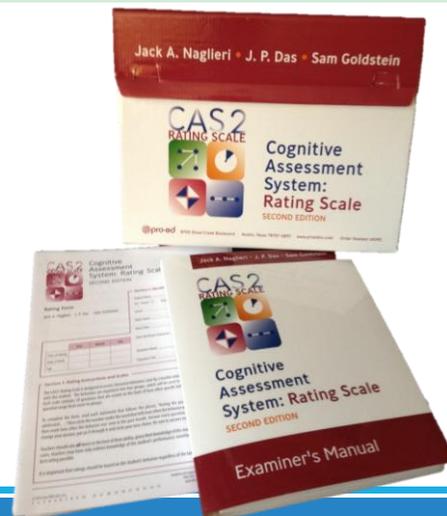
- Give in 20 minutes
- Yields PASS and Total standard scores (Mn 100, SD 15)
- Directions for administration are in the Record Form
- All items are different from CAS2
 - Planned Codes
 - Simultaneous Matrices
 - Expressive Attention
 - Successive Digits (forward only)

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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

CAS2 Rating Scale
Cognitive Assessment System: Rating Scale
SECOND EDITION

Section 1. Identifying Information

Student Name: _____
 Sex: Male Female Grade: _____
 School: _____
 Rating Form: _____
 Rating Title: _____
 Rating Has Known Subject for: (years/months) _____
 Date of Rating: Year _____ Month _____ Day _____
 Date of Birth: Year _____ Month _____ Day _____
 FSIQ: _____
 Dominant Hand: _____
 Examiner's Title: _____

Section 2. Rating Instructions and Scales

The CAS2 Rating Scale is designed to assess classroom behaviors seen by a teacher who has had at least 4 weeks of experience with the student. The behaviors are organized into four groups, which will be used to obtain scores for four different scales. Each scale contains 10 questions that are scored on the basis of how often specific behaviors were seen. The scores for each question range from never to always.

To complete the form, read each statement that follows the phrase, "During the past month, how often did the child or adolescent..." Then circle the number under the word that tells how often the behavior was seen. Read each question carefully, then mark how often the behavior was seen in the past month. Answer every question without skipping any. If you want to change your answer, put an X through it and circle your new choice. Be sure to answer every question.

Teachers should rate all items to the best of their ability, given their knowledge of the student and the student's peers. In some cases, teachers may have only indirect knowledge of the student's performance; nevertheless, the teacher should provide the best rating possible.

It is important that ratings should be based on the student's behavior regardless of the language or medium used.

Additional copies of this form or CAS2 may be purchased from www.naglieri.com. Please contact the publisher for more information.

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Rating Scale Summary

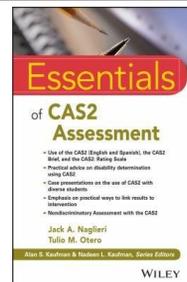
Item	Never	Rarely	Sometimes	Frequently	Always
1. work with patterns and designs?	1	2	3	4	5
2. work with objects and their own skills?	1	2	3	4	5
3. work well with physical objects?	1	2	3	4	5
4. like to use visual materials?	1	2	3	4	5
5. use the links among several things?	1	2	3	4	5
6. show interest in complex objects and patterns?	1	2	3	4	5
7. recognize faces easily?	1	2	3	4	5
8. work with patterns and designs?	1	2	3	4	5
9. work with objects and their own skills?	1	2	3	4	5
10. work well with physical objects?	1	2	3	4	5
11. like to use visual materials?	1	2	3	4	5
12. use the links among several things?	1	2	3	4	5
13. show interest in complex objects and patterns?	1	2	3	4	5
14. recognize faces easily?	1	2	3	4	5
15. work with patterns and designs?	1	2	3	4	5
16. work with objects and their own skills?	1	2	3	4	5
17. work well with physical objects?	1	2	3	4	5
18. like to use visual materials?	1	2	3	4	5
19. use the links among several things?	1	2	3	4	5
20. show interest in complex objects and patterns?	1	2	3	4	5
21. recognize faces easily?	1	2	3	4	5

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CAS2, CAS2-Espanol, CAS2: Brief & CAS2 Rating Scale

- This book is the most complete discussion of PASS theory and its measurement
- Chapters cover all versions of the CAS2 as well as the online scoring and report writer
- Administration, scoring, interpretation
- Reliability, validity (PASS profiles, evidence of test fairness,
- Discrepancy Consistency Method for SLE
- Intervention planning and clinical case studies



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Elephant in the room

- Traditional intelligence tests require too much knowledge
 - We should be measuring THINKING (intelligence) in a way that is not dependent upon academic skills like vocabulary and arithmetic
- Traditional intelligence tests were not developed on the basis of a theory of intelligence (i.e. the definition of thinking)
 - Theory defines what a test of intelligence should test
 - Theory provides the basis of test interpretation
 - It is the test authors' responsibility to inform the user how to interpret the intelligence test scores NOT the user

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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

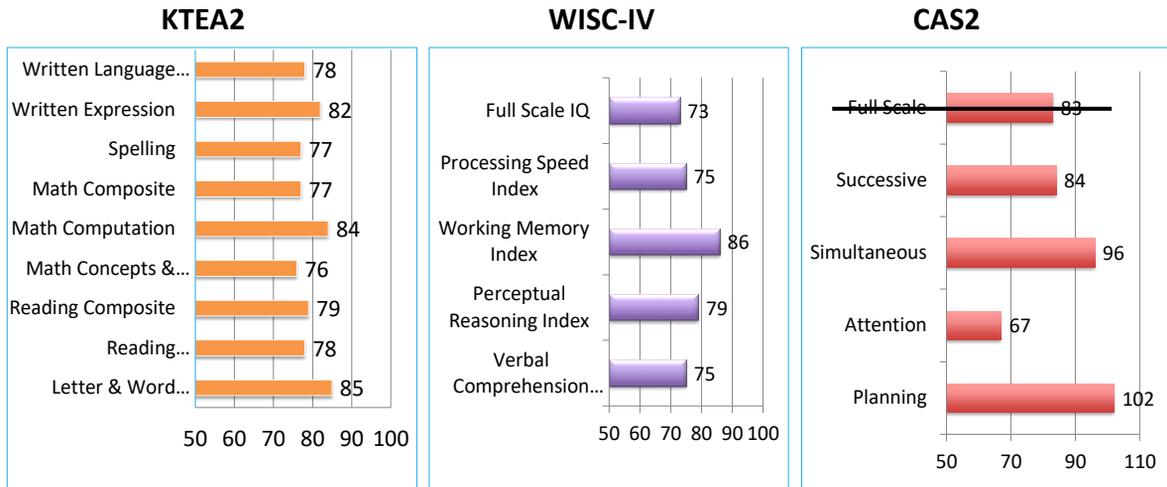


Note: this is not a picture of Alejandro

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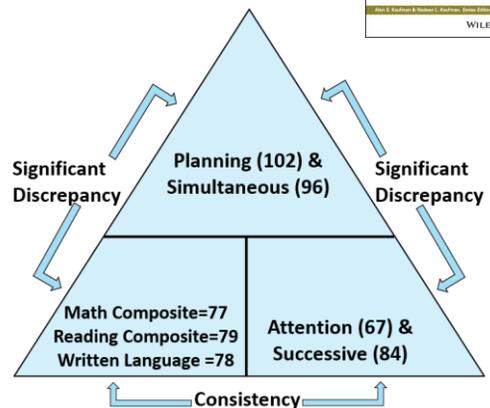
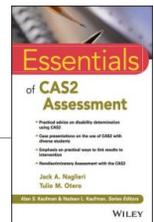
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WISC-IV ASSESSMENT



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)

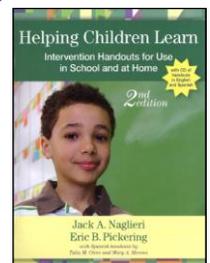
1. Help child understand their PASS strengths and challenges (be intentional & transparent)
2. Encourage Motivation & Persistence (student's mindset)
3. Encourage strategy use (build skill sets)
4. Encourage independence and self efficacy (metacognition, self assessment & self correction)

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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.



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Your Questions or Thoughts?



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CAS2 is Different



My Professional Journey

- An Awakening About Traditional Intelligence Tests

A Theory Based on Brain Function

- Thinking vs Knowing and Social Justice

From PASS to CAS2

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Research Update

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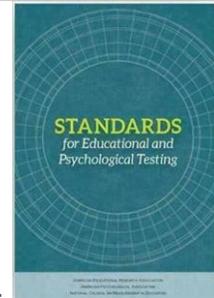
- Validity of PASS Theory

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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.**

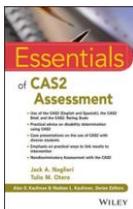


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Race & IQ

- Neurocognitive tests yield smaller differences
- CAS and CAS2 have the smallest differences



Mean Score Differences in Total scores by Race by Intelligence Test.

Traditional IQ tests	
SB-IV (matched samples)	12.6
WISC-V (normative sample)	11.6
WISC-IV (normative sample)	11.5
WJ- III (normative sample)	10.9
WISC-IV (matched samples)	10.0
WISC-V (statistical controls normative sample)	8.7
RIAS-2 (normative sample)	8.0
Second Generation Intelligence Tests	
K-ABC (normative sample)	7.0
K-ABC (matched samples)	6.1
KABC-2 (matched samples)	5.0
CAS-2 (normative sample)	6.3
CAS (statistical controls normative sample)	4.8
CAS-2 (statistical controls normative sample)	4.3

Note: The data for these results are reported for the Stanford-Binet IV from Wasserman (2000); Woodcock-Johnson III from Edwards & Oakland (2006); Kaufman Assessment Battery for Children from Naglieri (1986); Kaufman Assessment Battery for Children-II from (Lichenberger, Sotelo-Dynega & Kaufman, 2009); CAS from Naglieri, Rojahn, Matto & Aquilino (2005); CAS-2 from Naglieri, Das & Goldstein, 2014; Wechsler Intelligence Scale for Children – IV (WISC-IV) from O'Donnell (2009), WISC-V from Kaufman, Baiford & Coalson (2016), Reynolds Intellectual Assessment Scale -2 Reynolds, C. B. & Kamphaus, R. W. (2015).

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WE CAN DO BETTER

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Naglieri, Rojahn, Matto (2007)

Hispanic White
difference on
CAS Full Scale
of 4.8 standard
score points
(matched)

Available online at www.sciencedirect.com

Intelligence 35 (2007) 568–579

Hispanic and non-Hispanic children's performance on PASS cognitive processes and achievement[☆]

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^b Virginia Commonwealth University, United States

Received 16 May 2006; received in revised form 6 November 2006; accepted 6 November 2006
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 ($N=244$) and White ($N=1956$) children on the four PASS processes were obtained and the respective correlations between PASS and achievement compared. Three complementary sampling methodologies and data analysis strategies were chosen to compare the Ethnic groups. Sample size was maximized using nationally representative groups and demographic group differences were minimized using smaller matched samples. Small differences

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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

Jack A. Naglieri
George Mason University

Tulio Otero
Columbia College, Elgin Campus

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 during test administration. Small mean differences were noted between the means of the English and Spanish versions for the Simultaneous and Successive processing scales; however, mean Full Scale scores were similar. Specific subtests within the Simultaneous and Successive scales were found to contribute to the differences between the English and Spanish versions of the CAS. Comparisons of the children's profiles of cognitive weakness on both versions of the CAS showed that these children performed consistently despite the language difference.

Keywords: bilingual assessment, intelligence, PASS Theory, Cognitive Assessment System, non-biased assessment

Means, *SDs*, *d*-ratios, Obtained and Correction Correlations Between the English & Spanish Version of the CAS (*N* = 55).

	CAS English		CAS Spanish		<i>d</i> -ratio	Correlations	
	Mean	<i>SD</i>	Mean	<i>SD</i>		<i>d</i>	Obtained
Planning	92.6	13.1	92.6	13.4	.00	.96	.97
Simultaneous	89.0	12.8	93.0	13.7	-.30	.90	.93
Attention	94.8	13.9	95.1	13.9	-.02	.98	.98
Successive	78.0	13.1	83.1	12.6	-.40	.82	.89
Full Scale	84.6	13.6	87.6	13.8	-.22	.96	.97

- Very similar scores in both versions
- >90% agreement between PASS weakness & strengths using English and Spanish CAS

Otero, Gonzales, Naglieri (2013)

- Very similar PASS scores when giving the CAS English and Spanish versions
- >90% agreement between PASS weakness & strengths using English and Spanish CAS

APPLIED NEUROPSYCHOLOGY: CHILD, 0: 1-9, 2012
Copyright © Taylor & Francis Group, LLC
ISSN: 2162-2965 print/2162-2973 online
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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Lauren Gonzales
George Mason University, Fairfax, Virginia

Jack A. Naglieri
University of Virginia, Fairfax, Virginia

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; Naglieri & Otero, 2011c). Full Scale (FS) scores as well as PASS processing scale scores were compared, and no significant differences were found in FS scores or in any of the PASS processes. The CAS FS scores on the English (*M* = 86.4, *SD* = 8.73) and Spanish (*M* = 87.1, *SD* = 7.94) versions correlated .94 (uncorrected) and .99 (corrected for range restriction). Students earned their lowest scores in Successive processing regardless of the language in which the test was administered. PASS cognitive profiles were similar on English and Spanish versions of the PASS scales. These findings suggest that students scored similarly on both versions of the CAS and that the CAS may be a useful measure of these four abilities for Hispanic children with underdeveloped English-language proficiency.

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.))
))
BOARD OF EDUCATION FOR ILLINOIS) Judge Robert W. Gettleman
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

Wechsler vs CAS for Students with ID

- **WISC-III**
 - **White** children earned the same mean scores on WISC-III and CAS
 - **Black** children earned *lower* VIQ than PIQ scores due to language / achievement tasks resulting in Full Scale scores low enough to qualify as ID
- **CAS**
 - **Black** children earned *higher* scores on CAS than on the WISC-III because CAS DOES NOT HAVE TESTS OF KNOWLEDGE
 - **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

Jack A. Naglieri
George Mason University

Johannes Rojahn
The Ohio State University

California



SEPTEMBER 11, 2017

IT'S TIME TO BURY LARRY¹
USE NONTRADITIONAL OPTIONS TO ASSESS OUR AFRICAN-AMERICAN STUDENTS

The U.S. District Court opted nearly 40 years ago that standardized IQ tests used to classify African American students into intellectually disabled programs were culturally biased. The Court banned the use of IQ tests for the placement of African-American children. Since that decision, the ban was expanded to prohibit the administration of IQ tests to African-American students in California public schools for any special education purpose.

With excellent research, our understanding of the brain's functioning has developed significantly since 1979. Dr. Jack Naglieri has developed a new methodology of testing and created the Cognitive Assessment System 2, a nontraditional cognitive assessment focused on measuring a student's executive functioning. Dr. Naglieri explained the difference between an IQ test and a nontraditional cognitive assessment: an IQ test measures knowledge; a cognitive assessment measures ability.

Many of you may already be familiar with the CAS1. Use of the CAS1 with an African-American student was successfully defended by our office before the Office of Administration ("OAH")⁴. Further in 2006, the Special Education Department of the California Department of Education presented a list of acceptable tests for African-American children and the CAS1 was included⁵. While the CAS2 is similar to the CAS1, the CAS2 provides an even more accurate picture with minorities.

Since *Larry P.* was decided we can more accurately assess cognitive ability. When educators are developing educational programming for students, a more comprehensive and accurate picture of the student will lead to more successful Individualized Education Programs. In lieu of indirect assessment through interviews and surveys about the student, we recommend using the CAS2 or other similar options. If you would like a list of similar options, one is available in footnote 4 or you may contact our office.

If you need any further assistance or advice, please feel free to contact our office.

- STEPHANIE VIRREY GUTCHER

This very difference - that the CAS2³ is not reliant on knowledge and the IQ - is the reason these nontraditional tests are acceptable for assessing any student. The CAS2 correlates stronger to a student's cognitive ability than the IQ test, although it omits the achievement component. Moreover, the CAS2 identifies cognitive processing weaknesses with greater clarity than almost any other assessment tool.

Education Law Updates are intended to alert clients to developments in legislation, opinions of courts and administrative bodies and related matters. They are not intended as legal advice in any specific situation. Please consult legal counsel as to how the issue presented may affect your particular circumstances.

¹ Kern High v. Student, OAH Case Number 2014031002. In this particular instance, OAH approved the use of certain pieces of the CAS1. However, piecemealing is not legally defensible without a justified basis, and is no longer necessary.

² Holly Evans-Pinnett and Bernard Yalton of the California Department of Education, Revisiting *Larry P. v. Rife-A CAS1* Convention 2006 Report. (PDF; Outside Source), February 2006. http://www.cde.state.ca.us/cd/56_15.asp

A joint power entity providing legal & collective bargaining service to California public education agencies since 1976. Page 2

Director may consider. (A list is available following the link in footnote 4.)
A joint power entity providing legal & collective bargaining service to California public education agencies since 1976. Page 1



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>

Support for 'g'



Revisiting Carroll's Survey of Factor-Analytic Studies: Implications for the Clinical Assessment of Intelligence

Nicholas F. Benson and Alexander Beaujean
Baylor University

Ryan J. McGill
College of William & Mary

Stefan C. Dombrowski
Rutgers University

- ...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).

- 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.**

Research Supports ‘g’ but little More

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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Support for PASS Scales

School Psychology Quarterly
2011, Vol. 26, No. 4, 305–317

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1045-3830/11/\$12.00 DOI: 10.1037/a0025973

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

Gary L. Canivez
Eastern Illinois University

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

- “...compared to the WISC–IV, WAIS–IV, SB–5, RIAS, WASI, and WRIT, the CAS subtests had less variance apporportioned to the higher-order general factor (g) and *greater proportions of variance apporportioned 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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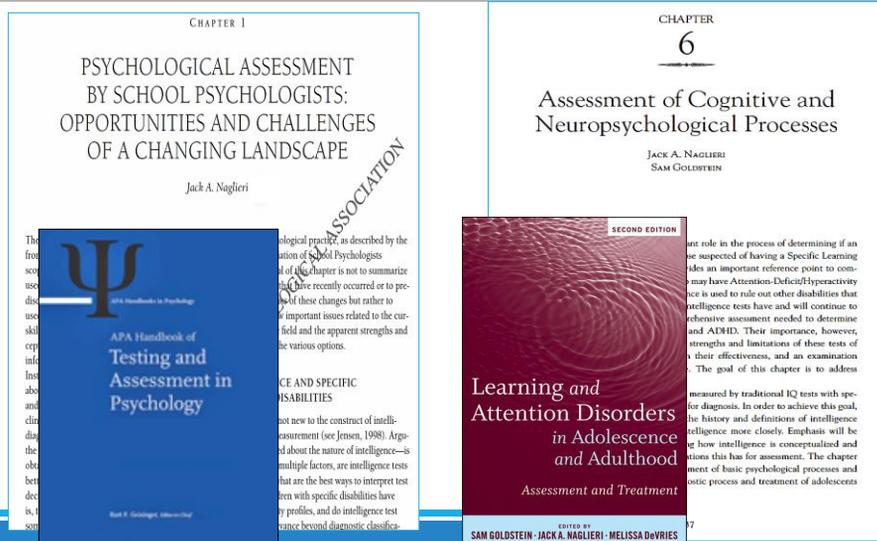
PASS



- 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?

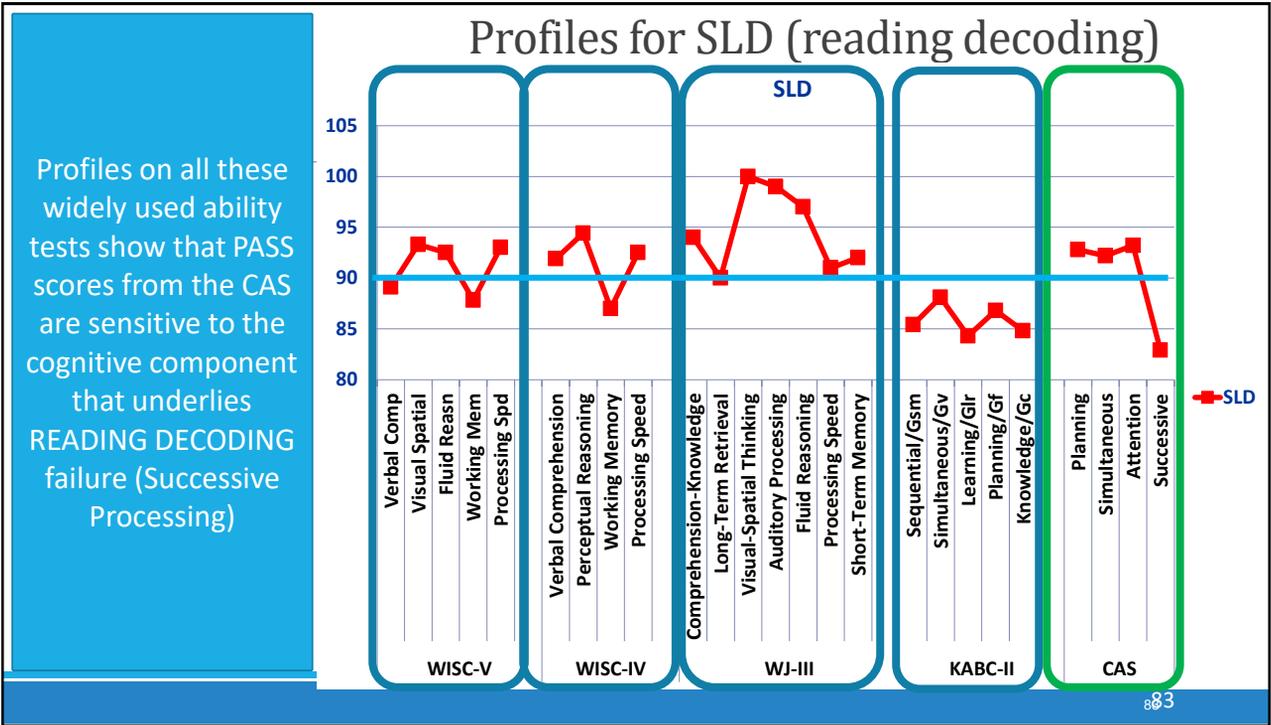
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PASS Scales can be Interpreted and SHOULD be: Profiles

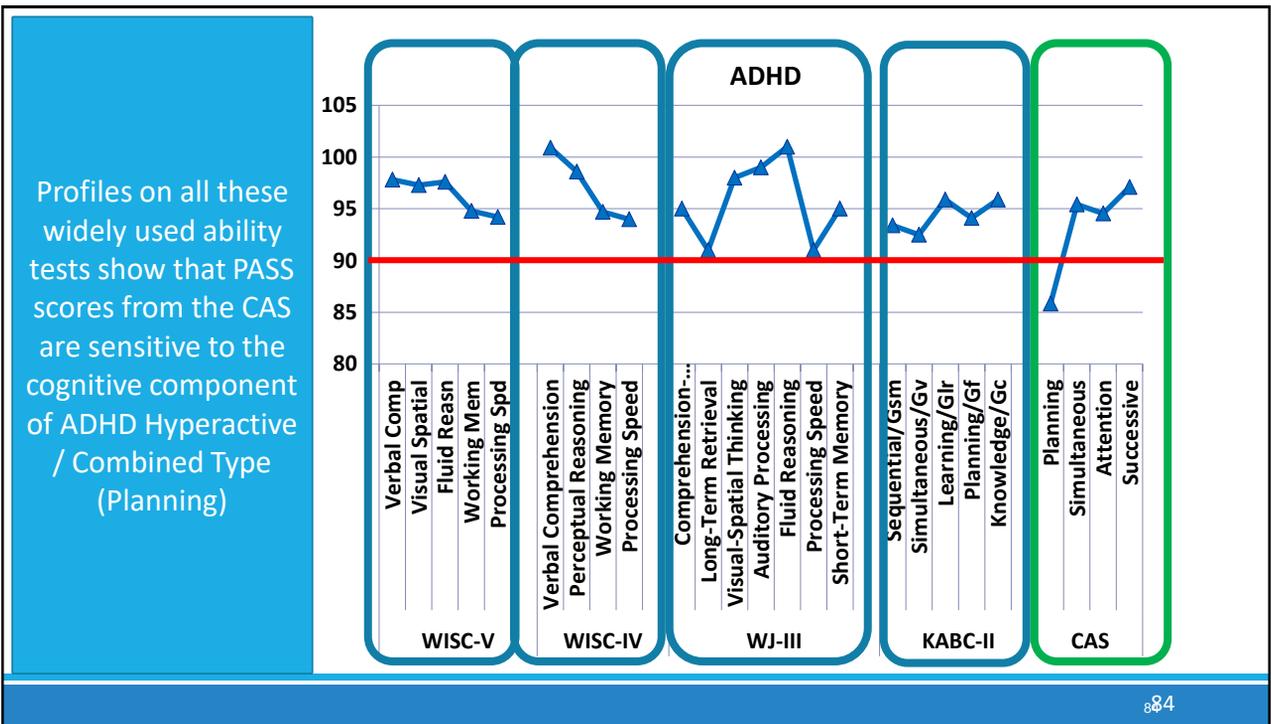


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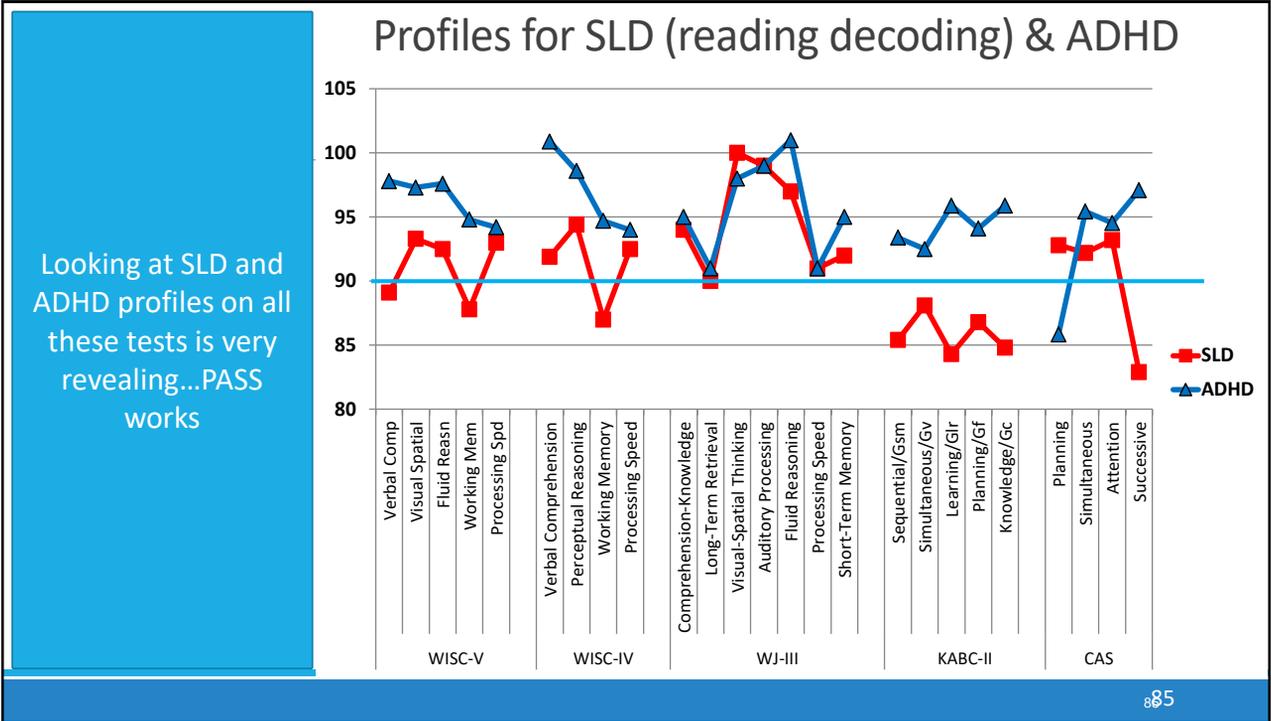
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Research on PASS Profiles

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

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

Journal of Psychoeducational Assessment
26(1) 19-30
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DOI: 10.1177/1532690910382027
<http://jpa.sagepub.com>
SAGE

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 megacluster 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 majority of the LD profiles

“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@eia.edu or the World Wide Web at <http://www.ua.edu/~gcanivez>. This handout is based on a manuscript presently submitted for publication so please do not reference without permission.

Journal of Psychoeducational Assessment
2003, 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-two 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; 1992). 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 83% 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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Correlation with Achievement

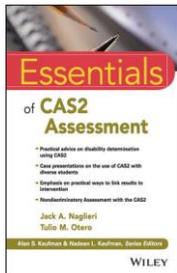
- When studying the relationships between intelligence tests and achievement there is a confounding factor...
 - Traditional tests have achievement in them !
 - That is called criterion contamination
- Measures of neurocognitive processes do not have academic content
- This is good for fair assessment, but does it limit the power of processing scores to predict achievement?

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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	
Test Scores			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		
	Visual Processing	.45		
KABC	Sequential/Gsm	.43	.53	.48
WJ-III ACH N = 167	Simultaneous/Gv	.41		
	Learning/Glr	.50		
	Planning/Gf	.59		
	Knowledge/GC	.70		
CAS	Planning	.57	.59	
WJ-III ACH N=1,600	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...”

Intelligence 79 (2020) 101431

Contents lists available at ScienceDirect

Intelligence

journal homepage: www.elsevier.com/locate/intel

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

George K. Georgiou^{a,*}, Kan Guo^{b,c,d}, Nithya Naveenkumar^a, Ana Paula Alves Vieira^a, J.P. Das^a

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^b Beijing Normal University, China
^c State University of Maringa, Brazil

ARTICLE INFO

Keywords: Intelligence, Mathematics, Meta-analysis, PASS processes, Reading

ABSTRACT

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 with reading and math in English than in other languages, (2) Simultaneous processing was more strongly related to math accuracy and problem solving than math fluency, (3) Simultaneous processing was more strongly related to problem solving than Attention, and (4) 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*.

WE CAN DO BETTER

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CAS2 is Different



My 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 – Measure Thinking not Knowing
- To *g* or not to *g*

Eligibility Determination

- What to use

Reasons To Change

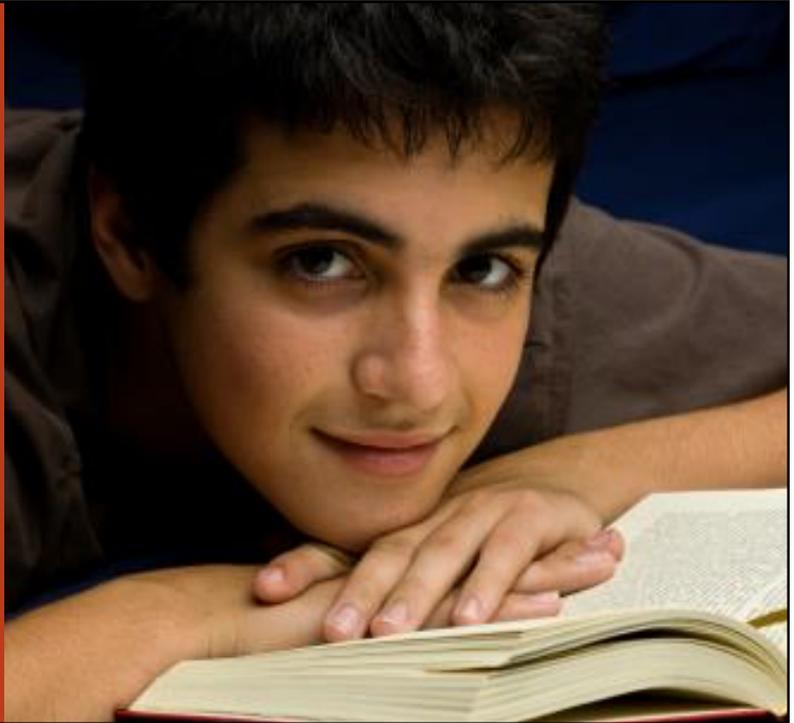
- Validity of PASS Theory

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The Case of Rocky

Strengths with Specific Learning Disability and ADHD



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The case of Rocky

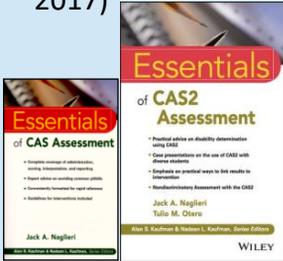
- ▶ Rocky¹ went to school in a large middle-class district
- ▶ In first grade Rocky was significantly below grade benchmarks in reading, math, and writing.
 - He received group reading instruction weekly and six months of individual reading instruction but minimal progress →retained
- ▶ By the middle 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.

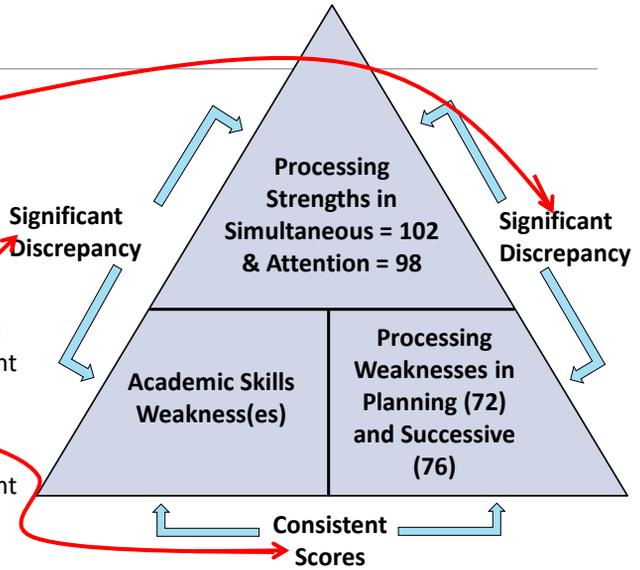
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- The Discrepancy Consistency Method (DCM) was first introduced in 1999 (most recently in 2017)



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



CAS2 Achievement Analyzer for PSW

CAS2 12-Subtest Extended Battery

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) for the CAS2 12-Subtest EXTENDED battery.

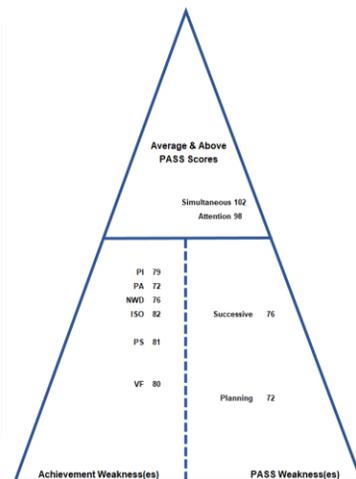
Cognitive Assessment System-2	PASS Mean & Standard Score	Differences: Standard Score	Significantly Different (at p = .05) from PASS Mean?	Strength or Weakness
Planning	72	-15.0	yes	Weakness
Simultaneous	102	15.0	yes	
Attention	98	11.0	yes	
Successive	76	-11.0	yes	Weakness

Notes:
 1. A Weakness is defined as PASS standard score that is significantly below the child's average PASS score (i.e. relative 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 (i.e. relative 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.

Note: These **FREE** analyzers can be downloaded from www.jacknaglieri.com

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

Feiler Assessment of READING	PASS Scores from CAS2				
	Planning	Simultaneous	Attention	Successive	
72	72	102	98	76	
Feiler Assessment of READING					
Standard Scores					
79	PI Phonological Index	Consistent	Discrepant	Discrepant	Consistent
72	PA Phonemic Awareness	Consistent	Discrepant	Discrepant	Consistent
76	NWD Nonsense Word Decoding	Consistent	Discrepant	Discrepant	Consistent
82	ISO Isolated Word Reading Fluency	Consistent	Discrepant	Discrepant	Consistent
89	ORF Oral Reading Fluency				
81	PS Position Sounds	Consistent	Discrepant	Discrepant	Consistent
92	FI Fluency Index				
100	RAI Rapid Automatic Naming				
86	VP Verbal Fluency	Consistent	Discrepant	Discrepant	Consistent
VP	Visual Perception				
IRF	Irregular Word Reading Fluency				
OP	Orthographical Processing				
85	MI Mixed Index	Consistent	Discrepant	Discrepant	Consistent
90	CI Comprehension Index				
SC	Semantic Concepts				
WR	Word Recognition				
PK	Print Knowledge				
MP	Morphological Processing				
SR	Silent Reading Fluency				
MP	Comprehension				
84	MI Total Index	Consistent	Discrepant	Discrepant	Consistent



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 information

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

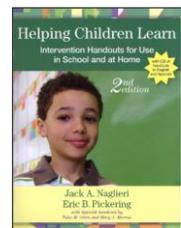
Chunking for Reading/Decoding

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.



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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Journal of Learning Disabilities
44(2) 184-195
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DOI: 10.1177/0022219410391190
http://jloflearningdisabilities

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reas the comparison group received-
eivement 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

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

99

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Planning (Metacognitive) Strategy Instruction

Teachers Asked

- 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?

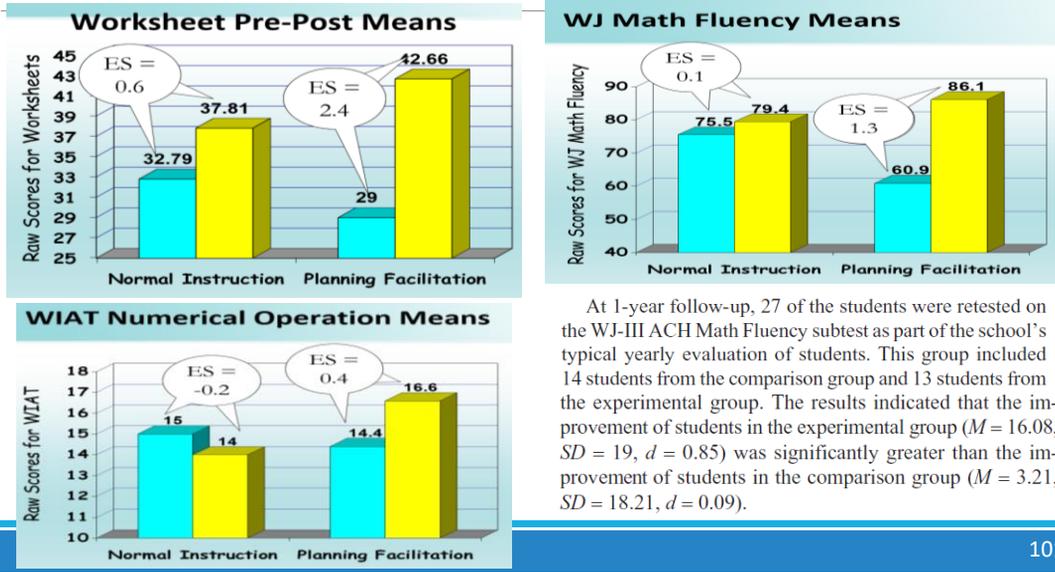
Students Responded

- “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.”
- “I draw lines to keep the columns straight”
- “I did the ones that took the least time”

100

100

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



At 1-year follow-up, 27 of the students were retested on the WJ-III ACH Math Fluency subtest as part of the school's typical yearly evaluation of students. This group included 14 students from the comparison group and 13 students from the experimental group. The results indicated that the improvement of students in the experimental group ($M = 16.08$, $SD = 19$, $d = 0.85$) was significantly greater than the improvement of students in the comparison group ($M = 3.21$, $SD = 18.21$, $d = 0.09$).

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 strategy was carried 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 4 math worksheets throughout the experimental phase. Standardized Johnson Tests of Achievement, Third Edition, Math Fluency and Wechsler Individualized Achievement Test - 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.

REMIEDIATING READING COMPREHENSION DIFFICULTIES: A COGNITIVE PROCESSING APPROACH

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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.

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

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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 ($n = 22$; Effect size = .52) or a Successive weakness ($n = 11$; effect size of .80) did not benefit as much. These results support previous research suggesting that PASS profiles are relevant to instruction.

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.

Essentials of CAS2 Assessment

Jack A. Naglieri
Talia M. Orvaschel

WILEY

Questions and Thoughts Please



My 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 – Measure Thinking not Knowing
- To *g* or not to *g*

Eligibility Determination

- What to use

Reasons To Change

- Validity of PASS Theory



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.
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.
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 (especially the FAR, FAM and/or FAW) 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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Moving Forward

 **WE CAN DO BETTER !**

- Start with a brain based theory
- CAS2 is efficient and easy to administer
- Measure thinking not knowing
- CAS2 is the Most equitable test

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