Independent Schools Queensland

Brain Function and Learning Disorders: From Assessment to Intervention Using PASS Theory

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How Are You Feeling Today ?

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Feeling Overwhelmed?

Mindful Breathing

Resources

FOR MORE INFORMATION
PLEASE GO TO MY WEB PAGE

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 a way to measure a student's ABILITY to think

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Planning, Attention, Simultaneous & Successive (PASS) Neurocognitive Theory of Learning:

What every teacher needs to know about HOW CHILDREN LEARN

Christine's Trouble with Planning — PASS

- Disorganized
- Impulsive
- Inconsistent
- Few strategies
- Little self-monitoring & correction
- Can't get work done
- Looses books, assignments, etc.
- ADHD Combined type

Frankie's Weakness in Attention — PASS

- Poor focus of attention
- Can't resist distractions
- Doesn't notice details
- Poor on multiple choice tests
- Looses focus when reading
- Poor work in many areas
- Inattentive type of ADHD

Jeremy's Weakness in Simultaneous — PASS

- Visual-spatial disorganization
- No big picture
- Poor reading comprehension
- Misses the meaning of text
- Math word problems especially hard
- SLD (Orthographic type of Dyslexia)

Ben's Problem with Successive — PASS

- Can't work with sequential thoughts, ideas & movements
- Following directions
- Poor memory
- Poor reading decoding
- Spelling & handwriting are bad
- Can't remember basic math facts
- SLD (Phonological type of Dyslexia)

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Ideas to Consider

My Professional Journey

- An Awakening About Intelligence Tests

A Theory Based on Neuroscience

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

PASS Theory & Our View of Learning

- PASS, Equity & Measuring Thinking not Knowing

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Traditional IQ and Achievement Tests

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

1975 Charles Champagne Elementary, Bethpage, NY

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How and Why…

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

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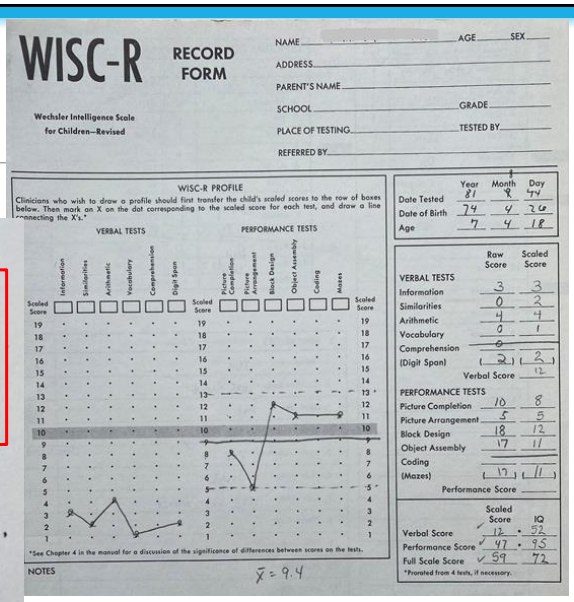
How and Why…

Test Results and Interpretations:

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

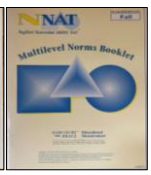
Within the WISC-R a clear pattern emerged: Amanda performed well on tasks that required little or no English language comprehension or expression, and poorly on all tasks which did require these linguistic skills. In fact, even if a task was visual and non-verbal, but required English language comprehension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



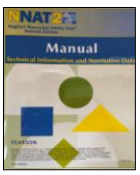
How and Why…

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

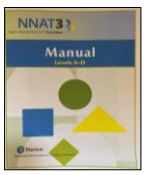
1985 MAT Short and Expanded Forms



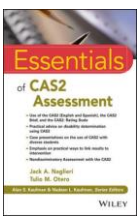
Naglieri Nonverbal Ability Test in 1997

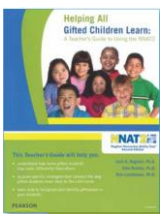


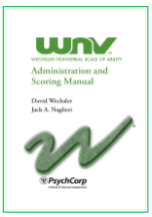
NNAT -2 published in 2008



NNAT -3 published in 2016







My Perspective

- Intelligence should be theoretically defined according to brain function – neuroscience
  - The theory should dictate the kinds of test questions
- A good theory of intelligence **should** inform us about HOW STUDENTS LEARN so we can determine HOW TO TEACH them based on their learning strengths and needs
- Educators need to understand the connection between intelligence (defined as cognitive processes), learning and instruction

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Our Intelligence Tests Define our view of Intelligence

Why do we measure intelligence the way we do?

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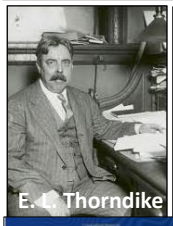
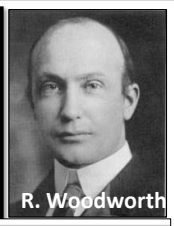
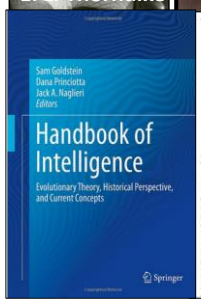
Evolution of IQ http://www.jacknaglieri.com/cas2.html







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

From Alpha & Beta to Wechsler IQ

- **Army Alpha**
  - Synonym- Antonym
  - Disarranged Sentences
  - Number Series
  - Arithmetic Problems
  - Analogies
  - Information

- **Army Beta**
  - Maze
  - Cube Imitation
  - Cube Construction
  - Digit Symbol
  - Pictorial Completion
  - Geometrical Construction

→ Verbal IQ (Knowledge)

→ Originally called "Performance" now "Nonverbal" (Thinking)

→ WISC, DAS, WJ Cog CogAT & Otis-Lennon

Our Tests Demand Knowledge

Stanford-Binet 5	WISC-V	WJ-IV and Batería-IV (including Cross Battery)	K-ABC-II
• Verbal • Knowledge • Quantitative Reasoning • Vocabulary • Verbal Analogies	• Verbal Comprehension: Vocabulary, Similarities, Information & Comprehension • Fluid Reasoning: Figure Weights, Picture Concepts, Arithmetic	• Comprehension Knowledge: Vocabulary & General Information • Fluid Reasoning: Number Series & Concept Formation • Auditory Processing: Phonological Processing	• Knowledge / GC: Riddles, Expressive Vocabulary, Verbal Knowledge

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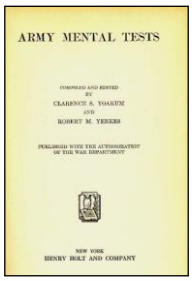
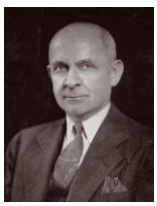
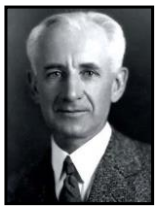
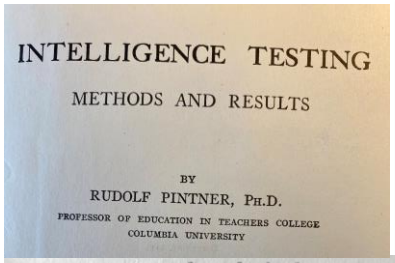
Army Testing (Yoakum & Yerkes, 1920) & Pintner (1923)


ARMY MENTAL TESTS

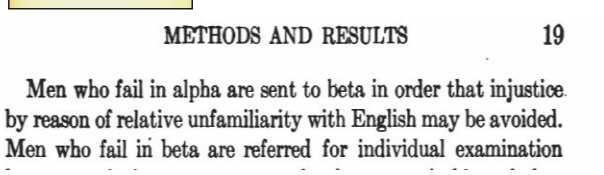




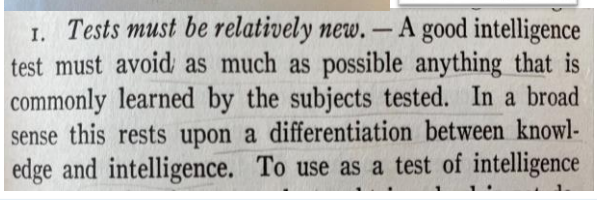

INTELLIGENCE TESTING

METHODS AND RESULTS

BY
RUDOLF PINTNER, PH.D.
PROFESSOR OF EDUCATION IN TEACHERS COLLEGE
COLUMBIA UNIVERSITY


METHODS AND RESULTS 19

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


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

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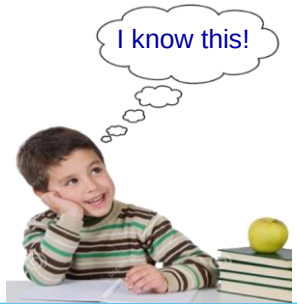
Measure Thinking not Knowing

- What does the student have to know to complete a task?
  - This is dependent upon educational opportunity



- How does the student have to think to complete a task?
  - This is dependent on the brain

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Your Thoughts are Important

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WE CAN DO BETTER

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My Professional Journey

- An Awakening About Intelligence Tests

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From PASS to CAS2

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PASS Theory & Our View of Learning

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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 andwe began development of the **C**ognitive **A**ssessment **S**ystem (Naglieri & Das, 1997).
- We conceptualized intelligence as Planning, Attention, Simultaneous, and Successive (PASS) neurocognitive processes based on Luria's concepts of brain function.

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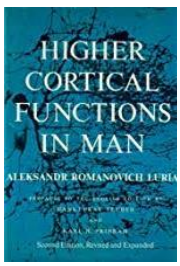
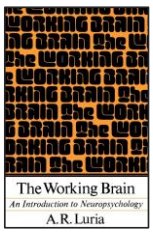
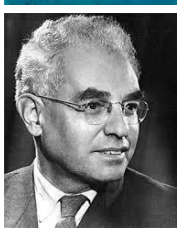
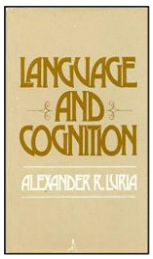
PASS Neurocognitive Theory









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

PASS = 'basic psychological processes'

NOTE: Easy to understand concepts!

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PASS 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

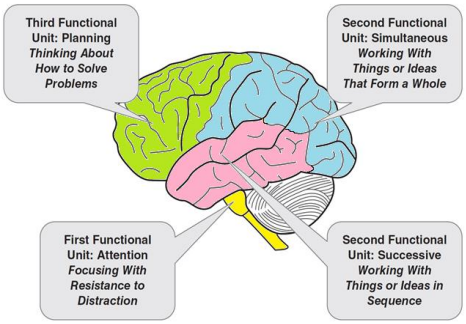


Figure 1.2 Three Functional Units and Associated Brain Structures

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

Neuropsychological Correlates of PASS

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

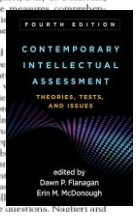
CHAPTER 6

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

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

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

The PASS theory and [illegible] neurocognitive perspective [illegible] from that of traditional [illegible] in part, subtests requiring [illegible] knowledge). These batteries [illegible] the Army mental testing pr[illegible] akum and Yerkes (1920) al[illegible] PASS theory, as operationa[illegible] CAS2, has created an op[illegible] field of intelligence and al[illegible] emphasizing (1) that a *test* be based on a *theory* of in[illegible] the test should measure ba[illegible] cesses defined by the intel[illegible] test, not the content of the questions. Naglieri and



28 Cognitive Assessment System: Redefining Intelligence From a Neuropsychological Perspective

Jack A. Naglieri and Tulio M. Otero

INTRODUCTION

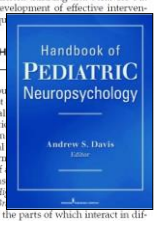
Pediatric neuropsychology has become an important field for understanding and treating developmental, psychiatric, psychosocial, and learning disorders. By addressing both brain functions and environmental factors intrinsic in complex behaviors, such as thinking, reasoning, planning, and the variety 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 interven-

tions and address the qu[illegible]

FROM NEUROPSYCH[illegible]
TO ASSESSMENT

Luria's theoretical accou[illegible] perhaps one of the most [illegible] 2008). Luria conceptual[illegible] of brain–behavior relati[illegible] orders that the clinician [illegible] the brain, the functional [illegible] syndromes and impairm[illegible] and clinical methods of [illegible] theoretical formulations[illegible] lated in works such as *Ho*[illegible] 1980) and *The Working Br*[illegible] as a functional mosaic, the parts of which interact in dif-



PASS Theory Based on Brain Function – Planning

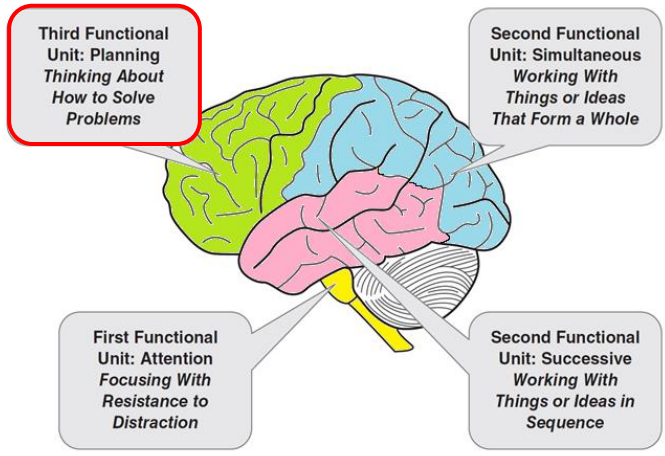


Figure 1.2 Three Functional Units and Associated Brain Structures

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

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PASS Theory: Planning

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

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CAS2: Rating Scale Planning

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

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

___ + ___ + ___ + ___ + ___ = ___

Planning Raw Score

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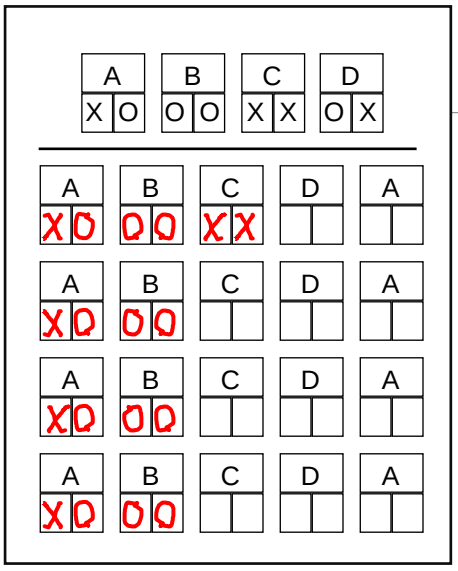

Planned Codes Page 1

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

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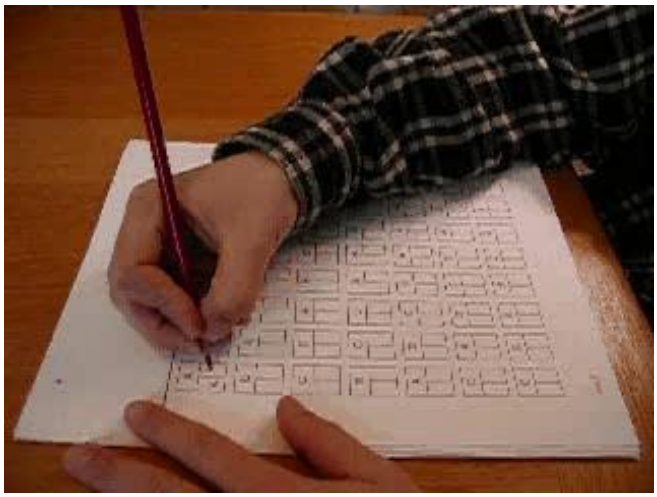
Planned Codes Page 2 Jack Jr age 10



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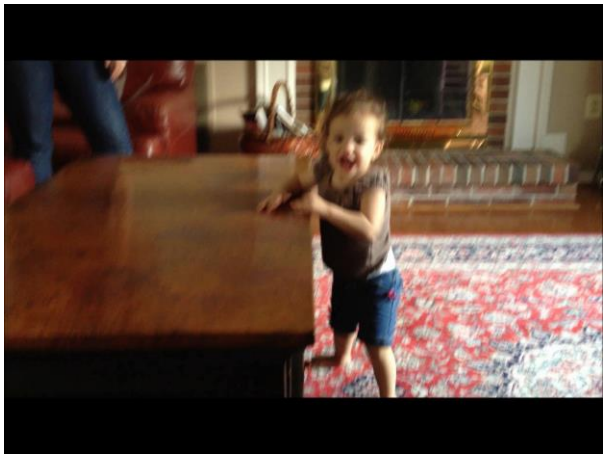
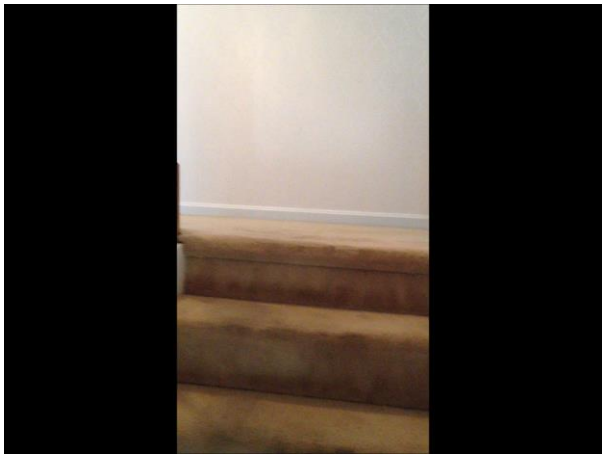
A 13 month old's Plan



At 19 months Planning & Knowledge



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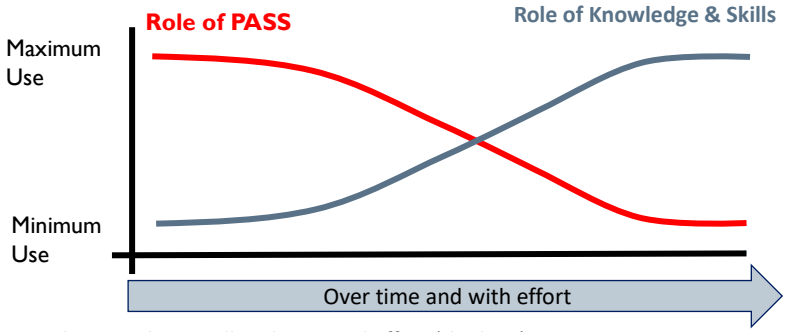
Planning Learning Curves

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



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

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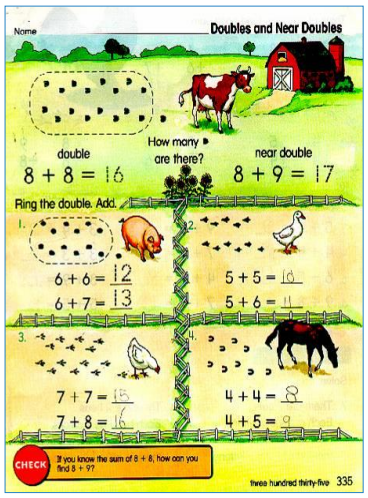
Math strategies stimulate thinking



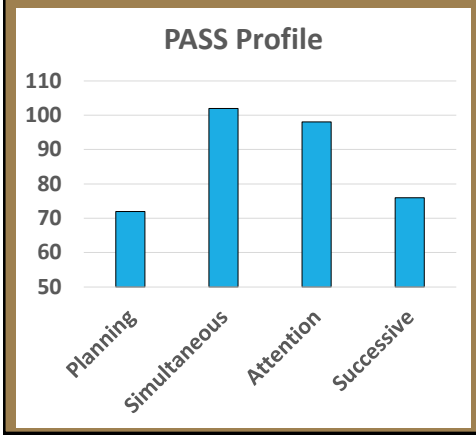
This work sheet encourages the child to use strategies (plans) in math such as: “If 8 + 8 = 16, then 8 + 9 is 17”

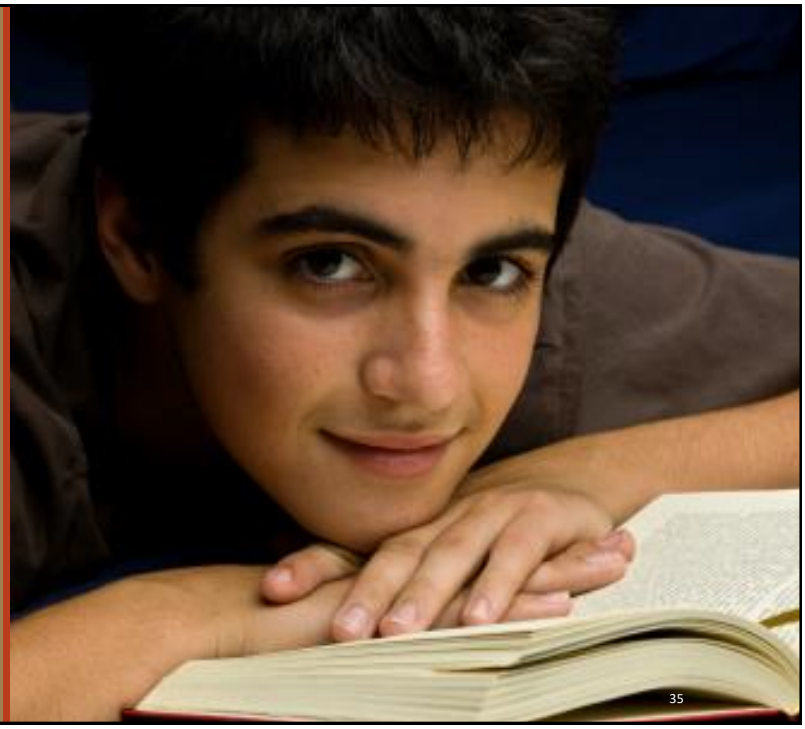
Note to the Teacher: When we teach children skills by helping them use strategies and plans for learning, we are teaching both knowledge and processing. Both are important.

34

34

The Case of Rocky





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The case of Rocky

- Rocky[1] 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.

36

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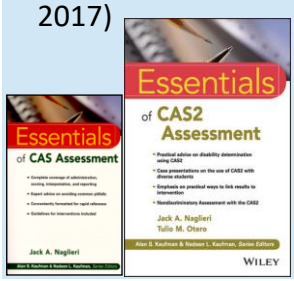
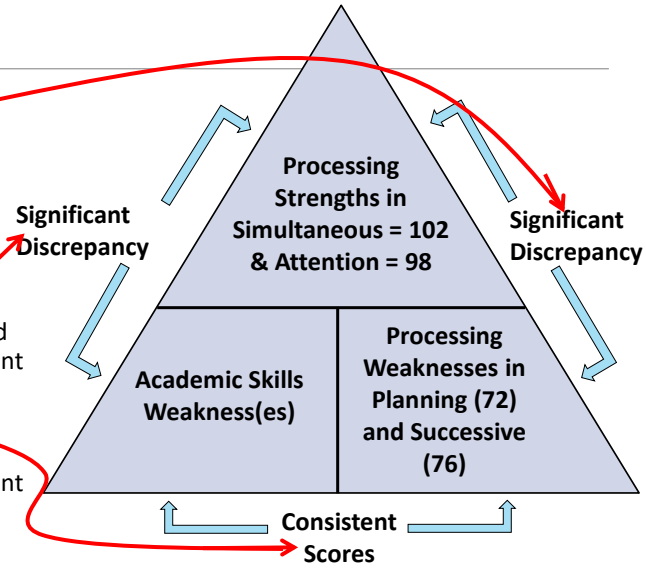
- The Discrepancy Consistency Method (DCM) was first introduced in 1999 (most recently in 2017)



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



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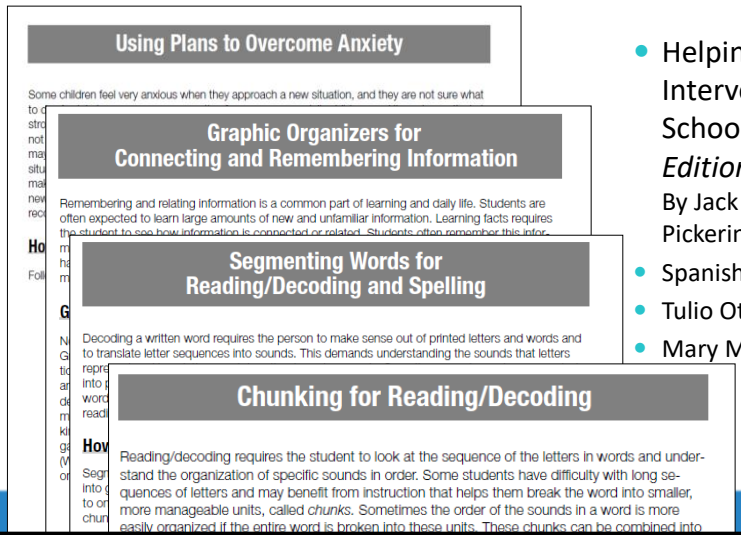
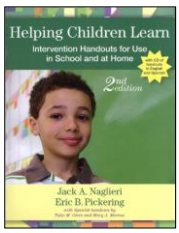
Interventions for Rocky



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



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Hammill Institute on Disabilities

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

Jackie S. Iseman[1] and Jack A. Naglieri[1]

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

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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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

40

40

Planning (Metacognitive) Strategy Instruction

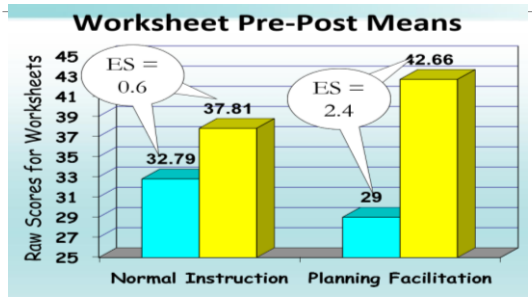
Teachers Asked

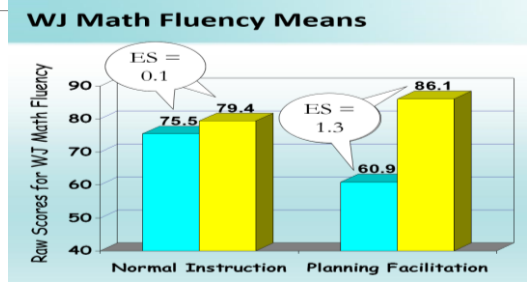
- Teachers *facilitated* discussions to help students become more self-reflective about use of strategies
- Teachers asked questions like:
  - What was your goal?
  - Where did you start the worksheet?
  - What strategies did you use?
  - How did the strategy help you reach your goal?
  - What will you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

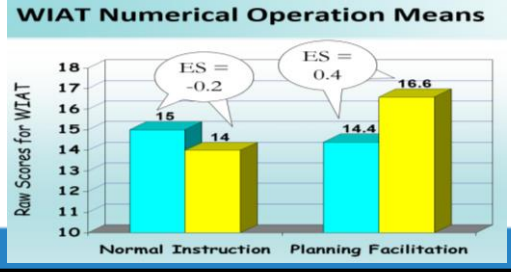
Students Responded

- "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"

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

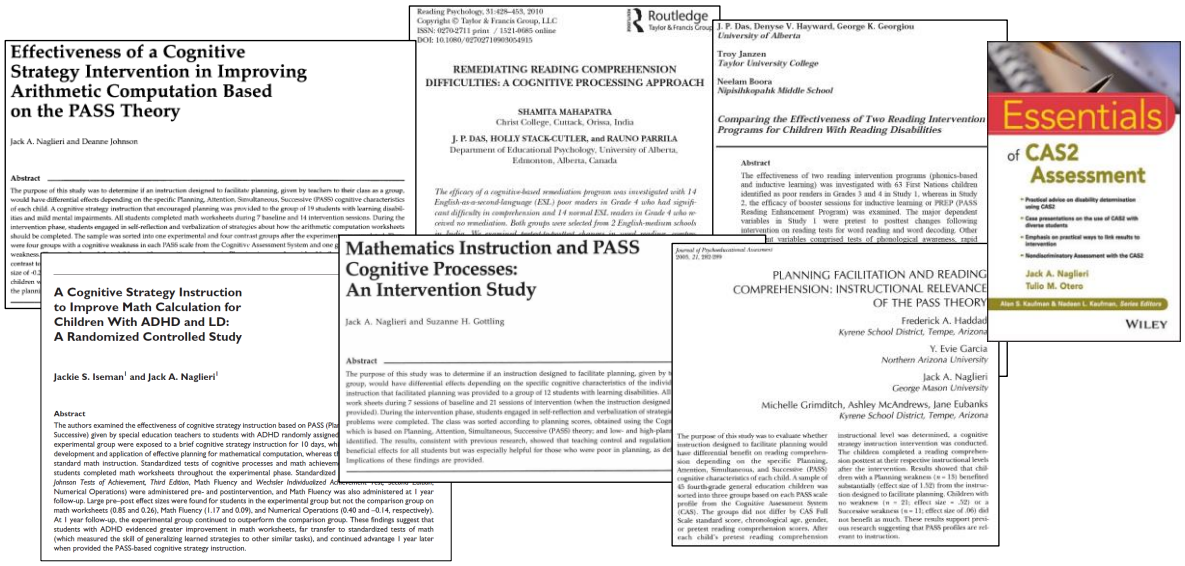






At 1-year follow-up, 27 of the students were retested on the WJ-III ACH Math Fluency subtest as part of the school's typical yearly evaluation of students. This group included 14 students from the comparison group and 13 students from the experimental group. The results indicated that the improvement 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



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PASS Theory Based on Brain Function -– Attention

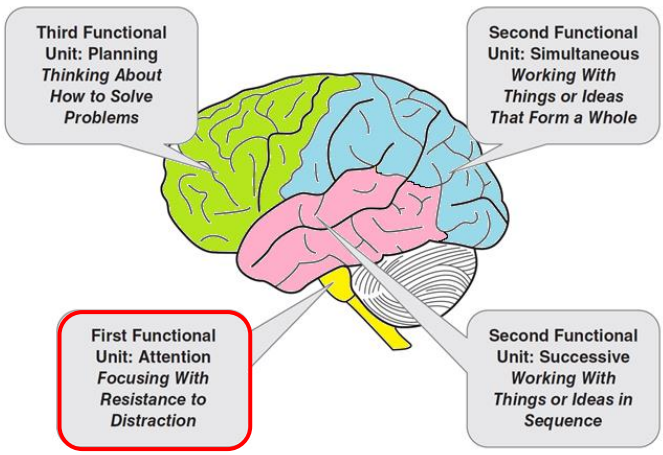

Figure 1.2 Three Functional Units and Associated Brain Structures

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

45

45

CAS2: Rating Scale Attention

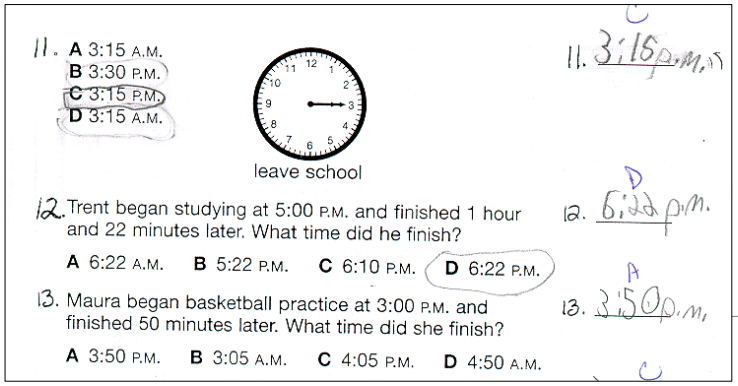
Classroom behaviors seen by the teacher

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

46



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

leave school

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.

11. C 3:15 p.m.
12. D 6:22 p.m.
13. A 3:50 p.m. C

Attention

READING COMPREHENSION IS DIFFICULT BECAUSE OF THE SIMILARITY OF THE OPTIONS

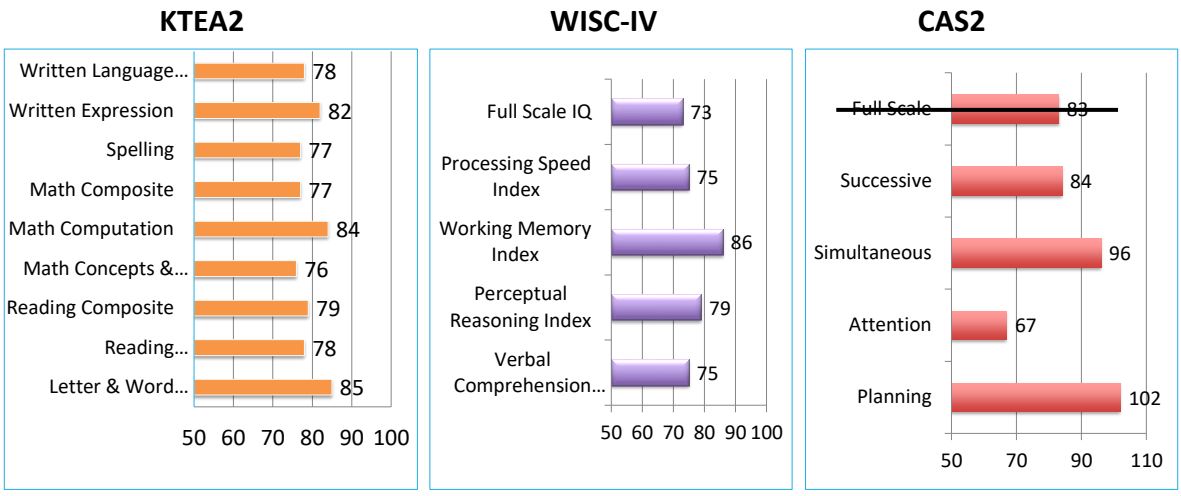
CASE by Tulio Otero: ALEJANDRO (C.A. 7-0 GRADE 1)

REASON FOR REFERRAL

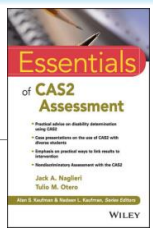
- Does he have ID?
- Academic:
  - Could not identify letters/sounds
  - October. Could only count to 39
  - All ACCESS scores of 1
- Behavior:
  - Difficulty following directions
  - Attention concerns
  - Refusal/defiance

Note: this is not a picture of Alejandro

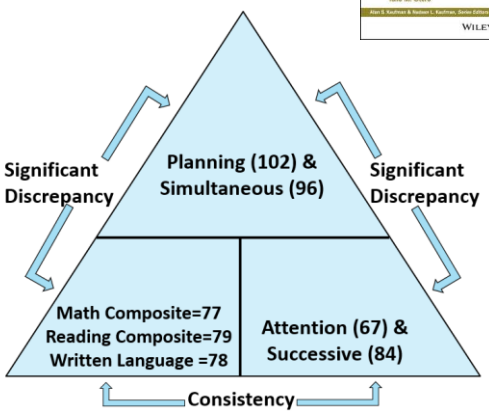
WISC-IV ASSESSMENT



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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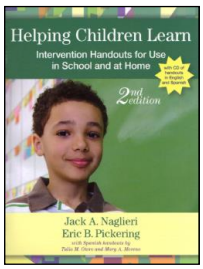
Be Intentional and Transparent

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

Jose reading problems and the teacher these concerns:

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

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

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

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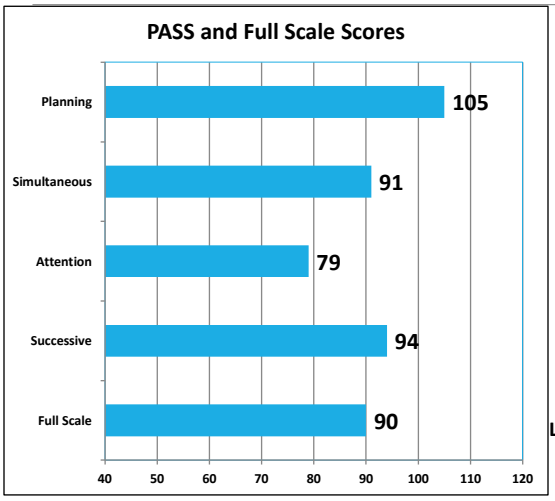
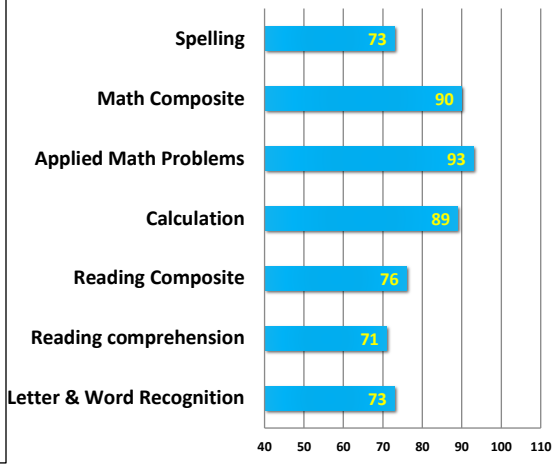
CAS2 and KTEA-III Scores (January 2020)





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54

Jose was given this simple intervention

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

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

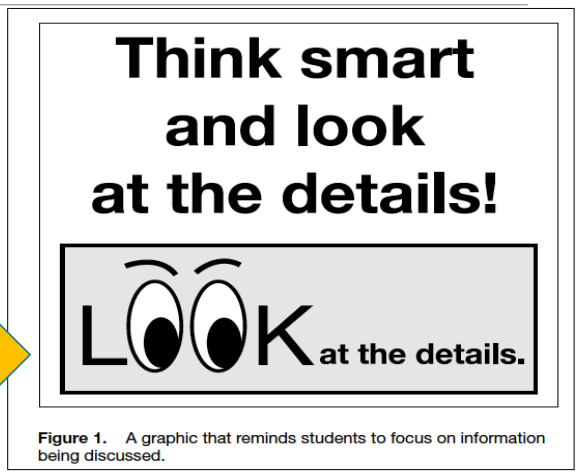

Figure 1. A graphic that reminds students to focus on information being discussed.

55

55

Two weeks later!

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

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PASS Theory Based on Brain Function - Simultaneous Processing

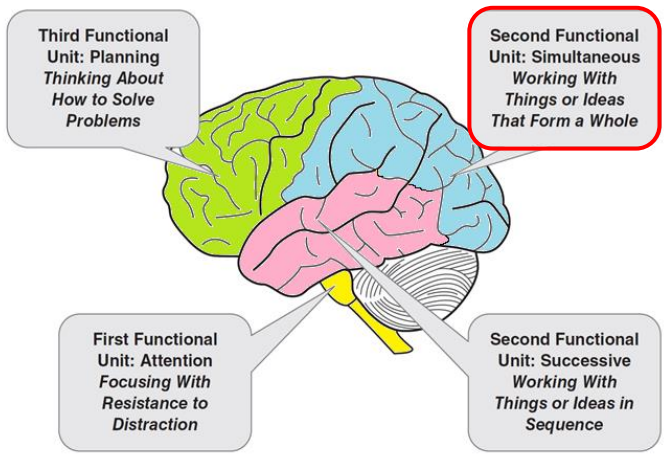

Figure 1.2 Three Functional Units and Associated Brain Structures

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

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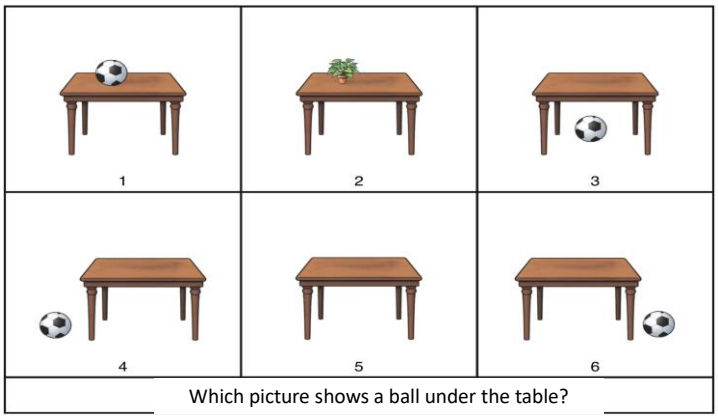
PASS Theory: Simultaneous

- **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.

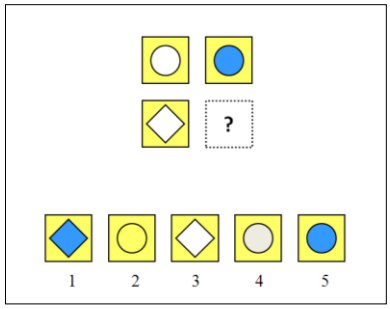
During the past month, how often did the child or adolescent . . .	Never	Rarely	Sometimes	Frequently	Always
11. like to draw designs?	0	1	2	3	4
12. figure out how parts of a design go together?	0	1	2	3	4
13. classify things into groups correctly?	0	1	2	3	4
14. work well with patterns and designs?	0	1	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

Thinking vs Knowing

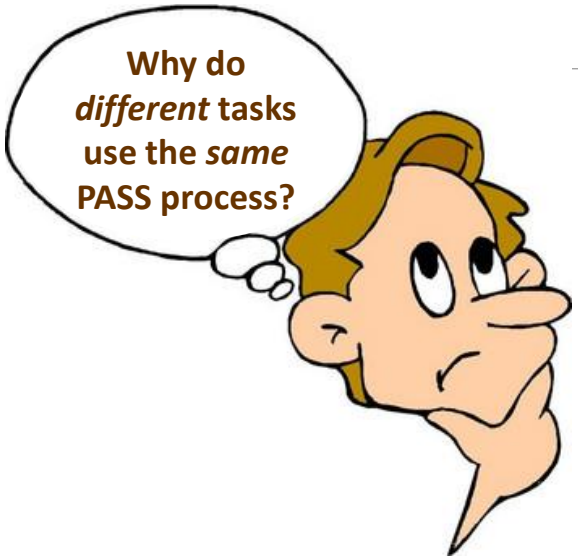
Solving these analogies demands the same kind of thinking



Girl is woman as boy is to _____?

3 is to 6 as 4 is to _____?

C^7 is to F as E^7 is to _____?



And Consider this…

- 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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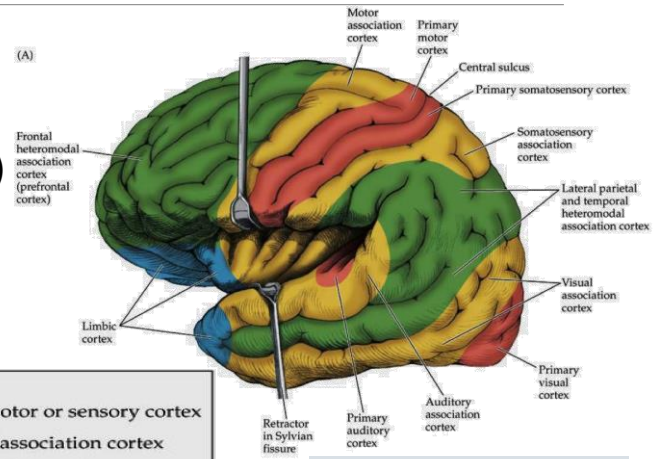
Heteromodal Association Cortex (Goldberg, 2006)

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



https://goo.gl/images/cyphg7

62

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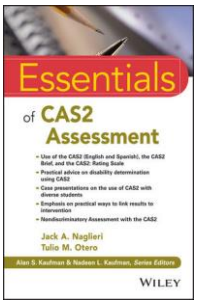
Case: Nelson (Naglieri & Feifer, 2017, Intervention Chapter 5)

- 9-year-old Nelson having problems with
  - Reading comprehension and fluency
  - Written language problems with organization
  - Math word problems are very difficult
  - Falling behind his peers
  - Not getting work done on time



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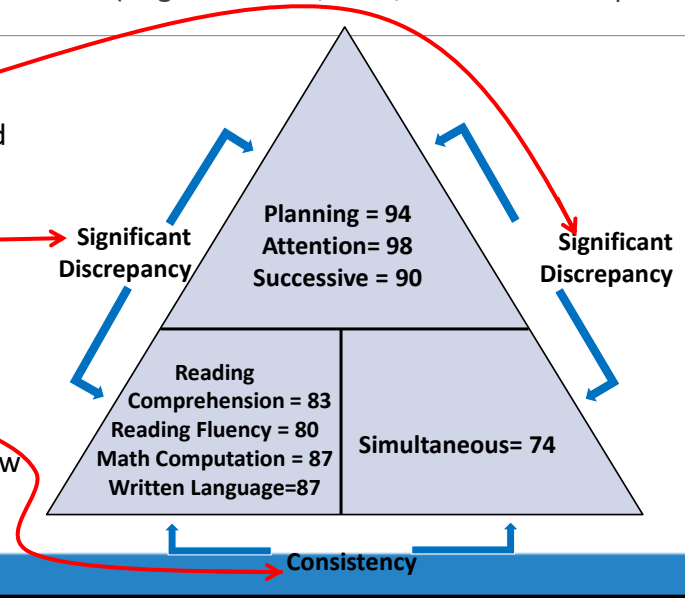
Case: Nelson (Naglieri & Feifer, 2017, Intervention Chapter 5)

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



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Case: Nelson (Naglieri & Feifer, 2017, Intervention Chapter 5)

Recommendations for School

1. Nelson would benefit from a targeted reading fluency intervention in order to increase text automatic recognition and fluency (e.g., Read Naturally, Great Leaps, RAVE-O, etc.).
2. Nelson's orthographic processing skills were somewhat weak. Color-coding letter-various syllable and sound subtypes, particularly vowel diphthongs in phonetically irregular words, may be very helpful (e.g., *c**au**tion*, *danger**ous***, etc.).

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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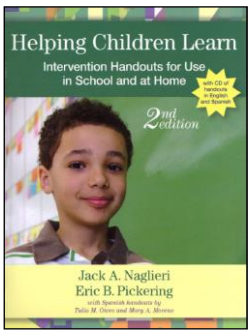
Case: Nelson (Naglieri & Feifer, 2017, Intervention Chapter 5)

Recommendations for Home

1. Nelson should be encouraged to read a minimum of 20 minutes per day after school in order to develop more text familiarity and enhanced fluency skills.
2. Nelson's parents may want to consider having a tutor work with him at home in order to improve his overall reading fluency skills.
3. Nelson's parents may want to consider using a reading fluency program at home (e.g., Great Leaps).
4. Nelson's parents may find the instructional methods described in the book *Helping Children Learn* (Naglieri & Pickering, 2010) to be useful. Especially appropriate are, for example, the handouts "Segmenting Words for Reading/Decoding," "Spelling, Word Sorts for Improving Spelling," and "Mnemonics for Spelling."



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PASS Theory Based on Brain Function – Successive Processing

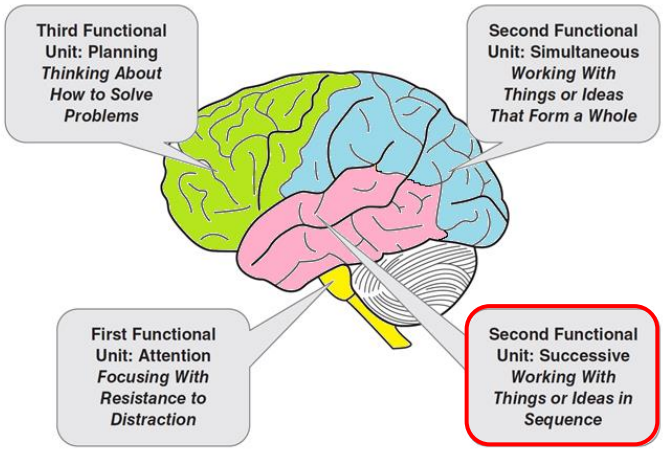

Figure 1.2 Three Functional Units and Associated Brain Structures

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

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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?***

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CAS2: Rating Scale Successive

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

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

___ + ___ + ___ + ___ + ___ = ☐

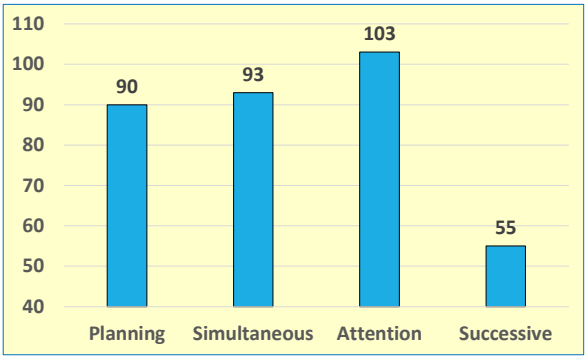
Successive Raw Score

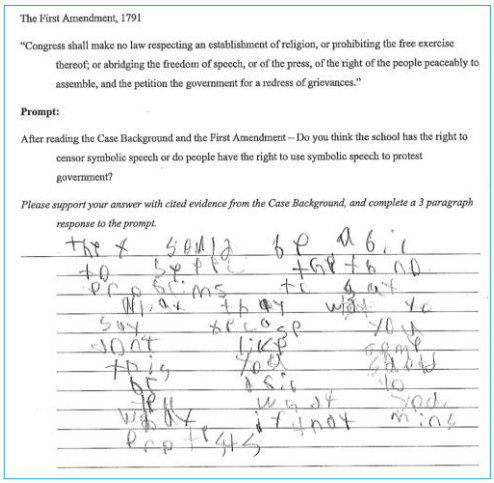
70

70

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.

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Case of Paul: gr. 4 Dyslexia (Naglieri & Otero, 2014)

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

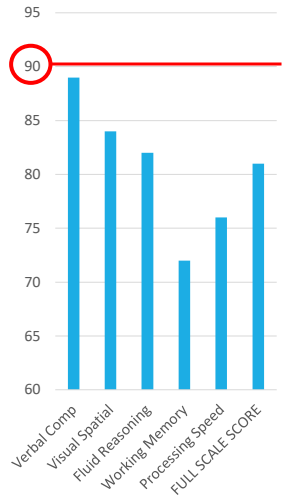
72

72

Case of Paul: gr. 4 Dyslexia

Presenting Concerns: Reading, Math Word Problems, Anxiety

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



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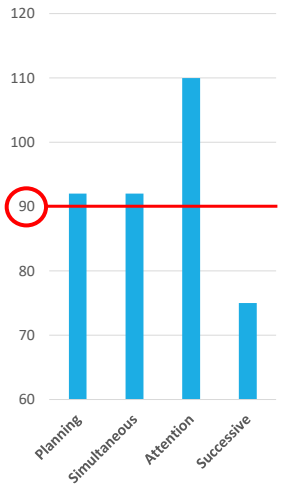
Case of Paul: gr. 4 Dyslexia (Naglieri & Otero, 2014)

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

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

Ages 8-18 YEARS

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



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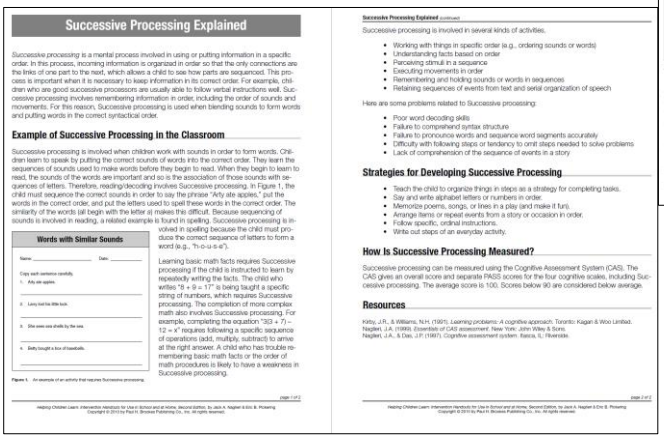
Case of Paul: gr. 4 Dyslexia (Naglieri & Otero, 2014)



Successive Processing Explained

Successive processing is a mental process involved in using or putting information in a specific order. In this process, incoming information is organized in order so that the only connections are the links of one part to the next, which allows a child to see how parts are sequenced. This process is important when it is necessary to keep information in its correct order. For example, children who are good successive processors are usually able to follow verbal instructions well. Successive processing involves remembering information in order, including the order of sounds and movements. For this reason, Successive processing is used when blending sounds to form words and putting words in the correct syntactical order.

Example of Successive Processing in the Classroom

Successive processing is involved when children work with sounds in order to form words. Children learn to speak by putting the correct sounds of words into the correct order. They learn the sequences of sounds used to make words before they begin to read. When they begin to learn to read, the sounds of the words are important and so is the association of those sounds with sequences of letters. Therefore, reading/decoding involves Successive processing. In Figure 1, the child must sequence the correct sounds in order to say the phrase "Arty ate apples," put the words in the correct order, and put the letters used to spell these words in the correct order. The similarity of the words (all begin with the letter *a*) makes this difficult. Because sequencing of sounds is involved in reading, a related example is found in spelling. Successive processing is involved in spelling because the child must produce the correct sequence of letters to form a word (e.g., "h-o-u-s-e").

Words with Similar Sounds

Name _____ Date _____

Copy each sentence carefully.

1. Arty ate apples.

2. Lacy lost his little lock.

3. She sees sea shells by the sea.

4. Betty bought a box of baseballs.

Figure 1. An example of an activity that requires Successive processing.

Learning basic math facts requires Successive processing if the child is instructed to learn by repeatedly writing the facts. The child who writes "9 + 9 = 17" is being taught a specific string of numbers, which requires Successive processing. The completion of more complex math also involves Successive processing. For example, completing the equation "3(5 + 7) – 12 = x" requires following a specific sequence of operations (add, multiply, subtract) to arrive at the right answer. A child who has trouble remembering basic math facts or the order of math procedures is likely to have a weakness in Successive processing.

Successive Processing Explained (continued)

Successive processing is involved in several kinds of activities.

- Working with things in specific order (e.g., ordering sounds or words)
- Understanding facts based on order
- Perceiving stimuli in a sequence
- Executing movements in order
- Remembering and holding sounds or words in sequences
- Retaining sequences of events from text and serial organization of speech

Here are some problems related to Successive processing:

- Poor word decoding skills
- Failure to comprehend syntax structure
- Failure to pronounce words and sequence word segments accurately
- Difficulty with following steps or tendency to omit steps needed to solve problems
- Lack of comprehension of the sequence of events in a story

Strategies for Developing Successive Processing

- Teach the child to organize things in steps as a strategy for completing tasks.
- Say and write alphabet letters or numbers in order.
- Memorize poems, songs, or lines in a play (and make it fun).
- Arrange items or repeat events from a story or occasion in order.
- Follow specific, ordinal instructions.
- Write out steps of an everyday activity.

How Is Successive Processing Measured?

Successive processing can be measured using the Cognitive Assessment System (CAS). The CAS gives an overall score and separate PASS scores for the four cognitive scales, including Successive processing. The average score is 100. Scores below 90 are considered below average.

Resources

Kirby, J.R., & Williams, N.H. (1991). *Learning problems: A cognitive approach*. Toronto: Kagan & Woo Limited.
Naglieri, J.A. (1999). *Essentials of CAS assessment*. New York: John Wiley & Sons.
Naglieri, J.A., & Das, J.P. (1987). Cognitive assessment system. Itasca, IL: Riverside.

Chunking for Reading/Decoding

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

How to Teach Chunking for Reading/Decoding

Teachers should first teach the children what it means to chunk or group information so that it can be remembered more easily. Use number sequences and letters for illustration (e.g., how telephone numbers are grouped). Then introduce words to be read and break the words into units, such as *re-mem-ber* for *remember* or *car-pet* for *carpet*. Try to organize the groups of letters (see Fi… ganize… is not a… becaus… naturall…

Plan	Action
Look at the word.	"I see the word beginning."
Find the chunk.	"I see the chunk grin in the middle."
Sound out the chunk.	"I say, 'grin.'"
Sound out the beginning.	"I say, 'be.'"
Sound out the chunk.	"I say, 'grin.'"
Sound out the ending.	"I say, 'ing.'"
Say the word.	"I say, 'beginning.'"

Figure 1. Recommended organization of letter groups in a word.

Who Should Learn Chunking for Reading/D…

Children who have difficulty with sounding out words are li… decoding helpful. Children who have difficulty working with… sive processing ability and may find this strategy particular… children with low Planning processing scores some ways …

Resources

Ashmen, A., & Conway, R. (1993). *Using cognitive methods in the clas…*
Naglieri, J.A. (1999). *Essentials of CAS assessment*. New York: John W…

Segmenting Words for Reading/Decoding and Spelling

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

How to Teach Segmenting Words

Segmenting words is an effective strategy to help students read and spell. By dividing the words into groups, students also learn about how words are constructed and how the parts are related to one another. Students should be taught that words can be broken down into segments or chunks. The teacher should present the following methods in a direct and explicit manner:

- Take the word apart. Break down the word into its component parts or syllables. For example, look at the word *reshaped*. It includes the main word *shape* with the prefix *re-* and the ending *-d*. Knowing that the main word shape has *re* and *d* added makes it easier to recognize than to try and sound out *r-e-s-h-a-p-e-d*.
- Identify prefixes. A prefix is a letter or group of letters at the beginning of a word. When a word has a prefix, imagine that there is a hyphen between the word and the prefix, and you can usually see the main word. For example, *misstep* includes the prefix *mis-* and the word *step* that are simply put together.
- Identify suffixes. Similarly, when a word has a suffix (i.e., a letter or group of letters at the end), you can often use a strategy similar to the prefix strategy. Just imagine a hyphen between the word and the suffix (e.g., *heart-less*).

Who Should Learn This Technique?

This instruction is likely to benefit students who are poor in reading and spelling. Because this intervention gives students strategies (i.e., plans) for solving the reading or spelling activity, it involves Planning processing. For this reason, students who have difficulty with Planning should be taught to use this strategy. This strategy should also be used with students who are good in Planning but have a Successive processing weakness and problems with reading and spelling because it will help them approach reading in a more strategic way that does not rely on their problem areas.

Resources

An excellent resource can be found at http://www.epschool.com.

Naglieri, J.A. (1999). *Essentials of CAS assessment*. New York: John Wiley & Sons.

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My Professional Journey

- An Awakening About Intelligence Tests

A Theory Based on Neuroscience

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

PASS Theory & Our View of Learning

- PASS, Equity & Measuring Thinking not Knowing

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A Theory Based on Neuroscience and a How to Measure PASS

BOTH ARE NEEDED

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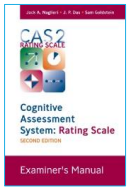
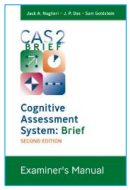
PASS Comprehensive System

(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

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





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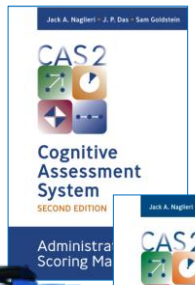
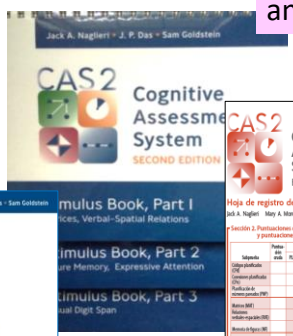
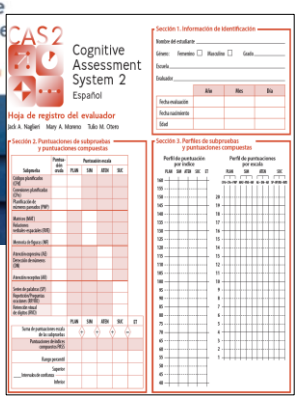
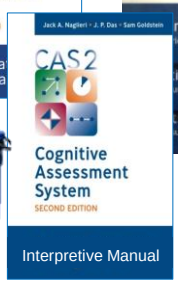
CAS2 for (Ages 5-18 yrs.)

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









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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:

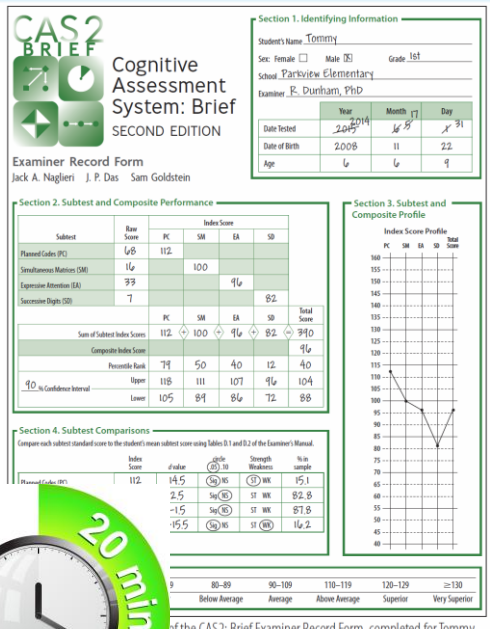
- CAS2: Online Scoring and Report System (Add-on 5-User License) **$69.00**
- CAS2: Online Scoring and Report System (Annual Renewal) **$69.00**

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.



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. Dunham, PhD

	Year	Month	Day
Date Tested	2014	6	31
Date of Birth	2008	11	22
Age	6	6	9

Section 2. Subtest and Composite Performance

Subtest	Raw Score	Index 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

	PC	SM	EA	SD	Total Score
Sum of Subtest Index Scores	112	100	96	82	390
Composite Index Score					96
Percentile Rank	79	50	40	12	40
90% Confidence Interval Upper	118	111	107	96	104
90% Confidence Interval Lower	105	89	86	72	88

Section 3. Subtest and Composite Profile

Index Score Profile

Section 4. Subtest Comparisons

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

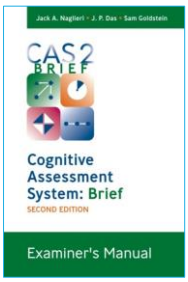
	Index Score	d value	Sig. (.05)	Strength Weakness	% in sample
Planned Codes (PC)	112	14.5	Sig. YES	ST WK	15.1
Simultaneous Matrices (SM)	100	2.5	Sig. NO	ST WK	82.8
Expressive Attention (EA)	96	-1.5	Sig. NO	ST WK	87.8
Successive Digits (SD)	82	-15.5	Sig. YES	ST WK	16.2

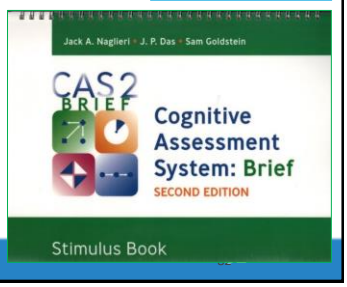
70–79	80–89	90–109	110–119	120–129	≥130
Below Average	Below Average	Average	Above Average	Superior	Very Superior

of the CAS2: Brief Examiner Record Form, completed for Tommy.

CAS2: Brief

- Yields PASS and Total standard scores (Mn 100, SD 15)
- Directions for administration are in the Record Form
- For Re-evaluations and Screening
- All items are different from CAS2
  - Planned Codes
  - Simultaneous Matrices
  - Expressive Attention
  - Successive Digits





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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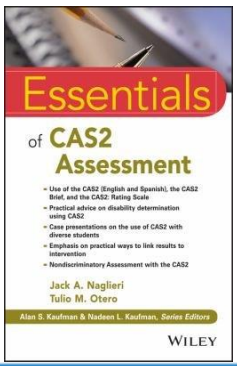
CAS2, CAS2 Online Score and Report Write, CAS2-Espanol, CAS2: Brief, CAS2 Rating Scale

- 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 SLD
- Intervention planning and clinical case studies



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Your Questions or Thoughts?

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My Professional Journey

- An Awakening About Intelligence Tests

A Theory Based on Neuroscience

- Thinking vs Knowing and Social Justice

From PASS to CAS2

- A Different View of People

PASS Theory & Our View of Learning

- PASS, Equity & Measuring Thinking not Knowing

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Race and Ethnic Differences in Group & Individually Administered Ability Tests

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

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

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

Citations: Otis-Lennon School Ability Test by Avant and O'Neal (1986); Stanford-Binet IV from Wasserman & Becker (2000); Woodcock-Johnson III race differences from Edwards & Oakland (2006) and ethnic differences from Sotelo-Dynega, Ortiz, Flanagan & Chaplin (2013); CogAT7 from Carman, Walther and Bartsch (2018); WISC-V from Kaufman, Raiford & Coalson (2016); Kaufman Assessment Battery for Children-II from (Lichenberger, Sotelo-Dynega & Kaufman, 2009); CAS-2 and CAS2:Brief from Naglieri, Das & Goldstein, 2014a & 2014b; Naglieri Nonverbal Ability Test (Naglieri & Ronning, 2000).

From: Brulles, D., Lansdowne, K. & Naglieri, J. A. (2022). *Ensuring Equity: Identifying and Serving All Gifted Students Using the Naglieri General Ability Tests*. Minneapolis, MN: Free Spirit Publishing.

Traditional Ability Tests' Overall Differences

Second Generation Ability Tests' Overall Differences

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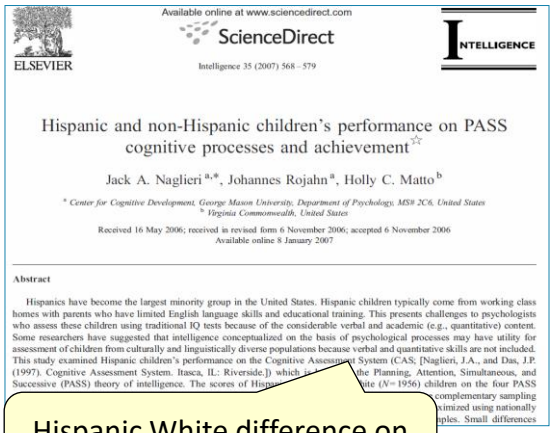
PASS Scores for Hispanics

Naglieri, Rojahn, Matto (2007)



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INTELLIGENCE

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Intelligence 35 (2007) 568–579

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

Jack A. Naglieri [a,*], Johannes Rojahn [a], Holly C. Matto [b]

[a] Center for Cognitive Development, George Mason University, Department of Psychology, MS# 2C6, United States
[b] Virginia Commonwealth, 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 [illegible] the Planning, Attention, Simultaneous, and Successive (PASS) theory of intelligence. The scores of Hispa[illegible]ple ($N = 1956$) children on the four PASS [illegible] complementary sampling [illegible]timized using nationally [illegible]ples. Small differences

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

WJ-III and ELL Hispanic Students

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

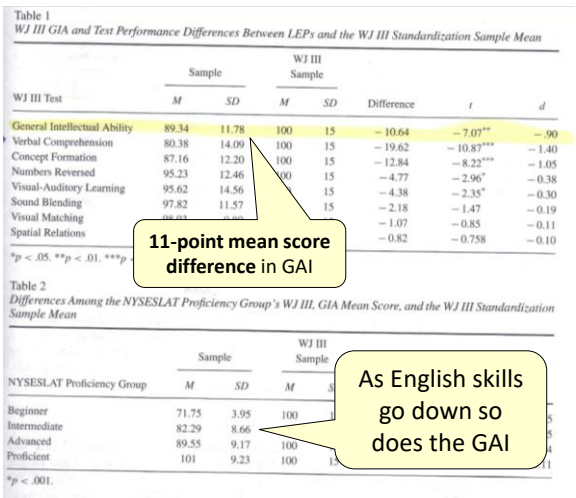

Table 1
WJ III GIA and Test Performance Differences Between LEPs and the WJ III Standardization Sample Mean

WJ III Test	Sample M	Sample SD	WJ III Sample M	WJ III Sample SD	Difference	t	d
General Intellectual Ability	89.34	11.78	100	15	−10.64	−7.07**	−.90
Verbal Comprehension	80.38	14.09	100	15	−19.62	−10.87***	−1.40
Concept Formation	87.16	12.20	100	15	−12.84	−8.22***	−1.05
Numbers Reversed	95.23	12.46	100	15	−4.77	−2.96*	−0.38
Visual-Auditory Learning	95.62	14.56	100	15	−4.38	−2.35*	−0.30
Sound Blending	97.82	11.57	100	15	−2.18	−1.47	−0.19
Visual Matching	98.93	9.89	100	15	−1.07	−0.85	−0.11
Spatial Relations	99.18	15.29	100	15	−0.82	−0.758	−0.10

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

11-point mean score difference in GAI

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

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

*p < .001.

As English skills go down so does the GAI

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PASS scores – English and Spanish

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

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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 [illegible] Simultaneous and Successive [illegible] were similar. Specific subtests were found to contribute to t[illegible] versions of the CAS. Compar[illegible] ness on both versions of the [illegible] sistently despite the language [illegible]

Keywords: bilingual assessment, i[illegible] tem, non-biased assessment

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

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This study examined the performance of referred Hispanic English-language learners ($N = 40$) on the English and Spanish versions of the *Cognitive Assessment System* (CAS; Naglieri & Das, 1997). The CAS measures basic neuropsychological processes based on the Planning, Attention, Simultaneous, and Successive (PASS) theory (Naglieri & Das, 1997; Naglieri & Otero, 2011a). Full Scale (FS) scores as well as PASS processing scale [illegible]rences were found in FS scores or in any of [illegible] English ($M = 86.4$, $SD = 8.73$) and Spanish [illegible] (uncorrected) and .99 (corrected for range [illegible]s in Successive processing regardless of the [illegible]. PASS cognitive profiles were similar on [illegible]cales. These findings suggest that students [illegible] and that the CAS may be a useful measure [illegible]n with underdeveloped English-language

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

CAS in Italy

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

Psychological Assessment

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

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

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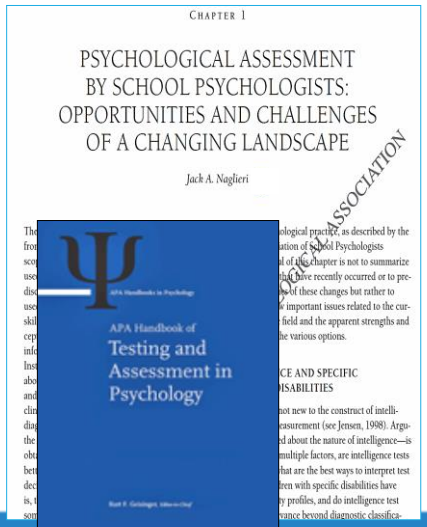
Stefano Taddei
University of Florence

Kevin Williams
Multi-Health Services, Toronto, Ontario, Canada

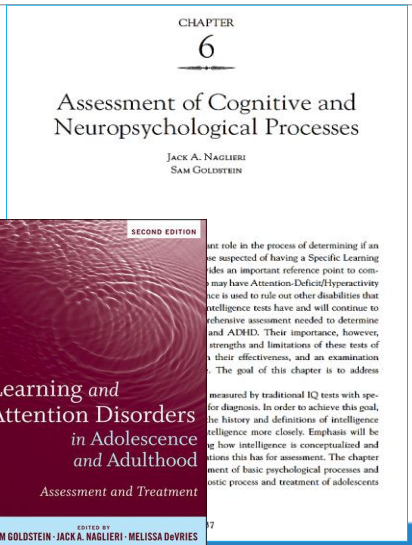
This study examined Italian and U.S. children's performance on the English and Italian versions, respectively, of the Cognitive Assessment System (CAS; Naglieri & Conway, 2009; Naglieri & Das, 1997), a test based on a neurocognitive theory of intelligence entitled PASS (Planning, Attention, Simultaneous,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

PASS Scales can be Interpreted and SHOULD be: Profiles


CHAPTER 1

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

Jack A. Naglieri


CHAPTER 6

Assessment of Cognitive and Neuropsychological Processes

Jack A. Naglieri
Sam Goldstein

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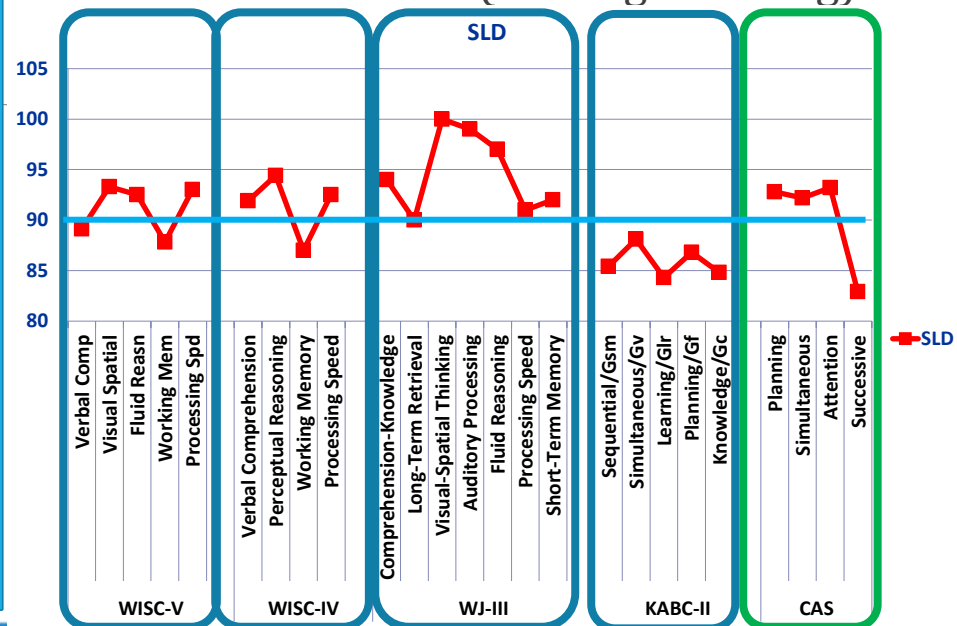
Profiles on all these widely used ability tests show that PASS scores from the CAS are sensitive to the cognitive component that underlies READING DECODING failure (Successive Processing)

Profiles for SLD (reading decoding)



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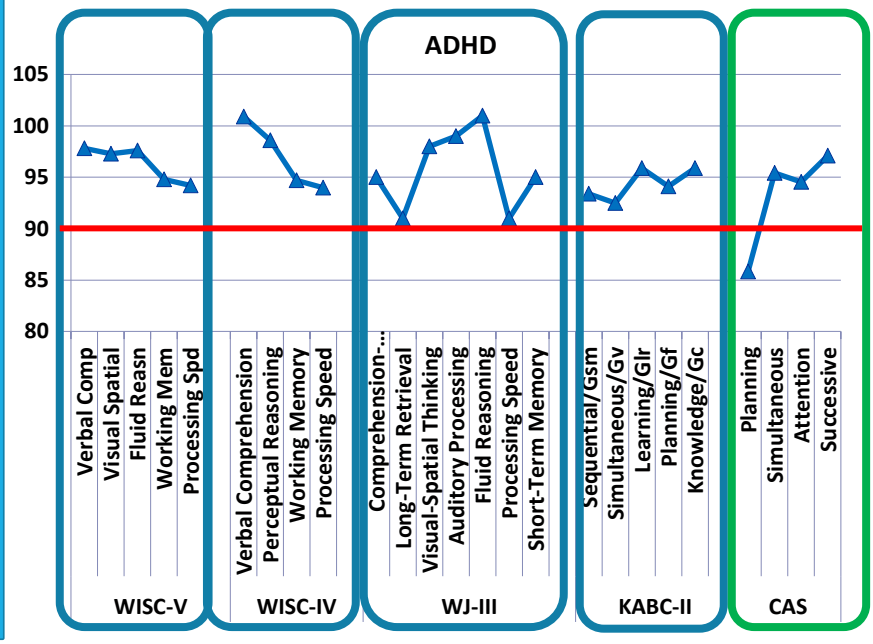
Profiles on all these widely used ability tests show that PASS scores from the CAS are sensitive to the cognitive component of ADHD Hyperactive / Combined Type (Planning)



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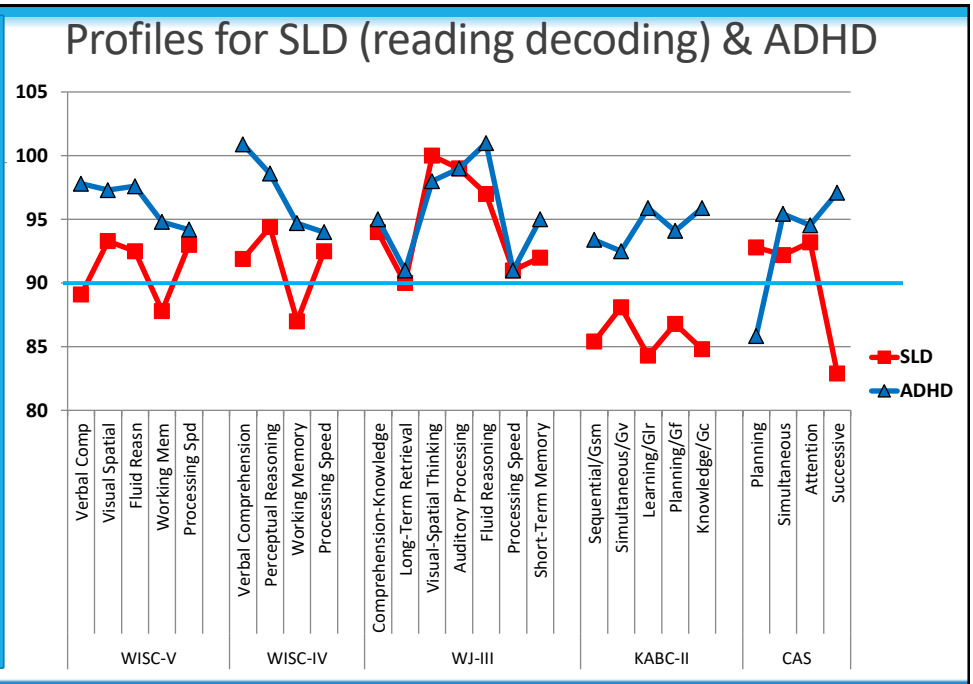
Looking at SLD and ADHD profiles on all these tests is very revealing…PASS works



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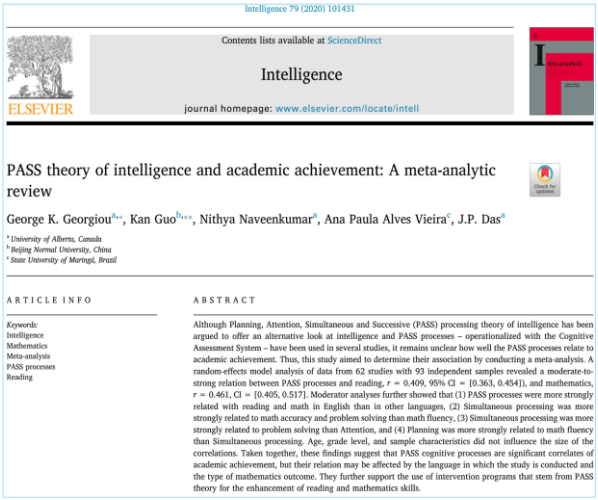

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PASS theory of intelligence and academic achievement: A meta-analytic review

George K. Georgiou[a,*], Kan Guo[b,**], Nithya Naveenkumar[a], Ana Paula Alves Vieira[c], J.P. Das[a]

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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.*

PASS Research

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

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Planning, Attention, Simultaneous & Successive (PASS) Neurocognitive Theory of Learning:

What every teacher needs to know about HOW CHILDREN LEARN

Christine's Trouble with Planning — PASS

- Disorganized
- Impulsive
- Inconsistent
- Few strategies
- Little self-monitoring & correction
- Can't get work done
- Looses books, assignments, etc.
- ADHD Combined type

Frankie's Weakness in Attention — PASS

- Poor focus of attention
- Can't resist distractions
- Doesn't notice details
- Poor on multiple choice tests
- Looses focus when reading
- Poor work in many areas
- Inattentive type of ADHD

Jeremy's Weakness in Simultaneous — PAsS

- Visual-spatial disorganization
- No big picture
- Poor reading comprehension
- Misses the meaning of text
- Math word problems especially hard
- SLD (Orthographic type of Dyslexia)

Ben's Problem with Successive — PASs

- Can't work with sequential thoughts, ideas & movements
- Following directions
- Poor memory
- Poor reading decoding
- Spelling & handwriting are bad
- Can't remember basic math facts
- SLD (Phonological type of Dyslexia)

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Final Questions and Thoughts

97

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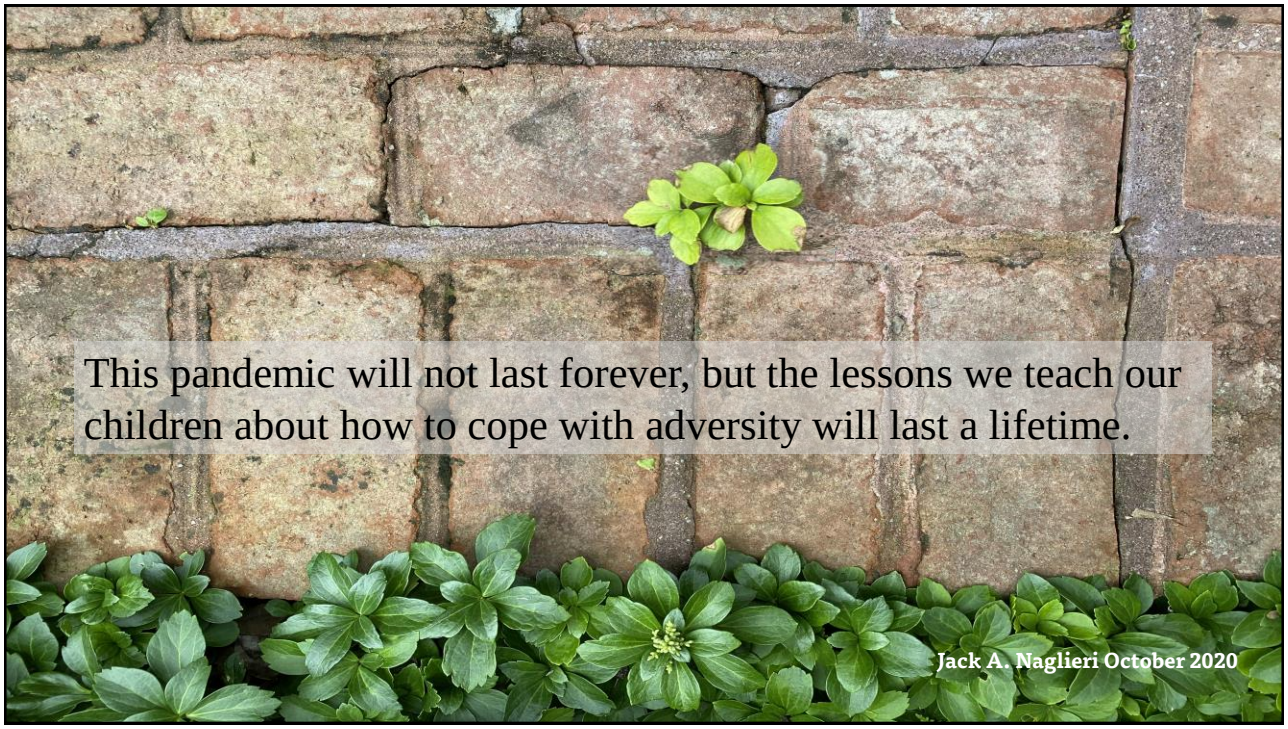
This pandemic will not last forever, but the lessons we teach our children about how to cope with adversity will last a lifetime.
Jack A. Naglieri October 2020

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