Cognitive Assessment System 2 – Español: From PASS Theory to Neurocognitive Assessment

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Conclusions

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Conclusions

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Presentation Outline

- Introduction
- A neurocognitive theory of Learning - PASS
  - complex decision making (frontal lobes – Planning)
  - focus and resistance to distractions (brain stem - Attention)
  - visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
  - visual/verbal sequencing (Temporal area - Successive)
- How to measure PASS
- Does PASS work?

Conclusions

The test we use to assess ability matters!

Case of Alejandro

Note: this is not a picture of Alejandro

Conclusions

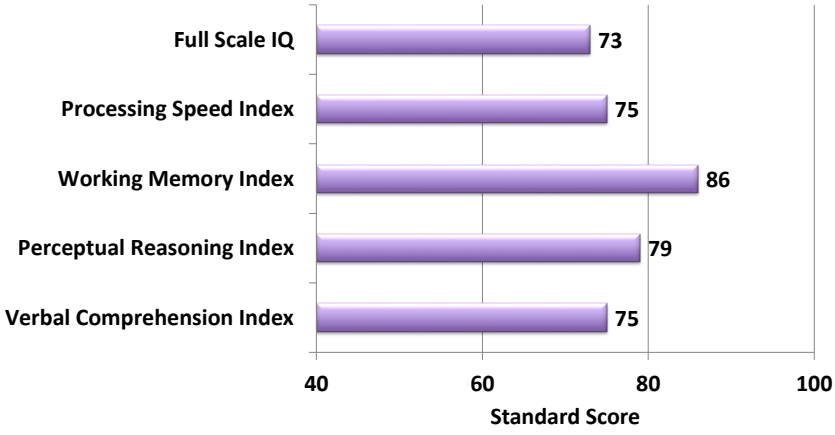
CASE STUDY: ALEJANDRO (C.A. 7-0 GRADE 1)

REASON FOR REFERRAL

- Academic:
  - Could not identify letters/sounds
  - October 2013: Could only count to 39
  - All ACCESS scores of 1
- Behavior:
  - Difficulty following directions
  - Attention concerns
  - Refusal/defiance

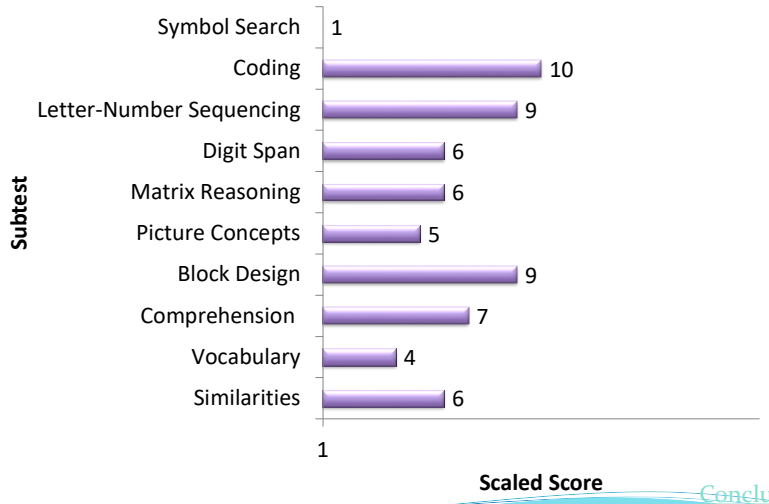
Conclusions

WISC-IV ASSESSMENT



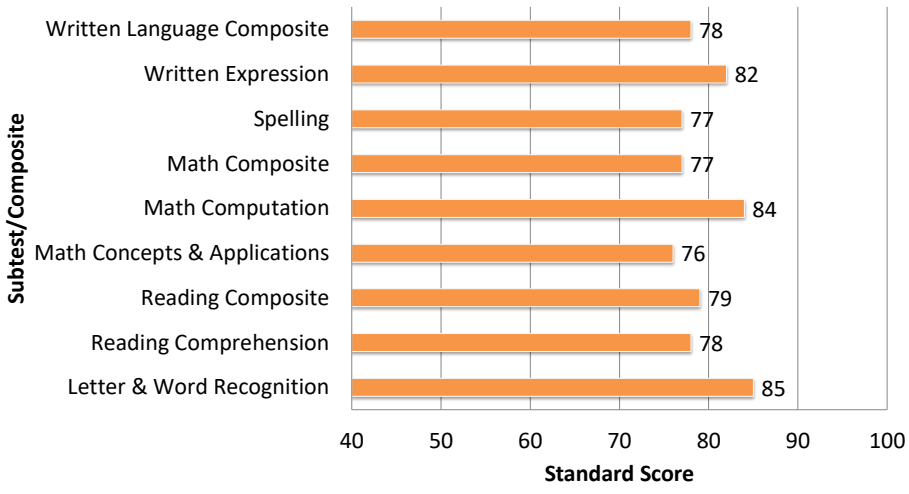
Conclusions

WISC-IV SUBTESTS



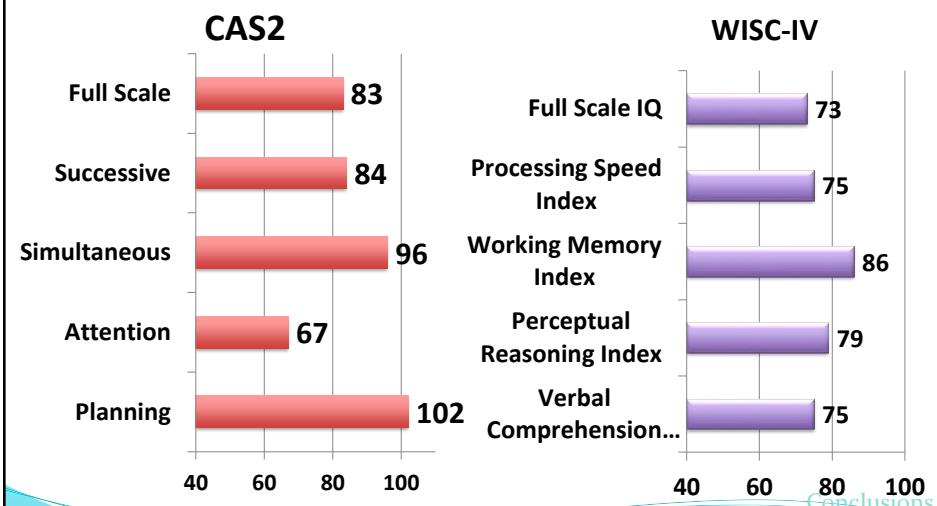
Conclusions

KTEA-II



Conclusions

PASS basic psychological processes



Conclusions

Thoughts about Alejandro

- We want to help our students, but how?
- What have tried to get information from the Wechsler Scales
  - Subtest analysis (doesn't work)
  - Interpretation of subtests according to other views (Working Memory, Speed, CHC, etc.) -doesn't work
- Which test/method should we use?
- All these questions will be answered…

Conclusions

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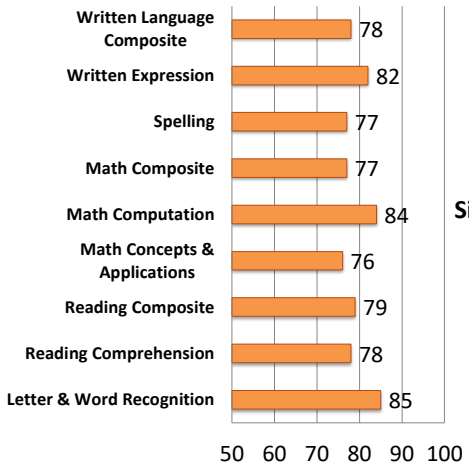
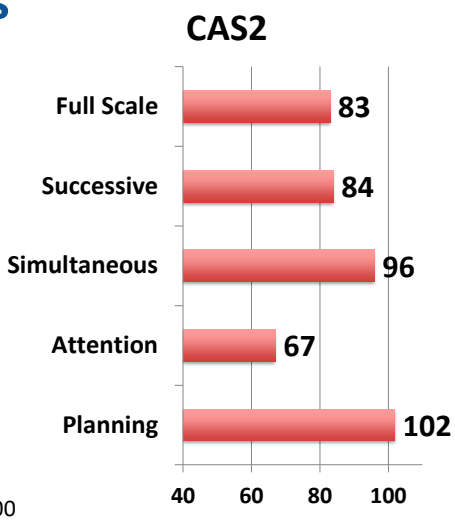
Alejandro's Results



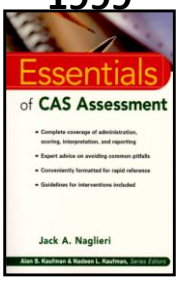


Conclusions

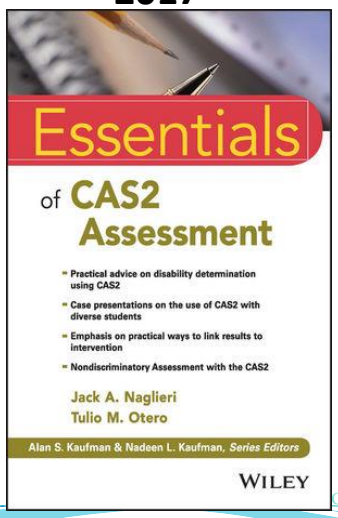
Discrepancy / Consistency Method (DCM)

- The Discrepancy / Consistency Method is a conceptual framework that was first introduced in 1999 (and now 2017)
- Similar models have been proposed

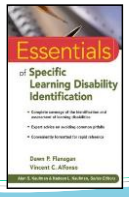
1999



2017



2011



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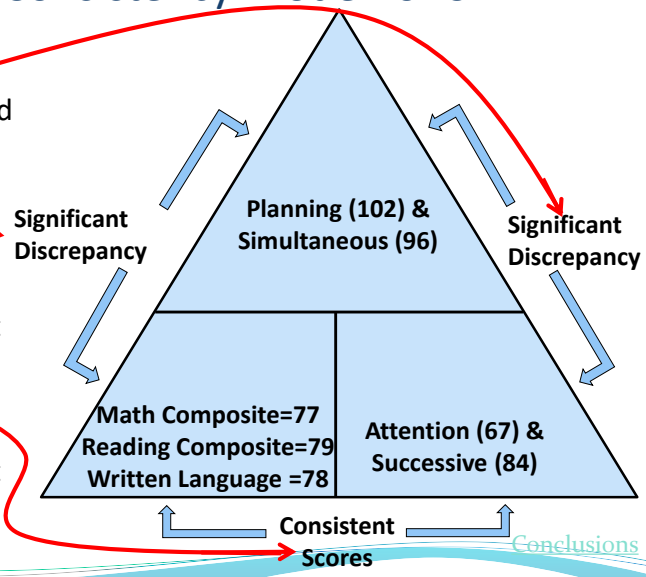
Discrepancy Consistency Model for SLD

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



Conclusions

The test we use can alter a student's self-image!

Case of Alejandro

Note: this is not a picture of Alejandro

Conclusions

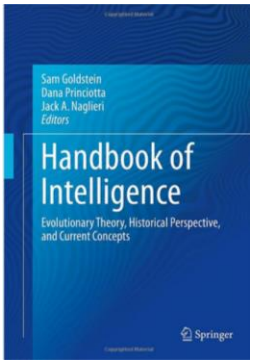
A Modern Measure of Ability

- Use a test based on a brain-based theory
- The theory and the test must
  - be non-discriminatory
  - yield profiles that can be used for identification
  - have instructional implications

Non-discriminatory Tests

This is essential for accurate assessment

Evolution of IQ (Goldstein, Principotta & Naglieri, 2015)



Hundred Years of Intelligence Testing: Moving from Traditional IQ to Second-Generation Intelligence Tests

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Jack A. Naglieri

"Do not go where the path may lead, go instead where there is no path and leave a trail."
–Ralph Waldo Emerson

Context

April 6, 1917, is remembered as the day the United States entered World War I. On that same day a group of psychologists held a meeting in Harvard University's Emerson Hall to discuss the possible role they could play with the war effort (Yerkes 1921). The group agreed that psychological knowledge and methods could be of importance to the military and utilized to increase the efficiency of the Army and Navy personnel. The group included Robert Yerkes, who was also the president of the American Psychological Association. Yerkes made an appeal to members of APA who responded by

Training School in Vineland, New Jersey, on May 28. The committee considered many types of group tests and several that Arthur S. Otis developed when working on his doctorate under Lewis Terman at Stanford University. The goal was to find tests that could efficiently evaluate a wide variety of men, be easy to administer in the group format, and be easy to score. By June 9, 1917, the materials were ready for an initial trial. Men who had some educational background and could speak English were administered the verbal and quantitative (Alpha) tests and those that could not read the newspaper or speak English were given the Beta tests (today described as nonverbal).

The Alpha tests were designed to measure general information (e.g., how many months are

The First IQ TEST: Alpha

1. Bull Durham is the name of tobacco
2. The Mackintosh Red is a kind of fruit
3. The Oliver is a typewriter
4. A passenger locomotive type is the Mogul
5. Stone & Webster are well know engineers
6. The Brooklyn Nationals are called Superbas
7. Pongee is a fabric
8. Country Gentleman is a kind of corn
9. President during the Spanish War Mckinley
10. Fatima is a make of cigarette

From: Psychological Examining the United States Army (Yerkes, 1921, p. 213)

Conclusions

Race by test
(Naglieri, 2015)

psychological processes measured by KABC and CAS are the more fair than traditional tests

Table 20.1 Mean score differences in standard scores by race on traditional IQ and second-generation intelligence tests

Test	Difference
Traditional	
SB-IV (matched)	12.6
WISC-IV (normative sample)	11.5
WJ-III (normative sample)	10.9
WISC-IV (matched)	10.0
Second generation	
KABC (normative sample)	7.0
KABC (matched)	6.1
KABC-2 (matched)	5.0
CAS2 (normative sample)	6.3
CAS (demographic controls)	4.8
CAS2 (demographic controls)	4.3

Naglieri, Rojahn, Matto (2007)

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

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

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

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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 between Hispanic and non-Hispanic children were found when ability was measured with tests of basic PASS processes. In addition, the correlation between the PASS constructs and achievement were substantial for both Hispanic and non-Hispanic children and were not significantly different between the groups.
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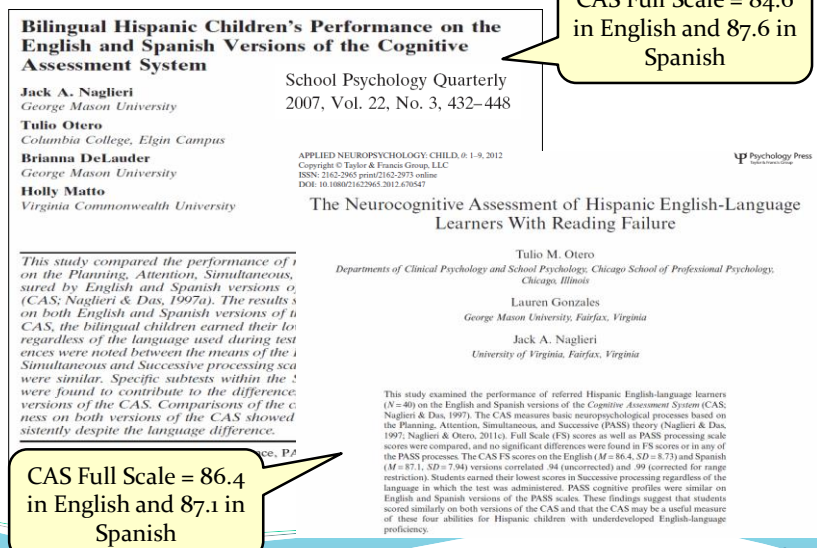
PASS Score by Language



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

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

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sistently despite the language difference.

CAS Full Scale = 84.6 in English and 87.6 in Spanish

CAS Full Scale = 86.4 in English and 87.1 in Spanish

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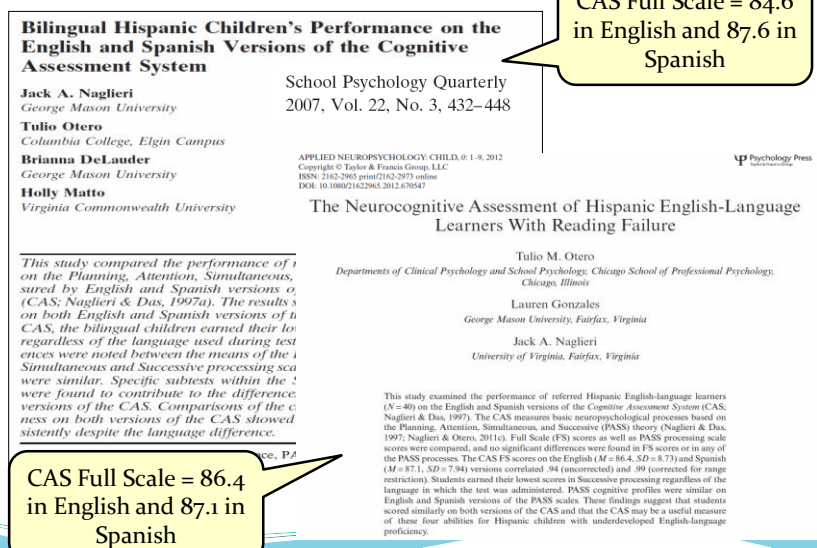
PASS Score by Language



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WJ-III and ELL Hispanic Students

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

11 point mean score difference in GAI

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	9.80	100	15	−1.07	−0.85	−0.11
Spatial Relations	99.18	8.45	100	15	−0.82	−0.758	−0.10

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

As English skills go down so does the 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	Difference	t	d
Beginner	71.75	3.95	100	15	−28.25	−14.31*	−7.15
Intermediate	82.29	8.66	100	15	−17.71	−7.65*	−2.05
Advanced	89.55	9.17	100	15	−10.45	−10.45*	−1.14
Proficient	101	9.23	100	15	1.00	.405	0.11

*$p < .001$.

Why Measure Basic Psych Processes?

- Measures of basic psychological processes in these measures assess abilities without requiring knowledge
  - Vocabulary
  - Arithmetic
  - Similarities
  - Comprehension
  - Information
- The knowledge requirement in traditional IQ tests distorts the measurement of ability

Conclusions

Time to Reflect

Presentation Outline

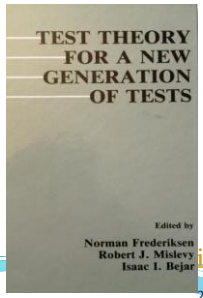
- Introduction
- A neurocognitive theory of Learning - PASS
  - complex decision making (frontal lobes – Planning)
  - focus and resistance to distractions (brain stem - Attention)
  - visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
  - visual/verbal sequencing (Temporal area - Successive)
- How to measure PASS
- Does PASS work?

Basic Psychological Processes

Connecting IDEA with practice

Defining basic psychological process

- How did we identify 'basic psychological processes'?
  - We should use knowledge from cognitive and neuropsychology to construct a model to test
  - A well tested model can evolve into a THEORY of 'basic psychological processes'
  - We should not assign new labels to traditional IQ subtests
  - We should recognize the limitations of developing a theory from factor analysis – "*a research program dominated by factor analyses of test intercorrelations is incapable of producing an explanatory theory of human intelligence*" (Lohman & Ippel, 1993, p. 41)



Defining basic psychological process

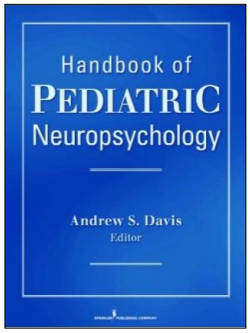
- The term 'basic psychological processes' is a modern term for ability (or intelligence) when traditional verbal tests that are confounded by knowledge (e.g., Information, Similarities, Arithmetic, Vocabulary) are excluded
- 'basic psychological processes' provide us the means to function and acquire knowledge and skills
  - Skills, like reading decoding, phonological coding, or math calculation, are *not* examples of a cognitive process
    - Skill = knowledge that is well learned and therefore can be performed with little thinking

Cognition or Knowledge?

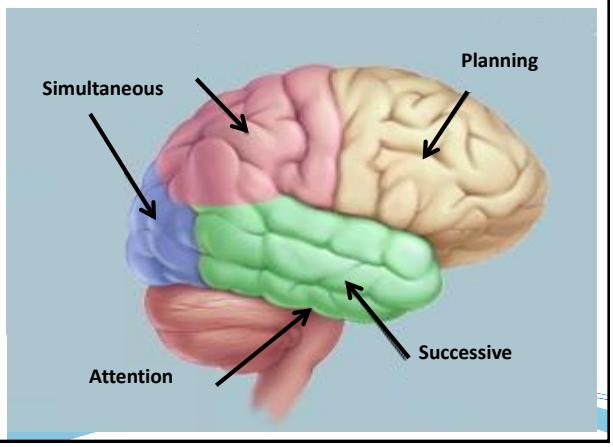
- What does the student have to **know** to complete a task?
  - This is dependent on *instruction*
- How does the student have to **think** to complete a task?
  - This is dependent on the *brain* – ***'basic psychological processes'***
- We must assess ability and achievement separately

Brain, Cognition, & Intelligence

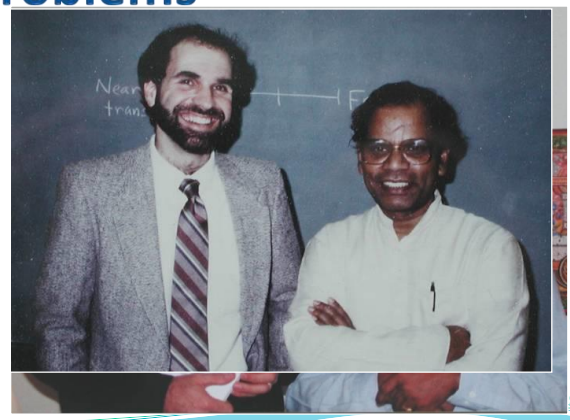
- The brain is the seat of abilities called PASS
- These basic psychological processes are the foundation of learning (Naglieri & Otero, 2011)



See Naglieri, J. A. & Otero, T. (2011). Cognitive Assessment System: Redefining Intelligence from A Neuropsychological Perspective. In A. Davis (Ed.). *Handbook of Pediatric Neuropsychology (320-333)*. New York: Springer Publishing.

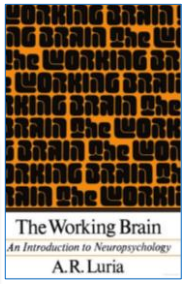


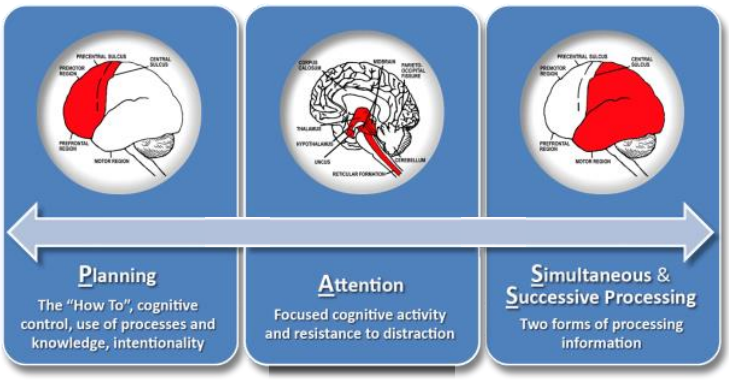
A Neurocognitve approach to understanding learning and learning problems



PASS: A neurocognitive approach

Three Functional Units described by A. R. Luria





Conclusions

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PASS & Basic Psychological Processes

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

- **PASS theory** is a modern way to measure neurocognitive abilities related to brain function

Conclusions

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PASS Theory

- **Planning** is a basic psychological process we use to determine, select, and apply efficient solutions to problems
  - problem solving
  - developing plans and using strategies
  - impulse control and self-control
  - control of processing
  - retrieval of knowledge

Conclusions

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

ions

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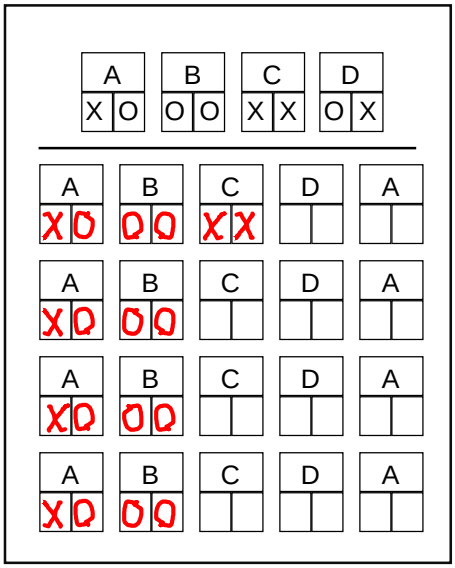
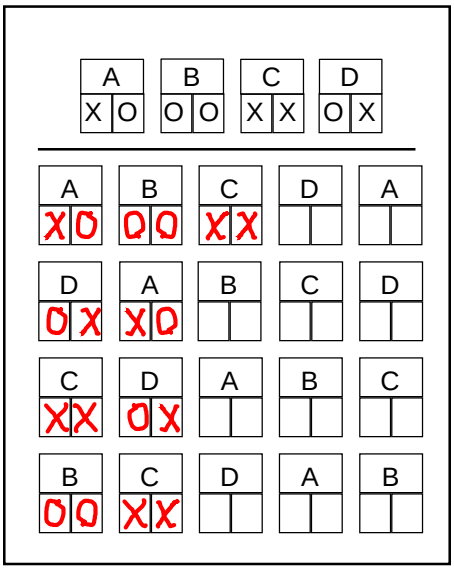
Planned Codes

- Child fills in the codes in the empty boxes
- Children are encouraged to think of a good way to complete the page



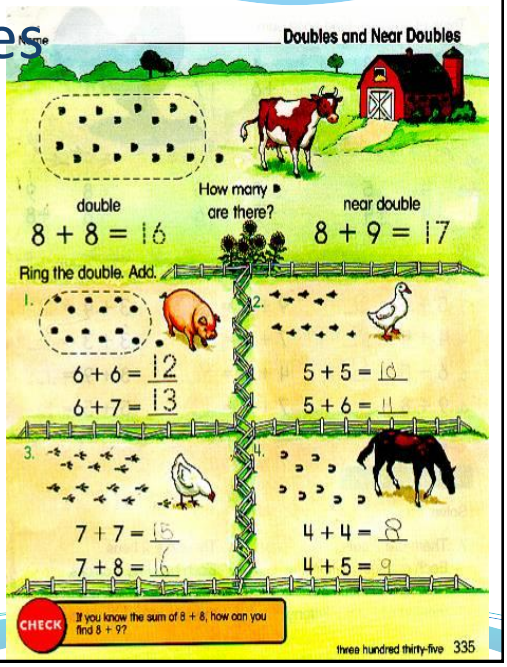
Planned Codes

- Page 2
- What is a good plan to complete this page?
- Note orientation



Math Strategies

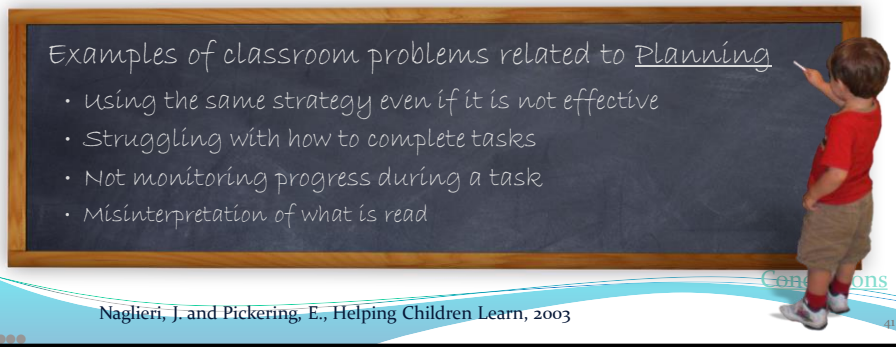
Note to the Teacher:
When we teach children skills by helping them use strategies and plans for learning, we are teaching both knowledge and processing. Both are important.



PASS Theory: Planning

Planning

- Evaluate a task
- Select or develop a strategy to approach a task
- Monitor progress during the task
- Develop new strategies when necessary



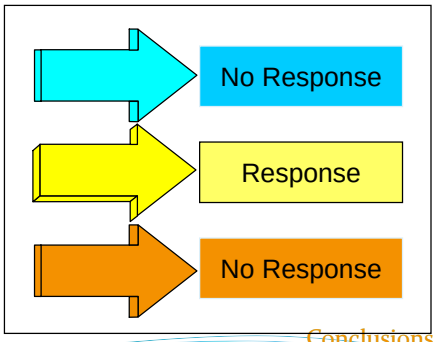
Naglieri, J. and Pickering, E., Helping Children Learn, 2003

PASS Theory

- **Attention** is a basic psychological process we use to selectively attend to some stimuli and ignores others
  - focused cognitive activity
  - selective attention
  - resistance to distraction

RED

BLUE



Conclusions

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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

ions

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CAS2 Expressive Attention

- The child says the color not the word
- Score is time and number correct

RED	BLUE	GREEN	YELLOW
YELLOW	GREEN	RED	BLUE
RED	YELLOW	YELLOW	GREEN
BLUE	GREEN	RED	BLUE
GREEN	YELLOW	RED	YELLOW

Conclusions

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Expressive Attention - Italiano

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

Conclusions

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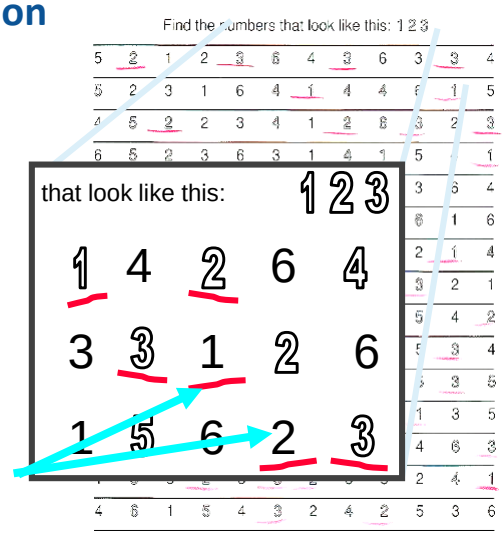
Number Detection

- Items 1 - 4 have 180 numbers on each page
- Each child is given two pages
- Targets appear at the top of the page
- Score for targets found and

false detections



Conclusions

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Attention

This sheet has a strong Attention demands because of the similarity of the options

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.

14. Lance fished from 6:00 A.M. to 9:45 A.M. How long did he fish?

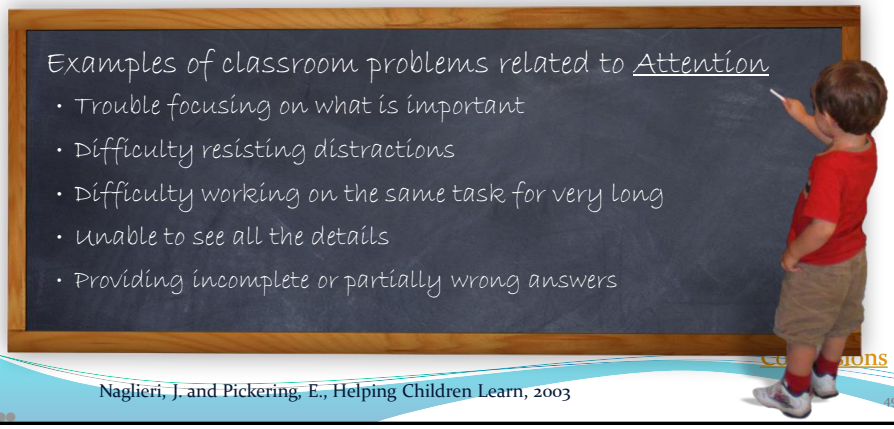
A 3 hours
B 3 hours and 15 minutes
C 3 hours and 45 minutes
D 4 hours and 45 minutes

Use the calendar for 15 - 17

PASS Theory: Attention

Attention

- Focus on one thing and ignore others
- Resist distractions in the learning environment



Naglieri, J. and Pickering, E., Helping Children Learn, 2003

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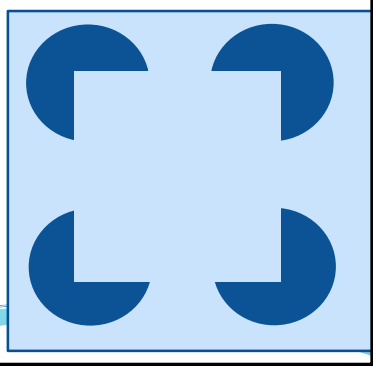
PASS Theory

- **Simultaneous** is a basic psychological process which we use to integrate stimuli into groups
  - Stimuli are seen as a whole
  - Each piece must be related to the others
  - Content is not relevant



CAS2: Rating Scale Simultaneous

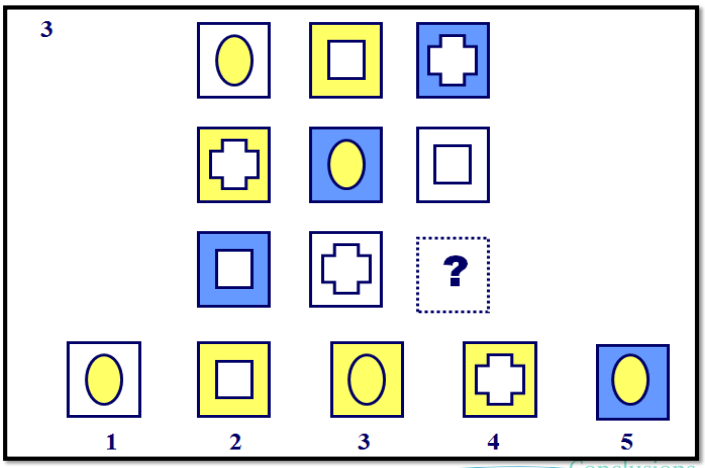
Directions for Items 11–20. These questions ask how well the child or adolescent sees how things go together. They also ask about working with diagrams and understanding how ideas fit together. The questions involve seeing the whole without getting lost in the parts. Please rate how well the child or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

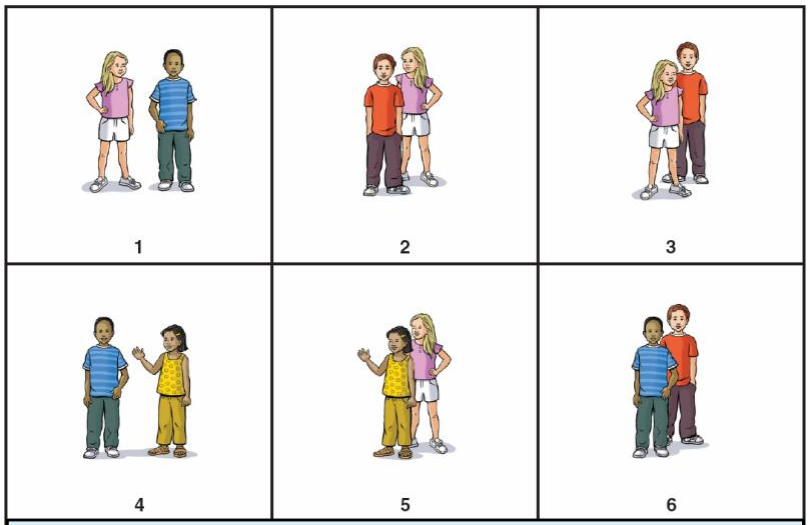
___ + ___ + ___ + ___ + ___ = ☐

Simultaneous Raw Score

CAS2 Matrices



CAS2 Verbal-Spatial Relations



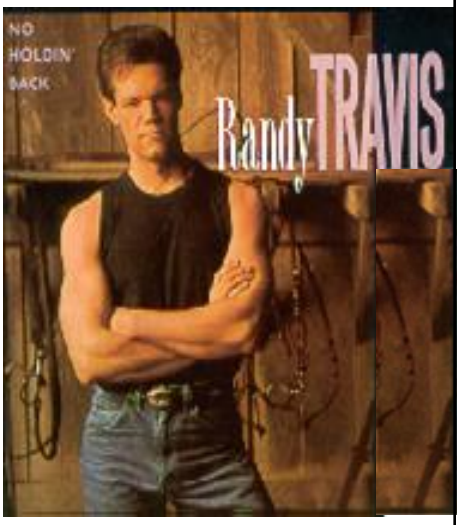
Which picture shows a boy behind a girl?

sions

Simultaneous Verbal Task

- Simultaneous processing using verbal content
- Who is this song about?

My momma's daddy was his oldest son.



Conclusions

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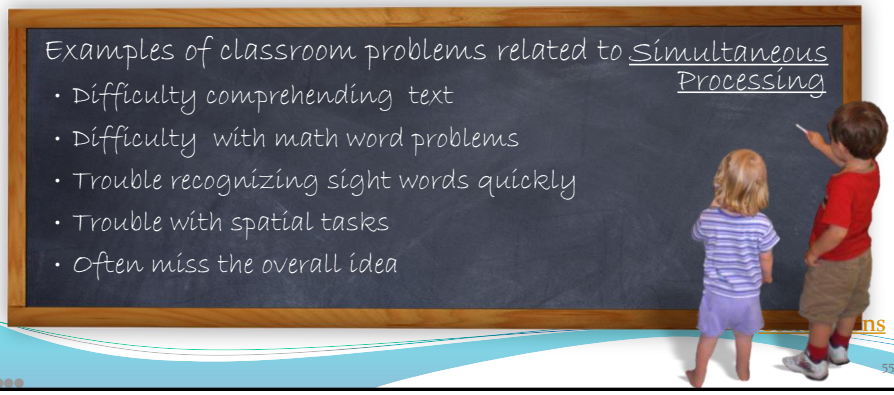
PASS Theory: Simultaneous

Simultaneous Processing

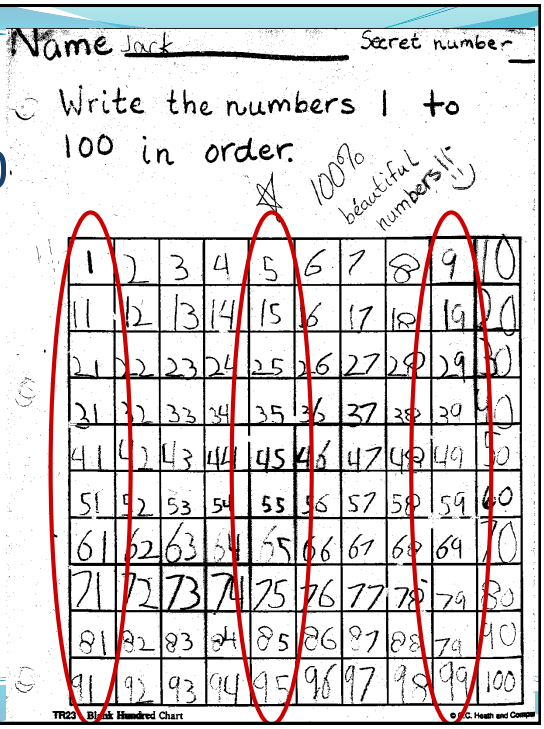
- Relate separate pieces of information into a group
- See how parts related to whole
- Recognize patterns



55

Numbers from 1 to 100

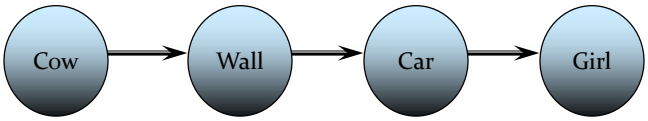
Simultaneous processing is used in this work sheet because it helps the child see the patterns in the math



- Your thoughts???

Modern 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
  - Stimuli are not inter-related



The child answers a question about a statement read by the examiner such as:
The red greened the blue with a yellow.
Who got greened?

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

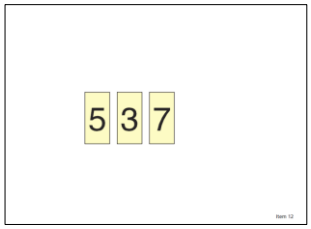
___ + ___ + ___ + ___ + ___ = ☐
Successive Raw Score

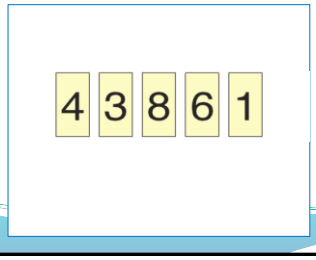
Word Series, Sentence Repetition (Ages 5-7) or Sentence Questions (Ages 8-17)

- Word Series
  - Child repeats high imagery single syllable words presented at 1 per second
- 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 red greened the blue with a yellow. Who got greened?

CAS2

- Visual Digit Span subtest allows for a Visual Auditory comparison





Visual–Auditory Comparison

	Scaled Score
Word Series	_____
Visual Digit Span	_____
Difference (ignore sign)	_____
Circle one: .05 .10 NS	

Conclusions

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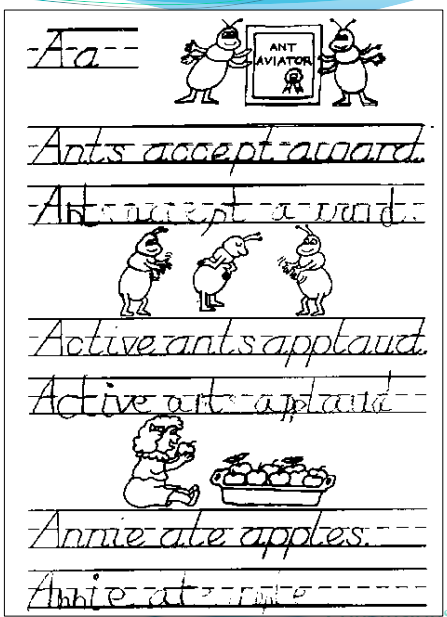
Successive

The sequence of the sounds is emphasized in this work sheet – this requires successive processing



Conclusions

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Learning Math Facts

8 + 9 = 1 7

8 + 9 = 1 7

*+

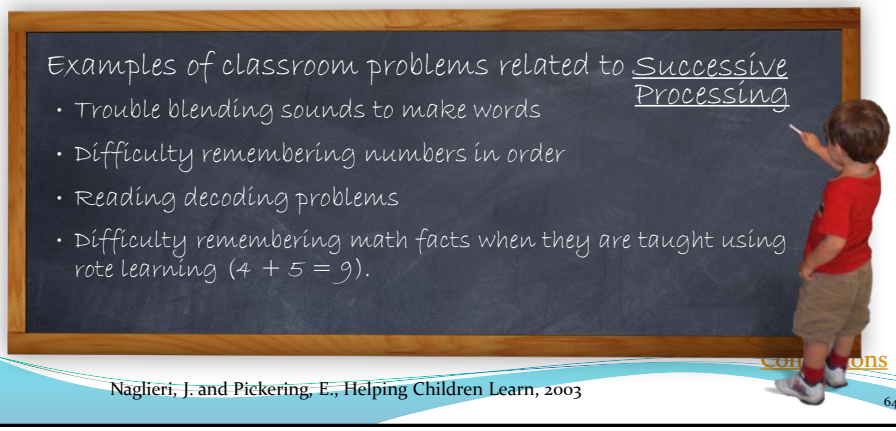
8 + 9 = 1 7

Conclusions

PASS Theory: Successive

Successive Processing

- Use information in a specific order
- Follow instructions presented in sequence



Conclusions

Naglieri, J. and Pickering, E., Helping Children Learn, 2003

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Time to Reflect

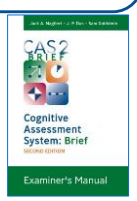
Presentation Outline

- Introduction
- A neurocognitive theory of Learning - PASS
  - complex decision making (frontal lobes – Planning)
  - focus and resistance to distractions (brain stem - Attention)
  - visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
  - visual/verbal sequencing (Temporal area - Successive)
- How to measure PASS
- Does PASS work?

PASS Comprehensive System

(Naglieri, Das, & Goldstein, 2014; Naglieri, Moreno & Otero (2017)

CAS2 Rating Scale (4 subtests)	CAS2 Brief (4 subtests)	CAS2 Core (8 subtests)	CAS2 Extended (12 subtests)	CAS2 Spanish (12 & 8 subtests)
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 Executive Function Working Memory Verbal / Nonverbal Visual-Auditory	



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Options for Assessing PASS

- PASS neurocognitive processes can be measured using the
  - CAS-2 English and Spanish (for school psychologists);
  - CAS-2 Brief (for speech/language, special education, etc); and
  - CAS-2 Rating Scale (for teachers)
- For effective instructional planning and identification of special students (e.g. SLD, ADHD), fair assessment, and the gifted.

Conclusions

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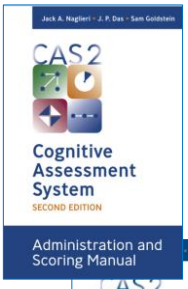
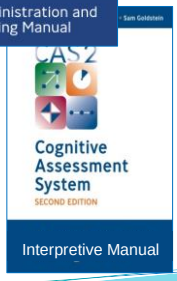
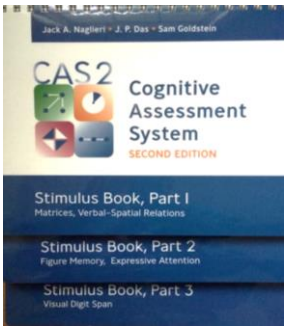
CAS2 (Ages 5-18 yrs.)







Conclusions

Provide Help

The examiner can explain the demands of the task in any manner deemed appropriate and in any language

Item Set 1

Expose Item Set 1 and say,

Look at this page. There are many boxes for you to fill in (point to the portion of the page with the empty boxes, but do not point in a sweeping motion to the rows or columns). **Fill in as many of these as you can, as fast as you can, using these answers** (point to the coded boxes, and pause for 3–5 seconds to allow the examinee to look at the page). **You can do it any way you want. Let's see how many you can do.**

Ready? (Provide a brief explanation if necessary.)

Begin. Start timing. Allow 60 seconds (1:00 minute). Record the time to completion and strategy use.

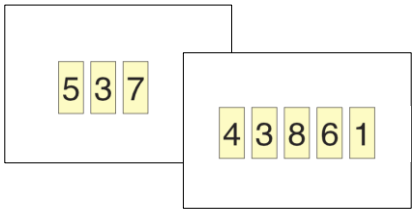
If the examinee stops or spends more than 1 or 2 seconds erasing, immediately say, **Keep going.**

If the examinee is still working after the time limit expires, say, **Stop.** Record the time in seconds. Note strategy use.

Conclusions

CAS2

- All subtests modified
- Planning subtests have more items
- Speech Rate deleted
- New: Visual Digit Span subtest



Section 2. Subtest and Composite Scores

Subtest	Raw Score	Scaled Score PLAN	SIM	ATT	SUC
Planned Codes (PCd)	34	7			
Planned Connections (PCn)	165	8			
Planned Number Matching (PNM)	10	8			
Matrices (MAT)	20		10		
Verbal-Spatial Relations (VSR)	18		11		
Figure Memory (FM)	16		10		
Expressive Attention (EA)	48			9	
Number Detection (ND)	74			10	
Receptive Attention (RA)	43			9	
Word Series (WS)	11				7
Sentence Repetition/ Questions (SR/SQ)	8				7
Visual Digit Span (VDS)	10				6

	PLAN	SIM	ATT	SUC	FS
Sum of Subtest Scaled Scores	23	+ 31	+ 28	+ 20	= 102
PASS Composite Index Scores	84	102	96	79	87
Percentile Rank	14	55	39	8	19
____% Confidence Interval Upper	92	108	104	87	92
____% Confidence Interval Lower	79	96	89	74	83

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CAS2

- Supplementary Scales: Executive Function, Working Memory, Verbal, Nonverbal
- Added: A Visual and Auditory comparison

Visual–Auditory Comparison

	Scaled Score
Word Series	_____
Visual Digit Span	_____
Difference (ignore sign)	_____
Circle one: .05 .10 NS	

Supplemental Composite Scores

Subtest	Scaled Score EF w/o WM	EF w/ WM	WM	VC	NvC
Planned Codes					7
Planned Connections	8	8			
Matrices					10
Verbal-Spatial Relations		11	11	11	
Figure Memory					10
Expressive Attention	9	9			
Receptive Attention				9	
Sentence Repetition/Questions		7	7	7	

	EF w/o WM	EF w/ WM	WM	VC	NvC
Sum of Subtest Scaled Scores	17	35	18	27	27
Composite Index Scores	91	91	94	93	92
Percentile Rank	27	27	34	32	30
____% Confidence Interval Upper	101	99	101	101	99
____% Confidence Interval Lower	84	85	88	87	86

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

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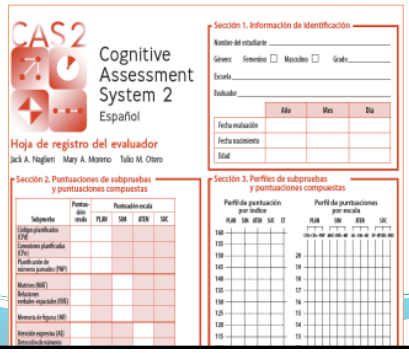
CAS2 in English & Spanish

- Same 8 (40 minutes) or 12 (60 minutes) subtest versions
- PASS and Full Scales provided (100 & 15) subtests (10 and 3)
- Supplemental Scales



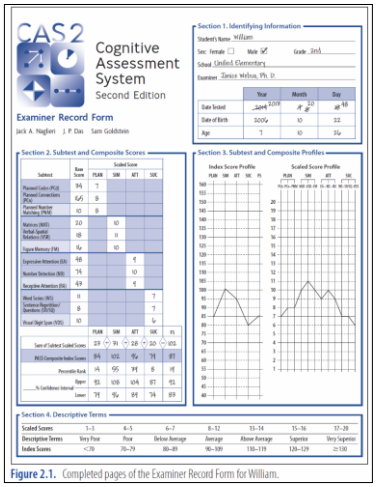


Figure 2.1. Completed pages of the Examiner Record Form for William.

Conclusions

Cognitive Assessment System 2 Translation Process

Conclusions

Spanish Translation of Cognitive Assessment System (CAS)

Translation

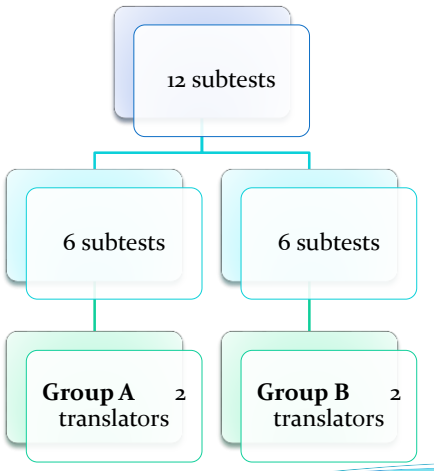
English → **Spanish**

- Administration and Scoring Manual
- Stimulus book
- Record form

Conclusions

Moreno, Otero & Naglieri, 2012

CAS Translation



Conclusions

Back-translation

english spanish

Consistency analysis

English version Spanish Version

Conclusions

Spanish Translation of Cognitive Assessment System (CAS)

Translation

English Spanish

Back translation

Analysis of agreement

Conclusions

Moreno, Otero & Naglieri, 2012

Considered Criteria

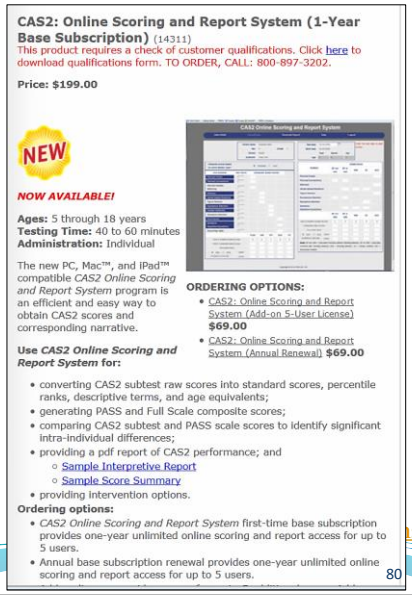
- Semantic Equivalence
  - The meaning of each item is similar in English and Spanish
- Content Equivalence
  - The content of each item is relevant to the targeted population
- Technical Equivalence
  - The assessment technique is maintained during the translation process

Conclusions

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 Online Score & Report

- Narrative report can be obtained in Word or PDF

CAS2 Cognitive Assessment System
Second Edition

Scoring and Interpretive Report
Jack A. Naglieri

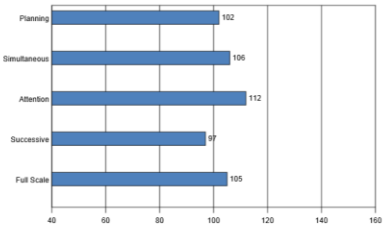
Name: Jack Nag
Age: 8
Gender: Male
Date of Birth: 07-12-2005
Grade: 5
School: East Lake

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

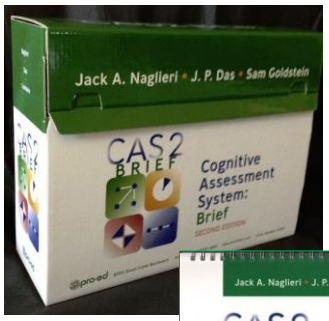
FULL SCALE

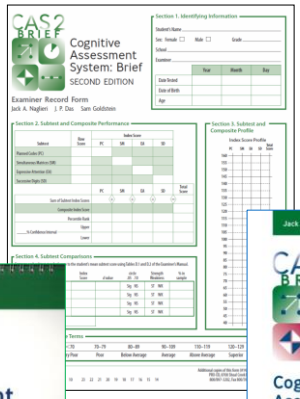
Jack earned a Cognitive Assessment System, Second Edition (CAS2) Full Scale score of 105, which is within the Average classification and is a percentile rank of 63. This means that his performance is equal to or greater than that of 63% of children his age in the standardization group. There is a 90%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

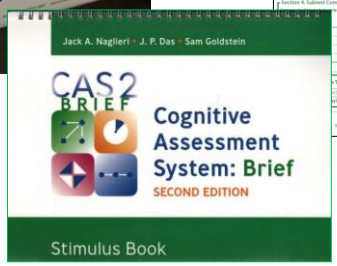
PASS and Full Scale Scores

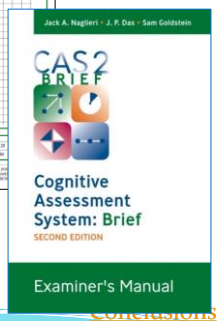


CAS2: Brief for ages 4-18 years





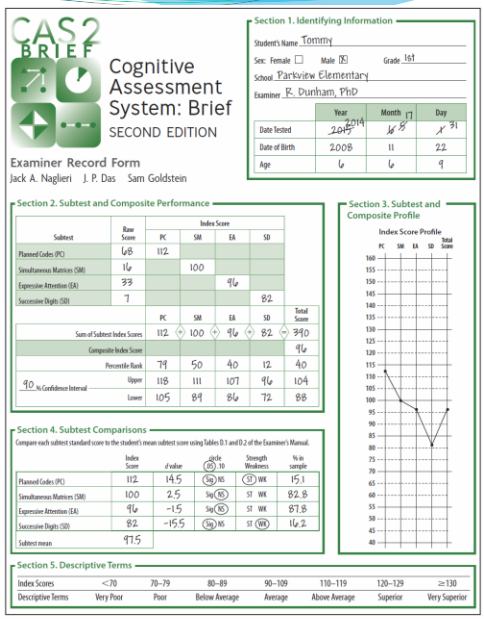




Conclusions

CAS2: Brief

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


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	11	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	Circle .05 or .10	Strength Weakness	% in sample
Planned Codes (PC)	112	14.5	Sig NS	ST WK	15.1
Simultaneous Matrices (SM)	100	2.5	Sig NS	ST WK	82.8
Expressive Attention (EA)	96	−1.5	Sig NS	ST WK	87.8
Successive Digits (SD)	82	−15.5	Sig NS	ST WK	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.

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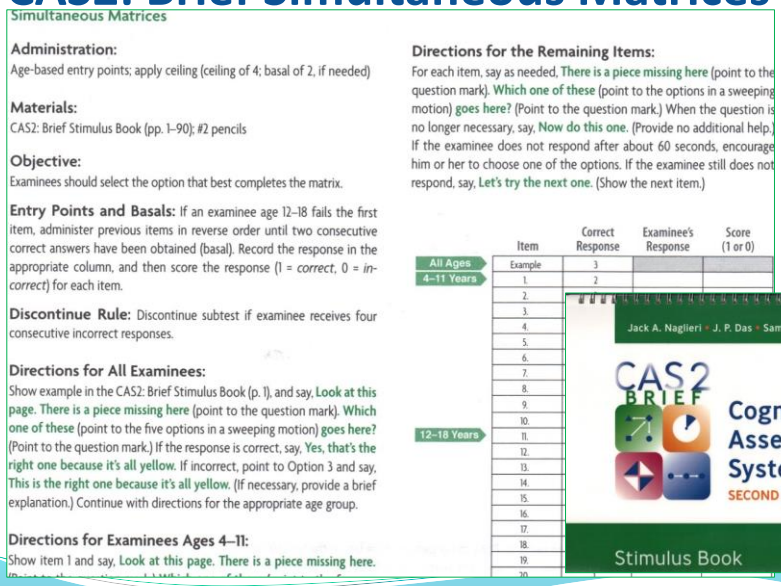
CAS2: Brief Simultaneous Matrices


Simultaneous Matrices

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

Materials:
CAS2: Brief Stimulus Book (pp. 1–90); #2 pencils

Objective:
Examinees should select the option that best completes the matrix.

Entry Points and Basals: If an examinee age 12–18 fails the first item, administer previous items in reverse order until two consecutive correct answers have been obtained (basal). Record the response in the appropriate column, and then score the response (1 = *correct*, 0 = *incorrect*) for each item.

Discontinue Rule: Discontinue subtest if examinee receives four consecutive incorrect responses.

Directions for All Examinees:
Show example in the CAS2: Brief Stimulus Book (p. 1), and say, **Look at this page. There is a piece missing here** (point to the question mark). **Which one of these** (point to the five options in a sweeping motion) **goes here?** (Point to the question mark.) If the response is correct, say, **Yes, that's the right one because it's all yellow.** If incorrect, point to Option 3 and say, **This is the right one because it's all yellow.** (If necessary, provide a brief explanation.) Continue with directions for the appropriate age group.

Directions for Examinees Ages 4–11:
Show item 1 and say, **Look at this page. There is a piece missing here.**

Directions for the Remaining Items:
For each item, say as needed, **There is a piece missing here** (point to the question mark). **Which one of these** (point to the options in a sweeping motion) **goes here?** (Point to the question mark.) When the question is no longer necessary, say, **Now do this one.** (Provide no additional help.) If the examinee does not respond after about 60 seconds, encourage him or her to choose one of the options. If the examinee still does not respond, say, **Let's try the next one.** (Show the next item.)

	Item	Correct Response	Examinee's Response	Score (1 or 0)
All Ages	Example	3		
4–11 Years	1.	2		
	2.			
	3.			
	4.			
	5.			
	6.			
	7.			
	8.			
	9.			
	10.			
12–18 Years	11.			
	12.			
	13.			
	14.			
	15.			
	16.			
	17.			
	18.			
	19.			
	20.			

Jack A. Naglieri • J. P. Das • Sam Goldstein

CAS2 BRIEF Cognitive Assessment System: Brief SECOND EDITION

Stimulus Book

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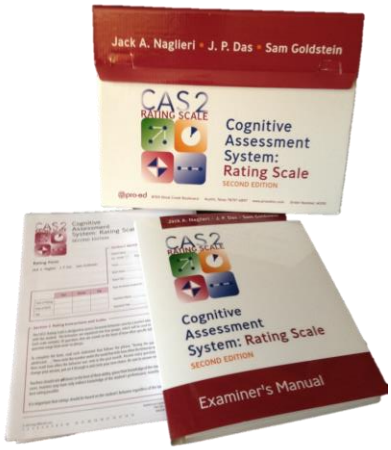
CAS2 Rating Scales (Ages 4-18 yrs.)

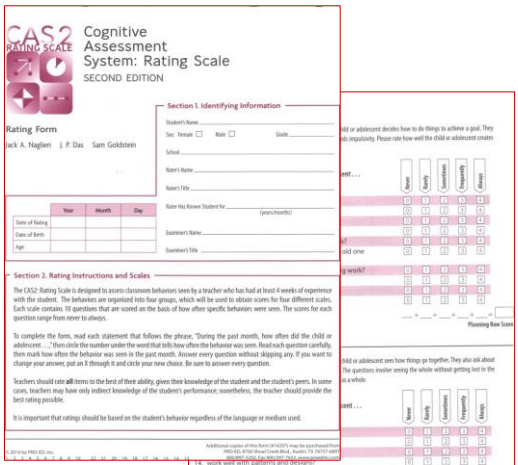
- The CAS2: Rating measures behaviors associated with PASS constructs
- Normed on a nationally representative sample of 1,383 students rated by teachers



Conclusions

CAS2 Rating Scales

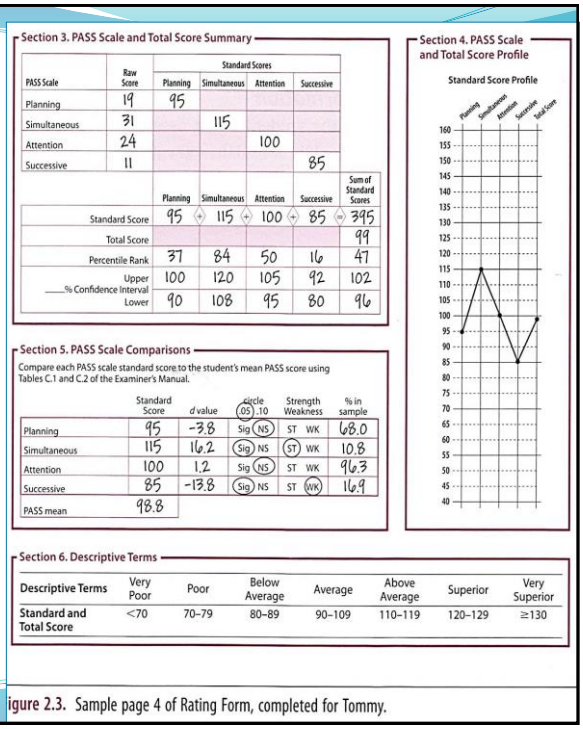
- The CAS2: Rating form contains 40 items
- 10 items for each PASS scale
- PASS and Total scales are set to have a mean of 100 and standard deviation of 15



Conclusions

CAS2 Rating Scales

- The CAS2: Rating Scale scores can be used as part of a larger comprehensive evaluation or for instructional planning



Section 3. PASS Scale and Total Score Summary

PASS Scale	Raw Score	Standard Scores: Planning	Simultaneous	Attention	Successive
Planning	19	95			
Simultaneous	31		115		
Attention	24			100	
Successive	11				85

	Planning	Simultaneous	Attention	Successive	Sum of Standard Scores
Standard Score	95 +	115 +	100 +	85 =	395
Total Score					99
Percentile Rank	37	84	50	16	47
Upper 95% Confidence Interval	100	120	105	92	102
Lower 95% Confidence Interval	90	108	95	80	96

Section 4. PASS Scale and Total Score Profile

Standard Score Profile

Section 5. PASS Scale Comparisons

Compare each PASS scale standard score to the student's mean PASS score using Tables C.1 and C.2 of the Examiner's Manual.

	Standard Score	d value	circle .05 .10	Strength Weakness	% in sample
Planning	95	-3.8	Sig (NS)	ST WK	68.0
Simultaneous	115	16.2	(Sig) NS	(ST) WK	10.8
Attention	100	1.2	Sig (NS)	ST WK	96.3
Successive	85	-13.8	(Sig) NS	ST (WK)	16.9
PASS mean	98.8				

Section 6. Descriptive Terms

Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Standard and Total Score	<70	70–79	80–89	90–109	110–119	120–129	≥130

igure 2.3. Sample page 4 of Rating Form, completed for Tommy.

Time to Reflect

Presentation Outline

- Introduction
- A neurocognitive theory of Learning - PASS
  - complex decision making (frontal lobes – Planning)
  - focus and resistance to distractions (brain stem - Attention)
  - visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
  - visual/verbal sequencing (Temporal area - Successive)
- How to measure PASS
- Does PASS work?

Conclusions

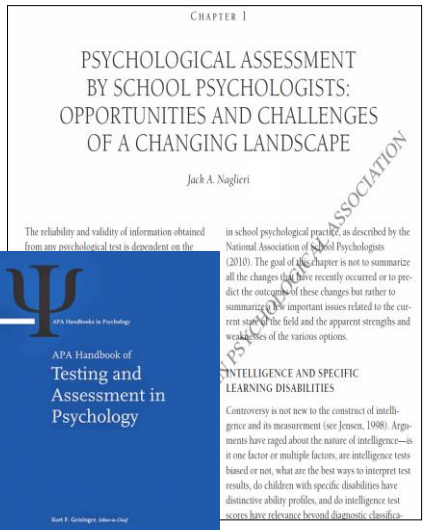
SLD vs ADHD Profiles and correlation with achievement

Do Students with SLD Have a Pattern of Cognitive Strengths and Weaknesses?

This is essential for intervention planning

Conclusions

Test Profile and SLD


CHAPTER 1

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

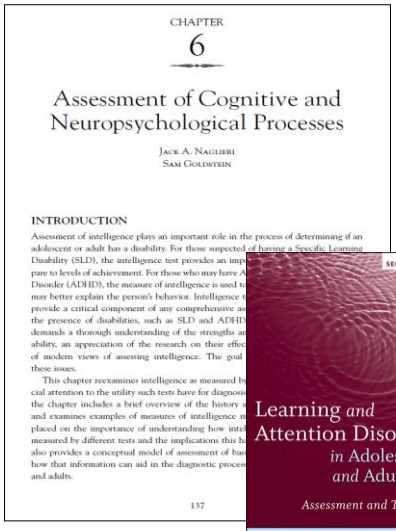
Jack A. Naglieri

The reliability and validity of information obtained from any psychological test is dependent on the

in school psychological practice, as described by the National Association of School Psychologists (2010). The goal of this chapter is not to summarize all the changes that have recently occurred or to predict the outcome of these changes but rather to summarize the important issues related to the current state of the field and the apparent strengths and weaknesses of the various options.

INTELLIGENCE AND SPECIFIC LEARNING DISABILITIES

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


CHAPTER

6

Assessment of Cognitive and Neuropsychological Processes

JACK A. NAGLIERI
SAM GOLDSTEIN

INTRODUCTION

Assessment of intelligence plays an important role in the process of determining if an adolescent or adult has a disability. For those suspected of having a Specific Learning Disability (SLD), the intelligence test provides an impo pare to levels of achievement. For those who may have A Disorder (ADHD), the measure of intelligence is used to may better explain the person's behavior. Intelligence t provide a critical component of any comprehensive as the presence of disabilities, such as SLD and ADHD demands a thorough understanding of the strengths a ability, an appreciation of the research on their effec of modern views of assessing intelligence. The goal these issues.

This chapter reexamines intelligence as measured b cial attention to the utility such tests have for diagnosi the chapter includes a brief overview of the history and examines examples of measures of intelligence placed on the importance of understanding how intel measured by different tests and the implications this h also provides a conceptual model of assessment of bas how that information can aid in the diagnostic proces and adults.

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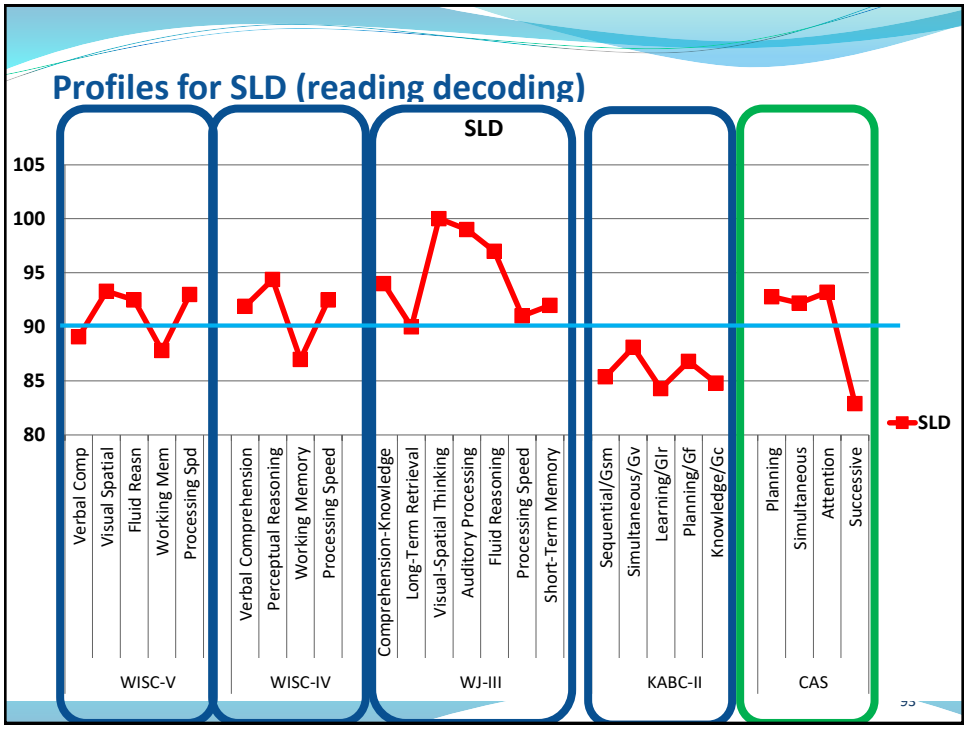
Naglieri & Goldstein (2011)

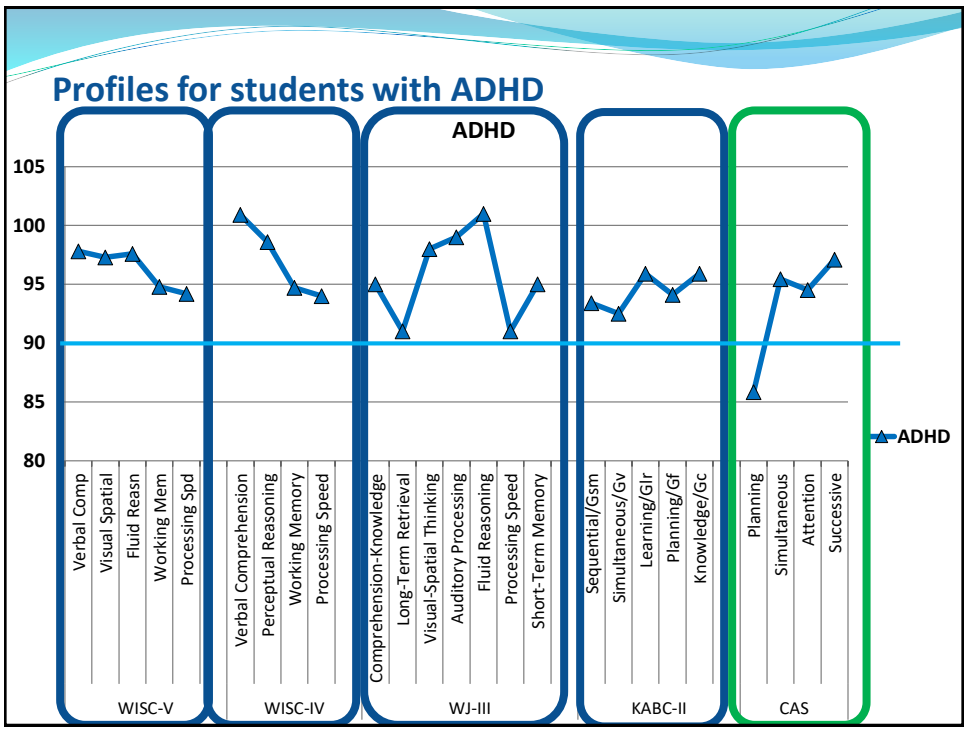
GROUP PROFILES BY ABILITY TEST

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

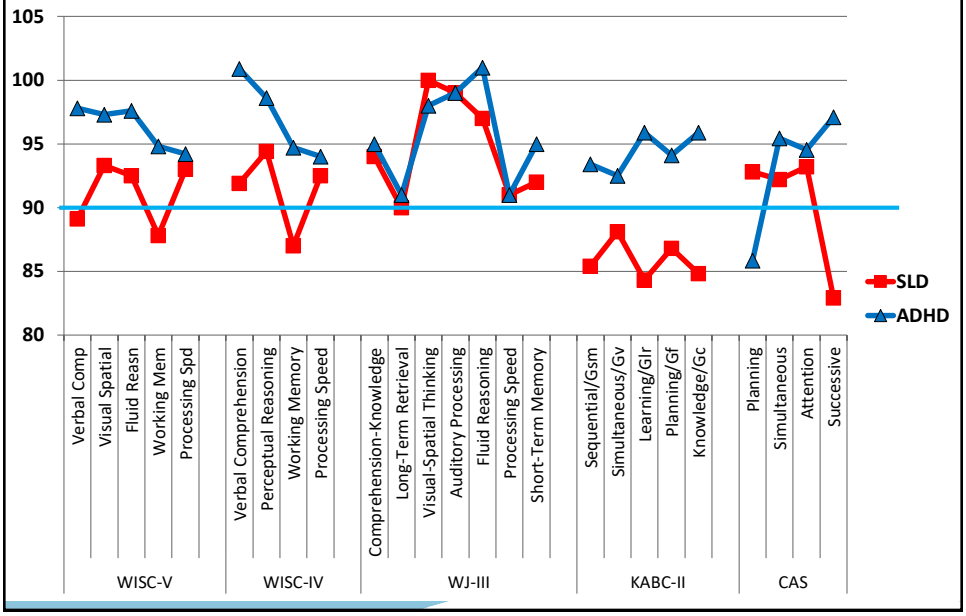
1. We need to know if intelligence tests yield distinctive profiles

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


Profiles for SLD (reading decoding)
SLD
105
100
95
90
85
80
Verbal Comp
Visual Spatial
Fluid Reasn
Working Mem
Processing Spd
Verbal Comprehension
Perceptual Reasoning
Working Memory
Processing Speed
Comprehension-Knowledge
Long-Term Retrieval
Visual-Spatial Thinking
Auditory Processing
Fluid Reasoning
Processing Speed
Short-Term Memory
Sequential/Gsm
Simultaneous/Gv
Learning/Glr
Planning/Gf
Knowledge/Gc
Planning
Simultaneous
Attention
Successive
WISC-V
WISC-IV
WJ-III
KABC-II
CAS
SLD


Profiles for students with ADHD
ADHD
105
100
95
90
85
80
Verbal Comp
Visual Spatial
Fluid Reasn
Working Mem
Processing Spd
Verbal Comprehension
Perceptual Reasoning
Working Memory
Processing Speed
Comprehension-Knowledge
Long-Term Retrieval
Visual-Spatial Thinking
Auditory Processing
Fluid Reasoning
Processing Speed
Short-Term Memory
Sequential/Gsm
Simultaneous/Gv
Learning/Glr
Planning/Gf
Knowledge/Gc
Planning
Simultaneous
Attention
Successive
WISC-V
WISC-IV
WJ-III
KABC-II
CAS
ADHD

Profiles for SLD (reading decoding) & ADHD



PASS Profiles and Educational Placement

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. 419–43[illegible]

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

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SLD Profiles on CAS (Huang, Bardos, D'Amato, 2010)

Journal of Psychoeducational Assessment
28(1) 19–30

DOI: 10.1177/0734282909333057
http://jpa.sagepub.com
SAGE

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

Leesa V. Huang[1], Achilles N. Bardos[2], and Rik Carl D'Amato[3]

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 were unique compared with profiles obtained from the general education sample. The implications of this study substantiate the usefulness of profile analysis on composite scores as a critical element in LD determination.

Conclusions

Johnson, Bardos & Tayebi, 2003

- "this study suggests that the CAS…yields information that contributes to the differential diagnosis of students suspected of having a learning disability in writing"

Journal of Psychoeducational Assessment
2003, *21*, 180-195

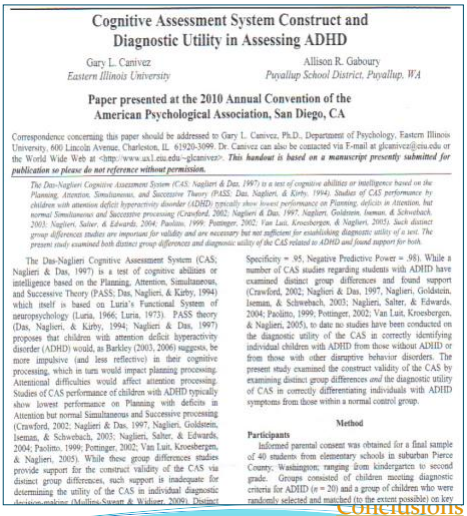
DISCRIMINANT VALIDITY OF THE COGNITIVE ASSESSMENT SYSTEM FOR STUDENTS WITH WRITTEN EXPRESSION DISABILITIES

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-six students with (n = 48) and without (n = 48) written expression disabilities were administered the Das-Naglieri: Cognitive Assessment System (DN:CAS; 1997) and the writing subtests of the Wechsler Individual Achievement Test (WIAT; 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.

Canivez & Gaboury (2010)

- "the present study demonstrated the potential of the CAS to correctly identify students who demonstrated behaviors consistent with ADHD diagnosis." glcanivez@eiu.edu



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 glcanivez@eiu.edu or the World Wide Web at <http://www.ux1.eiu.edu/~glcanivez>. ***This handout is based on a manuscript presently submitted for publication so please do not reference without permission.***

The Das-Naglieri Cognitive Assessment System (CAS; Naglieri & Das, 1997) is a test of cognitive abilities or intelligence based on the Planning, Attention, Simultaneous, and Successive Theory (PASS; Das, Naglieri, & Kirby, 1994). Studies of CAS performance by children with attention deficit hyperactivity disorder (ADHD) typically show lowest performance on Planning, deficits in Attention, but normal Simultaneous and Successive processing (Crawford, 2002; Naglieri & Das, 1997; Naglieri, Goldstein, Iseman, & Schwebach, 2003; Naglieri, Salter, & Edwards, 2004; Paolitto, 1999; Pottinger, 2002; Van Luit, Kroesbergen, & Naglieri, 2005). Such distinct group differences studies are important for validity and are necessary but not sufficient for establishing diagnostic utility of a test. The present study examined both distinct group differences and diagnostic utility of the CAS related to ADHD and found support for both.

The Das-Naglieri Cognitive Assessment System (CAS; Naglieri & Das, 1997) is a test of cognitive abilities or intelligence based on the Planning, Attention, Simultaneous, and Successive Theory (PASS; Das, Naglieri, & Kirby, 1994) which itself is based on Luria's Functional System of neuropsychology (Luria, 1966; Luria, 1973). PASS theory (Das, Naglieri, & Kirby, 1994; Naglieri & Das, 1997) proposes that children with attention deficit hyperactivity disorder (ADHD) would, as Barkley (2003, 2006) suggests, be more impulsive (and less reflective) in their cognitive processing, which in turn would impact planning processing. Attentional difficulties would affect attentive processing. Studies of CAS performance of children with ADHD typically show lowest performance on Planning with deficits in Attention but normal Simultaneous and Successive processing (Crawford, 2002; Naglieri & Das, 1997; Naglieri, Goldstein, Iseman, & Schwebach, 2003; Naglieri, Salter, & Edwards, 2004; Paolitto, 1999; Pottinger, 2002; Van Luit, Kroesbergen, & Naglieri, 2005). While these group differences studies provide support for the construct validity of the CAS via distinct group differences, such support is inadequate for determining the utility of the CAS in individual diagnostic decision-making (Mullins-Sweatt & Widiger, 2009). Distinct Specificity = .95, Negative Predictive Power = .98). While a number of CAS studies regarding students with ADHD have examined distinct group differences and found support (Crawford, 2002; Naglieri & Das, 1997, Naglieri, Goldstein, Iseman, & Schwebach, 2003; Naglieri, Salter, & Edwards, 2004; Paolitto, 1999; Pottinger, 2002; Van Luit, Kroesbergen, & Naglieri, 2005), to date no studies have been conducted on the diagnostic utility of the CAS in correctly identifying individual children with ADHD from those without ADHD or from those with other disruptive behavior disorders. The present study examined the construct validity of the CAS by examining distinct group differences *and* the diagnostic utility of CAS in correctly differentiating individuals with ADHD symptoms from those within a normal control group.

Method

Participants

Informed parental consent was obtained for a final sample of 40 students from elementary schools in suburban Pierce County, Washington; ranging from kindergarten to second grade. Groups consisted of children meeting diagnostic criteria for ADHD (n = 20) and a group of children who were randomly selected and matched (to the extent possible) on key

Conclusions

Georgiou & Das (2013)

Article

Hammill Institute on Disabilities

Journal of Learning Disabilities
XX(X) 1–11

DOI: 10.1177/0022219413513924
journaloflearningdisabilities.sagepub.com
SAGE

University Students With Poor Reading Comprehension: The Hidden Cognitive Processing Deficit

George K. Georgiou, PhD[1] and J. P. Das, PhD[1]

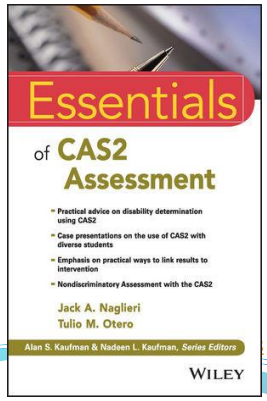
Abstract

The present study aimed to examine the nature of the working memory and general cognitive ability deficits experienced by university students with a specific reading comprehension deficit. A total of 32 university students with poor reading comprehension but average word-reading skills and 60 age-matched controls with no comprehension difficulties participated in the study. The participants were assessed on three verbal working memory tasks that varied in terms of their processing demands and on the *Das–Naglieri Cognitive Assessment System*, which was used to operationalize intelligence. The results indicated first that the differences between poor and skilled comprehenders on working memory were amplified as the processing demands of the tasks increased. In addition, although poor comprehenders as a group had average intelligence, they experienced significant difficulties in simultaneous and successive processing. Considering that working memory and general cognitive ability are highly correlated processes, these findings suggest that the observed differences between poor and skilled comprehenders are likely a result of a deficient information processing system.

Conclusions

IQ Correlations with Achievement?

- IQ scores correlate about **.5 to .55** with achievement Intelligence (Brody, 1992)
- But traditional tests have achievement in them
- Naglieri (1999) and Naglieri & Otero (2017) summarized the correlations between several tests and achievement
  - The median correlation between each test's overall score and all achievement variables was obtained



Correlations with Achievement

- Average correlations between IQ Scales with total achievement scores
- The strength of measuring *basic psychological processes* as PASS is clear

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

Correlations Between Ability and Achievement			Average Correlation	
Test Scores			All Scales	Scales without achievement
WISC-V	Verbal Comprehension	.74		
WIAT-III	Visual Spatial	.46		
N = 201	Fluid Reasoning	.40		
	Working Memory	.63		
	Processing Speed	.34	.53 →	.47
WJ-IV COG	Comprehension Knowledge	.50		
WJ-IV ACH	Fluid Reasoning	.71		
N = 825	Auditory Processing	.52		
	Short Term Working Memory	.55		
	Cognitive Processing Speed	.55		
	Long-Term Retrieval	.43		
	Visual Processing	.45	.54 →	.50
KABC	Sequential/Gsm	.43		
WJ-III ACH	Simultaneous/Gv	.41		
N = 167	Learning/Glr	.50		
	Planning/Gf	.59		.48
	Knowledge/GC	.70	.53 →	
CAS	Planning	.57		
WJ-III ACH	Simultaneous	.67		
N=1,600	Attention	.50		
	Successive	.60	→	.59

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

Time to Reflect

Implications

- Non-discriminatory data suggest that traditional IQ tests yield larger race and ethnic differences than tests of basic psychological processing.
  - Conclusion: KABC2 and CAS2
- Validity data suggests show not all tests yield profiles that differentiate SLD and ADHD, evidence needed for determining strengths and weaknesses suggests.
  - Conclusion: CAS2 yields different profiles
  - And CAS correlates the highest with achievement.

The Case of Rocky – Discrepancy Consistency Model example

From assessment to intervention

Jack A. Naglieri, Ph.D. jnaglier@gmu.edu

The case of Rocky

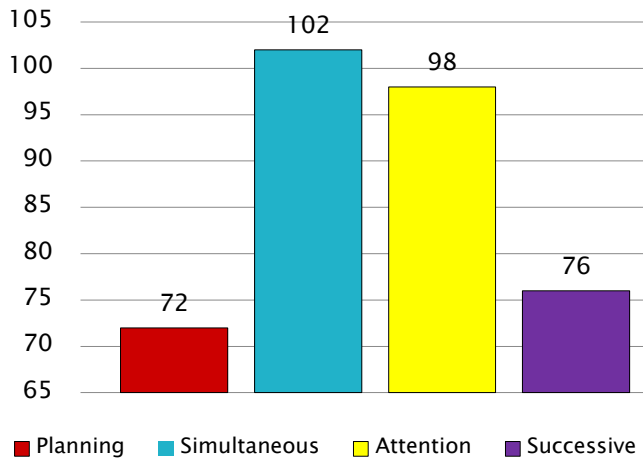
- Rocky[1] is a real child with a real problem
- He lives in a large middle class school district
  - a wide variety of services are available
- In first grade Rocky was performing significantly below grade benchmarks in reading, math, and writing.
  - He received group reading instruction weekly and six months of individual reading instruction from a reading specialist
  - He made little progress and was retained

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

The case of Rocky

- By the middle of his second year in first grade Rocky was having difficulty with
  - decoding, phonics, and sight word vocabulary; math problems, addition, fact families, and 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 and is having difficulty in reading, writing, and math
- A comprehensive evaluation was conducted
- Here is a look at just the evidence of a 'disorder in basic psychological processes'

Basic Psychological Processing Scores



The case of Rocky

- He has intra-individual differences in cognitive processes that underlie his academic problems
- Rocky has a "disorder in one or more of the basic psychological processes"

	Score	Diff	Significant	S/W
Planning	72	-15.0	yes	Weakness
Simultaneous	102	15.0	yes	
Attention	98	11.0	yes	
Successive	76	-11.0	yes	Weakness
PASS mean	87.0			

Conclusions

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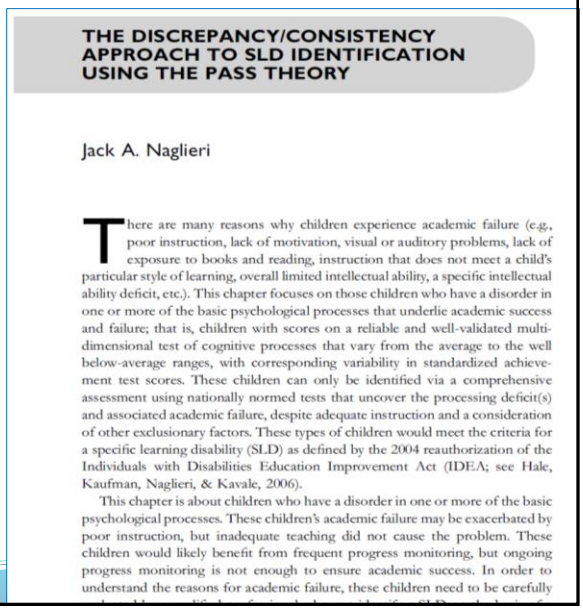
Discrepancy/Consistency Model (DCM)

- Naglieri (2011). The discrepancy/consistency approach to SLD identification using the PASS theory. In D. P. Flanagan & V. C. Alfonso (Eds.), *Essentials of Specific Learning Disability Identification* (145-172). Hoboken, NJ: Wiley.
- This chapter can be downloaded from www.jacknaglieri.com



THE DISCREPANCY/CONSISTENCY APPROACH TO SLD IDENTIFICATION USING THE PASS THEORY

Jack A. Naglieri

There are many reasons why children experience academic failure (e.g., poor instruction, lack of motivation, visual or auditory problems, lack of exposure to books and reading, instruction that does not meet a child's particular style of learning, overall limited intellectual ability, a specific intellectual ability deficit, etc.). This chapter focuses on those children who have a disorder in one or more of the basic psychological processes that underlie academic success and failure; that is, children with scores on a reliable and well-validated multidimensional test of cognitive processes that vary from the average to the well below-average ranges, with corresponding variability in standardized achievement test scores. These children can only be identified via a comprehensive assessment using nationally normed tests that uncover the processing deficit(s) and associated academic failure, despite adequate instruction and a consideration of other exclusionary factors. These types of children would meet the criteria for a specific learning disability (SLD) as defined by the 2004 reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA; see Hale, Kaufman, Naglieri, & Kavale, 2006).

This chapter is about children who have a disorder in one or more of the basic psychological processes. These children's academic failure may be exacerbated by poor instruction, but inadequate teaching did not cause the problem. These children would likely benefit from frequent progress monitoring, but ongoing progress monitoring is not enough to ensure academic success. In order to understand the reasons for academic failure, these children need to be carefully

Discrepancy / Consistency Model

- The Discrepancy / Consistency Model is a method used to ensure that there is evidence of "a disorder in 1 or more of the basic psychological processes … which manifests itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations."
- The disorder in 1 or more basic psychological processes is found when a student shows a pattern of strengths and weaknesses in basic psychological processes, **and**…
- The imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations is found when a student shows a pattern of strengths and weaknesses in achievement
- The result is two discrepancies and a consistency

Conclusions

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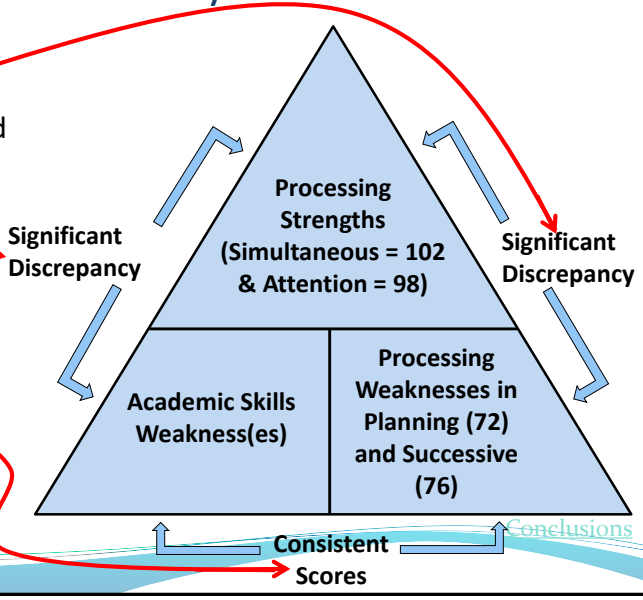
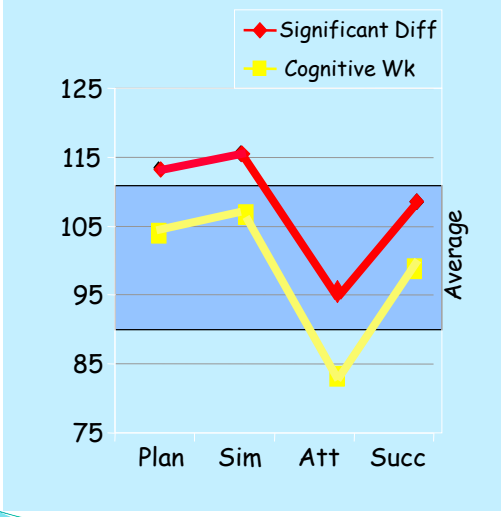
Discrepancy Consistency Model for SLD

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



Conclusions

Evidence of a 'disorder in processing'



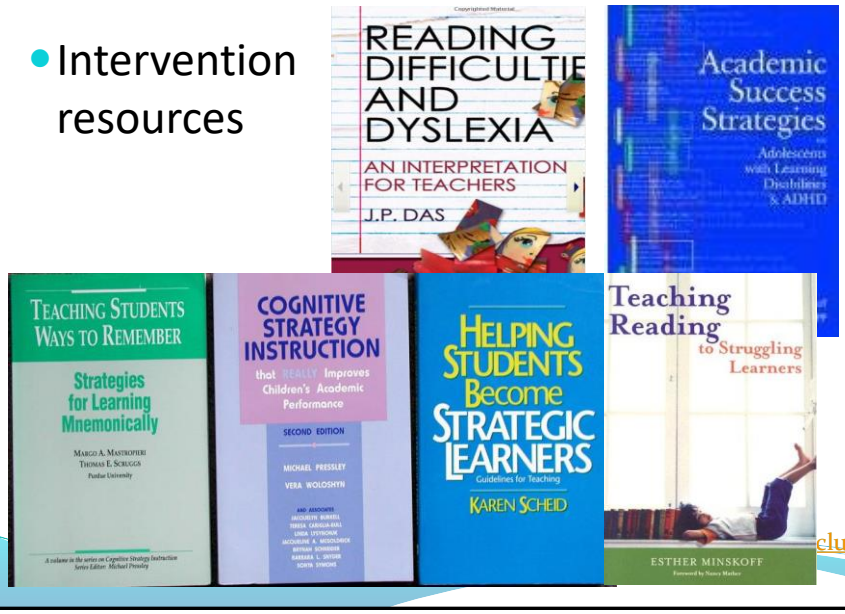
- **Significant Difference**
  - *Is low relative* to the child's mean score
- **Cognitive Weakness**
  - Is a Significant weakness and the score falls below the Average range (<90)

The case of Rocky

- Rocky meets the definition of SLD in IDEA
  - He requires specialized intervention that takes into account his learning needs
  - Intervention should emphasize the use of strategies and plans in all content areas
  - Intervention should include ways to better work with serial information
  - Rote memory and phonics instruction are ill-advised

Intervention Resources

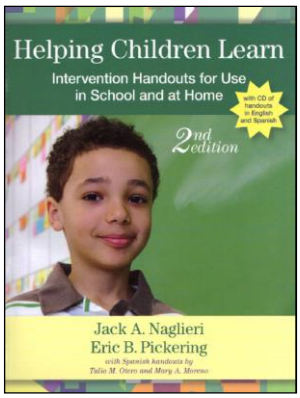
- Intervention resources



Conclusions

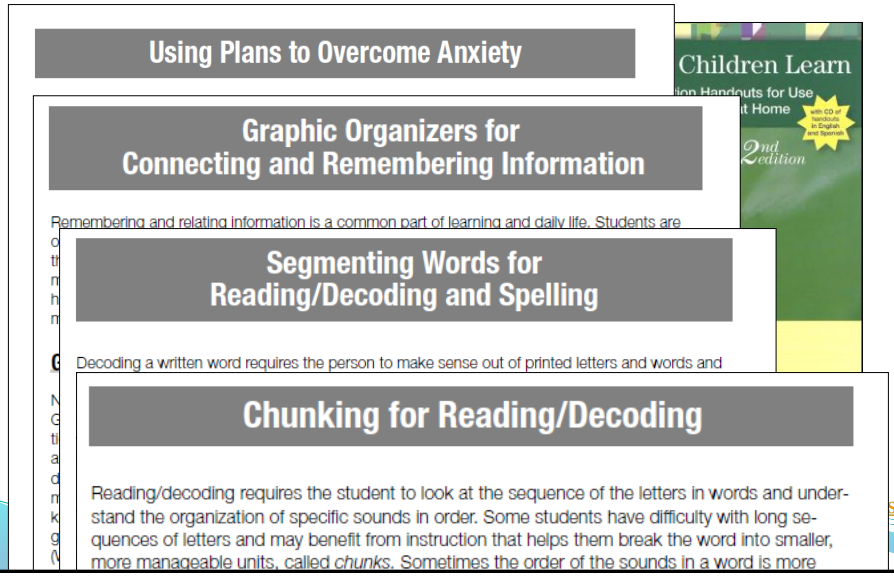
Interventions

- 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.



Conclusions

Interventions for Rocky



Basic Psychological Processes and Intervention

The first time a test of ability has been shown to be relevant to instruction/intervention

Hammill Institute on Disabilities

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SAGE

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 b
Successive) given by special education teachers to students with ADHD
experimental group were exposed to a brief cognitive strategy instructi
development and application of effective planning for mathematical comp
standard math instruction. Standardized tests of cognitive processes a
students completed math worksheets throughout the experimental ph
Johnson Tests of Achievement, Third Edition, Math Fluency and *Wechsle*
Numerical Operations) were administered pre- and postintervention, a
follow-up. Large pre–post effect sizes were found for students in the exp
math worksheets (0.85 and 0.26), Math Fluency (1.17 and 0.09), and Nu
At 1 year follow-up, the experimental group continued to outperform t
students with ADHD evidenced greater improvement in math worksh
(which measured the skill of generalizing learned strategies to other sin
when provided the PASS-based cognitive strategy instruction.

Design of the Study

Experimental and Comparison Groups

7 worksheets with Normal Instruction

Experimental Group

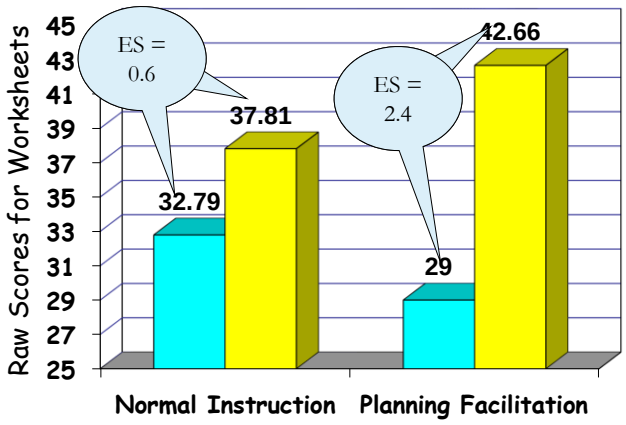
19 worksheets with Planning Facilitation

Comparison Group

19 worksheets with Normal Instruction

Conclusions

Classroom Worksheets Pre-Post

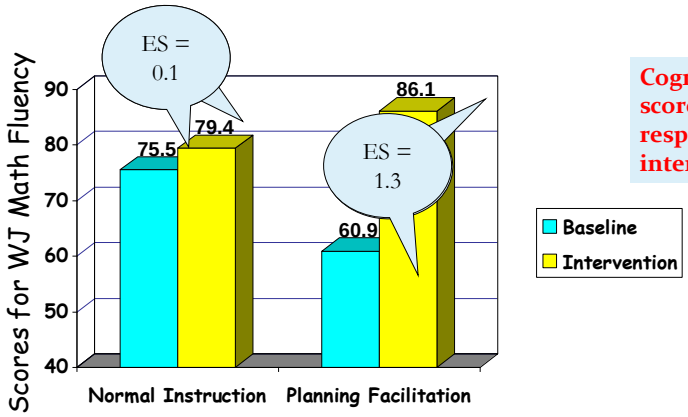


Cognition (Planning scores) predicted response to intervention

Reminder
< .2 = no effect
.2 - .5 = small
.6 - .8 = medium
> .8 = large

Conclusions

WJ Math Fluency



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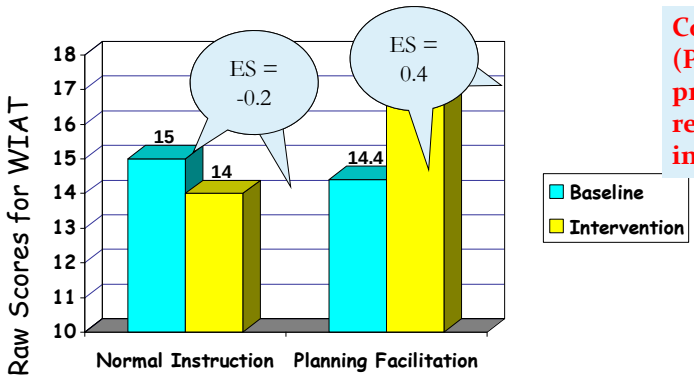
Conclusions

WIAT Numerical Operations



Cognition (Planning scores) predicted response to intervention

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Conclusions

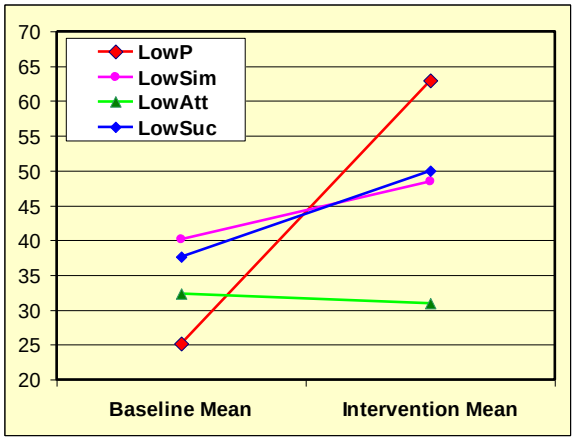
One Year Follow-up

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 ($M = 3.21$, $SD = 18.21$, $d = 0.09$).

Conclusions

Iseman (2005)

- Baseline Intervention means by PASS profile
- Different response to the same intervention



Cognition (Planning scores) predicted response to intervention

Conclusions

- When we measure PASS basic neurocognitive processes with the CAS2 we …
  - measure abilities from a brain-based theory
  - Can predict achievement better than any other ability test
  - can assess students fairly
  - obtain profiles for special populations
  - can select interventions that match the PASS characteristics of the learner

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