- Educational therapy is the practice of providing personalized remedial instruction to children and adults with learning challenges, including but not limited to dyslexia, ADHD, executive functioning deficits, and language, visual and auditory processing issues. The ultimate goal of educational therapy is to foster development of self-confident, independent individuals who feel positively about themselves and their potential as lifelong learners.
- Educational therapists understand the social, behavioral and emotional factors that can impact learning. They have extensive training and experience in aacademic assessments, developing intervention plans, and implementing strategies to addresses challenges with reading, writing, spelling, math organization, and study skill. A vital role of the educational therapist is to serve as case manager, working in collaboration with family, teachers, and other professionals involved in the client's life.
- dministering

1

Think Smart: PASS Neurocognitive Theory for School and Life

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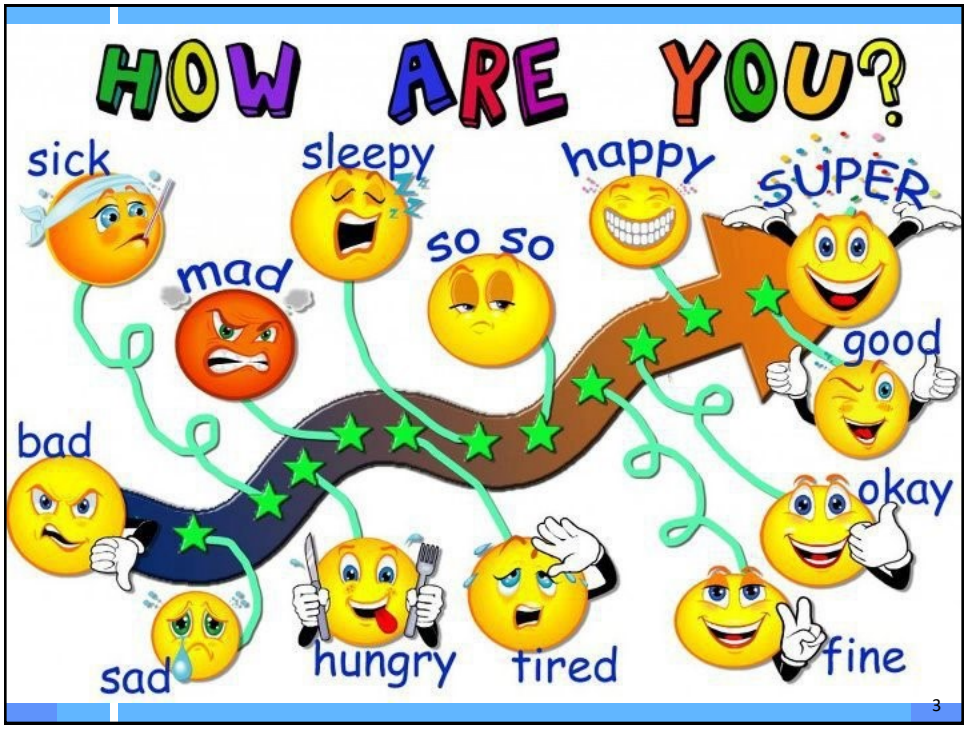
2



3

Resources and Disclosures

4

www.jacknaglieri.com

5

Presentation Outline

- Introduction
  - Using groups to stimulate thinking
  - How traditional IQ has influenced us
- A new way of thinking about intelligence
  - What is PASS theory of learning
  - How to measure PASS neurocognitive processes
- Case studies with instructional implications
- Final thoughts

6

My Background

- Interest in intelligence and instruction
-
-
-

7

Presentation Outline

- Introduction
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- Final thoughts

8

Core Groups - Stimulate Learning

- Groups of 3-5
- Introduce yourself to the group
- Establish roles:
  - **C**oach
  - **O**rganizer (keeps time)
  - **R**ecorder
  - **E**nergizer
- Were you taught to think smart?

9

Let's Practice: Thinking Together

- As you watch the following video, think…
- What was the teachers goal in this skit?
- Was the goal achieved ?
- Why was it so hard to get the students to think?
- Your own questions and thoughts..

10

11

Time to Talk: Core Groups

- **Task:**
- What was the teachers goal in this skit?
- Was the goal achieved ?
- Why was it so hard to get the students to think?
- **STAND AND SHARE**

12

Mountain View High School Student Comments

- 'The teacher was frustrated because the students weren't thinking about what he was saying'
- 'They should have paused before responding so that they could think'
- 'When you feel pressure you'll say anything if you don't know the answer'

13

Mountain View High School Student Comments

- We need to know why the teacher is getting us to learn history
- The way the teachers run the class stops you from thinking because they tell you there is only one way to do something – but it's a fact that there is more than one way to solve a problem'
- 'That's what I like about this class, there are different ways to solve the problems'

14

WHY DON'T KIDS THINK SMART?

15

"Just Think!"

- What do we mean – Just think?
- Thinking has many names
  - Metacognition, executive function, mindfulness, cognitive processing, IQ, intelligence, attention, reasoning, problem solving, memory etc.
- Psychologists have used these terms when defining thinking -- especially intelligence
- We need to reflect on the concept of IQ and intelligence to define how to THINK SMART

16

Presentation Outline

- Introduction
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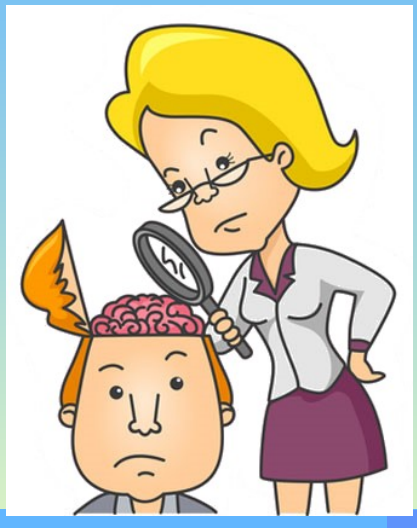
- Case studies with instructional implications
- Final thoughts

17

WHY DO WE MEASURE IQ THE WAY WE DO?

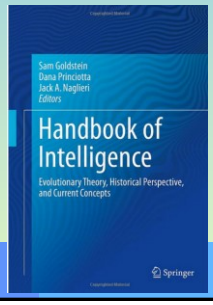
THE HISTORY OF IQ TESTS



18

Evolution of IQ

http://www.jacknaglieri.com/cas2.html



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

20

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, 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

Origins of Traditional IQ

- April 6, 1917 is remembered as the day the United States entered World War I.


"All the News That's Fit to Print."

The New York Times.

NEW YORK, TUESDAY, DECEMBER 9, 1941.

U. S. DECLARES WAR, PACIFIC BATTLE
MANILA AREA BOMBED; 1,500 DEAD IN
HOSTILE PLANES SIGHTED AT SAN FI

TURN BACK TO SEA
Two Formations Neared City on Radio Beams, Then West Astray

ALARM IS WIDESPREAD
Whole Coast Has a Nervous Night—Many Cities Blacked Out

Philippines Pounded All Day As Raiders Strike at Troops

Air Base Near Capital Among Targets Hit by Japanese—Landing on Lubang With Aid of Fifth Columnists Reported

BATTLESHIP LOST
Capsized in Pearl Harbor, Destroyer Is Blown Up, Other Ships Hurt

FLEET NOW IS FIGHTING
Aid Rushed to Hawaii—Some Congressmen Sharply Critical

Origins of Traditional IQ

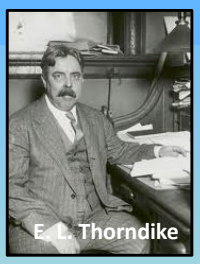
On that day same a group of psychologists held a meeting in **Harvard University's Emerson Hall** to discuss the possible role

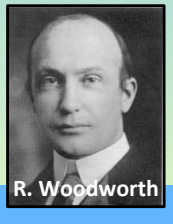
psychologists could play with the war effort (Yerkes, 1921). Some of the members: Yerkes, Thorndike, Seashore, Terman, Otis and others…

21

Origins of Traditional IQ

- They met at the Training School in Vineland, New Jersey on May 28, 1917 to construct a test
- Once they had a collection of tasks they conducted research on the newly devised measures


E. L. Thorndike


R. Woodworth

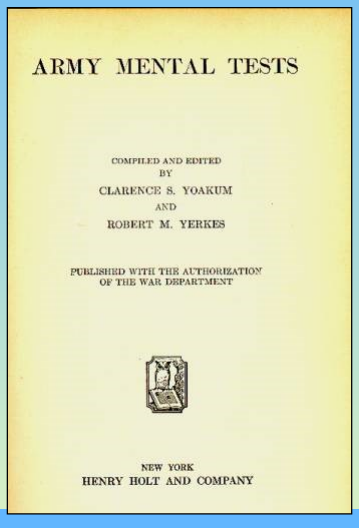
22

Origins of Traditional IQ

- On July 20, 1917 the authors concluded that the Army Alpha and Beta 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).
- Thus**, July 20, 1917** is the birth date of the verbal, quantitative, nonverbal IQ test format -- **Traditional groups and individually administered IQ tests.**
  - **In 1 year we can celebrate the 100th year of IQ**

23

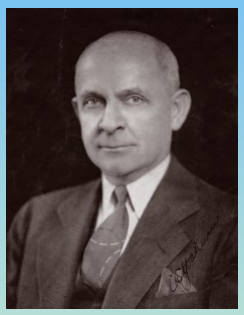
IQ's Origins

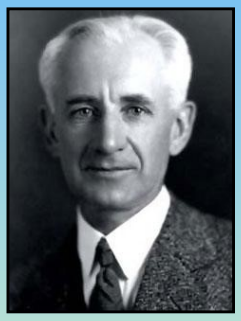

ARMY MENTAL TESTS

COMPILED AND EDITED
BY
CLARENCE S. YOAKUM
AND
ROBERT M. YERKES

PUBLISHED WITH THE AUTHORIZATION
OF THE WAR DEPARTMENT

NEW YORK
HENRY HOLT AND COMPANY





- Yoakum & Yerkes (1920) created IQ tests used today

24

1920 Army Testing

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

Verbal & Quantitative

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

Nonverbal

25

Army Mental Tests - Vocabulary (WISC-V)

Test J, vocabulary.

Materials.—Accompanying five series of words.

Directions.—Place the list so that subject may see the words and pronounce them if he wishes. If a word is pronounced incorrectly, examiner should give the correct pronunciation. Formula: "What does the word ..... mean?" If subject hesitates or seems to think that he must give a formal definition, examiner says, "It doesn't matter how you say it. All I care for is to find out whether you know what the word means. Tell me the meaning any way you want to express it." Subject is encouraged as liberally as necessary.

Ordinarily it will not he necessary to secure responses to all of the 40 words in a series, as some will obviously he too hard or too easy for the subject heing tested. This is especially true in series 1, the words of which have heen graded accurately according to difficulty. In each series, however, the testing should he over a wide enough range to secure an accurate score.

Scoring.—Credit each response as + or −. Occasionally half credits may he given, but in general this should be avoided.

The score is + if the response shows that subject knows at least one approximately correct meaning of the word. It is not necessary that the meaning given be the most common one. The form of definition is disregarded in computation of score, but for clinical purposes it is well to designate especially superior definitions by + +.

Series 1.

1 lecture	11 forfeit	21 conscientious	31 gelatinous
2 guitar	12 majesty	22 philanthropy	32 milksop
3 scorch	13 shrewd	23 exaltation	33 declivity
4 honfire	14 Mars	24 frustrate	34 irony
5 misuse	15 dilapidated	25 flaunt	35 incrustation

Army Mental Tests - Information (WISC-V)

EXAMINATION Q

Test 5 Information.

1 The color of fresh snow is white blue brown green
2 The ears are used in breathing digestion hearing seeing
3* Cows eat mostly meat grass nuts fruit
4 Dogs like best to eat grass seeds fruits meat
5 Thorns grow on daisies buttercups sun-flowers roses
6 Bull Durham is the name of chewing-gum aluminum-ware tobacco clothing
7 America was discovered by Drake Hudson Columbus Cabot
8 The apple grows on a vine bush tree reed
9 Berlin is the capital of Russia Germany England France
10 Blood is pumped by the lungs liver heart kidneys
11 Molasses is obtained from honey petroleum turpentine sugar-cane
12 Bowling is played with rackets cards balls dice
13 Baltimore is in Maryland Virginia Pennsylvania Ohio
14 St. Paul is in Missouri Minnesota Mississippi Florida
15 Ordinary flour is made from barley rye oats wheat
16 The lemon is most like the apple pear peach orange
17 The sacrifice hit comes in foot-ball tennis base-ball hand-ball
18 Gas engines are lubricated by gasoline air water oil
19 Buenos Ayres is a city of Spain Argentina Brazil Portugal

Army Mental Tests - Arithmetic (WISC-V)

TEST 2

Get the answers to these examples as quickly as you can.
Use the side of this page to figure on if you need to.

SAMPLES
1 How many are 5 men and 10 men?.....Answer (15)
2 If you walk 4 miles an hour for 3 hours, how far do you walk?..Answer (12)

1 How many are 40 guns and 6 guns?.....Answer ( )
2 If you save $6 a month for 5 months, how much will you save?.....Answer ( )
3 If 32 men are divided into squads of 8, how many squads will there be?....Answer ( )
4 Mike had 11 cigars. He bought 3 more and then smoked 6. How many cigars did he have left?.....Answer ( )
5 A company advanced 6 miles and retreated 3 miles. How far was it then from its first position?.....Answer ( )
6 How many hours will it take a truck to go 48 miles at the rate of 4 miles an hour?.....Answer ( )
7 How many pencils can you buy for 40 cents at the rate of 2 for 5 cents?....Answer ( )
8 A regiment marched 40 miles in five days. The first day they marched 9 miles, the second day 6 miles, the third 10 miles, the fourth 9 miles. How many miles did they march the last day?.....Answer ( )
9 If you buy 2 packages of tobacco at 8 cents each and a pipe for 55 cents, how much change should you get from a two-dollar bill?.....Answer ( )
10 If it takes 8 men 2 days to dig a 160-foot drain, how many men are needed to dig it in half a day?.....Answer ( )

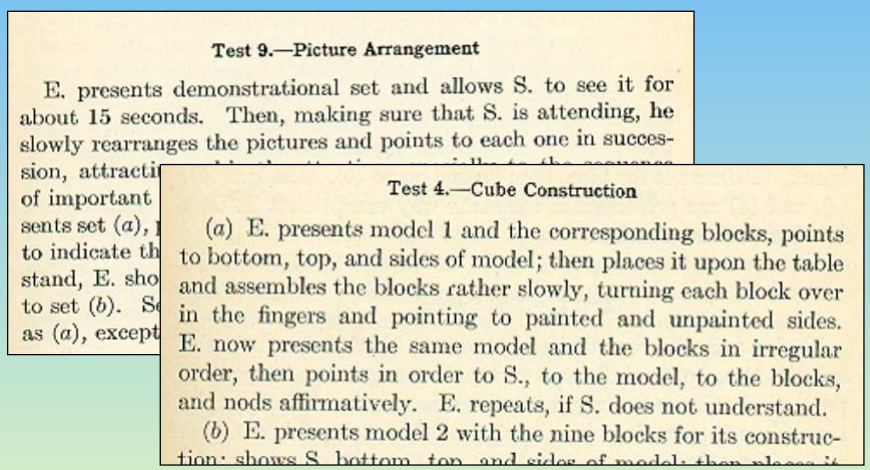
ARMY MENTAL TESTS

28

- NONVERBAL TESTS

29

Army Mental Tests → Picture Arrangement & Block Design (WISC-V)



Test 9.—Picture Arrangement

E. presents demonstrational set and allows S. to see it for about 15 seconds. Then, making sure that S. is attending, he slowly rearranges the pictures and points to each one in succession, attracti
of important
sents set (*a*),
to indicate th
stand, E. sho
to set (*b*). S
as (*a*), except

Test 4.—Cube Construction

(*a*) E. presents model 1 and the corresponding blocks, points to bottom, top, and sides of model; then places it upon the table and assembles the blocks rather slowly, turning each block over in the fingers and pointing to painted and unpainted sides. E. now presents the same model and the blocks in irregular order, then points in order to S., to the model, to the blocks, and nods affirmatively. E. repeats, if S. does not understand.

(*b*) E. presents model 2 with the nine blocks for its construc-
tion; shows S. bottom, top, and sides of model; then places it

30

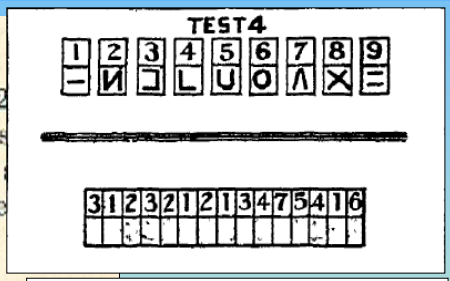
Army Mental Tests - WISC Digit Symbol (Coding (WISC-V) & Mazes

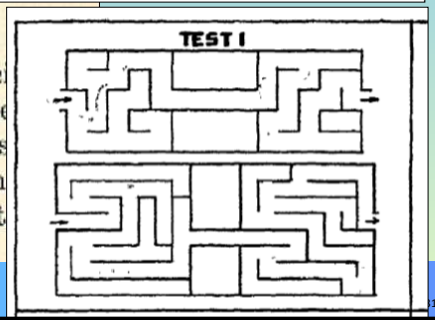
Test 7.—Digit Symbol

record sheet, points to blank below 2
mbol for 2 at top of page, writes in s
me way with the other parts of the
il, points to space below 3 in the te

Test 8.—The Maze

onstration maze (*a*), and with his penc
shortest way out. At critical points h
l in wrong direction without marking, s
tinues to work in the right direction
maze A, gives S. pencil, points to st





Army Mental Tests - WISC Object Assembly

- Wechsler used the Army tests as a basis for his tests
- Wechsler's nonverbal tests were much like those included in the Army Beta

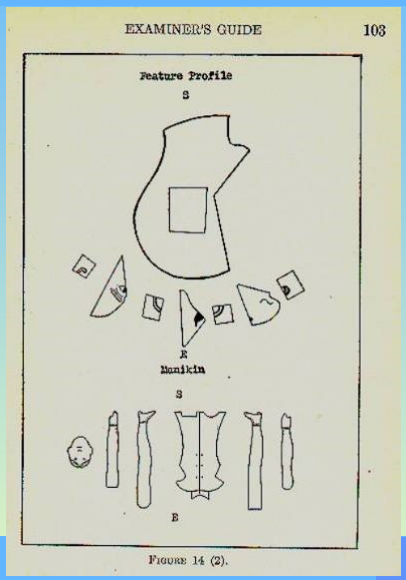


FIGURE 14 (2).

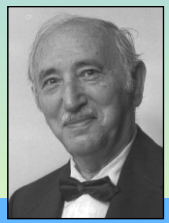
How did the US Army tests become IQ Tests?

Because of David Wechsler

33

Origins of Traditional IQ

- In May of 1918 a 22 year-old David Wechsler administered the Alpha and Beta (Yerkes, 1921, p. 40) at Camp Logan in Texas
- He made a version of the Army tests for use by clinical psychologists
  - He contacted the Psychological Corporation, and spoke to ….



34

Army Alpha and Beta

- The Army Alpha (Verbal & Quantitative) tests became Wechsler's **Verbal IQ scale**
- The Army Beta (visual-spatial) tests became Wechsler's **Performance IQ**, which is now referred to as Nonverbal
- **Did this mean Wechsler believed in Verbal and Nonverbal intelligences?**

35

What a Nonverbal Test Measures

(Naglieri, Brulles, & Lansdown, 2008)

Helping All Gifted Children Learn: A Teacher's Guide to Using the NNAT2

It is important to understand that even though Wechsler's intelligence (IQ) tests were organized into verbal and nonverbal sections, he did not mean that verbal and nonverbal are different types of ability. Wechsler (1958) explicitly stated that the organization of subtests into verbal and performance scales did *not* indicate that two distinctive types of intelligence were being measured. In fact, he

36

What a Nonverbal Test Measures
(Naglieri, Brulles, & Lansdown, 2008)

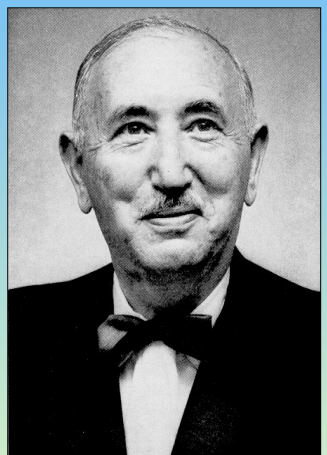
wrote: "the subtests are *different measures of intelligence*, not *measures of different kinds of intelligence*" (p. 64). Similarly, Naglieri (2003) further clarified that "the term nonverbal refers to the content of the test, not a type of ability" (p. 2). Thus, tests may differ in their content or specific demands, but still measure the concept of general intelligence.

37

Wechsler's Definition

- Definition of intelligence does not mention verbal or nonverbal *abilities*:

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



David Wechsler, Ph.D.

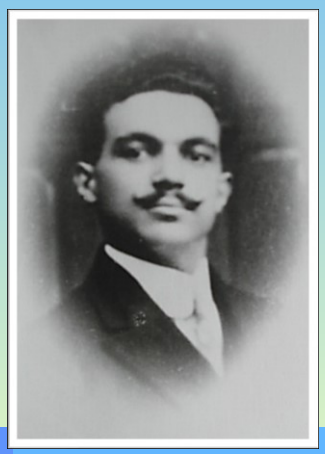
38

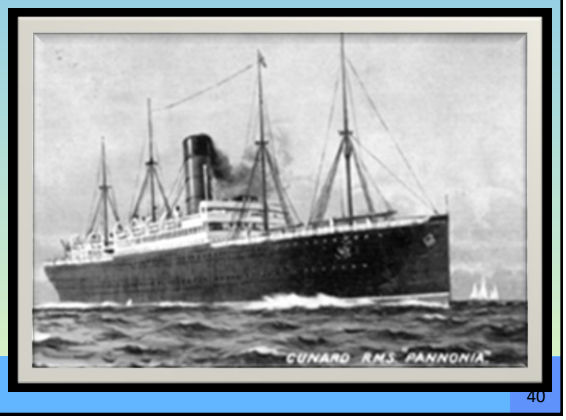
Verbal Nonverbal Intelligence?

- Verbal / Nonverbal is a practical division
- Advantages of Verbal tests
  - they correlate with achievement because they have achievement in them
    - Information, Vocabulary, Arithmetic
- Advantages of Nonverbal Tests
  - they correlate with achievement without having achievement in them
- **Why NONVERBAL** ?

39

Antonino Mirenda



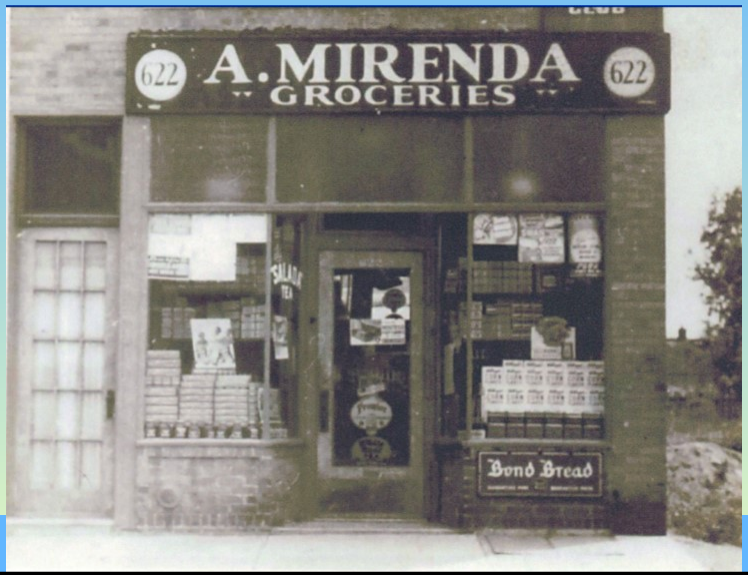


40

Antonino Mirenda - 1907

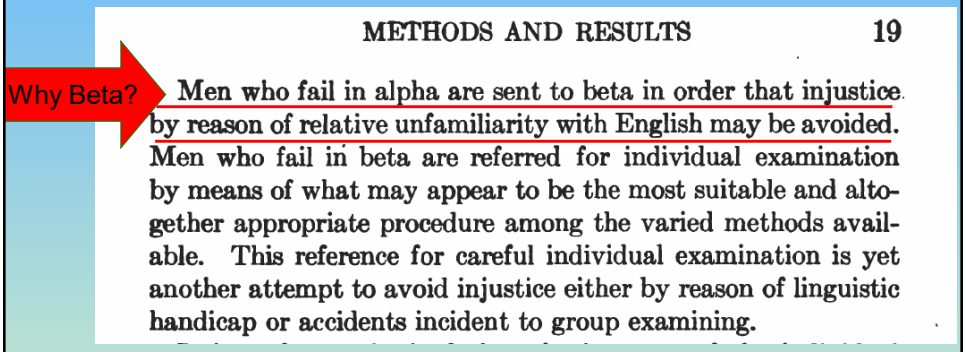
41

A. Mirenda Groceries
622 Ave X, Brooklyn, NY



42

1927 Army Testing



METHODS AND RESULTS 19

Why Beta?

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

Note there is no mention of measuring verbal and nonverbal intelligences – it was a social justice issue.

43

Are Verbal IQ test items different from achievement test items?

The answer may surprise you…

44

Verbal intelligence or achievement?

http://www.jacknaglieri.com/nnat.html

CHAPTER
4

Traditional IQ: 100 Years of Misconception and Its Relationship to Minority Representation in Gifted Programs

Jack A. Naglieri

Introduction

The underrepresentation of minority children in classes for the gifted has been and continues to be one of the most important problems facing educators of gifted students (Ford, 1998; Naglieri & Ford, 2005). The severity of the problem was made obvious in the United States Department of Education's recent report that Black, Hispanic, and Native American students are underrepresented by 50–70% in gifted education

45

VIQ is Achievement - Vocabulary

What does *scared* mean?

(The child answers orally)

Someone who is *glad* is

(a) tall

(b) proud

(c) happy

(d) alone

Wechsler or Binet Vocabulary item presented orally by the examiner:

Stanford Achievement Test Reading Vocabulary

46

VIQ is Achievement - Arithmetic

"A boy had twelve books and sold five. How many books did he have left?"

Stanford-Binet 5th Ed. Quantitative items

Peter counted seventeen lily pads at the pond. There were frogs sitting on five of the lily pads, and the rest were empty. How many lily pads were empty?
(a) 22 (b) 13 (c) 12

Stanford Achievement Test Math item

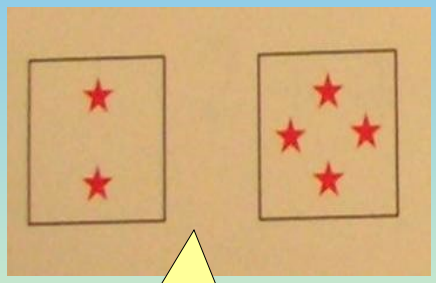
47

Quantitative Ability or Achievement?

- "Neal had five marbles. Then his mother gave him three more marbles. How many marble did he have then?"

Wechsler Individual Achievement Numerical Operations Subtest

- "How many stars are there all together?"

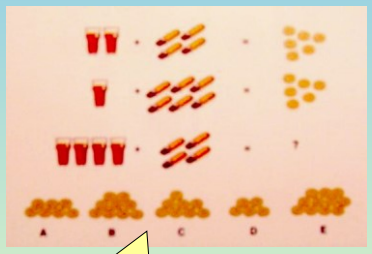


Stanford-Binet 5 Quantitative Reasoning

48

Quantitative Ability or Achievement?

- "Drinks and snacks cost money. Show me how much money these drinks and snacks would cost."



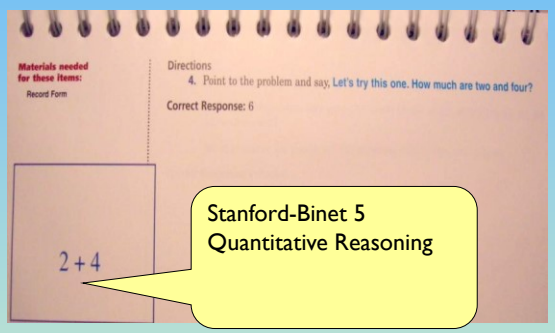
SB5 Quantitative Reasoning

- "If you bought both balls and you had this much money, how much money would you have left?"

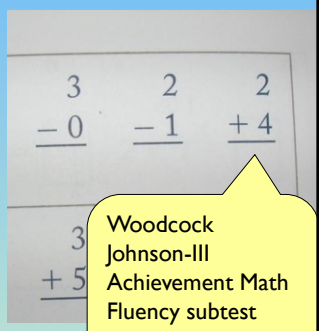
WJ-III ACH Applied Problems

49

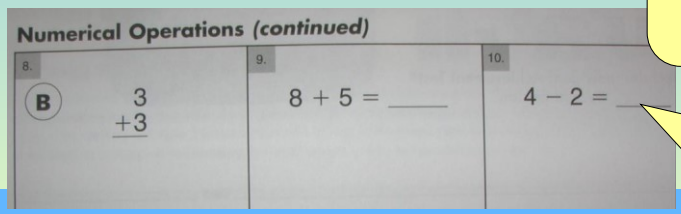
The Same Arithmetic Item!



Stanford-Binet 5 Quantitative Reasoning



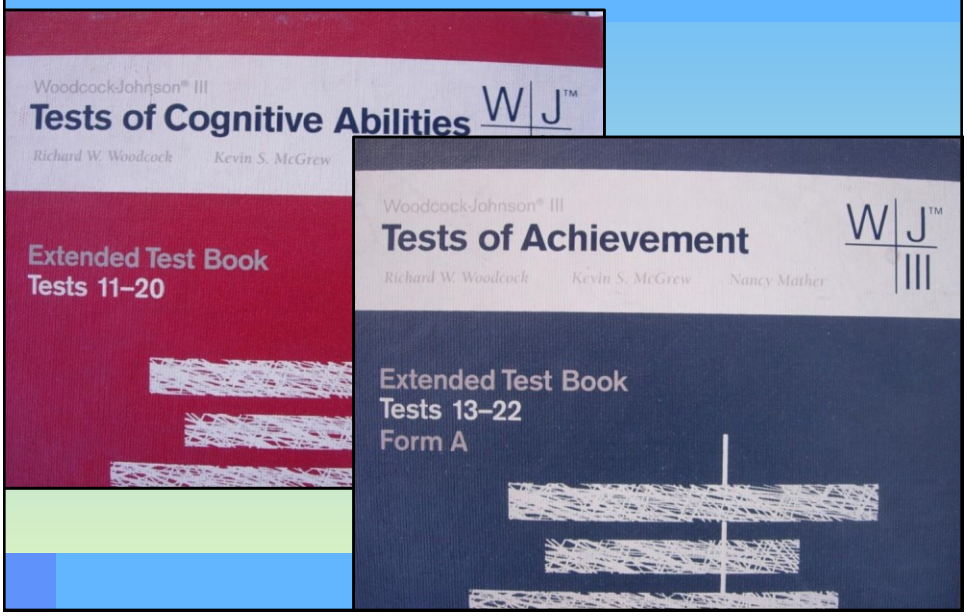
Woodcock Johnson-III Achievement Math Fluency subtest



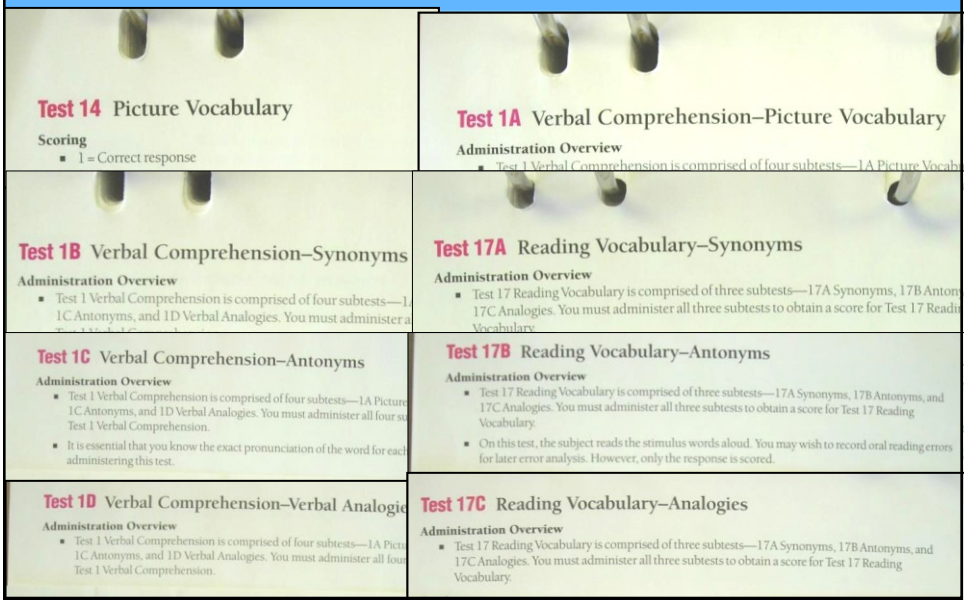
WIAT-II Numerical Operations

50

Ability or Achievement ?



Which is Ability and which is Achievement?



Myth of Verbal IQ - Conclusions

- The lack of a clear distinction between ability and achievement tests has corrupted the very concept of "verbal ability"
- A child who does not have an adequately enriched educational experience will be at disadvantage when assessed with so-called Verbal and Quantitative reasoning "ability" tests

53

Poverty and Test Scores

- Children from homes with limited enrichment receive low test scores because of unequal opportunity to learn
- Too many minority students are penalized on traditional tests of intelligence leading to under- and over-representation
- Many children with Specific Learning Disabilities do poorly on Verbal and Quantitative tests because of school failure and get LOW IQs

54

Minority Representation

- The over-representation of minorities in special education is a significant problem (Naglieri & Rojahn, 2000).
- There is under-representation of minorities in gifted (Ford, 1998).
  - Black, Hispanic, and Native American students by 50% to 70% (U.S. Dept of Education, 1993)

55

Case of Alejandro

Note: this is not a picture of Alejandro

56

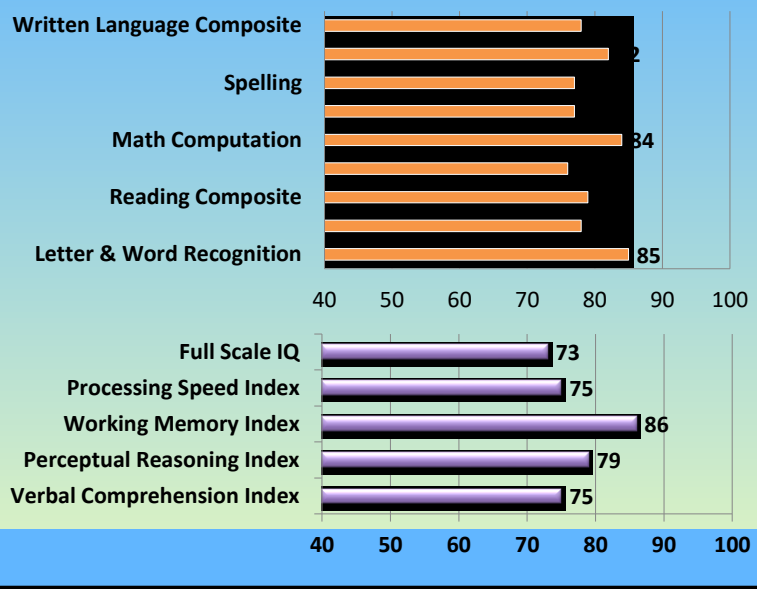
CASE STUDY: ALEJANDRO (C.A. 7-0 GRADE 1)

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

57

WISC-IV ASSESSMENT



58

CORE Group Thinking

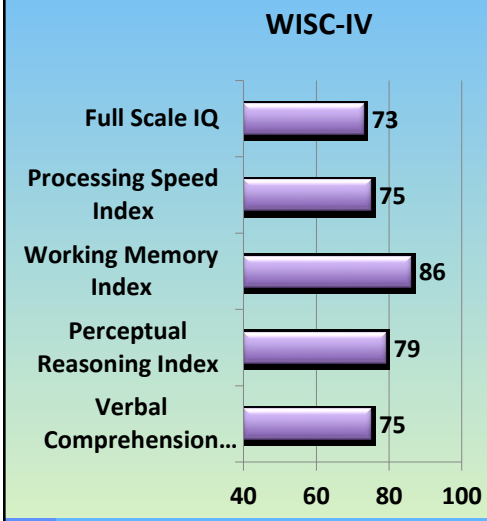
What would you say about Alejandro's abilities based on this assessment?

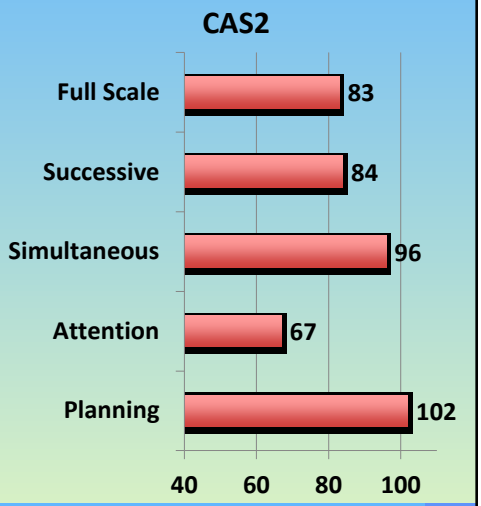
59

- **BACK TO ALEJANDRO**

60

Assessing Brain Function is Different





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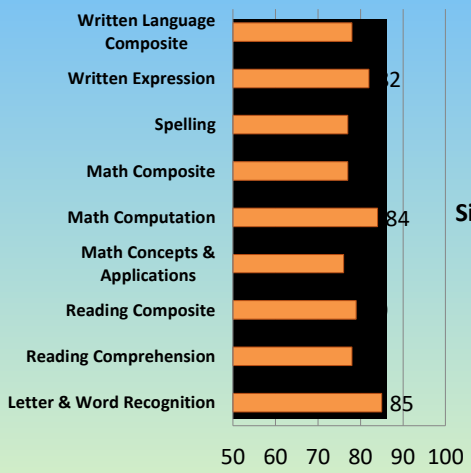
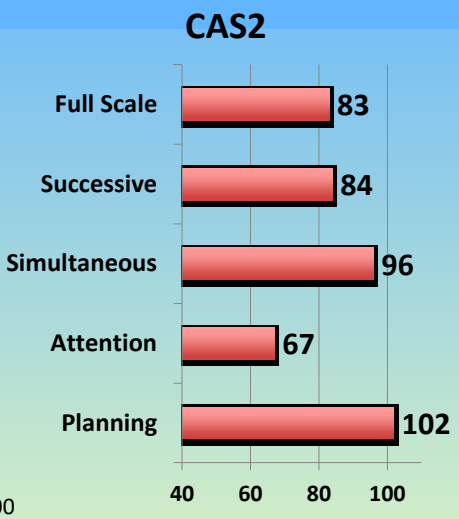
Alejandro's Results





62

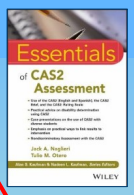
Alejandro and PASS (by Dr. Otero)

- Alejandro is not a slow learner.
- He has good scores in basic psychological processes:
  - Simultaneous = 96 and Planning = 102
- He has a "disorder in one or more of the basic psychological processes"
  - Attention = 67 and Successive = 84
- And he has academic failure which equals an SLD determination.

63

Discrepancy Consistency Method for SLD

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



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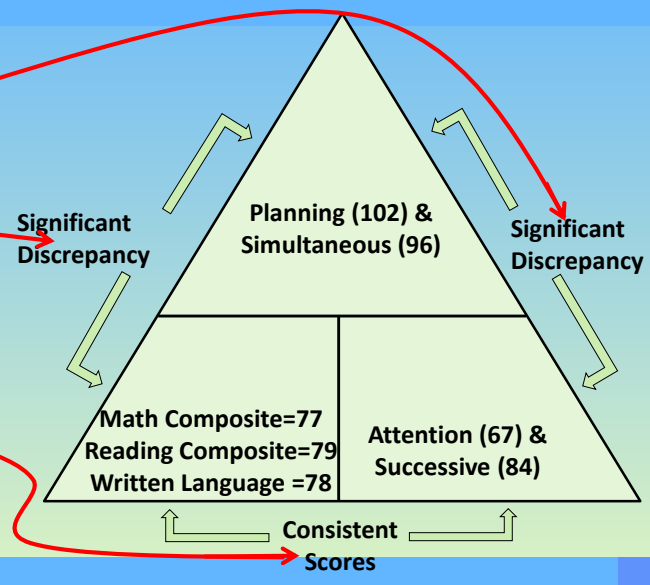
Discrepancy Consistency Model for SLD

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



65

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
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Intelligence 35 (2007) 568–579
INTELLIGENCE

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

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Received 16 May 2006; received in revised form 6 November 2006; accepted 6 November 2006
Available online 8 January 2007

Abstract

Hispanics have become the largest minority group in the United States. Hispanic children typically come from working class homes with parents who have limited English language skills and educational training. This presents challenges to psychologists who assess these children using traditional IQ tests because of the considerable verbal and academic (e.g., quantitative) content. Some researchers have suggested that intelligence conceptualized on the basis of psychological processes may have utility for assessment of children from culturally and linguistically diverse populations because verbal and quantitative skills are not included. This study examined Hispanic children's performance on the Cognitive Assessment System (CAS; [Naglieri, J.A., and Das, J.P. (1997). Cognitive Assessment System. Itasca, IL: Riverside.]) which is based on the Planning, Attention, Simultaneous, and Successive (PASS) theory of intelligence. The scores of Hispanic (N=244) and White (N=1956) children on the four PASS processes were obtained and the respective correlations between PASS and achievement compared. Three complementary sampling methodologies and data analysis strategies were chosen to compare the Ethnic groups. Sample size was maximized using nationally representative groups and demographic group differences were minimized using smaller matched samples. Small differences 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.
Published by Elsevier Inc.

PASS scores – English and Spanish

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

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Brianna DeLauder
George Mason University
Holly Matto
Virginia Commonwealth University

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

This study compared the performance of referred bilingual Hispanic children on the Planning, Attention, Simultaneous, Successive (PASS) theory as measured by English and Spanish versions of the Cognitive Assessment System (CAS; Naglieri & Das, 1997a). The results suggest that students scored similarly on both English and Spanish versions of the CAS. Within each version of the CAS, the bilingual children earned their lowest scores in Successive processing regardless of the language used during test administration. Small mean differences were noted between the means of the English and Spanish versions for the Simultaneous and Successive processing scales; however, mean Full Scale scores were similar. Specific subtests within the Simultaneous and Successive scales

67

English & Spanish CAS

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

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

Otero, Gonzales, Naglieri (2012)

- SLD and PASS scores

APPLIED NEUROPSYCHOLOGY: CHILD, 0: 1–9, 2012
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DOI: 10.1080/21622965.2012.670547

Psychology Press
Taylor & Francis Group

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

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Lauren Gonzales
George Mason University, Fairfax, Virginia

Jack A. Naglieri
University of Virginia, Fairfax, Virginia

This study examined the performance of referred Hispanic English-language learners ($N = 40$) on the English and Spanish versions of the *Cognitive Assessment System* (CAS; Naglieri & Das, 1997). The CAS measures basic neuropsychological processes based on the Planning, Attention, Simultaneous, and Successive (PASS) theory (Naglieri & Das, 1997; Naglieri & Otero, 2011c). Full Scale (FS) scores as well as PASS processing scale scores were compared, and no significant differences were found in FS scores or in any of the PASS processes. The CAS FS scores on the English ($M = 86.4$, $SD = 8.73$) and Spanish ($M = 87.1$, $SD = 7.94$) versions correlated .94 (uncorrected) and .99 (corrected for range restriction). Students earned their lowest scores in Successive processing regardless of the language in which the test was administered. PASS cognitive profiles were similar on English and Spanish versions of the PASS scales. These findings suggest that students scored similarly on both versions of the CAS and that the CAS may be a useful measure of these four abilities for Hispanic children with underdeveloped English-language proficiency.

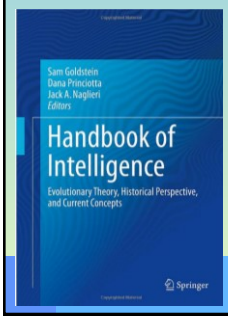
Non-Discriminatory Tests

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

20

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

70

Race Differences

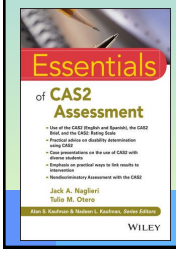


Table 1.6 Standard Score Mean Differences by Race on Traditional and Nontraditional Intelligence Tests

Test	Difference
Traditional IQ Tests	
SB-IV (matched samples)	12.6
WISC-IV (normative sample)	11.5
WJ-III (normative sample)	10.9
WISC-IV (matched samples)	10.0
Nontraditional Tests	
K-ABC (normative sample)	7.0
K-ABC (matched samples)	6.1
KABC-II (matched samples)	5.0
CAS2 (normative sample)	6.3
CAS (demographic controls of normative sample)	4.8
CAS2 (demographic controls of normative sample)	4.3

Note: The data for these results are reported for the Stanford-Binet IV from Wasserman (2000); Woodcock-Johnson III from Edwards and Oakland (2006); Kaufman Assessment Battery for Children from Naglieri (1986); Kaufman Assessment Battery for Children II from Lichenberger, Sotelo-Dynega, and Kaufman (2009); CAS from Naglieri, Rojahn, Matto, and Aquilino (2005); CAS2 from Naglieri, Das, and Goldstein (2014a); and Wechsler Intelligence Scale for Children IV (WISC-IV) from O'Donnell (2009).

Think and Talk in CORE group

&

- Did PASS scores change your mind about Alejandro? How?
- What big "Ah Ha" did you have?
- Your thoughts…

72

Presentation Outline

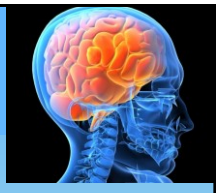
- Introduction
  - Using groups to stimulate thinking
  - How traditional IQ has influenced us
- A new way of thinking about intelligence
  - What is PASS theory of learning
  - How to measure PASS neurocognitive processes
- Case studies with instructional implications
- Final thoughts

73

Intelligence in the 21st Century Conceptualized as brain function

Our Amazing Brains !

From IQ to Brain Function



- Learning is based on BRAIN function
  - Wechsler (traditional IQ) was not based on the brain
  - We can now redefine intelligence as neurocognitive processes based on brain function (A. R. Luria)
- Reinvent understanding of intelligence based on the brain
  - Measure brain function, not IQ
  - Do not include achievement test questions
  - Measure ***thinking*** not ***knowledge***

75

Knowledge vs. Thinking

- What does the student have to ***know*** to complete a task?
  - ***This is dependent on educational opportunity***
- How does the student have to ***think*** to complete a task?
  - ***This is dependent on PASS neurocognitive processes***

76

Presentation Outline

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77

A Brain-Based view of Intelligence

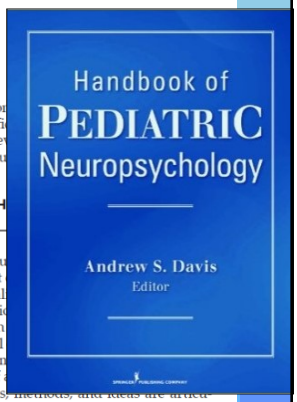
and how this changes our view of students

78

A Theory of Learning

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 o
cesses necessary for effi
also provide for the de
tions and address the qu

FROM NEUROPSYCH
TO ASSESSMENT

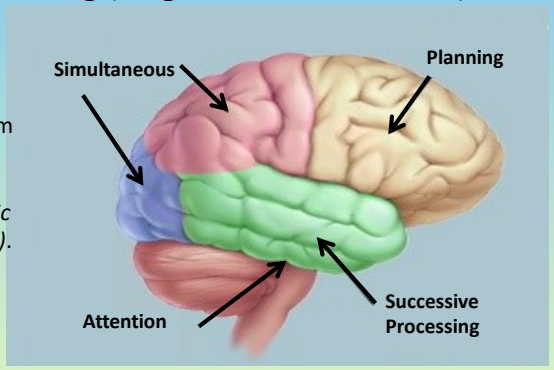
Luria's theoretical accou
perhaps one of the most
2008). Luria conceptual
of brain–behavior relati
orders that the clinician
the brain, the functional
syndromes and impairm
and clinical methods of
theoretical formulations
lated in works such as *Higher cortical functions in man* (1966, 1980) and *The Working Brain* (1973). Luria viewed the brain as a functional mosaic, the parts of which interact in dif-

79

PASS Neurocognitive Theory

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

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.



80

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

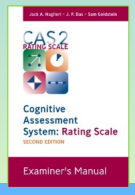
- **PASS theory** is a way to measure neuro-cognitive abilities related to brain function

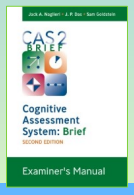
81

PASS Comprehensive System

(Naglieri, Das, & Goldstein, 2014)

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





82

Here's Where We're Going Today

- Planning
- Attention
- Successive
- Simultaneous

83

INTELLIGENCE CONCEPTUALIZED AS BRAIN FUNCTION

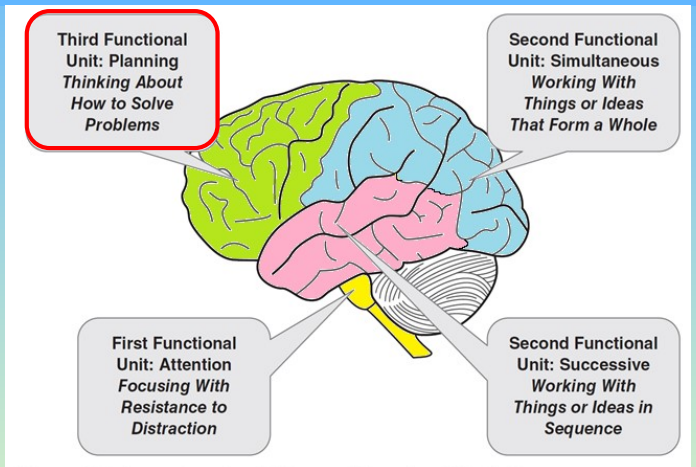
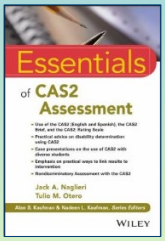


Figure 1.2 Three Functional Units and Associated Brain Structures

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



84

PASS Theory: Planning

- **Planning** is a neurocognitive process that a person uses to determine, select, and use efficient solutions to problems
  - problem solving
  - developing plans and using strategies
  - retrieval of knowledge
  - impulse control and self-control
- These can also be described as executive function, metacognition, strategy use

85

Which Lemming has good Planning?

86

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

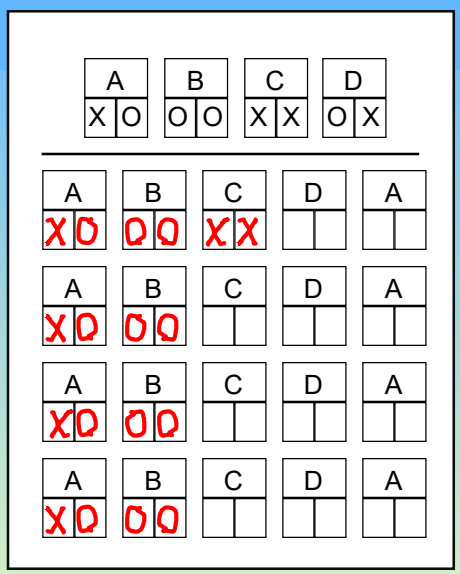
___ + ___ + ___ + ___ + ___ = ☐

Planning Raw Score

87

Planned Codes 1

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

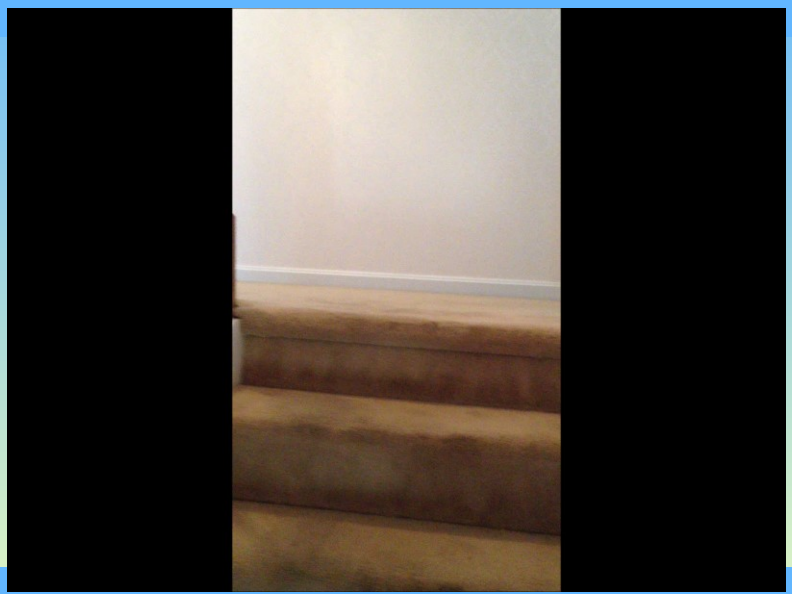


88

Does a 13 month old Plan?

89

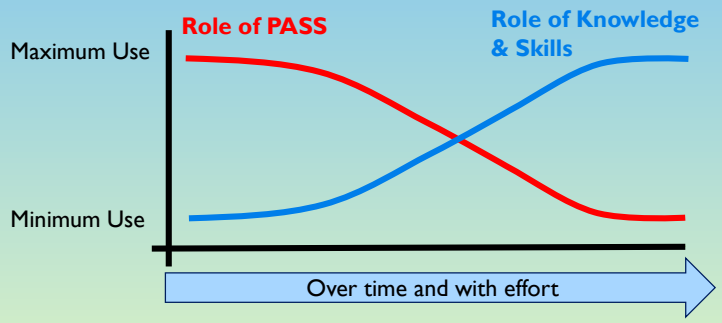
Age 19 mos: Knowledge & Planning



90

Planning Learning Curves

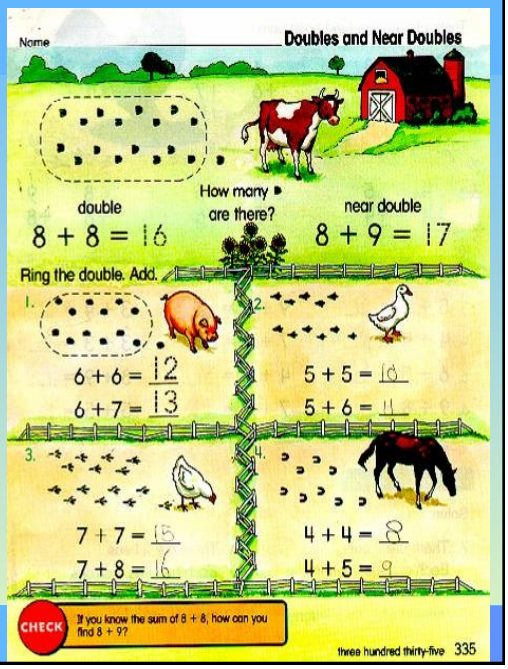
- Learning depends upon many factors especially PASS
- At first, PASS plays a major role in learning
- When a task is practiced and learned it requires less thinking (PASS) and becomes a skill



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

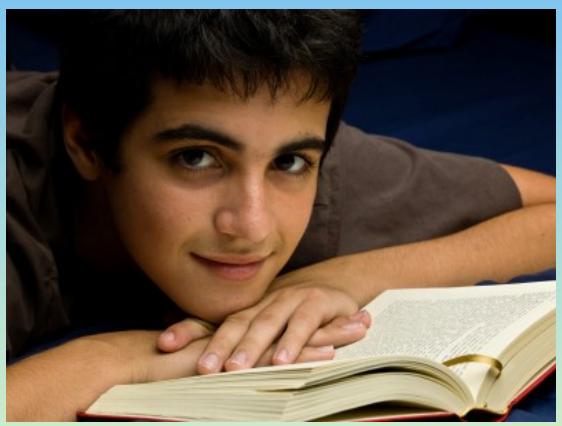
Math Strategies

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.



The Case of Rocky

Specific Learning Disability and ADHD



93

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.

94

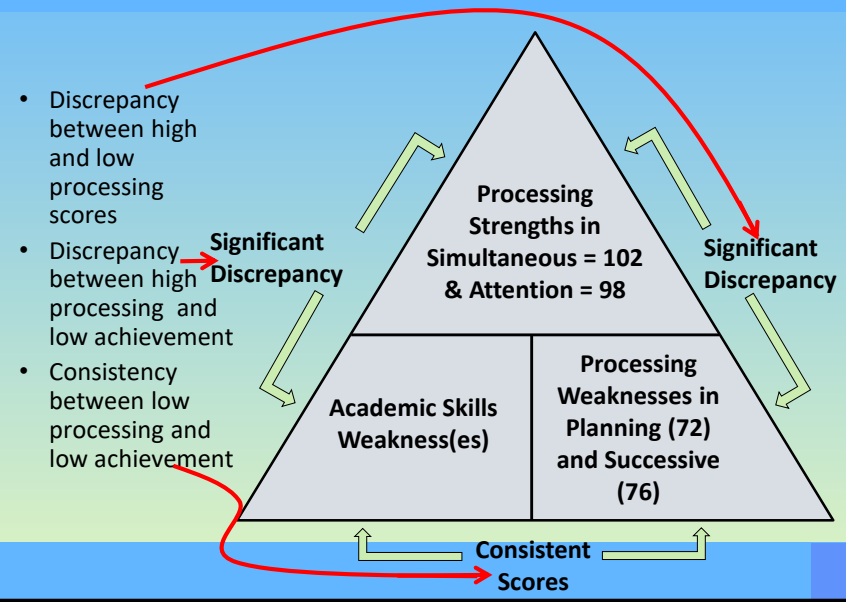
The case of Rocky

- 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

95

Discrepancy Consistency Model for Rocky

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



PASS PASS Intervention Protocol

- Help child understand his/her PASS strengths and areas of challenges (Intentional & Transparent)
- Encourage Motivation & Persistence (Mindsets)
- Support in developing strategies for approaching tasks (Skill Sets)
  - Student/Peer or Teacher generated
  - Model and Scaffold as needed
- Encourage independence and self efficacy

97

Intervention Plan for Rocky – K Kryza

- Be Intentional and Transparent
  - Explain his PASS scores to him
- Build on His Strengths
  - Help him use his Attention and Simultaneous Strengths to support his learning challenges with Planning and Successive.
- Develop Effective Skill Sets to remediate his weaker skills
  - Offer and encourage the use of strategies that can improve his planning and successive processing.
- Encourage a Growth Mindset and Self Efficacy

98

Think SMART!

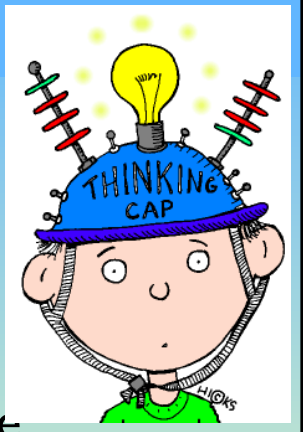
Stop and THINK

Make a PLAN

Take **A**ction!

Review/Reflect/Revise

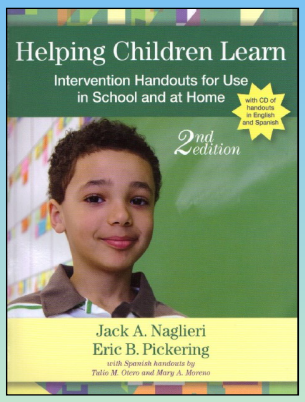
Ta da! (or) Try Again



Developed by Naglieri and Kryza, 2014

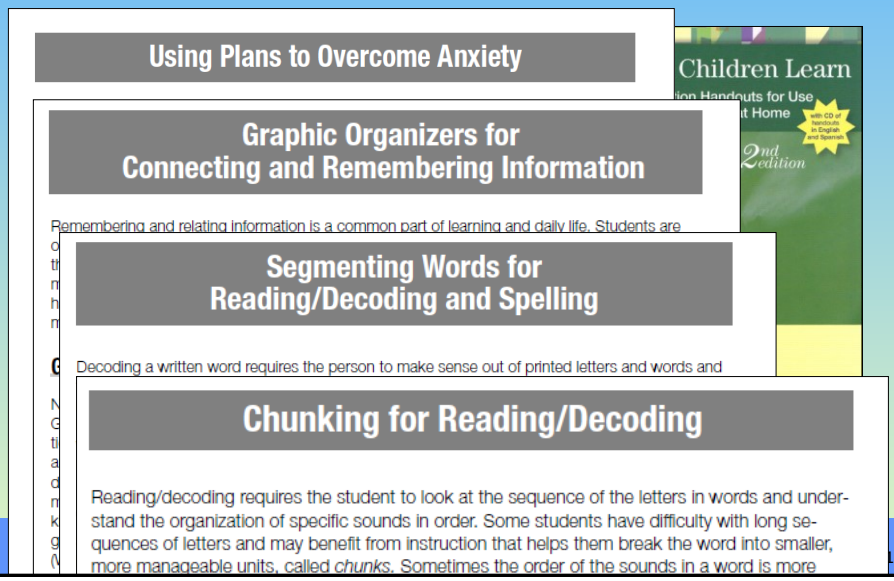
Interventions

- 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.



100

Interventions for Rocky



101

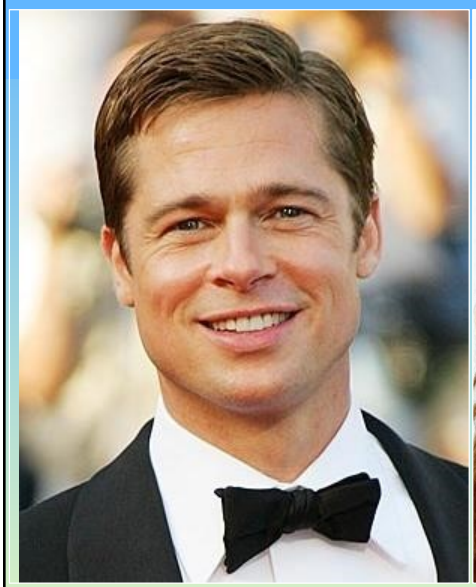
Think and Talk Time

&

- In your group, determine how you can help Rocky learn better
- Consider how he could self-assess his own growth in reducing his anxiety and increasing his use of plans (strategies)
- How could he ask his teachers to help the support him as a learner? (Self Efficacy)
- Your thoughts…

102

103



104

Here's Where We're Going Today

- Planning
- Attention
- Successive
- Simultaneous

105

PASS DEEPER DIVE:
INTELLIGENCE CONCEPTUALIZED AS BRAIN FUNCTION

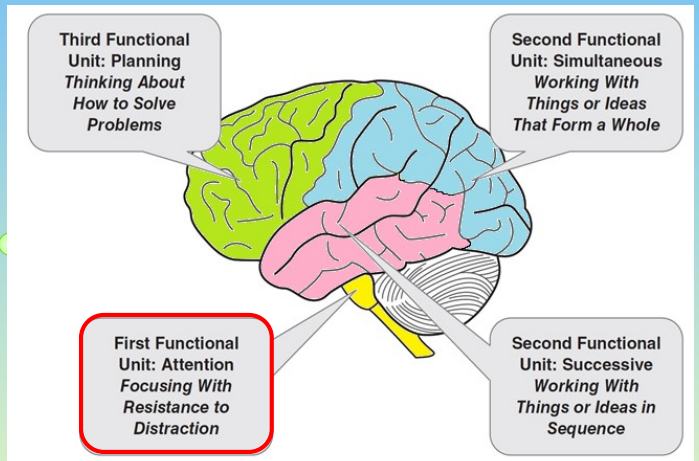


Figure 1.2 Three Functional Units and Associated Brain Structures

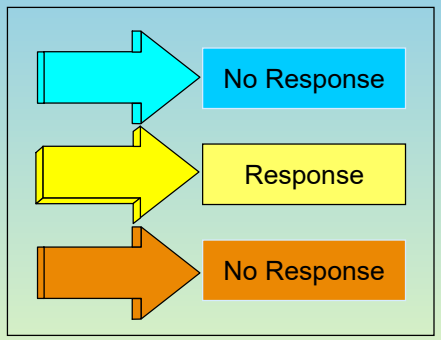
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

106

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



107

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

108

CAS2 Expressive Attention

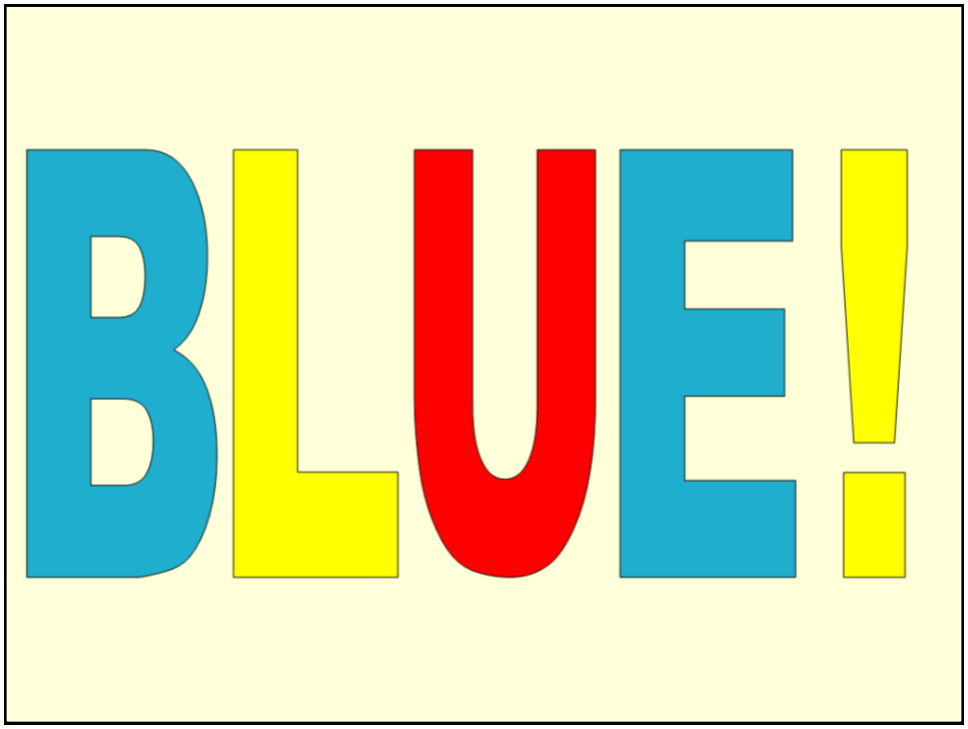
- The child says the color not the word
- Score is time and number correct

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

109

READY ?

110



Expressive Attention - Italiano

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

112

Attention

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.

Reading comprehension is difficult because of the similarity of the options

Frankie at age 11 years

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

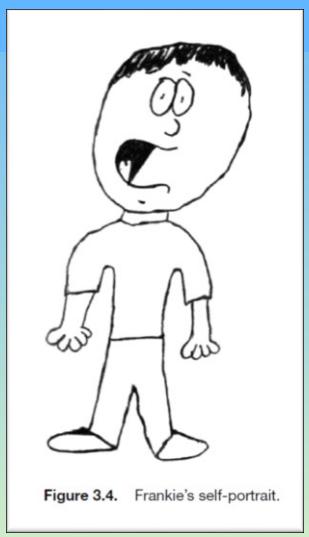
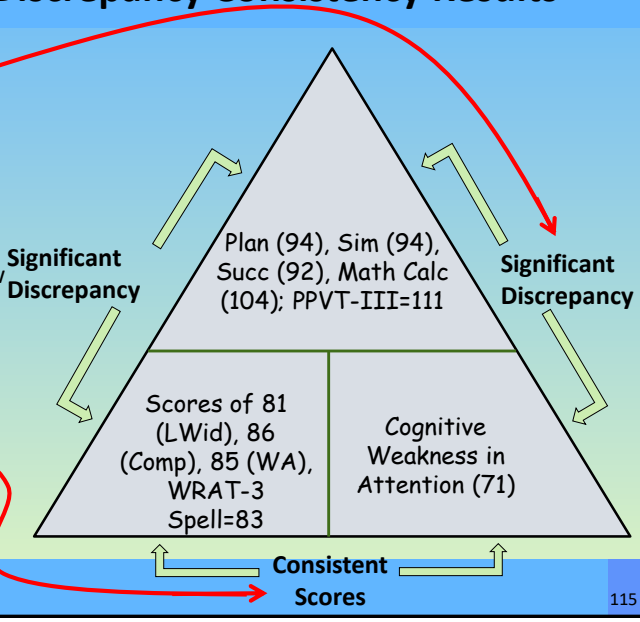


Figure 3.4. Frankie's self-portrait.

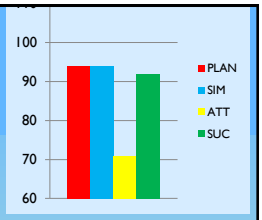
Frankie Discrepancy Consistency Results

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



115

Frankie



- Frankie has weaknesses in Attention & achievement which are consistent with Inattentive Type of ADHD and:

ED.gov U. S. Department of Education
Promoting educational excellence for all Americans

Browse Major Topics
- Alignment with the No Child Left Behind Act
- Discipline
- Disproportionality
- Early Intervening Services (EIS)
- Evaluation and Reevaluation
- Funding
- Highly Qualified

Regulations: Part 300 / A / 300.8 / c / 9

(9) Other health impairment means having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that--

(i) Is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and

(ii) Adversely affects a child's educational performance.

116

PASS Intervention Protocol

- Help child understand their PASS strengths and areas of challenges (Intentional & Transparent)
- Encourage Motivation & Persistence (Mindsets)
- Teach/Stress strategies for approaching tasks (Skill Sets)
  - Student generated
  - Model and Scaffold as needed
- Encourage independence and self efficacy (Metacognition/Self Assessment)

118

Measure of Mindset (From Naglieri & Otero, 2017)

Measure of Mindset (Child & Adolescent)

Jack A. Naglieri & Kathleen M. Kryza - Copyright © 2015

Name _____

Date _____

Instructions: These 10 questions ask about how you think and feel. The answers you give can help us know your thoughts about how you learn. Please read every question carefully and circle the number under the word that tells what you do.

		Never	Sometimes	Most times	Always
1	I don't give up easily.	0	1	2	3
2	When things get hard I say, "I Can do it"	0	1	2	3
3	When I fail I try harder until I get it done.	0	1	2	3
4	I believe that I can learn from my mistakes.	0	1	2	3
5	I think I can do almost anything if I try hard enough.	0	1	2	3
6	When I don't understand something I give up.	0	1	2	3
7	I do not like to be challenged.	0	1	2	3
8	When work is hard I think, "I can not do it."	0	1	2	3
9	When things get hard I do something else.	0	1	2	3
10	When I fail I do something else that is more fun.	0	1	2	3

Figure 5.2 Measure of Mindset: Child & Adolescent Version

Measure of Mindset (Teacher & Parent)

Jack A. Naglieri & Kathleen M. Kryza - Copyright © 2015

Name _____

Date _____

Instructions: These 10 questions ask about a child or adolescent's attitudes toward learning. Please read every question carefully and circle the number under the word that tells what you have observed about your child.

		Never	Sometimes	Most times	Always
1	He/she doesn't give up easily.	0	1	2	3
2	When things get hard he/she says, "I can do it!"	0	1	2	3
3	Failure leads him/her to try harder until the task is finished.	0	1	2	3
4	He/she views failure as an important part of learning.	0	1	2	3
5	He/she believes that you can do anything if you try hard enough.	0	1	2	3
6	He/she is afraid of failure.	0	1	2	3
7	When things get hard he/she avoids the work.	0	1	2	3
8	He/she believes that hard work usually does not pay off.	0	1	2	3
9	He/she is fast to give up on a task.	0	1	2	3
10	He/she sees failure as proof of a person's limitations.	0	1	2	3

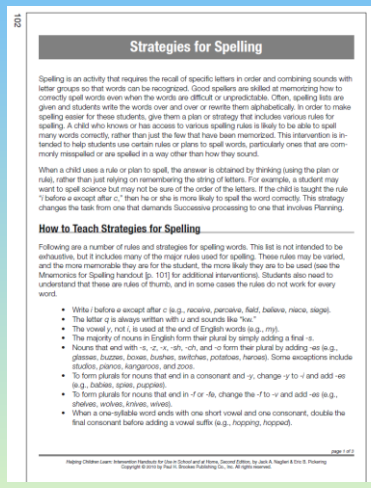
Figure 5.3 Measure of Mindset: Teacher & Parent Version

Kathleen's Intervention Plan for Frankie

- Be Intentional and Transparent
  - Explain his PASS scores to him
- Build on His Strengths
  - Help him use his Planning, Simultaneous and Successive Strengths to support his learning challenges with Attention
- Develop Effective Skill Sets to remediate his weaker skills
  - Offer and encourage the use of metacognitive strategies that can improve his attention.
- Encourage a Growth Mindset and Self Efficacy

120

Frankie - Use Planning Strength



201

Strategies for Spelling

Spelling is an activity that requires the recall of specific letters in order and combining sounds with letter groups so that words can be recognized. Good spellers are skilled at memorizing how to correctly spell words even when the words are difficult or unpredictable. Often, spelling lists are given and students write the words over and over or rewrite them alphabetically. In order to make spelling easier for these students, give them a plan or strategy that includes various rules for spelling. A child who knows or has access to various spelling rules is likely to be able to spell many words correctly, rather than just the few that have been memorized. This intervention is intended to help students use certain rules or plans to spell words, particularly ones that are commonly misspelled or are spelled in a way other than how they sound.

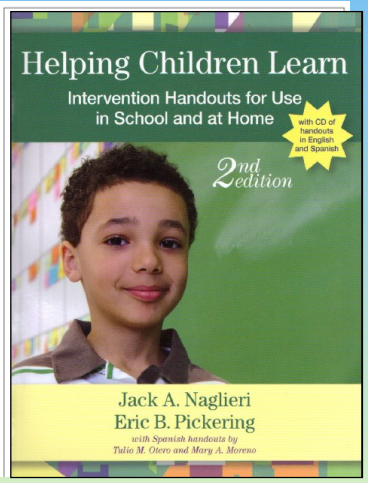
When a child uses a rule or plan to spell, the answer is obtained by thinking (using the plan or rule), rather than just relying on remembering the string of letters. For example, a student may want to spell *science* but may not be sure of the order of the letters. If the child is taught the rule "I before e except after c," then he or she is more likely to spell the word correctly. This strategy changes the task from one that demands Successive processing to one that involves Planning.

How to Teach Strategies for Spelling

Following are a number of rules and strategies for spelling words. This list is not intended to be exhaustive, but it includes many of the major rules used for spelling. These rules may be varied, and the more memorable they are for the student, the more likely they are to be used (see the Mnemonics for Spelling handout [p. 101] for additional interventions). Students also need to understand that these are rules of thumb, and in some cases the rules do not work for every word.

- Write *i* before *e* except after *c* (e.g., *receive, perceive, field, believe, niece, siege*).
- The letter *q* is always written with *u* and sounds like "kw."
- The vowel *y*, not *i*, is used at the end of English words (e.g., *my*).
- The majority of nouns in English form their plural by simply adding a final *-s*.
- Nouns that end with *-s, -z, -x, -sh, -ch,* and *-o* form their plural by adding *-es* (e.g., *glasses, buzzes, boxes, bushes, switches, potatoes, heroes*). Some exceptions include *studios, pianos, kangaroos,* and *zoos*.
- To form plurals for nouns that end in a consonant and *-y*, change *-y* to *-i* and add *-es* (e.g., *babies, spies, puppies*).
- To form plurals for nouns that end in *-f* or *-fe*, change the *-f* to *-v* and add *-es* (e.g., *shelves, wolves, knives, wives*).
- When a one-syllable word ends with one short vowel and one consonant, double the final consonant before adding a vowel suffix (e.g., *hopping, hopped*).

page 1 of 2



Slides by Jack A. Naglieri, Ph.D.
(jnaglieri@gmail.com)

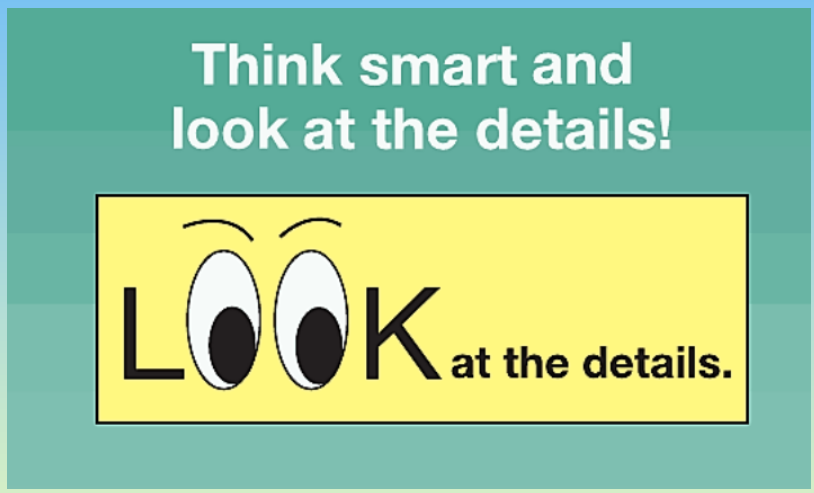
121

Frankie – Metacognitive (Planning) Interventions

- Discourage passivity / encourage independence
  - Teacher should only provide as much assistance as is needed
  - Discourage exclusive use of teacher's solutions
  - Child needs to correct own work
  - Child needs to learn to be self-reliant (Scheid, 1993).

122

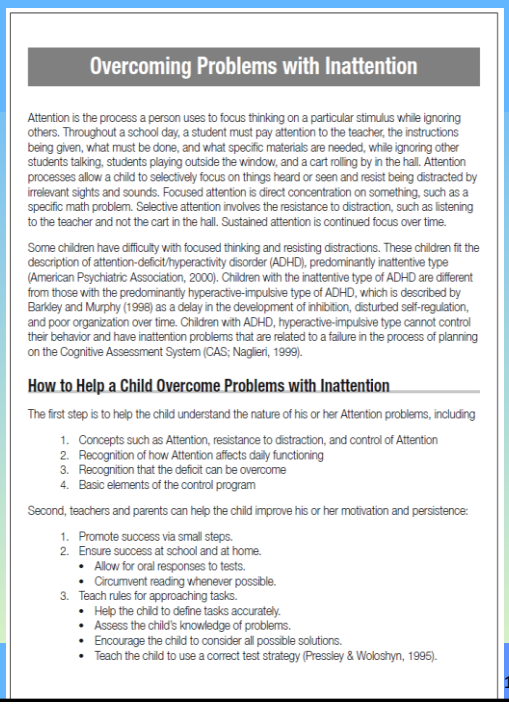
Focus: Am I paying attention?



123

Frankie

Help Frankie better manage his attention problem



Overcoming Problems with Inattention

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

Some children have difficulty with focused thinking and resisting distractions. These children fit the description of attention-deficit/hyperactivity disorder (ADHD), predominantly inattentive type (American Psychiatric Association, 2000). Children with the inattentive type of ADHD are different from those with the predominantly hyperactive-impulsive type of ADHD, which is described by Barkley and Murphy (1998) as a delay in the development of inhibition, disturbed self-regulation, and poor organization over time. Children with ADHD, hyperactive-impulsive type cannot control their behavior and have inattention problems that are related to a failure in the process of planning on the Cognitive Assessment System (CAS; Naglieri, 1999).

How to Help a Child Overcome Problems with Inattention

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

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

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

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

124

Frankie - Interventions

- Teach rules for approaching tasks
  - Define tasks accurately
  - Assess child's knowledge of the problem
  - Consider ALL possible solutions
  - Evaluate value of all possible solutions
  - Checking work carefully is required
  - Correct your own test strategy (see Pressley & Woloshyn, 1995, p. 140).

125

What Should Teachers & Parents do?

How to Teach Students to Attend

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

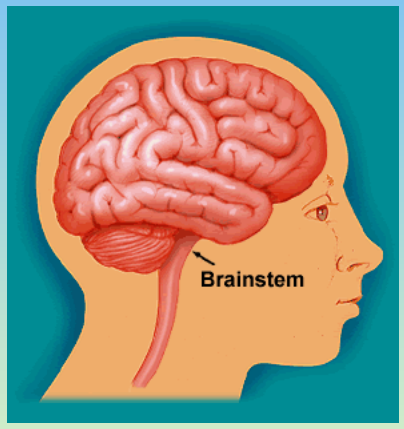
The first step in teaching children about their own abilities is to explain that they have many different types of abilities and that Attention is one of them. They also need to be aware of when their attention is focused and they are resisting distractions, as well as when it is divided among too many things, which leaves them unfocused and overloaded. In Figure 1 (which also appears in the PASS poster on the CD), we provide a fast and simple message: "Think smart and look at the details!" During appropriate times during the day, remind students to closely attend to information being discussed. We need to teach children to approach *all* their work with an understanding of how well they are focused on the details and resisting distractions in their environment. Throughout the day, the teacher should

1. Teach children to be aware of their level of attention and resistance to distraction.
2. Encourage children by asking: "Are you able to focus?" or "Are you getting distracted?"
3. Remind the students that Attention is necessary for reading, writing, and arithmetic, as well as in sports, playing a musical instrument, driving a car, and so forth.
4. Teach children that they may have to modify their environment so that they can attend better.
5. Remind students that learning requires attention to detail and resisting distractions.

Pay Attention

Intentionally and Transparently Teach Students…

- ***Focus*** and know what to focus on
- Learn to ***Resist*** distractions
- ***Sustain*** attention over time



127

Frankie and Successive Processing

- **Spelling**
  - Strategies for Spelling (pp.102–103)
  - Segmenting Words for Reading/Decoding and Spelling (p. 89)
- These are designed to help him perform better when tasks require a lot of Successive processing.

128

Let's Take a Mindful Moment or Brain Break (or Syn-nap)

The brain needs time **to process!**

- Stretch
- Cross Laterals
- Walk and Talk
- Energizers
- Relaxers

129

Is Frankie a Typical ADHD Child?

Note the Hyperactive-Impulsive Type

130

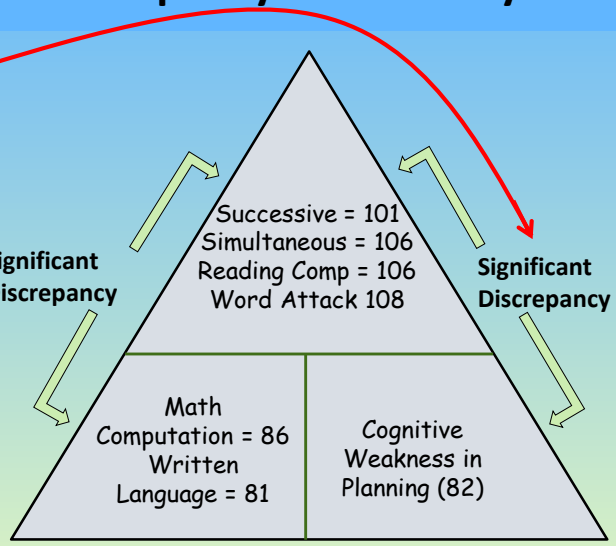
Case of Christopher - Is He ADHD?

- Problems
  - behavior problems
  - impulsive & disorganized
  - forgets assignments
  - can't stay on task
  - poor grades
- Clinical Observations
  - anxious about testing
  - used simple strategies
  - did sloppy work
  - control problems (threw pencil when frustrated)
  - impulsive choices made

131

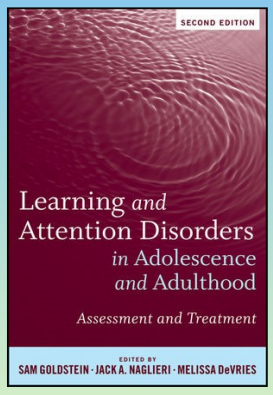
Christopher Discrepancy Consistency

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



132

ADHD Profiles by Ability Test



CHAPTER

6

Assessment of Cognitive and Neuropsychological Processes

JACK A. NAGLIERI
SAM GOLDSTEIN

INTRODUCTION

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

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

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Naglieri & Goldstein (2011)

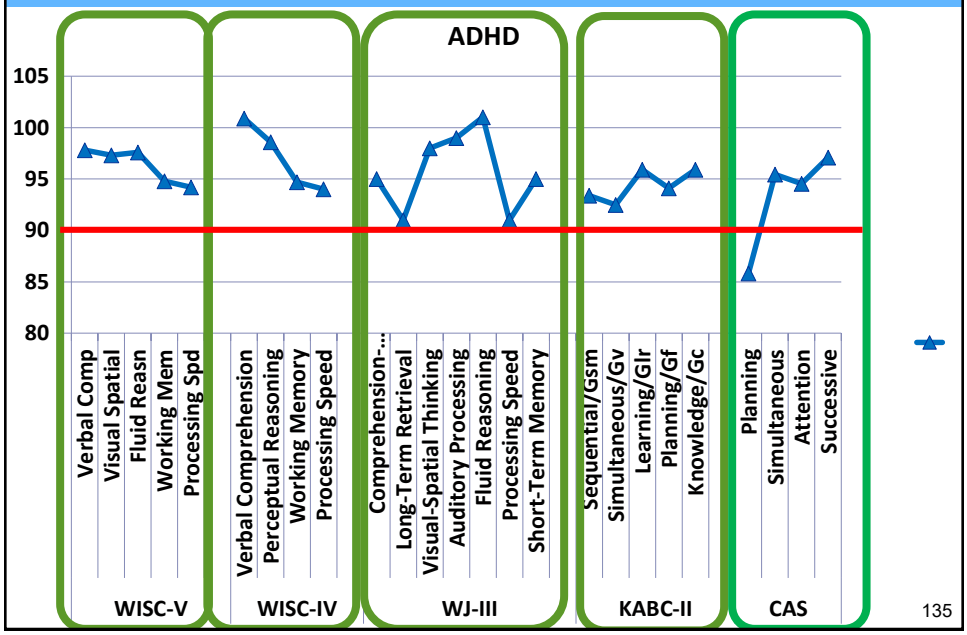
GROUP PROFILES BY ABILITY TEST

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

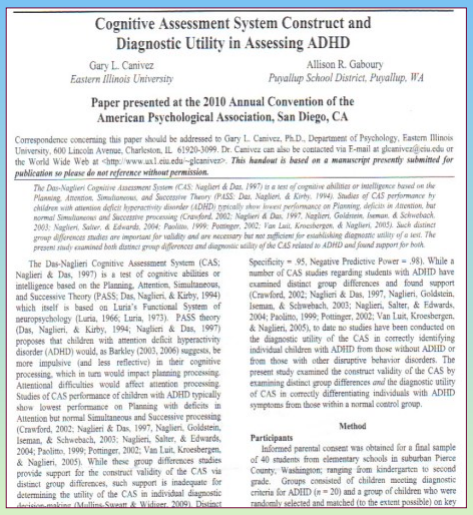
Profiles for students with ADHD



135

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 attention 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

136

PASS Intervention Protocol

- Help child understand their PASS strengths and areas of challenges (Intentional & Transparent)
- Encourage Motivation & Persistence (Mindset)
- Teach/Stress strategies for approaching tasks (Skill Sets)
  - Student generated
  - Model and Scaffold as needed
- Encourage independence and self efficacy
  - Planning (Metacognition) and Self Assessment

137

Think and Talk

&

What would you recommend as possible interventions for Christopher's planning challenges?

NOTE: STOP AND TALK is important because the brain retains 50% through talk.

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Kathleen's Intervention Plan for Christopher

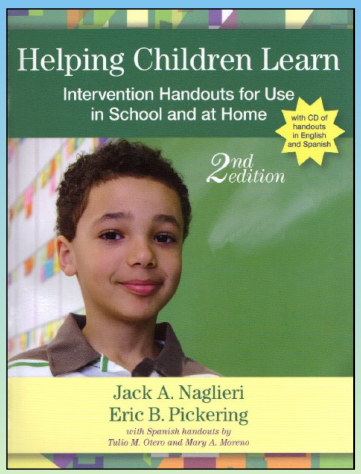
- Be Intentional and Transparent
  - Explain his PASS scores to him
- Build on His Strengths
  - Help him use his Attention, Simultaneous and Successive Strengths to support his learning challenges with Planning
- Develop Effective Skill Sets to remediate his weaker skills
  - Offer and encourage the use of metacognitive strategies that can improve his planning. Think Smart!
- Encourage a Growth Mindset and Self Efficacy

139

140

Helping Children Learn Resources

- Planning Facilitation
- Strategies for Learning Basic Math Facts
- Touch Math for Calculation
- Seven Step Strategy for Math Word Problems
- Chunking Strategy for Multiplication
- Other ideas?



LET'S TAKE A BRAIN BREAK

The brain needs time **to process!**

- **Stretch**
- **Cross Laterals**
- Walk and Talk
- Energizers
- Relaxers

141

Here's Where We're Going Today

- Planning
- Attention
- Successive
- Simultaneous

142

INTELLIGENCE CONCEPTUALIZED AS BRAIN FUNCTION

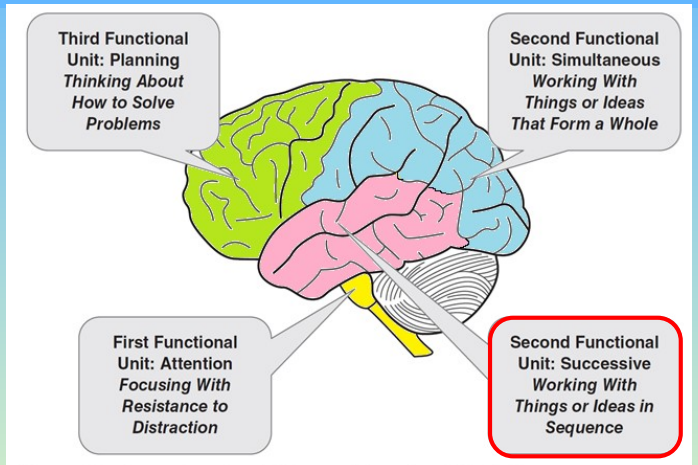
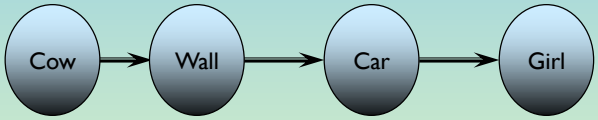


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

143

PASS: Successive

- **Successive** processing is used whenever we do something in a specific serial order
  - Anything we comprehend, speak, or do in a sequence requires successive processing



144

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

145

Let's Take a TEST !

- First a word repetition test
- I will say some words and you need to write them in order -- AFTER I finish the saying the words.
- Next, I'll show you numbers, then take them away, and you need to write them in order

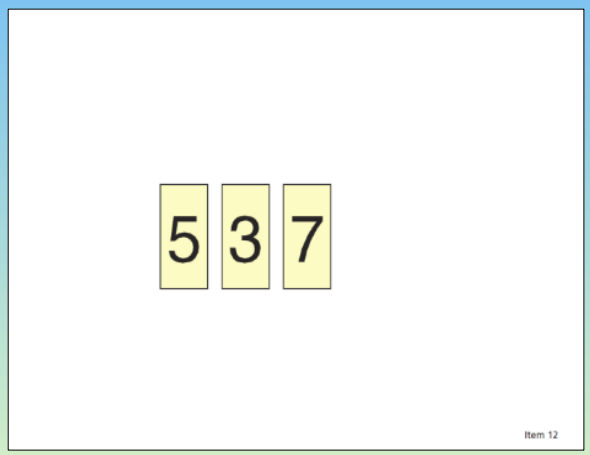
- ***DO NOT ADVANCE SLIDE***

146

- Man Cow Key
- Book Shoe Girl Dog Car
- Girl Book Dog Car Wall Cow Key Shoe

147

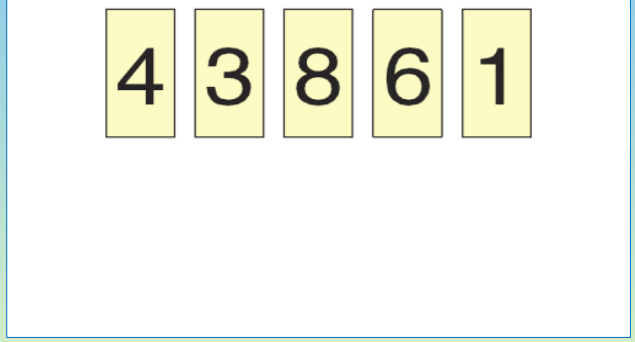
CAS2



148

149

CAS2



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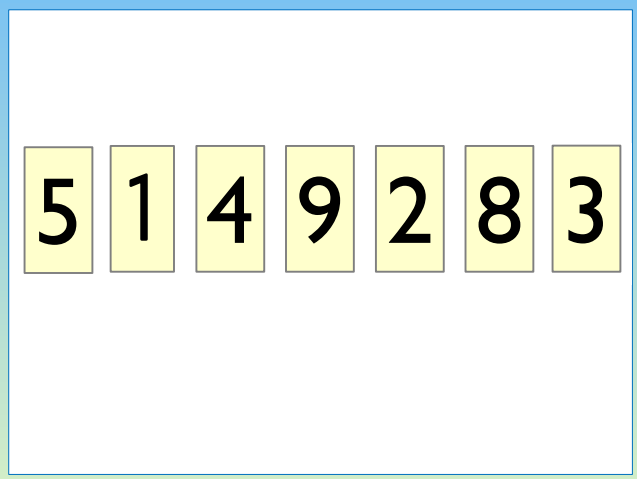
151

CAS2



152

153

Insights…

- Even thought tasks were different in content and modality, they required the same kind of thinking

154

PASS Theory: Successive

- **Successive** processing is used when information is in a specific serial order
  - Decoding words
  - Letter-sound correspondence
  - Phonological tasks
  - Understanding the syntax of sentences
  - Comprehension of written instructions
  - Sequence of words, sentences, paragraphs
  - Remembering the sequence of events in a story that was read

155

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?***

156

Phonemic Awareness = Successive

"Now I am going to say parts of words. I want you to put the parts together to make a whole word."

Blending: Advantage

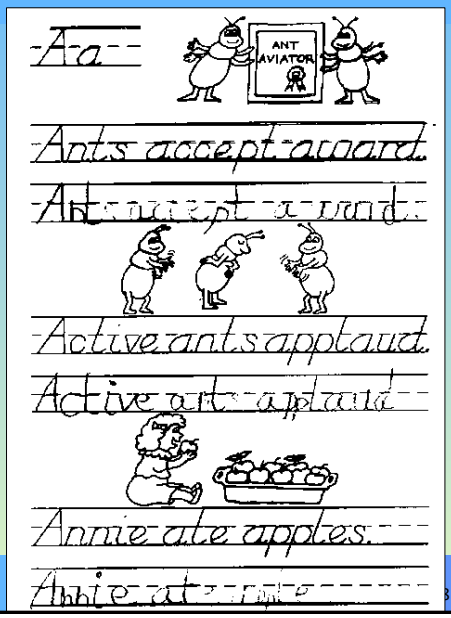
Item	Correct response	# of syllables	Score
ad : van : tage	advantage	3	0 1

From the Feifer Assessment of Reading (2016)

157

Successive Reading Practices

The sequence of the sounds is emphasized in this work sheet



Successive Processing & Reading Decoding

- The ability to sequence and sequence multiple sounds together to identify a word in print is critical for reading decoding

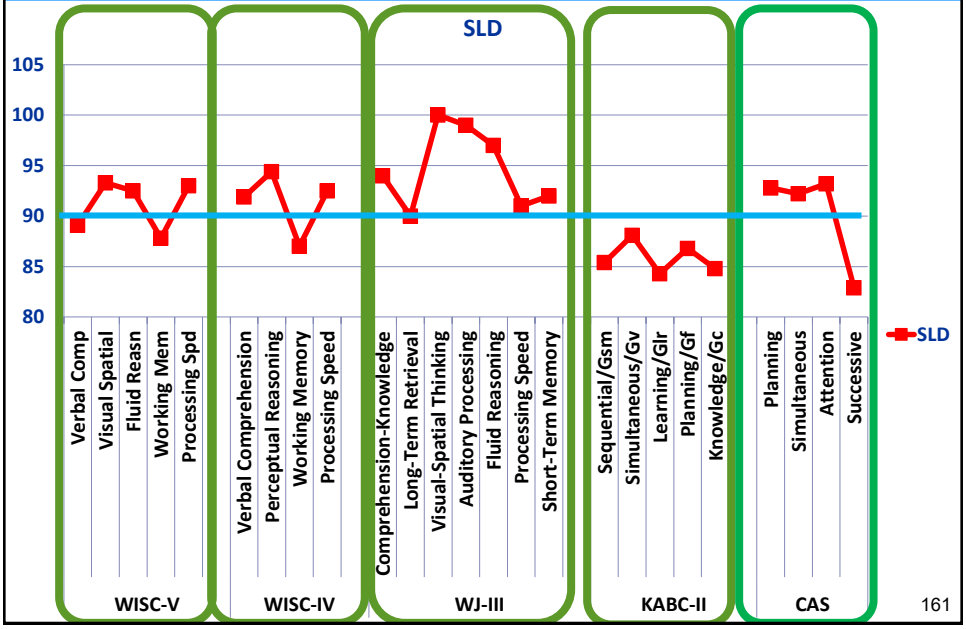
159

PASS - ADHD and SLD weaknesses

- Students with SLD in Reading Decoding, Spelling, phonological skill deficits and related problems have difference PASS profiles from those with ADHD

160

Profiles for SLD (reading decoding)



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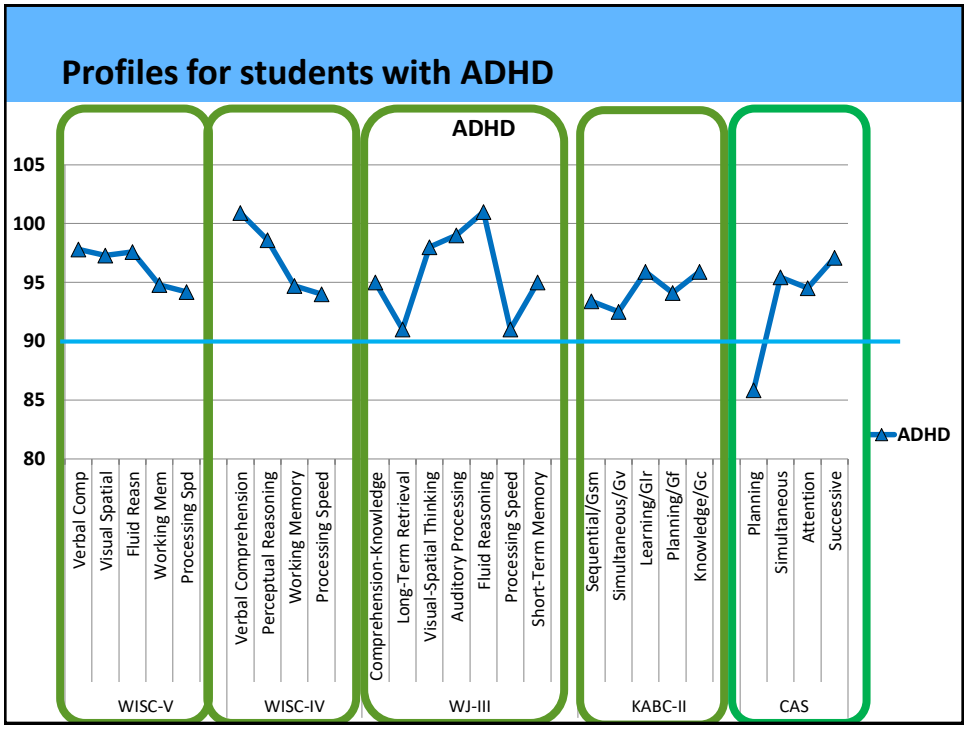
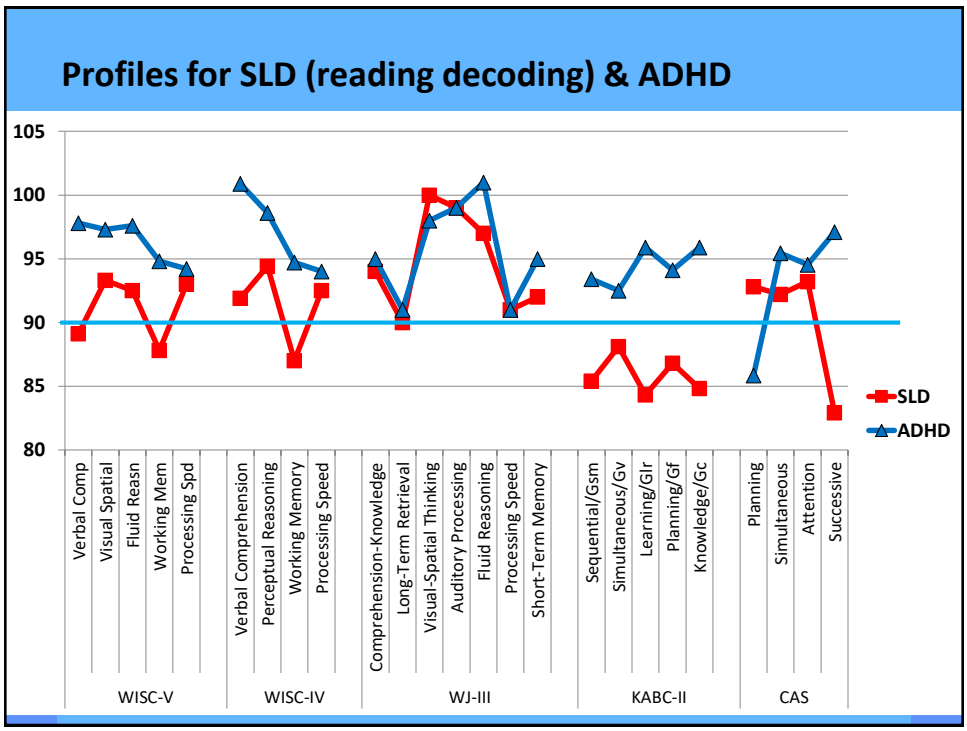

Profiles for students with ADHD
ADHD
105
100
95
90
85
80
Verbal Comp
Visual Spatial
Fluid Reasn
Working Mem
Processing Spd
Verbal Comprehension
Perceptual Reasoning
Working Memory
Processing Speed
Comprehension-Knowledge
Long-Term Retrieval
Visual-Spatial Thinking
Auditory Processing
Fluid Reasoning
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
105
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Verbal Comp
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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
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. 419-433

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

Jack A. Naglieri
George Mason University

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

164

Jacob 6th grade

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%

165

Jacob 6th grade

CAS-2	COMPOSITE SCORE	RANGE	PERCENTILE RANK
Planning: the ability to apply a strategy, and self-monitor and self- correct performance while working toward a solution.	92	Average	30%
Attention: the ability to selectively focus on a stimulus while inhibiting responses from competing stimuli.	98	Average	45%
Simultaneous Processing- is the ability to reason and problem solve by integrating separate elements into a conceptual whole, and often requires strong visual-spatial problem solving skills.	90	Average	25%
Successive Processing- is the ability to put information into a serial order or particular sequence.	72	Very Low	3%
CAS-2 COMPOSITE SCORE	86	Below Average	18%

166

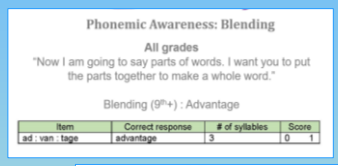
How well does Jacob do on phonological tests?

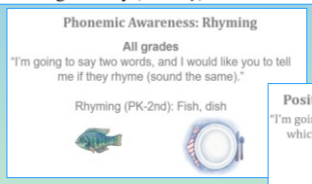
167

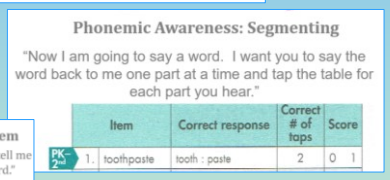
FAR Phonological Index Subtests

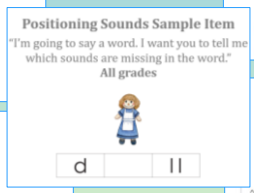
far
PHONOLOGICAL INDEX

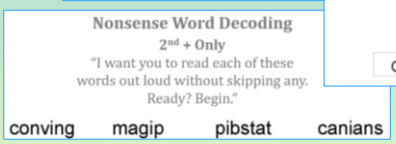
- Phonemic Awareness
  - rhyming, blending, segmenting & manipulation of sounds
- Positioning Sounds
- Nonsense Word Decoding
- Isolated Word Fluency
- Oral Reading Fluency (accuracy)

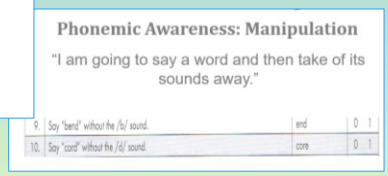












Jacob 6th grade

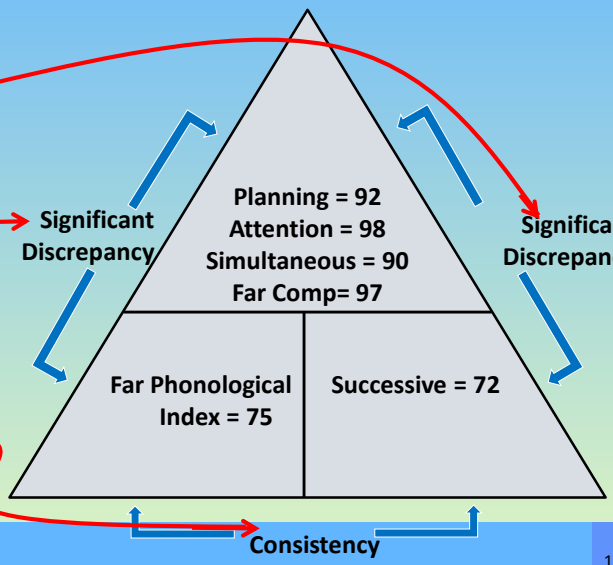
FAR index	Standard score (95% CI)	Percentile	Qualitative descriptor
Phonological Index	75	5%	Moderately Below Average
Fluency Index	92	30%	Average
Mixed Index	81	10%	Below Average
Comprehension Index	97	42%	Average
FAR Total Index	**84**	**14%**	**Below Average**

KEY INTERPRETATION	Score	Percentile	Descriptor
Nonsense Word Decoding – requires the student to decode a series of nonsense words presented in order of increasing difficulty .	71	3%	Moderately Below Average
Irregular Word Reading Fluency – the student reads a list of phonologically irregular words arranged in order of increasing difficulty in 60 seconds.	95	37%	Average

Discrepancy Consistency Method - Jacob

Poor Successive + Poor Phonological = SLD in Reading Decoding

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



170

PASS Intervention Protocol

- Help child understand their PASS strengths and areas of challenges (Intentional & Transparent)
- Encourage Motivation & Persistence (Mindset)
- Teach/Stress strategies for approaching tasks (Skill Sets)
  - Student generated
  - Model and Scaffold as needed
- Encourage independence and self efficacy
  - Planning (Metacognition) and Self Assessment

171

Measure of Mindset – Child Adolescent

(Naglieri & Kryza, © 2015)

Measure of Mindset (MOM-CA)

Jack A. Naglieri & Kathleen M. Kryza - Copyright © 2015

Name _____

Date _____

Instructions: These 10 questions ask about how you think and feel. The answers you give can help us know your thoughts about how you learn. Please read every question carefully and circle the number under the word that tells what you do.

		Never	Sometimes	Most times	Always
1	I don't give up easily.	0	1	2	3
2	When things get hard I say "I can do it!".	0	1	2	3
3	When I fail I try harder until I get it done.	0	1	2	3
4	I believe that I can learn from my mistakes.	0	1	2	3
5	I think I can do almost anything if I try hard enough.	0	1	2	3
6	When I don't understand something I give up.	0	1	2	3
7	I do not like to be challenged.	0	1	2	3
8	When work is hard I think, "I can't do it".	0	1	2	3
9	When things get hard I do something else.	0	1	2	3
10	When I fail I do something else that is more fun.	0	1	2	3

172

Measure of Mindset: Teacher Parent

(Naglieri & Kryza, 2015)

Measure of Mindset (MOM-TP)

Jack A. Naglieri & Kathleen M. Kryza - Copyright © 2015

Name _____

Date _____

		Never	Sometimes	Most times	Always
1	He/she doesn't give up easily.	0	1	2	3
2	When things get hard he/she says "I can do it!".	0	1	2	3
3	Failure leads him/her to try harder untilthe task is finished.	0	1	2	3
4	He/she views failure as an important part of learning.	0	1	2	3
5	He/she believes that you can do anything if you try hard enough.	0	1	2	3
6	He/she is afraid of failure.	0	1	2	3
7	When things get hard he/she avoids the work.	0	1	2	3
8	He/she believes that hard work usually does not pay off.	0	1	2	3
9	He/she is fast to give up on a task.	0	1	2	3
10	He/she views failure as an important part of learning.	0	1	2	3

173

Think and Talk

&

What would you recommend as possible interventions for Jacob's Successive Processing challenges?

NOTE: STOP AND TALK is important because the brain retains 50% through talk.

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Kathleen's Intervention Plan for Jacob

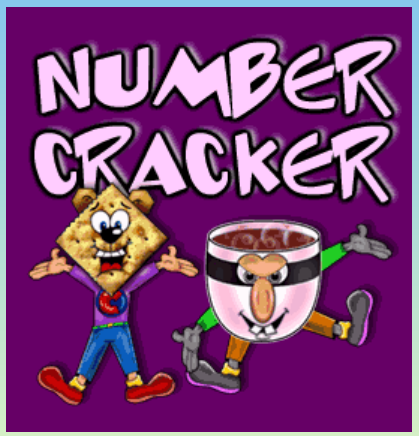
- Be Intentional and Transparent
  - Explain his PASS scores to him
- Build on His Strengths
  - Help him use his Planning, Attention, Simultaneous and Strengths to support his learning challenges with Successive Processing
- Develop Effective Skill Sets to remediate his weaker skills
- Offer and encourage the use of metacognitive strategies that can improve his Successive Processing skills.
- Encourage a Growth Mindset and Self Efficacy

175

Math Sequencing

- Encouraging students to write out the steps for solving problems. (For example: Steps for solving addition and subtraction problems that include regrouping)
- Use a simple sheet of paper folded into four squares. Ask students to write the steps in order in the squares.

Sequencing Games



176

Using Digital Storytelling in the Classroom

- Load pictures from a story out of order, and then save the file as a project.
- Have students rearrange the pictures to assess them for their understanding of sequencing.

Here's Where We're Going Today

- Planning
- Attention
- Successive
- Simultaneous

178

PASS DEEPER DIVE:
INTELLIGENCE CONCEPTUALIZED AS BRAIN FUNCTION

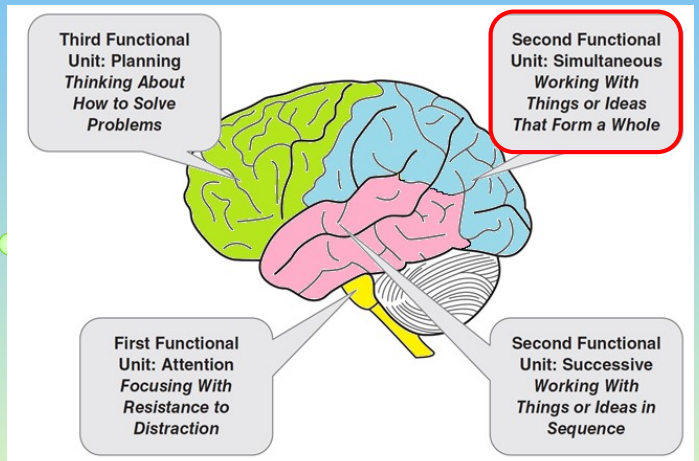


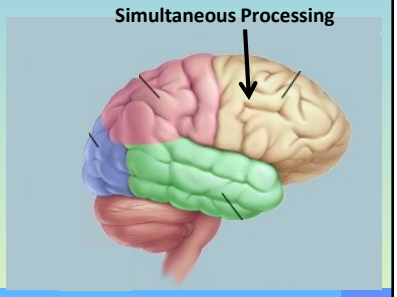
Figure 1.2 Three Functional Units and Associated Brain Structures

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

179

PASS Theory

- **Simultaneous** processing is used to integrate stimuli into groups
  - Stimuli are seen as a whole
  - Each piece must be related to the other
  - Whole language
  - Seeing word as a whole
  - Verbal concepts
  - Geometry, math word problems



180

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

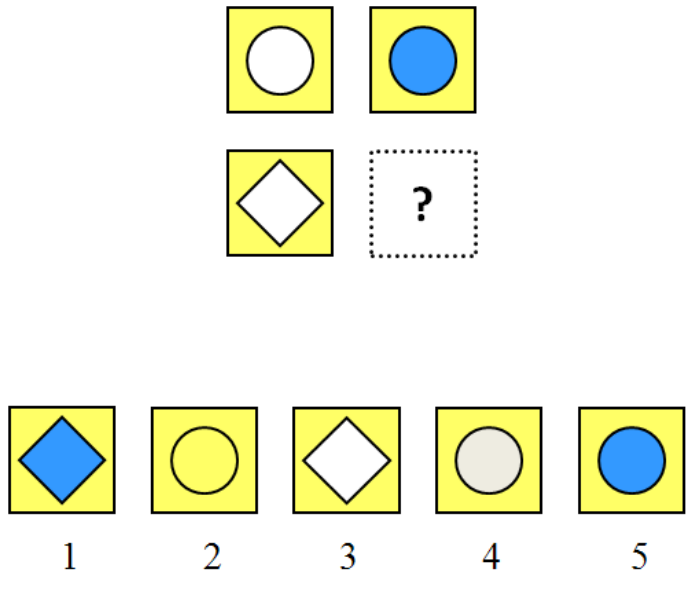
___ + ___ + ___ + ___ + ___ = ☐
Simultaneous Raw Score

181

PASS Theory

- **Simultaneous** processing is what Gestalt psychology was based on
- Seeing the whole

182



183

Test Yourself !

Solve these analogies:

Girl is woman as boy is to _____?

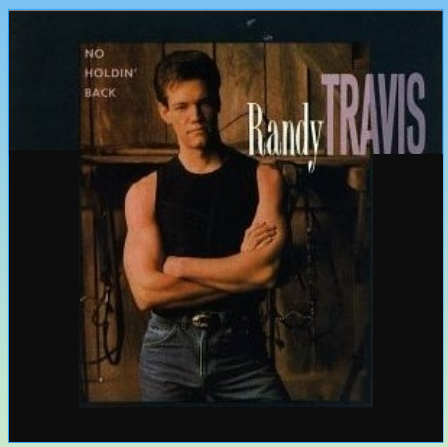
C^7 is to F as E^7 is to _____?

184

Simultaneous Verbal Task

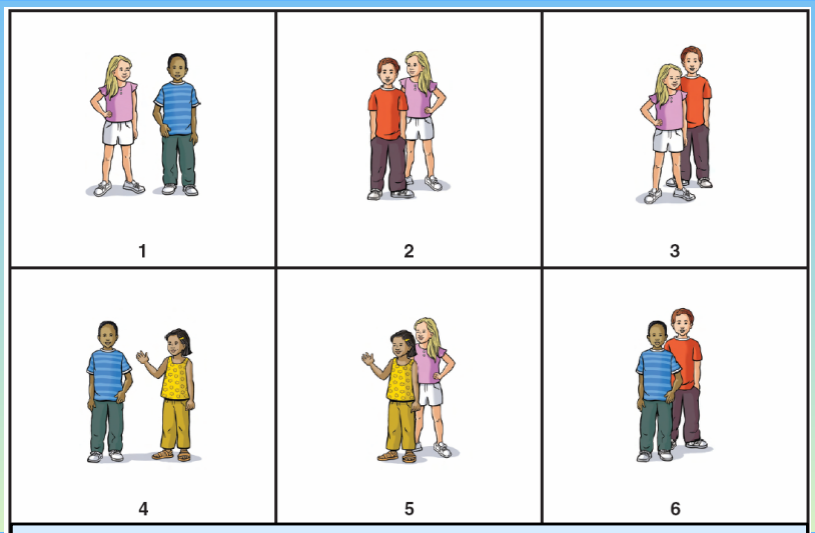
- Simultaneous processing using verbal content
- Who is this song about?

My momma's daddy was his oldest son.



185

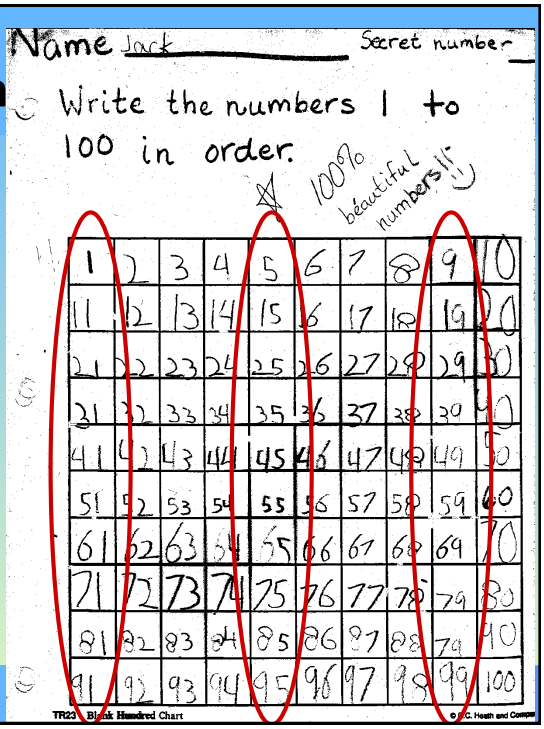
CAS2 Verbal-Spatial Relations



Which picture shows a boy behind a girl?

Numbers from 1 to 100

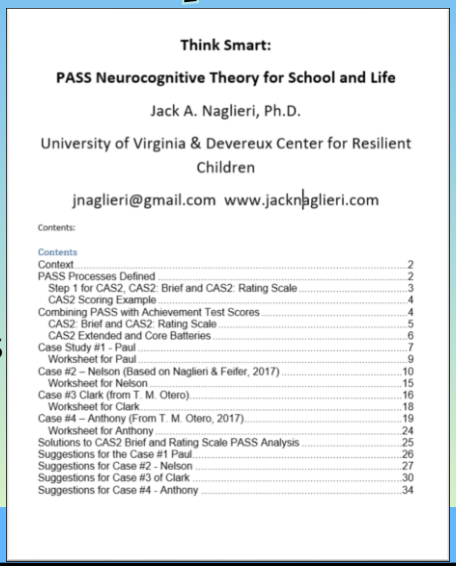
Simultaneous processing facilitated by this work sheet



Think and Talk Time

&

- Open you Think Smart Workbook and read the case of Nelson
- What is the PASS weakness?
- What interventions are appropriate?



Think Smart:

PASS Neurocognitive Theory for School and Life

Jack A. Naglieri, Ph.D.

University of Virginia & Devereux Center for Resilient Children

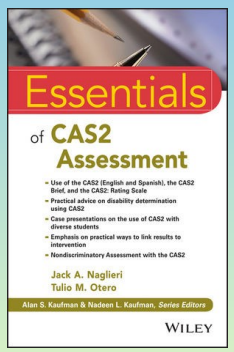
jnaglieri@gmail.com www.jacknaglieri.com

Contents:

Contents

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

- Nelson (9 year-old 4th grader) for 3 years
  - difficulty with spelling and written language math facts, and inconsistent with reading comprehending skills.
  - difficulty keeping pace with his peers and often failed to complete his work in a timely manner.
  - The Child Development Team (CDT) recommended a comprehensive psychological evaluation.



Case of Nelson (Naglieri & Feifer, 2017)

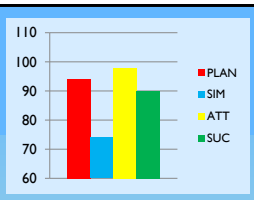


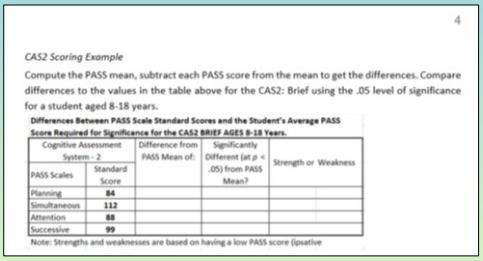
Table 5.2 Nelson's CAS2 Scoring

PASS Scales	Scaled Score	Percentile	Ability Range
CAS2 Planning: The ability to apply a strategy and self-monitor performance while working toward a solution	94	34	Average
CAS2 Attention: The ability to selectively focus on a stimulus while inhibiting responses from competing stimuli	98	45	Average
CAS2 Simultaneous Processing: The ability to reason and problem-solve by integrating separate elements into a conceptual whole, often involving visual-spatial tasks	74	4	Very low
CAS2 Successive Processing: The ability to put information into a serial order or particular sequence	90	25	Average
CAS2 Total Composite Score	89	23	Below average

190

How to Find the PSW of PASS Scores

- See Pages 3 & 4 of the Think Smart Workbook
- Work the numbers



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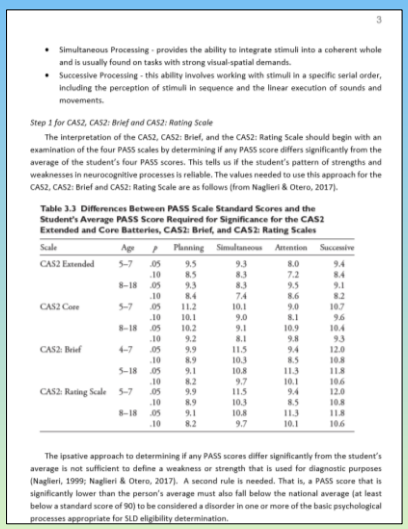
CAS2 Scoring Example

Compute the PASS mean, subtract each PASS score from the mean to get the differences. Compare differences to the values in the table above for the CAS2: Brief using the .05 level of significance for a student aged 8-18 years.

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

Cognitive Assessment System - 2		Difference from PASS Mean of:	Significantly Different (at $p <$ .05) from PASS Mean?	Strength or Weakness
PASS Scales	Standard Score			
Planning	**84**			
Simultaneous	**112**			
Attention	**88**			
Successive	**99**			

Note: Strengths and weaknesses are based on having a low PASS score (ipsative



3

- Simultaneous Processing - provides the ability to integrate stimuli into a coherent whole and is usually found on tasks with strong visual-spatial demands.
- Successive Processing - this ability involves working with stimuli in a specific serial order, including the perception of stimuli in sequence and the linear execution of sounds and movements.

Step 1 for CAS2, CAS2: Brief and CAS2: Rating Scale

The interpretation of the CAS2, CAS2: Brief, and the CAS2: Rating Scale should begin with an examination of the four PASS scales by determining if any PASS score differs significantly from the average of the student's four PASS scores. This tells us if the student's pattern of strengths and weaknesses in neurocognitive processes is reliable. The values needed to use this approach for the CAS2, CAS2: Brief and CAS2: Rating Scale are as follows (from Naglieri & Otero, 2017).

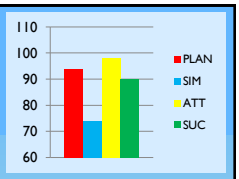
Table 3.3 Differences Between PASS Scale Standard Scores and the Student's Average PASS Score Required for Significance for the CAS2 Extended and Core Batteries, CAS2: Brief, and CAS2: Rating Scales

Scale	Age	*p*	Planning	Simultaneous	Attention	Successive
CAS2 Extended	5–7	.05	9.5	9.3	8.0	9.4
		.10	8.5	8.3	7.2	8.4
	8–18	.05	9.3	8.3	9.5	9.1
		.10	8.4	7.4	8.6	8.2
CAS2 Core	5–7	.05	11.2	10.1	9.0	10.7
		.10	10.1	9.0	8.1	9.6
	8–18	.05	10.2	9.1	10.9	10.4
		.10	9.2	8.1	9.8	9.3
CAS2: Brief	4–7	.05	9.9	11.5	9.4	12.0
		.10	8.9	10.3	8.5	10.8
	5–18	.05	9.1	10.8	11.3	11.8
		.10	8.2	9.7	10.1	10.6
CAS2: Rating Scale	5–7	.05	9.9	11.5	9.4	12.0
		.10	8.9	10.3	8.5	10.8
	8–18	.05	9.1	10.8	11.3	11.8
		.10	8.2	9.7	10.1	10.6

The ipsative approach to determining if any PASS scores differ significantly from the student's average is not sufficient to define a weakness or strength that is used for diagnostic purposes (Naglieri, 1999; Naglieri & Otero, 2017). A second rule is needed. That is, a PASS score that is significantly lower than the person's average must also fall below the national average (at least below a standard score of 90) to be considered a disorder in one or more of the basic psychological processes appropriate for SLD eligibility determination.

191

Case of Nelson (Naglieri & Feifer, 2017)



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	88.8		
Planning	94	5.3	no	
Simultaneous	74	-14.8	yes	Weakness
Attention	98	9.3	no	
Successive	89	0.3	no	

Notes

1. A Weakness is defined as PASS standard score that is significantly below the child's average PASS score (ipsative comparison at the .05 level) *and* the PASS score is below 90 (i.e. below the Average range).
2. A Strength is defined as PASS standard score that is significantly above the child's average PASS score (ipsative comparison at the .05 level) *and* the PASS score is above 109 (i.e. above the Average range).

192

Case of Nelson (Naglieri & Feifer, 2017)

Table 5.6 Nelson's Scores on the Feifer Assessment of Reading (FAR)

FAR Index	Standard Score (95% CI)	Percentile	Qualitative Descriptor
Phonological Index	90 (±5)	25	Average
Fluency Index	73 (±7)	3	Moderately below average
Mixed Index	81 (±5)	10	Below average
Comprehension Index	97 (±8)	42	Average
FAR Total Index	84 (±5)	14	Below average

Table 5.3 Nelson's Scores on the KTEA-III Reading Subtests

Reading	Age Norms	Percentile	Range
Reading Comprehension: The student reads a word and points to its corresponding picture or reads a simple instruction and responds by performing the action.	83 ± 10	13	Below average
Silent Reading Fluency: The student is required to read as many statements as possible in 2 minutes and must respond either "yes" or "no" as to whether each statement is valid.	80 ± 11	9	Below average
KTEA-III Reading Composite Score	81 ± 6	10	Below average

193

Case of Nelson (Naglieri & Feifer, 2017)

Table 5.4 Nelson's Scores on the KTEA-III Math Subtests

Math	Age Norms	Percentile	Range
Math Computation: The student solves math equations in the response booklet including addition and subtraction.	87 ± 10	19	Below average
Math Fluency: This is a timed task requiring the student to solve as many single-digit addition, subtraction, multiplication, and division problems in a minute.	89 ± 11	23	Below average
KTEA-III Math Composite Score	90 ± 6	25	Average
Spelling: The student is required to spell words of increasing difficulty dictated by the examiner.	86 ± 5	18	Below average
Writing Fluency: The student has 5 minutes to write as many sentences as possible describing various pictures.	88 ± 14	21	Below average
KTEA-III Written Language	87 ± 6	19	Below average

194

Case of Nelson (Naglieri & Feifer, 2017)

- Nelson's history of reading problems and interventions to address this, slower reading speed, difficulty reading phonetically irregular words, and poor **Simultaneous**

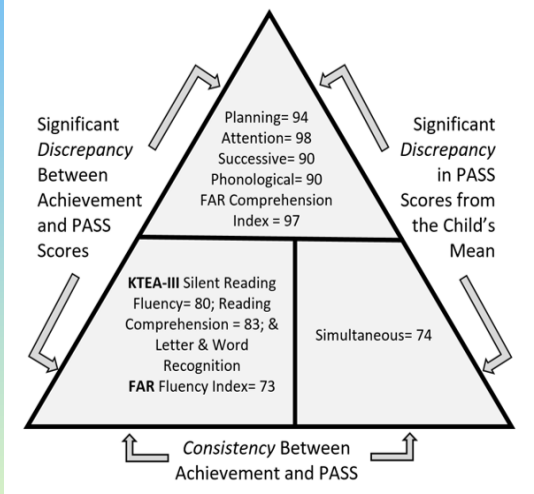


Figure 5.5 Nelson's Discrepancy/Consistency Method of SLD Results

195

Think and Talk in your Core Groups

&

- What do the PASS scores tell you?
- What approach to teaching would you recommend and why?
- What are some possible interventions?
- What other ideas do you have?

PASS Intervention Protocol

- Help child understand their PASS strengths and areas of challenges (Intentional & Transparent)
- Encourage Motivation & Persistence (Mindset)
- Teach/Stress strategies for approaching tasks (Skill Sets)
  - Student generated
  - Model and Scaffold as needed
- Encourage independence and self efficacy
  - Planning (Metacognition) and Self Assessment

197

Kathleen's Intervention Plan for Nelson

- Be Intentional and Transparent
  - Explain his PASS scores to him
- Build on His Strengths
  - Help him use his Planning, Attention, and Successive Strengths to support his learning challenges with Simultaneous Processing
- Develop Effective Skill Sets to remediate his weaker skills
- Offer and encourage the use of metacognitive strategies that can improve his Simultaneous Processing Skills
- Encourage a Growth Mindset and Self Efficacy

198

Teaching Students to Own Graphic Organizers

- Teachers need to model and scaffold instruction of graphic organizers and explain WHY they work?
- What is MOST important is that students know what kind of thinking they are doing – compare/contrast, word exploration, etc.
- Graphic organizers are more powerful if they are students created and BIG and ALIVE!
- Students should be able to choose how they organize their thoughts.
- When you know your students, you can differentiate the complexity of the organizers
- Inspiration is a great and easy-to-use graphic organizer computer program

Presentation Outline

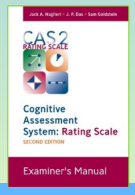
- Introduction
  - Using groups to stimulate thinking
  - How traditional IQ has influenced us
- A new way of thinking about intelligence
  - What is PASS theory of learning
  - How to measure PASS neurocognitive processes
- Case studies with instructional implications
- Final thoughts

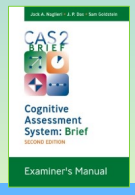
200

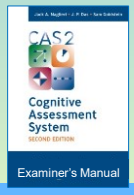
PASS Comprehensive System

(Naglieri, Das, & Goldstein, 2014)

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

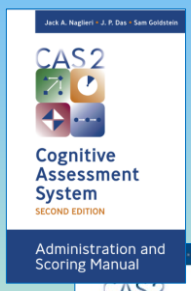


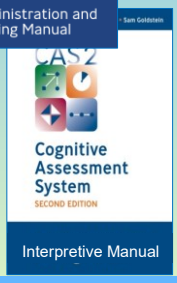


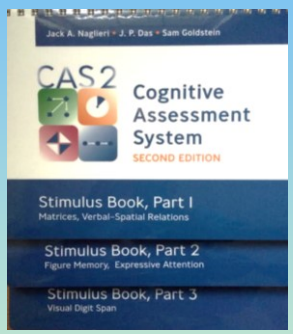


201

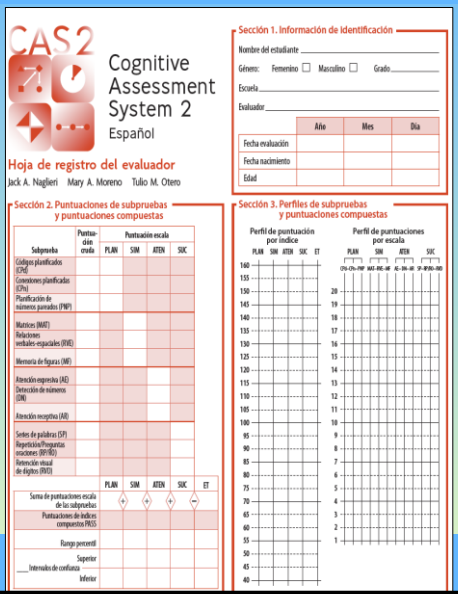
CAS2 for (Ages 5-18 yrs.)





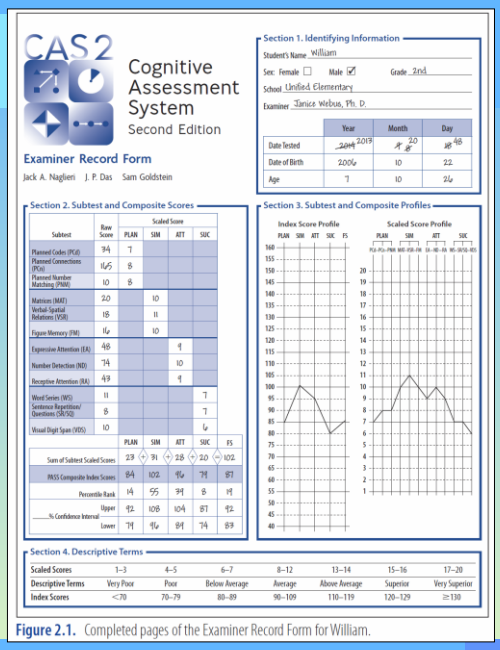


CAS2 Español (Ages 5-18 yrs.)



CAS2

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



CAS 2

Cognitive Assessment System
Second Edition

Examiner Record Form

Jack A. Naglieri J. P. Das Sam Goldstein

Section 1. Identifying Information

Student's Name William

Sex: Female ☐ Male ☑ Grade 2nd

School Unified Elementary

Examiner Janice Webus, Ph. D.

	Year	Month	Day
Date Tested	2017	10	18
Date of Birth	2006	10	22
Age	7	10	26

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)	49			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	97
Percentile Rank	14	55	39	8	19
95% Confidence Interval Upper	92	108	104	87	92
95% Confidence Interval Lower	79	96	89	74	89

Section 3. Subtest and Composite Profiles

Index Score Profile

Scaled Score Profile

Section 4. Descriptive Terms

Scaled Scores	1–3	4–5	6–7	8–12	13–14	15–16	17–20
Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Index Scores	<70	70–79	80–89	90–109	110–119	120–129	≥130

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

CAS2

- Supplementary Scales: **Executive Function (which relates to CEFI)**, Working Memory, Verbal, Nonverbal
- Added: A Visual and Auditory comparison

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
95% Confidence Interval Upper	101	99	101	101	99
95% 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.

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

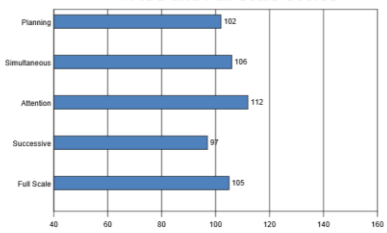
Name: Jack Nag
Age: 8
Gender: Male
Date of Birth: 07-12-2005
Grade: 5
School: East Lake

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

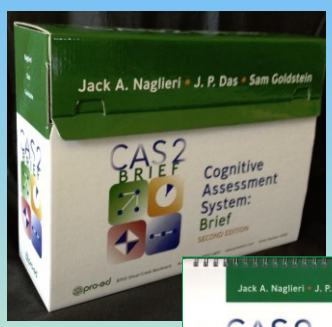
FULL SCALE

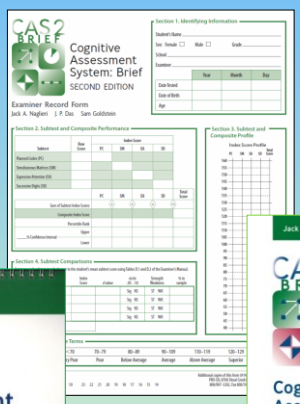
Jack earned a Cognitive Assessment System, Second Edition (CAS2) Full Scale score of 105, which is within the Average classification and is a percentile rank of 63. This means that his performance is equal to or greater than that of 63% of children his age in the standardization group. There is a 90% 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.

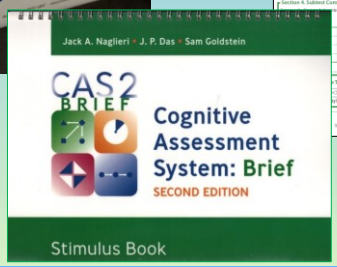
PASS and Full Scale Scores

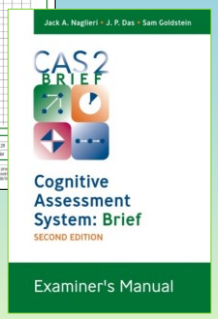


CAS2: Brief for Ages 4-18 years



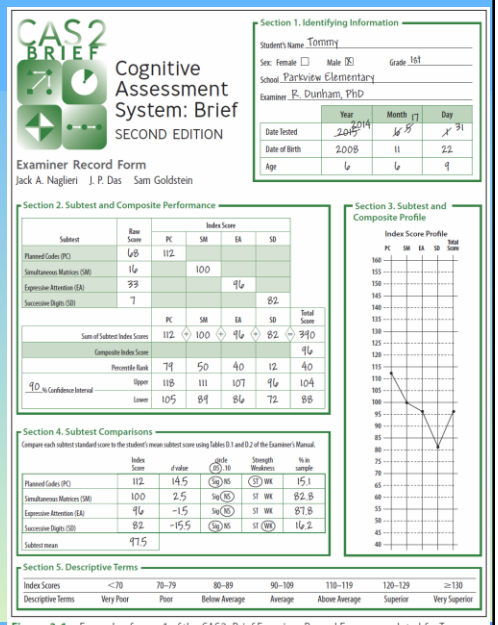






CAS2: Brief

- 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	10	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
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 or 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

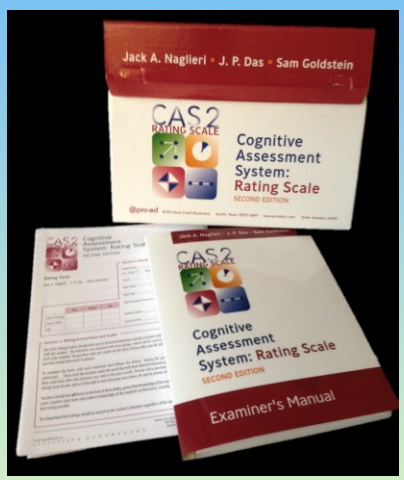
Index Scores	<70	70–79	80–89	90–109	110–119	120–129	≥130
Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior

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

208

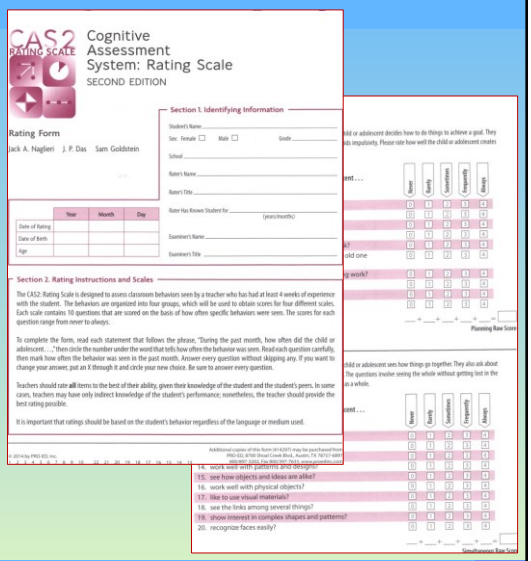
CAS2 Rating Scales (Ages 4-18 yrs.)

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



CAS2 Rating Scales

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



CAS2 Rating Scales

- The rater is given a description of what each scale is intended to measure.
- This informs teachers about PASS

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.

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.

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.

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.

CAS2 Rating Scales

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

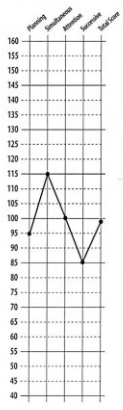
Section 3. PASS Scale and Total Score Summary

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	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 Look over CAS2 Materials

- Questions?

213

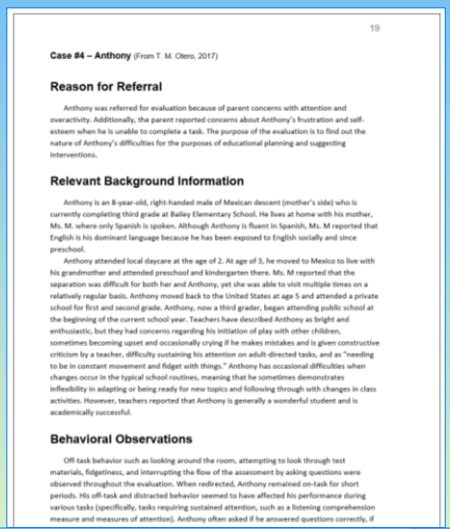
Presentation Outline

- Introduction
  - Using groups to stimulate thinking
  - How traditional IQ has influenced us
- A new way of thinking about intelligence
  - What is PASS theory of learning
  - How to measure PASS neurocognitive processes
- Case studies with instructional implications
- Final thoughts

214

The Case of Anthony

- CORE group activity
- Read the background and test results
- Analyze the pattern of strengths and weaknesses in PASS and academic scores



19

Case #4 – Anthony (From T. M. Otero, 2017)

Reason for Referral

Anthony was referred for evaluation because of parent concerns with attention and overactivity. Additionally, the parent reported concerns about Anthony's frustration and self-esteem when he is unable to complete a task. The purpose of the evaluation is to find out the nature of Anthony's difficulties for the purposes of educational planning and suggesting interventions.

Relevant Background Information

Anthony is an 8-year-old, right-handed male of Mexican descent (mother's side) who is currently completing third grade at Bailey Elementary School. He lives at home with his mother, Ms. M. where only Spanish is spoken. Although Anthony is fluent in Spanish, Ms. M reported that English is his dominant language because he has been exposed to English socially and since preschool.

Anthony attended local daycare at the age of 2. At age of 3, he moved to Mexico to live with his grandmother and attended preschool and kindergarten there. Ms. M reported that the separation was difficult for both her and Anthony, yet she was able to visit multiple times on a relatively regular basis. Anthony moved back to the United States at age 5 and attended a private school for first and second grade. Anthony, now a third grader, began attending public school at the beginning of the current school year. Teachers have described Anthony as bright and enthusiastic, but they had concerns regarding his initiation of play with other children, sometimes becoming upset and occasionally crying if he makes mistakes and is given constructive criticism by a teacher, difficulty sustaining his attention on adult-directed tasks, and as "needing to be in constant movement and fidget with things." Anthony has occasional difficulties when changes occur in the typical school routines, meaning that he sometimes demonstrates inflexibility in adapting or being ready for new topics and following through with changes in class activities. However, teachers reported that Anthony is generally a wonderful student and is academically successful.

Behavioral Observations

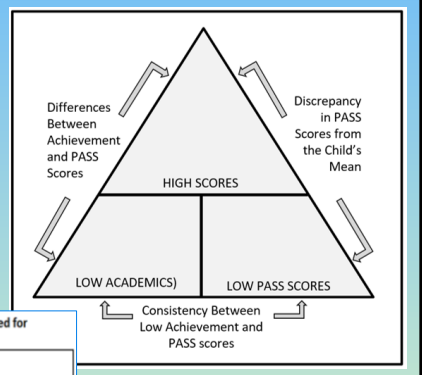
Off-task behavior such as looking around the room, attempting to look through test materials, fidgetiness, and interrupting the flow of the assessment by asking questions were observed throughout the evaluation. When redirected, Anthony remained on-task for short periods. His off-task and distracted behavior seemed to have affected his performance during various tasks (specifically, tasks requiring sustained attention, such as a listening comprehension measure and measures of attention). Anthony often asked if he answered questions correctly, if

215

The Case of Anthony – ADHD?

Worksheet for Anthony

Cognitive Assessment System - 2			Difference from PASS Mean of:	Significantly Different (.05) from PASS Mean?	Strength (S) or Weakness (W)
PASS Scales	Standard Score	Percentile			
Planning	79	34			
Simultaneous	108	45			
Attention	76	4			
Successive	109	25			



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	93.0			
Planning	79	-14.0	yes		Weakness
Simultaneous	108	15.0	yes		
Attention	76	-17.0	yes		Weakness
Successive	109	16.0	yes		

216

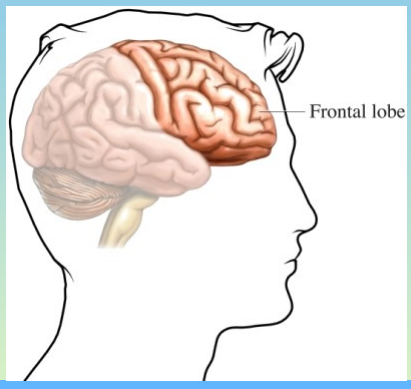
Think and Talk in your Core Groups

&

- ***Do the next case in the Think Smart Workbook***
- What do the PASS scores tell you?
- What approach to teaching would you recommend and why?
- What are some possible interventions?
- What other ideas do you have?

Research on the Impact of Teaching Student to Plan

Engaging the FRONTAL LOBES



218

Planning Research

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.

Planning facilitation helps students develop useful strategies to carefully complete math problems through discussion and shared discovery. It encourages students to think about how they solve problems, rather than just think about whether their answers are correct. This helps them develop careful ways of doing math.

How to Teach Planning Facilitation

Planning facilitation is provided in three 10-minute time periods: 1) 10 minutes of math, 2) 10 minutes of discussion, and 3) 10 more minutes of math. These steps can be described in more detail:

Step 1: The teacher should provide math worksheets for the students to complete in the first 10-minute session. This gives the children exposure to the problems and ways to solve them. The teacher gives each child a worksheet and says, "Here is a math worksheet for you to do. Please try to get as many of the problems correct as you can. You will have 10 minutes." Slight variations on this instruction are okay, but do not give any additional information.

219

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
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

221

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

222

Planning (Metacognitive) Strategy Instruction

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

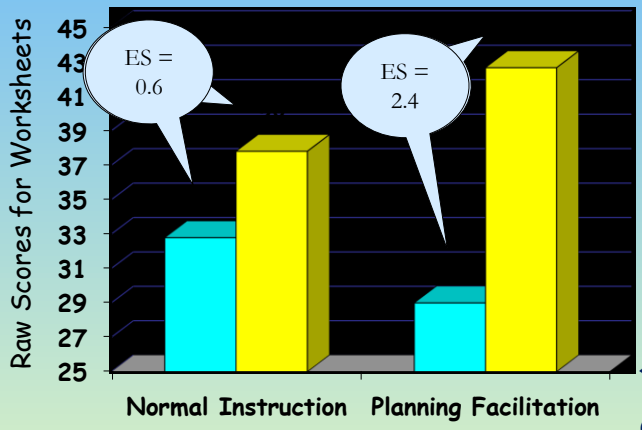
223

Student Plans

- "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 do them (the algebra) by figuring out what I can put in for X to make the problem work."
- "I did all the problems in the brain-dead zone first."

224

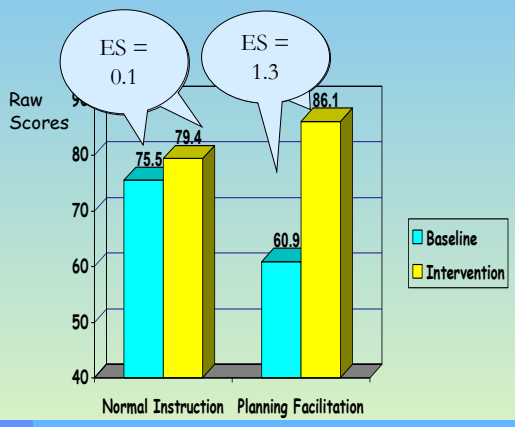
Classroom Worksheets Pre-Post



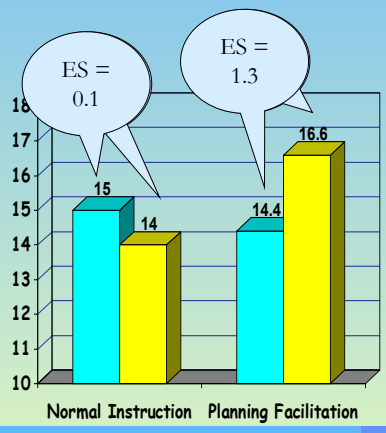
Reminder
< .2 = no effect
.2 - .5 = small
.6 - .8 = medium
> .8 = large

225

Woodcock-Johnson Math Fluency



WIAT Numerical Operations



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

Results

- The experimental group did better than the control on math taken from the curriculum on standardized math tests
- A year later the experimental group still outperformed the control group.
- ***Mindsets Plus Skill Sets Equals Results!***

&

Discuss: What does this research mean for your work as educators

The Case of Paul - Dyslexia

- CORE group activity
- Read the background and test results
- Analyze the pattern of strengths and weaknesses in PASS and academic scores

7

Case Study #1 - Paul

Paul is currently 9-years of age and in 4th grade and is having problems in reading and mathematics. He struggles to remember the sequence of steps when doing math equations, basic math facts, and long passages when reading, when decoding words, and spelling hard words. What remained puzzling is that Paul had an outstanding memory for details, and excelled when remembering specific aspects of a field trip or any type of experiential learning experience.

Paul's CAS-2 Full Scale score of 92 was in the Average range, and at the 27th percentile compared to peers (see Table 8). Most of his PASS scores are in the Average range, with the exception of his Successive processing, which was a weakness. Lower scores on this scale reflects his difficulty working with any kind of information or task that demands sequencing. It is important to note that difficulties with Successive processing can hinder both verbal information (i.e. remember multiple step directions) or non-verbal information (i.e. remembering longer algorithms or steps when engaged in more complex mathematics) as well as reading decoding and spelling.

Paul earned a Planning scale score of 92 which reflects his ability to use strategies when solving problems, check to see if the strategies are effective, modify or change solutions when needed, and efficiently complete tasks. The Planning score is within the average classification and is a percentile rank of 30. This indicates that Paul did as well as or better than 30% of children his age in the standardization group. There is a 90% probability that Clark's true Planning score is within the range of 87 to 98.

Paul's Simultaneous score measures his ability to work with information that is organized into groups and form a cohesive whole. This scale also requires an understanding of how shapes as well as words and verbal concepts are interrelated. Clark Paul a Simultaneous scale score of 110, which means that he did as well as or better than 75% of the children in the standardization group. There is a 90% probability that Clark's true Simultaneous score is within the range of 104 to 115.

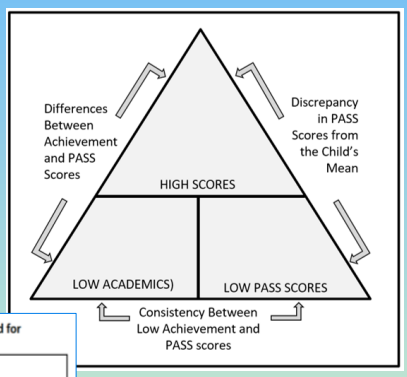
Paul's Successive score reflects his ability to repeat information, such as words or sentences, in order and an understanding of verbal statements when the meaning was dependent on the sequence of the words. He earned a Successive scale score of 75, which is considerably below average and is a percentile rank of 5. This means that Paul only did as well as or better than 5% of the sample his age in the standardization group. There is a 90% probability that Clark's true Successive score is within the range of 71 to 82.

Testing with the Feifer Assessment of Math (FAM: Feifer, 2017) revealed significantly low scores on the Procedural Index, which involves a collection of sequence-based skills such as skip counting forward and backward from various points on a number line, as well as recognizing patterns and sequences among number relationships. His overall FAM Total Index score was 86, which was in the Below Average range and at the 18th percentile compared to peers. Paul's core deficit with Successive processing influences mathematics in both a symbolic fashion (i.e. difficulty identifying number pattern) as well as a conceptual fashion (i.e. difficulty remembering the sequences of steps needed to solve more complex equations). In addition, Paul also

The Case of Paul - Dyslexia

Paul's PASS Scores from the Cognitive Assessment System – Second Edition Extended Battery Results.

Cognitive Assessment System - 2			Difference from PASS Mean of:	Significantly Different (.05) from PASS Mean?	Strength (S) or Weakness (W)
PASS Scales	Standard Score	Percentile			
Planning	92	30			
Attention	92	30			
Simultaneous	110	75			
Successive	75	5			



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

PASS Intervention Protocol

- Help child understand their PASS strengths and areas of challenges (Intentional & Transparent)
- Encourage Motivation & Persistence (Mindset)
- Teach/Stress strategies for approaching tasks (Skill Sets)
  - Student generated
  - Model and Scaffold as needed
- Encourage independence and self efficacy
  - Planning (Metacognition) and Self Assessment

232

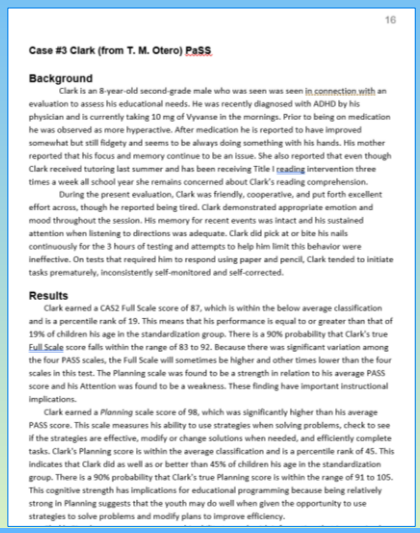
Think and Talk in your Core Groups

&

- ***Do the next case in the Think Smart Workbook***
- What do the PASS scores tell you?
- What approach to teaching would you recommend and why?
- What are some possible interventions?
- What other ideas do you have?

The Case of Clark

- CORE group activity
- Read the background and test results
- Analyze the pattern of strengths and weaknesses in PASS and academic scores



16

Case #3 Clark (from T. M. Otero) PaSS

Background

Clark is an 8-year-old second-grade male who was seen was seen in connection with an evaluation to assess his educational needs. He was recently diagnosed with ADHD by his physician and is currently taking 10 mg of Vyvanse in the mornings. Prior to being on medication he was observed as more hyperactive. After medication he is reported to have improved somewhat but still fidgety and seems to be always doing something with his hands. His mother reported that his focus and memory continue to be an issue. She also reported that even though Clark received tutoring last summer and has been receiving Title I reading intervention three times a week all school year she remains concerned about Clark's reading comprehension.

During the present evaluation, Clark was friendly, cooperative, and put forth excellent effort across, though he reported being tired. Clark demonstrated appropriate emotion and mood throughout the session. His memory for recent events was intact and his sustained attention when listening to directions was adequate. Clark did pick at or bite his nails continuously for the 3 hours of testing and attempts to help him limit this behavior were ineffective. On tests that required him to respond using paper and pencil, Clark tended to initiate tasks prematurely, inconsistently self-monitored and self-corrected.

Results

Clark earned a CAS2 Full Scale score of 87, which is within the below average classification and is a percentile rank of 19. This means that his performance is equal to or greater than that of 19% of children his age in the standardization group. There is a 90% probability that Clark's true Full Scale score falls within the range of 83 to 92. Because there was significant variation among the four PASS scales, the Full Scale will sometimes be higher and other times lower than the four scales in this test. The Planning scale was found to be a strength in relation to his average PASS score and his Attention was found to be a weakness. These finding have important instructional implications.

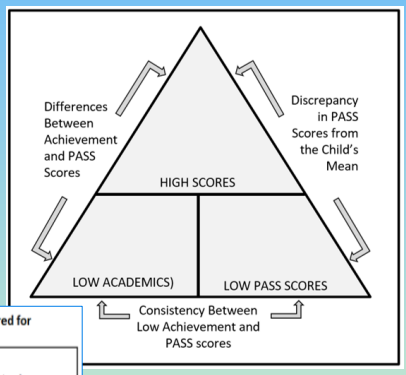
Clark earned a *Planning* scale score of 98, which was significantly higher than his average PASS score. This scale measures his ability to use strategies when solving problems, check to see if the strategies are effective, modify or change solutions when needed, and efficiently complete tasks. Clark's Planning score is within the average classification and is a percentile rank of 45. This indicates that Clark did as well as or better than 45% of children his age in the standardization group. There is a 90% probability that Clark's true Planning score is within the range of 91 to 105. This cognitive strength has implications for educational programming because being relatively strong in Planning suggests that the youth may do well when given the opportunity to use strategies to solve problems and modify plans to improve efficiency.

234

The Case of Clark

Worksheet for Clark

Cognitive Assessment System - 2			Difference from PASS Mean of:	Significantly Different (.05) from PASS Mean?	Strength (S) or Weakness (W)
PASS Scales	Standard Score	Percentile			
Planning	98	45			
Simultaneous	89	24			
Attention	79	8			
Successive	91	27			



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	89.3		
Planning	98	8.8	no	
Simultaneous	89	-0.3	no	
Attention	79	-10.3	yes	Weakness
Successive	91	1.8	no	

235

PASS Intervention Protocol

- Help child understand their PASS strengths and areas of challenges (Intentional & Transparent)
- Encourage Motivation & Persistence (Mindset)
- Teach/Stress strategies for approaching tasks (Skill Sets)
  - Student generated
  - Model and Scaffold as needed
- Encourage independence and self efficacy
  - Planning (Metacognition) and Self Assessment

236

Presentation Outline

- Introduction
  - Using groups to stimulate thinking
  - How traditional IQ has influenced us
- A new way of thinking about intelligence
  - What is PASS theory of learning
  - How to measure PASS neurocognitive processes
- Case studies with instructional implications
- Final thoughts

237

Final Thoughts

- Combining CAS2 with FAM and FAR
- Executive function and PASS
- How does social emotional fit in?
- Sex differences in PASS, social emotional, and EF

238

Combining PASS and FAR

See the last page in your Think Smart Workbook

- Feifer Assessment of Reading and PASS neurocognitive processes
- Page 36 in Think Smart Workbook
- And (See Naglieri & Otero, 2017 and *Using PASS Processes to Identify Developmental Dyslexia,* Naglieri & Feifer, 2018)

Feifer Assessment of Reading

Feifer Assessment of Reading	Planning	Attention	Simultaneous	Successive
Phonological Index				X
Phonemic Awareness				X
Nonsense Word Decoding				X
Isolated Word Reading Fluency			X	X
Oral Reading Fluency			X	X
Positioning Sounds				X
Fluency Index			X	
Rapid Automatic Naming			X	
Verbal Fluency	X			
Visual Perception		X		
Irregular Word Reading Fluency			X	
Orthographical Processing		X	X	
Comprehension Index	X	X		
Semantic Concepts	X		X	
Word Recall	X	X		
Print Knowledge		X		
Morphological Processing				X
Silent Reading Fluency: Comprehension	X	X	X	

239

Combining PASS and FAM

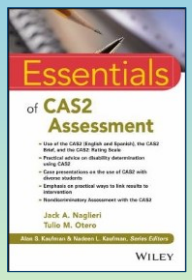
- Feifer Assessment of Reading and PASS neurocognitive processes
- Page 36 in Think Smart Workbook
- And (See Naglieri & Otero, 2017 and *Using PASS Processes to Identify Developmental Dyslexia,* Naglieri & Feifer, 2018)

Feifer Assessment of Mathematics	Planning	Attention	Simultaneous	Successive
Procedural Index				X
Forward Number Count		X		X
Backward Number Count		X		X
Numeric Capacity		X		X
Sequences	X			X
Object Counting		X		X
Verbal Index			X	
Rapid Number Naming			X	
Addition Fluency		X	X	
Subtraction Fluency		X	X	
Multiplication Fluency		X	X	
Division Fluency		X	X	
Linguistic Math Concepts	X		X	
Semantic Index	X		X	
Spatial Memory		X	X	
Equation Building	X		X	X
Perceptual Estimation	X		X	
Number Comparison		X	X	
Addition Knowledge	X	X		
Subtraction Knowledge	X	X		
Multiplication Knowledge	X	X		
Division Knowledge	X	X		

240

Comparing PASS scores with other Achievement Tests

- See Naglieri & Otero (2017) tables



241

Comparing PASS scores with other Achievement Tests

- See Naglieri & Otero (2017) tables

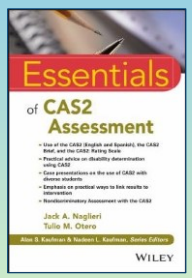


Table A.1 Values Needed for Significance When Comparing the CAS2 Extended and Core Battery PASS and Full Scale Scores to All Scores From the KTEA-3

	CAS2 12-Subtest Extended Battery										CAS2 8-Subtest Core Battery									
	$p = .05$					$p = .10$					$p = .05$					$p = .10$				
	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc
Subtests																				
Letter and Word Recognition	7	10	9	11	10	6	8	8	9	8	9	11	9	12	11	7	9	8	10	9
Reading Comprehension	11	13	12	14	13	9	11	10	11	11	12	14	13	15	14	10	11	11	12	12
Nonsense Word Decoding	8	10	9	11	10	6	8	8	9	8	9	11	10	12	11	7	9	8	10	9
Phonological Processing	10	12	11	12	12	8	10	9	10	10	11	12	11	14	13	9	10	9	11	11
Word Recognition Fluency	12	14	13	14	14	10	11	11	12	11	13	14	13	15	15	11	12	11	13	12

(*continued*)

	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc
Subtests																				
Letter-Word Identification	9	11	10	12	11	7	9	9	10	9	10	12	11	13	12	8	10	9	11	10
Applied Problems	8	11	10	11	11	7	9	8	9	9	9	11	10	13	12	8	9	9	11	10
Spelling	8	11	10	11	11	7	9	8	9	9	9	11	10	13	12	8	9	9	11	10
Passage Comprehension	11	13	12	13	13	9	11	10	11	11	12	13	13	15	14	10	11	10	12	12
Calculation	9	11	11	12	11	8	9	9	10	9	10	12	11	13	13	9	10	9	11	10
Writing Samples	11	12	12	13	12	9	10	10	11	10	11	13	12	14	14	10	11	10	12	11
Word Attack	11	12	12	13	12	9	10	10	11	10	11	13	12	14	14	10	11	10	12	11

(*continued*)

Comparing PASS scores with other Achievement Tests

- See Naglieri & Otero (2017) tables

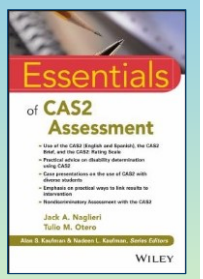


Table D.1 Values Needed for Significance When Comparing the CAS2 Extended and Core Battery PASS and Full Scale Scores to All Scores From the Feifer Assessment of Reading (FAR)

	CAS2 12-Subtest Extended Battery										CAS2 8-Subtest Core Battery									
	$p = .05$					$p = .10$					$p = .05$					$p = .10$				
	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc	FS	Plan	Sim	Att	Suc
Subtests																				
Phonemic Awareness	9	11	10	12	11	7	9	9	10	9	10	12	11	13	12	8	10	9	11	10
Nonsense Word Decoding	11	13	12	13	13	9	11	10	11	11	12	13	13	15	14	10	11	11	12	12
Isolated Word Reading Fluency	10	12	11	13	12	9	10	10	11	10	11	13	12	14	13	9	11	10	12	11
Oral Reading Fluency	8	10	9	11	10	7	9	8	9	9	9	11	10	13	12	8	9	8	10	10
Positioning Sounds	10	12	11	13	12	8	10	9	11	10	11	13	12	14	13	9	11	10	12	11

(*continued*)

It's Time for a Brain Break

244

Final Thoughts

- Combining CAS2 with FAM and FAR
- Executive function and PASS
- How does social emotional fit in?
- Sex differences in PASS, social emotional, and EF

245

Executive Function & PASS

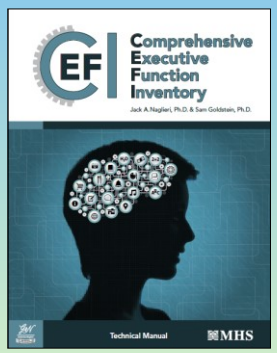
- Planning and Attention are used in CAS2 to obtain an Executive Function score.
- If the EF score on CAS2 is low, look for other evidence of problems related to the frontal lobes
  - Academic skills related to Planning and Attention (see Feifer Assessment of Reading (Feifer, 2015) and Math (Feifer, 2016)
  - Social emotional problems (see DESSA, LeBuffe, Shapiro & Naglieri, 2009)
  - Behavioral scale such as the Comprehensive Executive Function Inventory (CEFI, Naglieri 7 Goldstein, 2013)

246

Comprehensive Executive Function Inventory (CEFI)

Jack A. Naglieri & Sam Goldstein

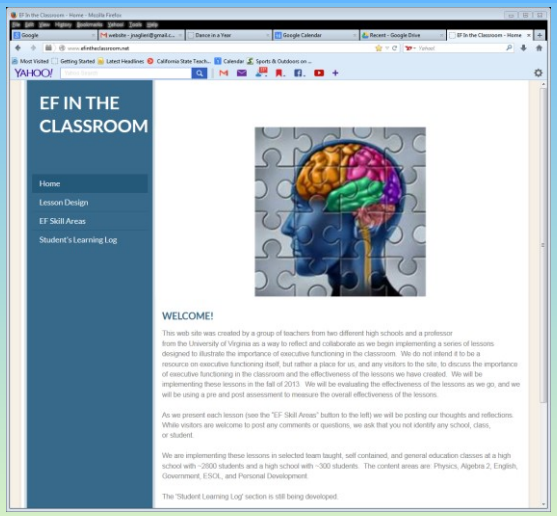
- CEFI is a **strength based** EF measure
- Items are **positively** worded
- Higher scores = **good** behaviors related to EF
- Scores set at mean of **100** SD of **15**
- Ages 5-18 years rated by a parent, teacher, or the child/youth.



247

www.efintheclassroom.net

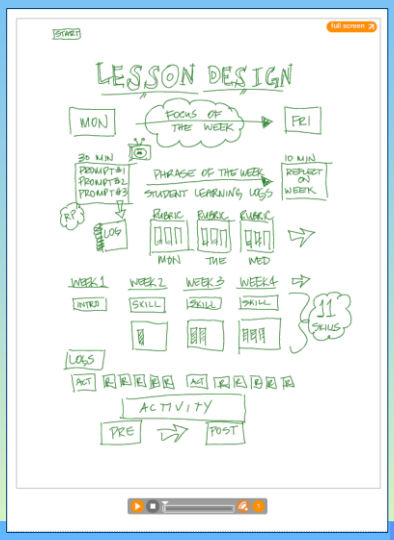
- Start with Awareness of thinking about thinking



248

Structure of the lessons

- Each topic is discussed for one week
- Monday – class lesson
- Tues-Thurs reminders
- Friday – class reflection



249

Interventions for EF Behaviors

CEFI Scales	Efintheclassroom.net
Attention	Sustained Attention
Emotion Regulation	Emotional Control
Flexibility	Cognitive Flexibility
Inhibitory Control	Response Inhibition
Initiation	Task Initiation
Organization	Organization
Panning	Planning
Self-Monitoring	Response Inhibition
Working Memory	Working Memory
	Goal Directed Persistence

250

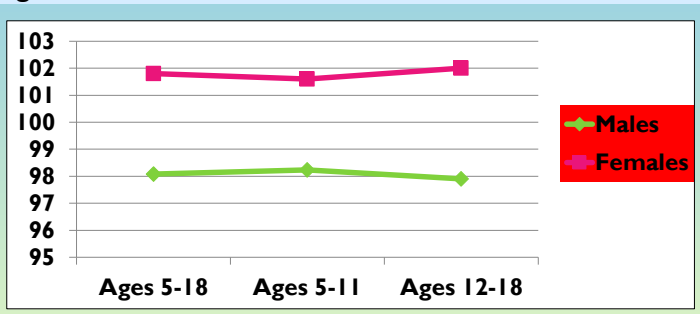
Sex Differences in Executive Function

251

CEFI Sex Differences: Parent Raters

- Girls are Smarter than Boys

Parents	N	Mn	SD	N	Mn	SD	ES
Ages 5-18	700	**98.1**	14.9	699	**101.8**	15.0	**-0.25**
Ages 5-11	350	**98.2**	14.3	349	**101.6**	15.6	**-0.22**
Ages 12-18	350	**97.9**	15.4	350	**102.0**	14.4	**-0.28**

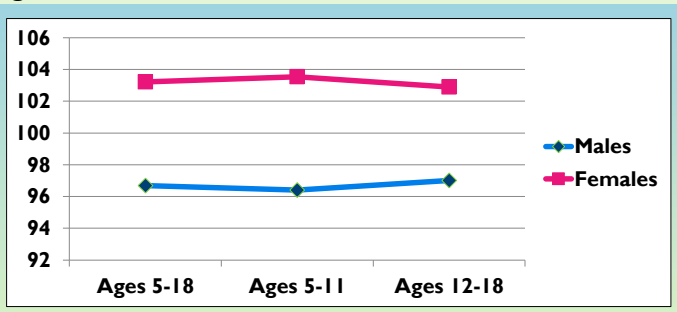


252

CEFI Sex Differences: Teacher Raters

- Girls are Smarter than Boys

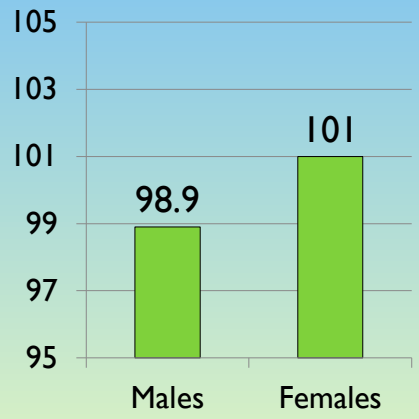
Teachers	N	Mn	SD	N	Mn	SD	ES
Ages 5-18	700	**96.7**	14.4	700	**103.2**	15.0	**-0.44**
Ages 5-11	350	**96.4**	14.5	350	**103.5**	14.9	**-0.49**
Ages 12-18	350	**97.0**	14.4	350	**102.9**	15.0	**-0.40**



253

Gender Differences: Self Raters

- Girls are better EF than Boys



	Mean	SD	N
Male	98.9	15.4	350
Female	101.0	14.6	350

254

Sex Differences: Ability

Journal of Educational Psychology
2001, Vol. 93, No. 2, 430–437

0022-0663/01/$5.00 DOI: 10.1037//0022-0663.93.2.430

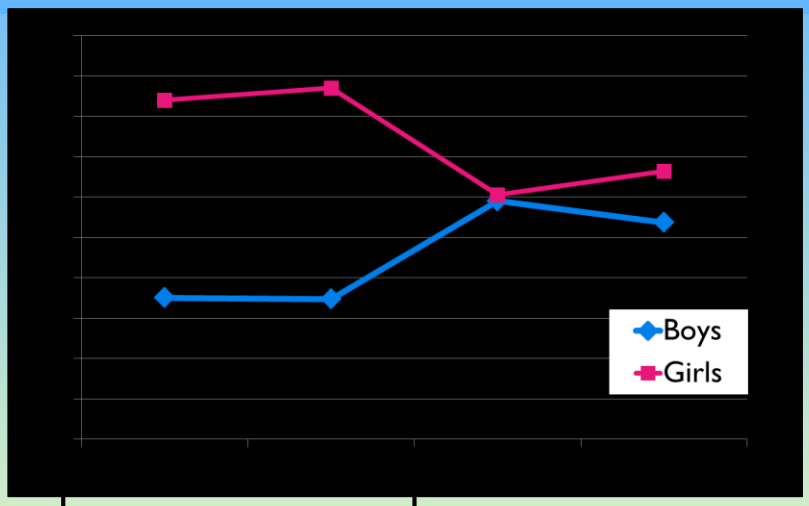
Gender Differences in Planning, Attention, Simultaneous, and Successive (PASS) Cognitive Processes and Achievement

Jack A. Naglieri
George Mason University

Johannes Rojahn
Ohio State University

Gender differences in ability and achievement have been studied for some time and have been conceptualized along verbal, quantitative, and visual–spatial dimensions. Researchers recently have called for a theory-based approach to studying these differences. This study examined 1,100 boys and 1,100 girls who matched the U.S. population using the Planning, Attention, Simultaneous, Successive (PASS) cognitive-processing theory, built on the neuropsychological work of A. R. Luria (1973). Girls outperformed boys on the Planning and Attention scales of the Cognitive Assessment System by about 5 points (d = .30 and .35, respectively). Gender differences were also found for a subsample of 1,266 children on the Woodcock–Johnson Revised Tests of Achievement Proofing (d = .33), Letter–Word Identification (d = .22), and Dictation (d = .22). The results illustrate that the PASS theory offers a useful way to examine gender differences in cognitive performance.

Sex Differences: Ability



Executive Function

256

Sex Differences: Social Emotional

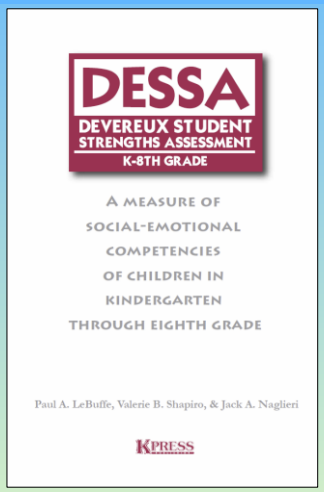


TABLE 2.6

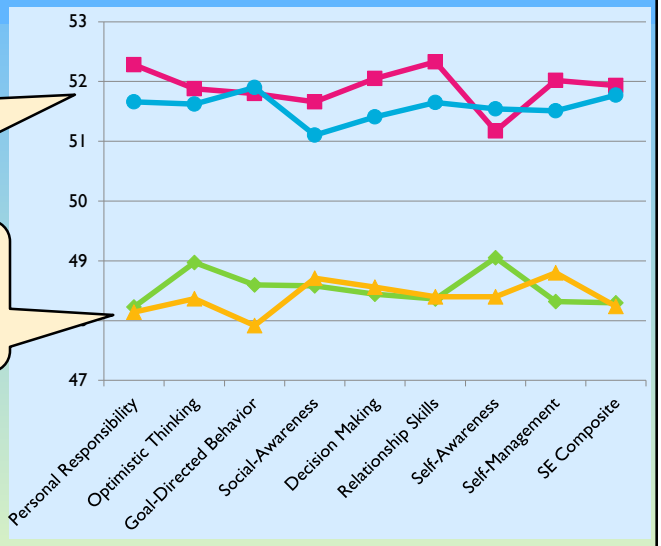
Means, SDs, Ns, and *d*-ratios for DESSA *T*-Scores by Gender

	Males			Male Female *d*-ratio	Females		
	Mean	*SD*	*n*		*Mean*	*SD*	*n*
TEACHER RATERS							
Personal Responsibility	48.23	9.98	631	-0.42	52.28	9.30	611
Optimistic Thinking	48.97	10.14	627	-0.30	51.88	9.47	612
Goal-Directed Behavior	48.60	10.05	631	-0.33	51.80	9.38	611
Social-Awareness	48.58	10.13	630	-0.31	51.66	9.64	612
Decision Making	48.44	10.08	631	-0.37	52.05	9.32	612
Relationship Skills	48.36	10.04	630	-0.41	52.33	9.30	612
Self-Awareness	49.05	10.28	631	-0.22	51.17	9.36	611
Self-Management	48.32	10.02	631	-0.39	52.02	9.18	612
Social-Emotional Composite	48.30	10.09	625	-0.38	51.93	9.02	609
PARENT RATERS							
Personal Responsibility	48.14	9.52	602	-0.36	51.66	9.87	641
Optimistic Thinking	48.37	9.86	602	-0.33	51.62	9.82	641
Goal-Directed Behavior	47.92	9.51	602	-0.41	51.90	9.96	641
Social-Awareness	48.71	9.75	602	-0.25	51.10	9.71	641
Decision Making	48.56	9.76	602	-0.29	51.41	9.62	641
Relationship Skills	48.40	9.72	602	-0.33	51.65	9.90	641
Self-Awareness	48.40	10.03	602	-0.32	51.54	9.51	641
Self-Management	48.80	9.98	602	-0.27	51.51	9.94	641
Social-Emotional Composite	48.24	9.51	602	-0.37	51.77	9.60	641

Devereux Elementary Student Strength Assessment (DESSA, LeBuffe Shapiro & Naglieri, 2009)

257

Sex Differences: Social Emotional



Notes:
N = 2,477
DESSA values are T-scores (Mn= 50, SD = 10).

258

Sex Differences

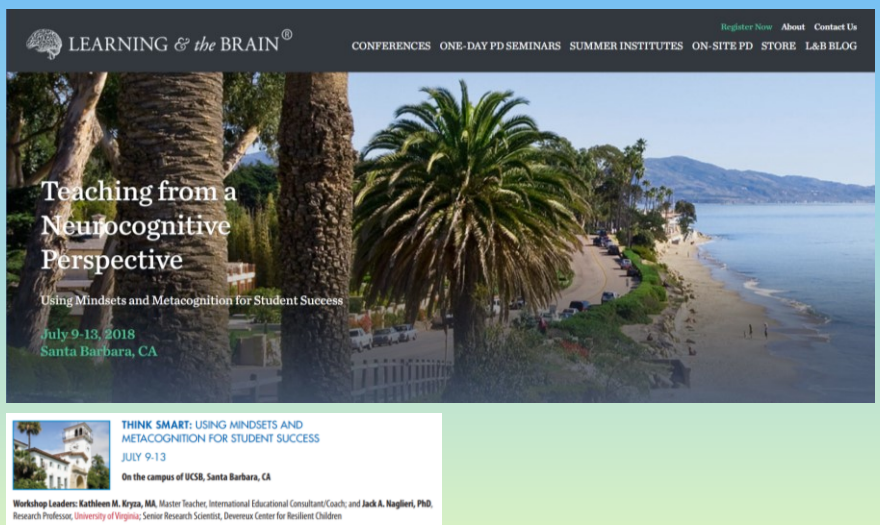
259

Conclusions

- Understanding PASS neurocognitive abilities of the students you work with will help you make better decisions about HOW to teach
- Understanding WHY a student fails if the key to knowing HOW they can learn

260

Want to Learn More… Join us in California July 9-13, 2018



261