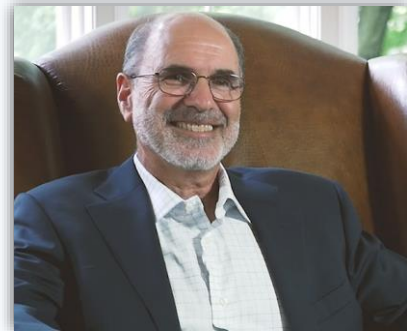


COVID-19 Really Demands Executive Function: Implications for Assessment and Intervention of ADHD

Jack A. Naglieri, Ph.D.

Research Professor, University of Virginia
 Senior Research Scientist, Devereux Center
 for Resilient Children
 Emeritus Professor, George Mason University

jnaglieri@gmail.com
www.jacknaglieri.com



1

1

How Are You Feeling?

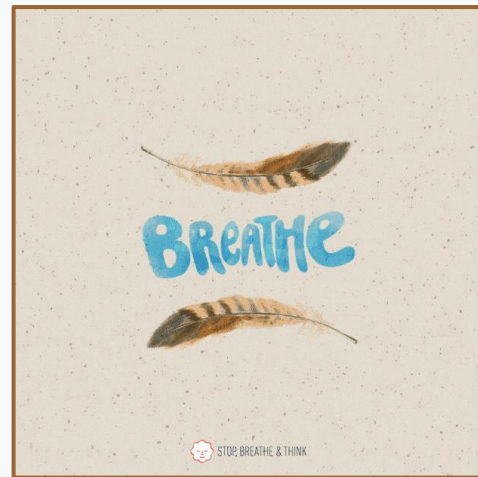


2

2

Mindful Breathing

Feeling Overwhelmed?



3


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Tools for Psychological and Educational Assessment

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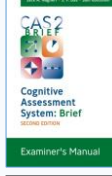
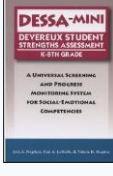




This site was created to provide tools and resources for both psychologists and educators alike.


Jack A. Naglieri, PhD, has held faculty appointments at Northern Arizona University, The Ohio State University and George Mason University. He is currently a Research Professor at the University of Virginia, Senior Research Scientist at the Devereux Center for Resilient Children, and Emeritus Professor of Psychology at George Mason University.

Dr. Naglieri has developed many tests used by psychologists and educators such as the Naglieri Nonverbal Ability Test, the Cognitive Assessment System, Autism Spectrum Rating Scale, Devereux Student Strengths Assessment, Comprehensive Executive Function Inventory, and Reinforcing Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative. He is widely known for his efforts to increase participation of traditionally under-represented students in gifted education. He is also well known for the PASS Theory of Intelligence and its application using the CAS for identification of specific learning disabilities using the Diagnostic Consistency Method. Fair and equitable assessment of diverse populations, and academic interventions related to PASS neurocognitive processes.

DISCLOSURES












Webinars




A webinar library that covers a variety of topics such as EF, Autism Assessment, and SLD. We have created this library to share and learn from each other while staying home and safe.

Ask Dr. Jack




Dr. Jack Naglieri discusses timely topics and answers frequently asked questions.

Handouts




Download PDF handouts of past presentations and related research on the following tests and topics.

Naglieri Feifer SLD




Access all the work that Drs. Jack Naglieri & Shave Feifer have done on the identification of students with specific learning disabilities and learning needs.

Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative



The Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative provide equitable assessment of students for gifted educational programs.

10-Minute Solutions



Short published papers that describe applications of PASS theory to identify disabilities such as Dyslexia.

4

4

2

Why This Work?

- Interest in intelligence and instruction
- Working as a school psychologist in 1975...I realized that the tests I used had a profound impact on what I said about the results and ultimately the life of a student
- NY -> Georgia -> Arizona -> Ohio -> Virginia
- Tests and measurement became my passion even into my 'retirement'
- We must follow the science



5

Why this session on EF?

- Executive Function (EF) is the most important ability we have, because it provides us a way to decide ***how to do what we choose to do to achieve a goal***
- EF is especially needed in novel situations – COVID-19 exemplifies a context that demands figuring out how to do things we used to do without thinking
- The best news is that EF **can be taught**
- Instruction that improves EF will affect a person's ability to learn, their behavior, and their social skills.
- Improving EF will change an individual's life

6

6



After participating in this presentation, participants will be able to:

1. Describe how executive function is expressed as a type of ability (intelligence), behaviors, social-emotional skills, and academic success or limitations
2. Identify various behavioral, cognitive, academic and social-emotional tools to measure EF
3. Integrate information from EF as measured by ability, behaviors, social-emotional competencies and academic/work skills to select effective instructional methods
4. List strategies to improve behaviors and academic skills which rely on executive functioning to increase academic success and general well-being

7

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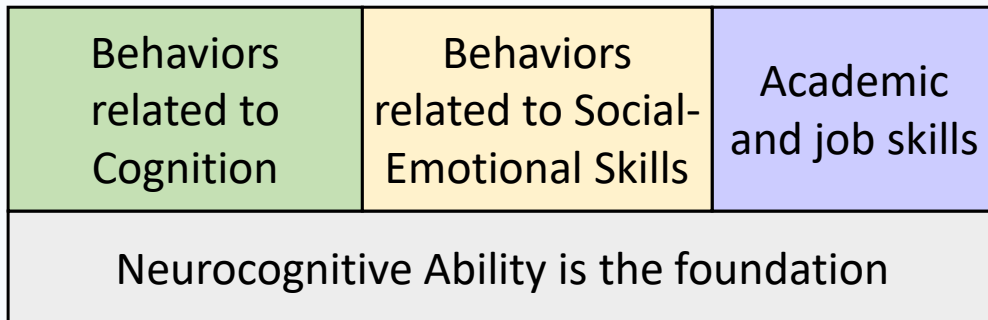
Presentation Outline

- Introduction to Executive Function (EF)
- EF Behaviors
- EF and Cognition (intelligence)
- EF and Social Emotional Skills
- EF and Academic/Job Performance
- Research about EF as ability, behavior, and SE
- Conclusions

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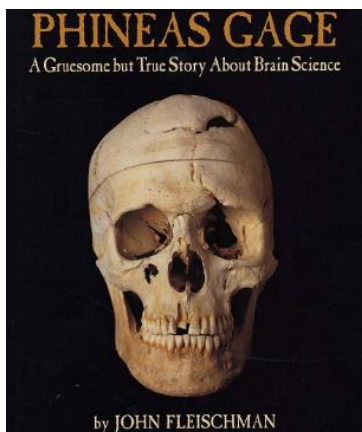
My Approach to Assessment of EF



9

9

The Curious Story of Phineas Gage



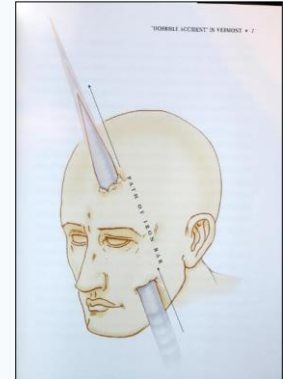
- September 13, 1848 26 year old Phineas Gage was in charge of a railroad track construction crew blasting granite bedrock near Cavendish, Vermont
- The job Phineas has is to use a “tamping iron” to set explosives
- The tamping iron is a rod about 3 ½ feet long weighing 13 ½ lbs pointed at one end

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Fleishman (2002, p 70)

- From Damasio (1994) article in *Science*
- The rod passed through the left frontal lobe
- The damage was to the front of the frontal cortex more than the back, and the underside more than the top
- This diminished his planning and decision making, self monitoring, self correction, especially in novel settings



Fleishman (2002)

11

11

Before . . . & . . . After

Before the accident 'he possessed a well-balanced mind, was seen as a shrewd, smart business man, very energetic and persistent in executing all his plans of operation' (p 59)

After the accident his ability to direct others was gone, he had considerable trouble with:

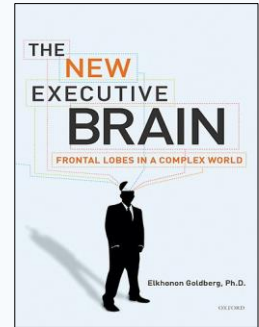
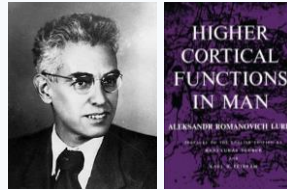
- Thinking
- Behaviors
- Work
- Social-emotional

12

12

Executive Functions

- In 1966 Luria first wrote and defined the concept of Executive Function (EF) and described the frontal lobes as “the organ of civilization”
- Luria’s student, Nick Goldberg states that the frontal lobes are about ...”leadership, motivation, drive, vision, self-awareness, and awareness of others, success, creativity, sex differences, social maturity, cognitive development and learning...”



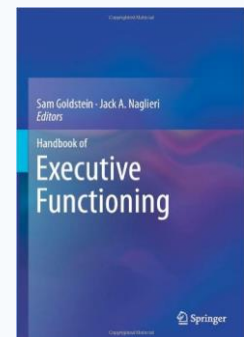
13

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What is Executive Function(s)

There is no formal accepted definition of EF

- We typically find a vague general statement of EF (e.g., goal-directed action, cognitive control, top-down inhibition, effortful processing, etc.).
- Or a listing of the constructs such as
 - Inhibition, Working Memory,
 - Planning, Problem-Solving,
 - Goal-Directed Activity, Strategy Development and Execution,
 - Emotional Self-Regulation, Self-Motivation
- Goldstein, Naglieri, Princiotta, & Otero (2013)
 - Found more than 30 definitions of EF!



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Executive Function(s)

- Given all the definitions of EF(s) we wanted to address the question...
Executive Function^s ... or
Executive Function?
- One way to answer the question is to research the factor structure of EF behaviors
- Factor structure of the Comprehensive Executive Function Inventory (CEFI), and the Comprehensive Executive Function Inventory Adult (CEFI Adult)

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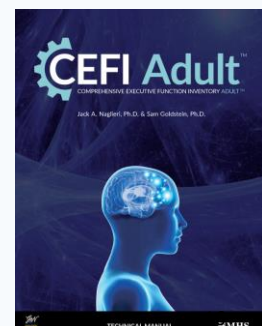
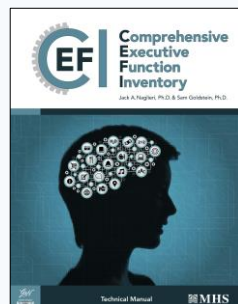
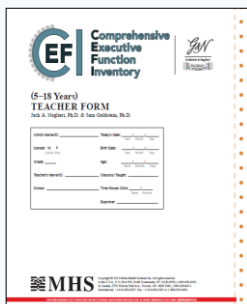
Test Development → Research

CEFI

(Naglieri & Goldstein, 2012)

CEFI Adult

(Naglieri & Goldstein, 2017)



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CEFI Exploratory Factor Analysis

- The normative samples for CEFI and CEFI Adult included ratings by parents, teachers, observers, and self ratings were randomly split into two samples and EFA conducted

Conclusions

- Nationally representative samples aged 5 to 80 years (N = 6,700) indicates that EF behaviors are best seen as **one construct**



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CEFI Factor Analysis

Item Level Analysis

- For the **first half** of the normative sample (Parent, Teacher and Self ratings') **item scores** (90 items) used in factor analysis

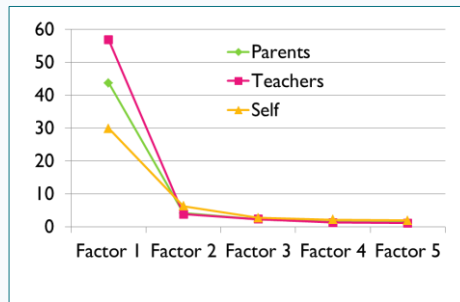
Scale Level Analysis

- Using the **second half** of the normative sample EFA was conducted using raw scores for the following scales:
 - Attention
 - Emotion Regulation
 - Flexibility
 - Inhibitory Control
 - Initiation
 - Organization
 - Planning
 - Self-Monitoring
 - Working Memory

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CEFI Factor Analysis

Item Factor Analyses

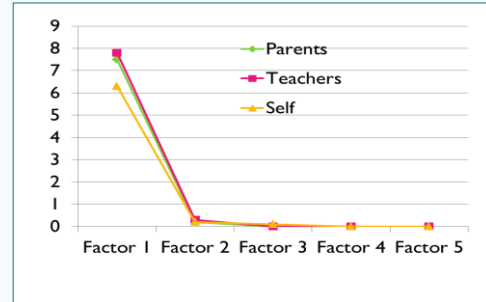


Eigenvalues from the Inter-Item Correlations

Form	Factor						
	1	2	3	4	5	6	7
Parent	43.7	4.1	2.3	1.5	1.3	1.3	1.0
Teacher	56.8	3.8	2.3	1.3	1.1	1.1	0.8
Self-Report	29.9	6.3	2.7	2.1	1.9	1.8	1.5

Note. Extraction method: Principal Axis Factoring. Only the first 10 eigenvalues are presented.

Scale Factor Analyses



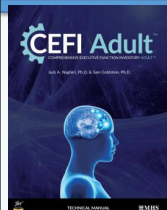
Eigenvalues of the CEFI Scales Correlations

Form	Factor						
	1	2	3	4	5	6	7
Parent	7.5	0.2	0.0	0.0	0.0	0.0	0.0
Teacher	7.8	0.3	0.0	0.0	0.0	0.0	0.0
Self-Report	6.3	0.2	0.1	0.0	0.0	0.0	-0.1

Note. Extraction method: Principal Axis Factoring.

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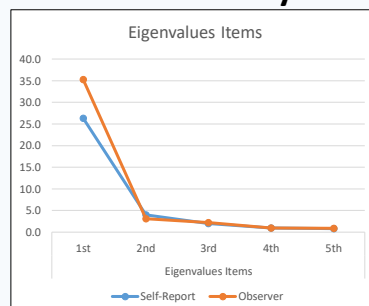
19



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

- Same scale structure as CEFI
- Full Scale
 - Attention
 - Emotion Regulation
 - Flexibility
 - Inhibitory Control
 - Initiation
 - Organization
 - Planning
 - Self-Monitoring
 - Working Memory

Item Factor Analyses

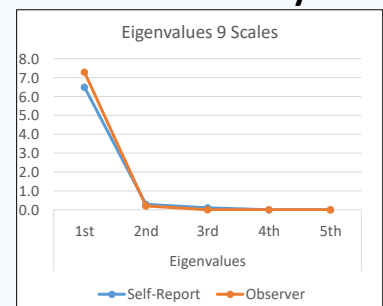


Eigenvalues from the Inter-Item Correlations

Form	1 st -2 nd	Factor								
		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th
Self-Report	6.7	26.3	4.0	2.0	1.0	0.8	0.7	0.6	0.5	0.5
Observer	11.3	35.3	3.1	2.2	1.0	0.9	0.8	0.7	0.5	0.5

Note. Extraction method: Principal Axis Factoring. Only the first 9 eigenvalues are presented.

Scale Factor Analyses



Eigenvalues from the CEFI Adult Scales Correlations

Form	1 st -2 nd	Factor								
		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th
Self-Report	21.7	6.5	0.3	0.1	0.0	0.0	0.0	-0.1	-0.1	-0.1
Observer	32.7	7.3	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1

Note. Extraction method: Principal Axis Factoring.

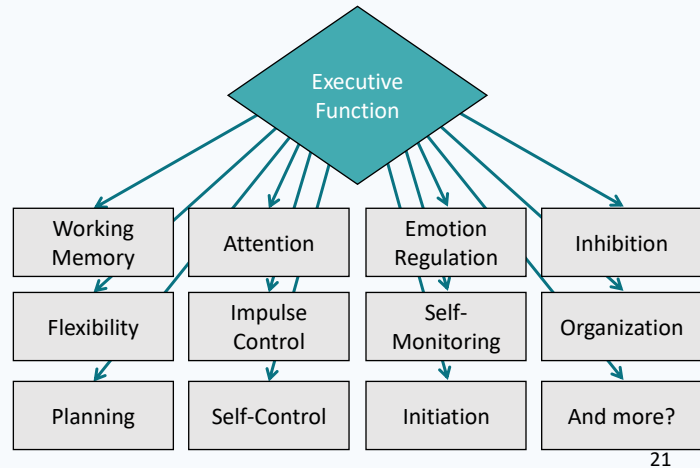
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Exploratory Factor Analysis

Conclusions

- Nationally representative samples aged 5 to 80 years (N = 6,700) indicates that EF behaviors are best seen as **one construct**



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Executive Function Involves

"How you do what you decide to do" demands...

- Initiation** to achieve a goal, **planning** and **organizing** parts of a task, **attending** to details to notice success of the solution, keeping information in **memory**, having **flexibility** to modify the solution as information from **self-monitoring** is received and demonstrating **emotion regulation** (which also demands **inhibitory control**) to ensure clear thinking so that the task is completed successfully.

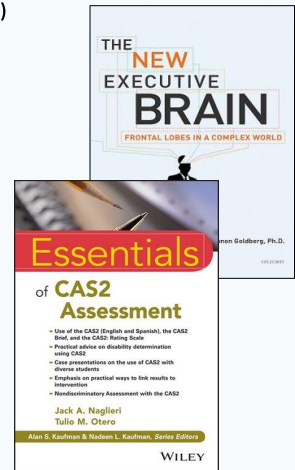
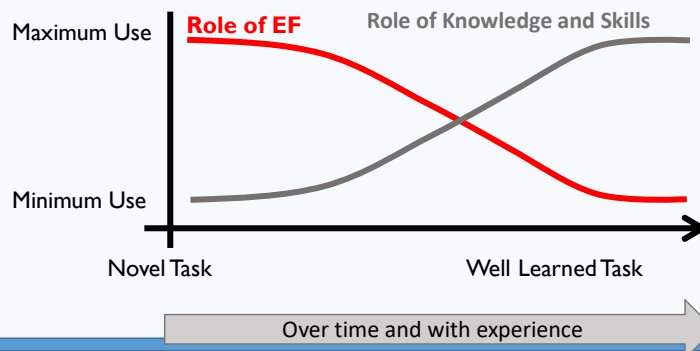


22

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EF's Learning Curves (Naglieri & Otero, 2017)

- Learning depends upon instruction and EF
- At first, EF plays a major role in learning (see Goldberg, 2009, p. 90)
- When a new task is learned and practiced it becomes a skill and execution requires less EF (see Naglieri & Otero, 2017, p. 117)



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Presentation Outline

- Introduction to Executive Function (EF)
- EF Behaviors
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- Conclusions

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CEFI Scale has Positively Worded Items

Strength Based Scales



Deficit Based Scales

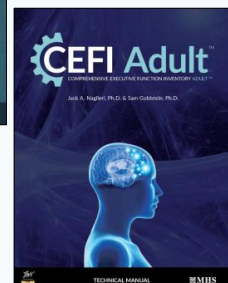
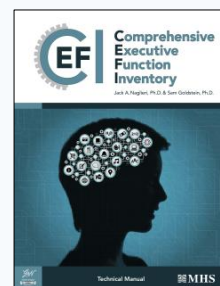


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CEFI and the CEFI Adult

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



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One Factor and 9 Scales?

- EF is a unidimensional concept
- Use the Full Scale to answer the question “Is the individual poor in EF or not?”
- Use the 9 scales to identify the specific groups of items that represent 9 different types of behaviors that can be addressed by Intervention

CEFI Scales

Attention
Emotion Regulation
Flexibility
Inhibitory Control
Initiation
Organization
Planning
Self-Monitoring
Working Memory

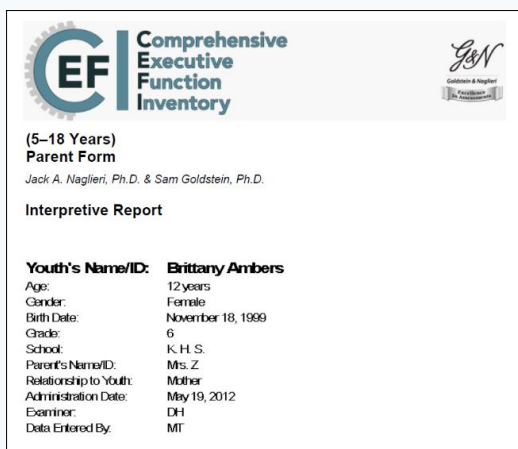
CEFI Adult Scales

Attention
Emotion Regulation
Flexibility
Inhibitory Control
Initiation
Organization
Planning
Self-Monitoring
Working Memory

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CEFI and CEFI Adult Interpretive Reports



CEFI Comprehensive Executive Function Inventory
(5–18 Years)
Parent Form
Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Interpretive Report

Youth's Name/ID: Brittany Ambers
Age: 12 years
Gender: Female
Birth Date: November 18, 1999
Grade: 6
School: K. H. S.
Parent's Name/ID: Mrs. Z.
Relationship to Youth: Mother
Administration Date: May 19, 2012
Examiner: DH
Data Entered By: MT



CEFI Adult
COMPREHENSIVE EXECUTIVE FUNCTION INVENTORY ADULT™
Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Observer Form Interpretive Report

Client's Name/ID: Jodie Weather
Age: 20
Gender: Female
Birth Date: February 14, 1997
Observer's Name/ID: Megan
Relationship to Client: Sibling
Time Known Client: 4 years, 2 months
Administration Date: January 26, 2017
Examiner:
Data Entered By:

28

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Presentation Outline

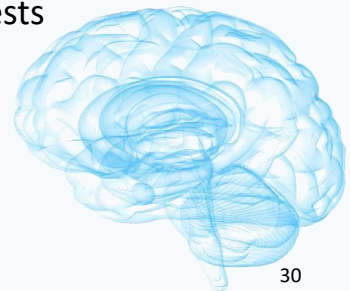
- Introduction to Executive Function (EF)
- EF Behaviors
- EF and Cognition (intelligence)
- EF and Social Emotional Skills
- EF and Academic/Job Performance
- Research about EF as ability, behavior, and SE
- Conclusions

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EF is a Brain-Based Ability

- If we define intelligence from a neurocognitive perspective
- EF is an ability (type of intelligence) by virtue of its relationship to the brain
- But note that EF is not measured by traditional IQ tests



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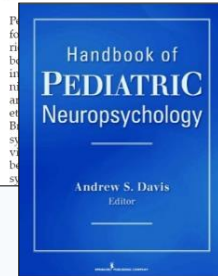
A Theory of Learning

28

Cognitive Assessment System: Redefining Intelligence From a Neuropsychological Perspective

Jack A. Naglieri and Tullio M. Otero

INTRODUCTION



important field of clinical psychology. By addressing factors intrinsic to the assessment of children with a variety of mental, emotional, and behavioral disorders, this handbook provides a comprehensive overview of the field and its applications.

FROM NEUROPSYCHOLOGY THEORY TO ASSESSMENT

Luria's theoretical account of dynamic brain function is perhaps one of the most complete (Lewandowski & Scott, 2008). Luria conceptualized four interconnected levels of brain-behavior relationships and neurocognitive disorders that the clinician needs to know: the structure of the brain, the functional organization based on structure,

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

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

20

Jack A. Naglieri

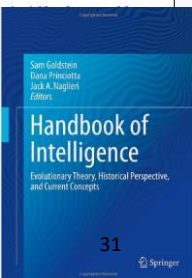
"Do not go where the path may lead, go instead where there is no path and leave a trail."

—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 Vietnam. The committee developed when working with the Army and Navy to find tests that could be used by a variety of men, be easy to administer, and be easy to score. The materials were ready to use and had some educational value. The Alpha tests were a quantitative (Alpha) test and the Beta tests were a qualitative (Beta) test. The Alpha tests were general information (Alpha) tests and the Beta tests were specific information (Beta) tests.



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A Neurocognitive Test Measures Thinking not Knowing

What does the examinee have to **know** to complete a task?

- This is dependent on *instruction*

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

- This is dependent on the *brain* – 'basic psychological processes'
- Some thinking involves executive function and some does not



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PASS Theory Based on Luria's Concept of Functional Units

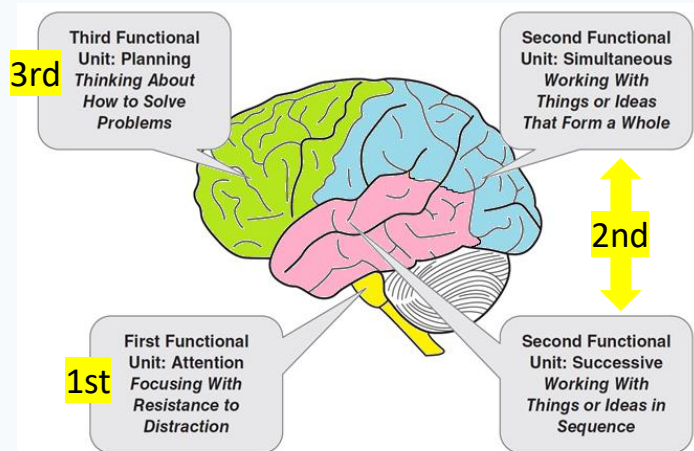


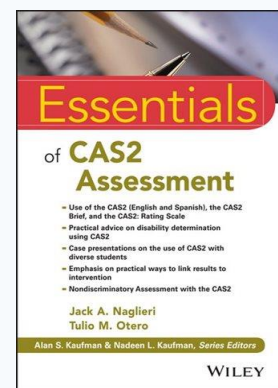
Figure 1.2 Three Functional Units and Associated Brain Structures

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

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IQ defined by BRAIN function

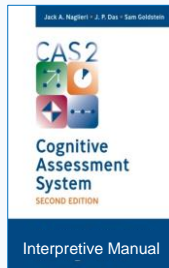
- **P**ASS theory is a modern way to define 'ability' (AKA – intelligence)
- **P**lanning = THINKING ABOUT THINKING
- **A**ttention = BEING ALERT
- **S**imultaneous = GETTING THE BIG PICTURE
- **S**uccessive = FOLLOWING A SEQUENCE



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CAS2 for (Ages 5-18 yrs.)

CAS2 Yields PASS and Full Scale scores but ALSO

Executive Function which is the combination of Planning and Attention subtests

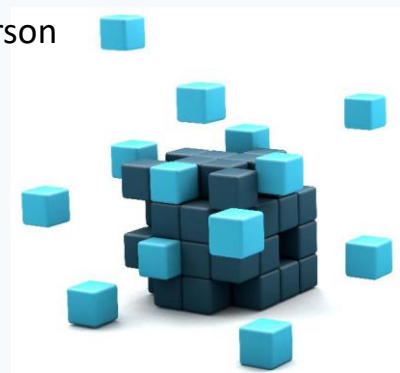
Also: Working Memory, Verbal, Nonverbal, Speed/Fluency and a Visual and Auditory comparison

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PASS Theory: Planning

- **Planning** is a neurocognitive ability 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
 - control of processing
- Planning tests measure Executive Function

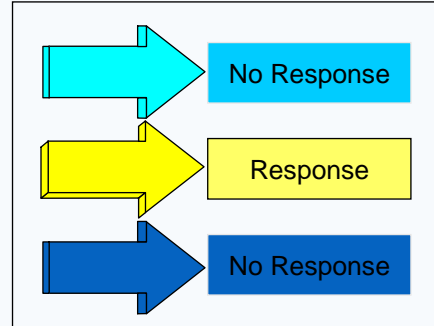


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PASS Theory: Attention

- **Attention** is a neurocognitive ability that a person uses to selectively attend to some stimuli and ignore others
 - selective attention
 - focused cognitive activity over time
 - resistance to distraction



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PASS Theory: Successive

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

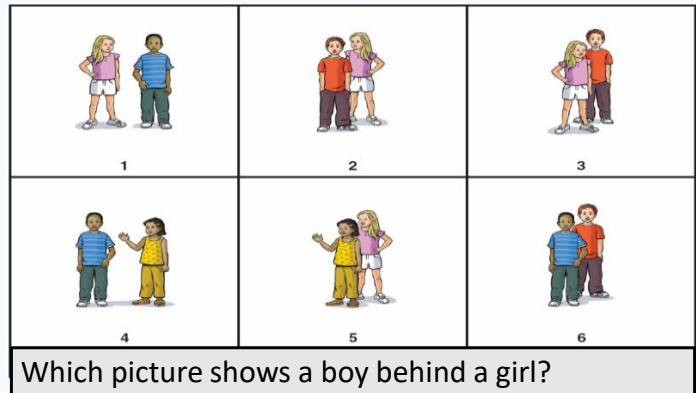
Recall of Numbers in Order
Successive Processing

4 3 8 6 1

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PASS Theory: Simultaneous

- **Simultaneous** processing is used to integrate stimuli into groups
 - Each piece must be related to the other
 - Stimuli are seen as a whole
- Academics:
 - Reading comprehension
 - geometry
 - math word problems
 - whole language
 - verbal concepts



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CAS2 Scales includes EF

- CAS2 yields scores for PASS and a Full Scale as well as:
- Executive Function
- Working Memory
- Verbal
- Nonverbal
- Visual vs Auditory
- Speed/Fluency

CAS2 Cognitive Assessment System
Second Edition
Examiner Record Form
Jack A. Naglieri, J. P. Das, Sam Goldstein

Student's Name: Sam Goldstein
Sex: M Grade: 5
School: Austin Middle School
Examiner: Temp User

	Year	Month	Day
Date Tested	2014	04	22
Date of Birth	1999	11	10
Age	14	5	12

Subtest and Composite Scores

Subtest	Raw Score	Scaled Score	PLAI	BM	ATT	NUC
Planned Codes (PCG)	15	1				
Planned Connections (PCN)	19	19				
Planned Number Matching (PNM)	10	10				
Matrices (M)	16	5				
Verbal Spatial Relations (VSR)	20	6				
Figure Memory (FM)	16	5				
Expressive Attention (EA)	19	1				
Number Detection (ND)	23	1				
Receptive Attention (RA)	24	1				
Word Series (WS)	19	9				
Sentence Repetition Questions (SRQ)	12	9				
Visual Digit Span (VDS)	11	3				
Sum of Subtest Scaled Scores	30	16	3	19	68	
PASS Composite Index Scores	100	70	50	77	47	
Percentile Rank	50	2	<0.1	6	1.4	
90% Confidence Interval	Upper	107	79	62	86	72
	Lower	93	60	40	70	64

Subtest and Composite Profiles

Index Score Profile: PLAI, BM, ATT, NUC, WS, SRQ, VDS, FM, VSR, M, PNM, PCN, PCG

Visual Digit Span: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Receptive Mean: 6.9

Supplemental Composite Scores

Subtest	EF w/ WM	EF w/ WM	WM	VC	NVC
Planned Codes					1
Planned Connections	19	19			
Matrices					3
Verbal Spatial Relations		6	6	6	
Figure Memory					5
Expressive Attention	1	1			
Receptive Attention					1
Sentence Repetition Questions		9	9	9	
Sum of Subtest Scaled Scores	20	37	17	18	9
Composite Index Scores	100	94	91	74	56
Percentile Rank	50	34	27	4	0.2
90% Confidence Interval	Upper	109	102	96	63
	Lower	91	87	69	53

NOTE: EF w/ WM = Executive Function With Working Memory; EF w/ WM = Executive Function With Working Memory; WM = Working Memory; VC = Verbal Content; NVC = Nonverbal Content.

Visual-Auditory Comparison

Subtest	Scaled Score
Word Series	9
Visual Digit Span	3
Difference	6
Significance	Significant

40

40

www.efintheclassroom.net

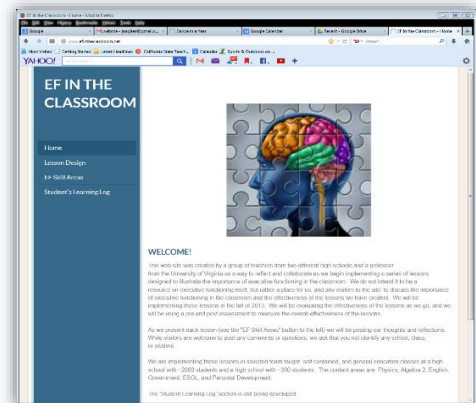
Interventions for EF Behaviors

CEFI Scales

- Attention
- Emotion Regulation
- Flexibility
- Inhibitory Control
 - Initiation
 - Organization
 - Planning
- Self-Monitoring
- Working Memory

Efintheclassroom.net

- Sustained Attention
- Emotional Control
- Cognitive Flexibility
- Response Inhibition
- Task Initiation
- Organization
- Planning
- Response Inhibition
- Working Memory



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Planning Lesson Student Responses

Students view FLASH MOB DANCE



Q 1: What would you have to plan out?

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

Q2: What are the parts of a good plan?

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

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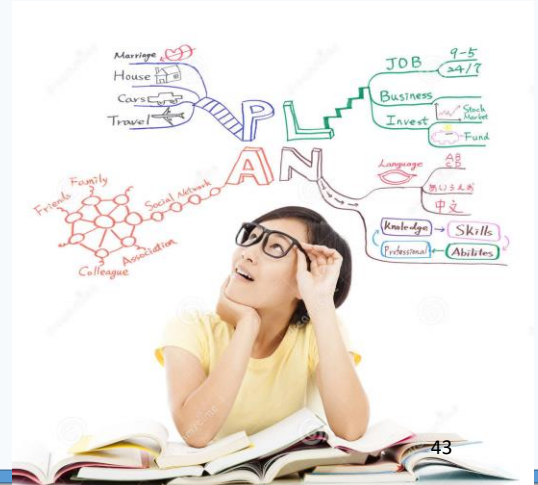
Planning Lesson Student Responses

Q3: How do you know if a plan is any good?

- Put the plan in action and see if it works (self-monitoring)
- Give it a try (perhaps learn by failing)

Q4: What should you do if a plan isn't working?

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



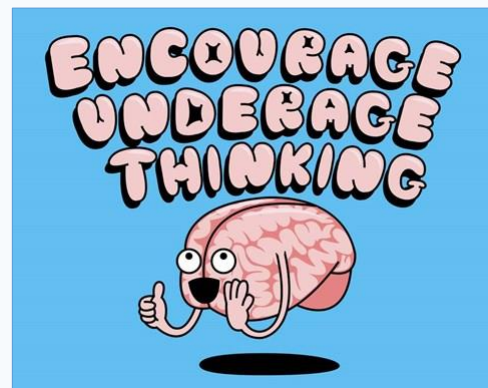
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Planning Lesson Student Responses

Q5: How do you use planning in this class?

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

To encourage EF we have to stress thinking about *how to* do what *you* chose to do

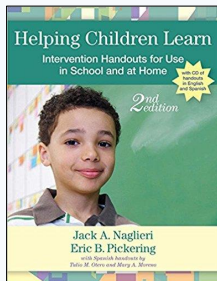


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44

Encourage Planning

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



Step 1 – Talk with Students

How Can You Be Smarter?

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

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

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

**Think smart
and use a plan!**



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

45

45

EF Intervention for Math

Planning Facilitation for Math Calculation

Math calculation is a complex activity that involves recalling basic math facts, for dures, working carefully, and checking one's work. Math calculation requires a c approach to follow all of the necessary steps. Children who are good at math ca move on to more difficult math concepts and problem solving with greater ease. are having problems in this area. For children who have trouble with math calcul that helps them approach the task planfully is likely to be useful. Planning facilitat technique.

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

How to Teach Planning Facilitation

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

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

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

Jackie S. Iseman¹ and Jack A. Naglieri¹

Abstract

The authors examined the effectiveness of cognitive strategy instruction based on PASS (Planning, Attention, Simultaneous, Successive) given by special education teachers to students with ADHD randomly assigned by classroom. Students in the experimental group were exposed to a brief cognitive strategy instruction for 10 minutes per day for 10 weeks. The control group received standard math instruction. Standardized tests of cognitive processes and math students completed math worksheets throughout the experimental phase. Stan Johnson Tests of Achievement, Third Edition, Math Fluency and Wechsler Indiv Numerical Operations) were administered pre- and postintervention, and Math follow-up. Large pre-post effect sizes were found for students in the experimental math worksheets (0.85 and 0.26), Math Fluency (1.17 and 0.09), and Numerical C At 1 year follow-up, the experimental group continued to outperform the comp students with ADHD evidenced greater improvement in math worksheets, far (which measured the skill of generalizing learned strategies to other similar task when provided the PASS-based cognitive strategy instruction.

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Strategy Instruction EF Intervention for Math

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



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Student Plans

Iseman and Naglieri

Table 3. Students' Comments During Planning Facilitation Sessions

Goals

- "My goal was to do all of the easy problems on every page first, then do the others."
- "To get as many correct as I can."
- "To get as many right as quickly as possible."
- "To take time and make sure I get them correct."

Starting place

- "I started on the first one."
- "I skipped around."
- "I do the easy ones first."
- "I look at the type of problem and the number of steps and decide which problems to do first."

Overall plan

- "I did all the easy problems on a page and went onto the next one."
- "I do all the addition first, then the easy minus, and then I move onto the harder ones."
- "I do the problems I know, then I check my work."

Specific strategies

- "I simplify fractions first."
- "Skip the longer multiplication questions."
- "The problems that have lots of steps take more time, so I skip them."
- "I do them [the algebra] by figuring out what I can put in for X to make the problem work."
- "I draw lines so I don't get my columns confused [on the multiplication]."
- "I stopped drawing lines because it slowed me down."
- "If a problem is taking a long time I skip it and come back to it if I have time."
- "I did the ones that take the least time."
- "Remember that anything times 0 is 0."

Noticing patterns in the worksheets

- "I did all the problems in the brain-dead zone first."
- "I started in the middle of the page, the problems on top take longer."
- "Next time I'll skip the hard multiplication at the top of the first page."

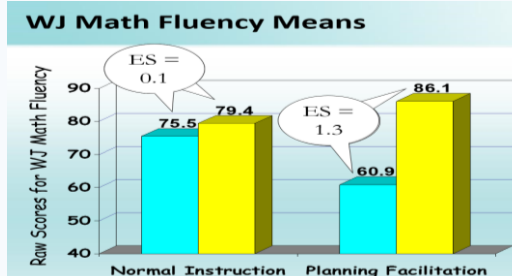
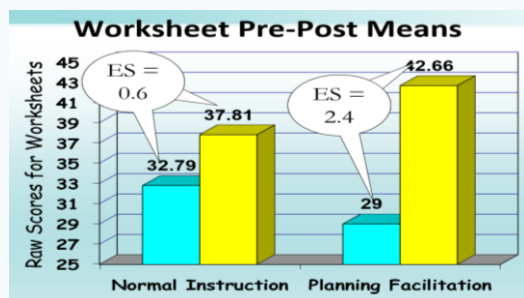
- "My goal was to do all of the easy problems on every page first, then do the others."
- "I do the problems I know, then I check my work."
- "I did all the problems in the brain-dead zone first."



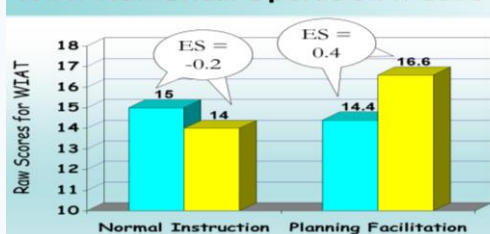
"I try not to fall asleep."

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



WIAT Numerical Operation Means



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

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Summary of PASS Intervention Research in Essentials of CAS2

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

Jack A. Naglieri and Deanne Johnson

Abstract

The purpose of this study was to determine if an instruction designed to facilitate planning, given by teachers to their class as a group, would have differential effects depending on the specific Planning, Attention, Simultaneous, Successive (PASS) cognitive characteristics of each child. A cognitive strategy instruction that encouraged planning was provided to the group of 19 students with learning disabilities and mild mental impairments. All students completed math worksheets during 7 baseline and 14 intervention sessions. During the intervention phase, students engaged in self-reflection and verbalization of strategies about how the arithmetic computation worksheets should be completed. The sample was sorted into one experimental and four control groups after the experiment was completed. The sample was sorted into one experimental and four control groups after the experiment was completed. The sample was sorted into one experimental and four control groups after the experiment was completed.

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

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The authors examined the effectiveness of cognitive strategy instruction based on PASS (the Successive) given by special education teachers to students with ADHD randomly assigned experimental group were exposed to a brief cognitive strategy instruction for 10 days, with development and application of effective planning for mathematical computation, whereas a standard math instruction. Standardized tests of cognitive processes and math achievement students completed math worksheets throughout the experimental phase. Standardized Johnson Tests of Achievement, Third Edition, Math Fluency and Whole Number Individualized Achievement Tests (Naglieri, 2000) were administered pre- and post-intervention, and Math Fluency was also administered at 1 year follow-up. Large pre-post effect sizes were found for students in the experimental group but not the comparison group on math worksheets (0.85 and 0.26), Math Fluency (1.17 and 0.09), and Numerical Operations (0.40 and -0.14, respectively). At 1 year follow-up, the experimental group continued to outperform the comparison group. These findings suggest that students with ADHD evidenced greater improvement in math worksheets, for transfer to standardized tests of math (which measured the skill of generalizing learned strategies to other similar tasks), and continued advantage 1 year later when provided the PASS-based cognitive strategy instruction.

Reading Psychology, 33:428-435, 2010
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ISSN: 0270-2711 print / 1321-4685 online
DOI: 10.1080/02702710903054895

REMEDATING READING COMPREHENSION DIFFICULTIES: A COGNITIVE PROCESSING APPROACH

SHAMITA MAHAPATRA
Christ College, Cuttack, Orissa, India
J. P. DAS, HOLLY STACK-CUTLER, and RAUNO PARRILA
Department of Educational Psychology, University of Alberta,
Edmonton, Alberta, Canada

The efficacy of a cognitive-based remediation program was investigated with 14 English-as-a-second language (ESL) poor readers in Grade 4 who had significant difficulty in comprehension and 14 normal ESL readers in Grade 4 who received no remediation. Both groups were selected from 2 English-medium schools for further assessment.

Mathematics Instruction and PASS Cognitive Processes: An Intervention Study

Jack A. Naglieri and Suzanne H. Gottling

Abstract

The purpose of this study was to determine if an instruction designed to facilitate planning, given by a group, would have differential effects depending on the specific cognitive characteristics of the individual instruction that facilitated planning was provided to a group of 12 students with learning disabilities. All work sheets during 7 sessions of baseline and 21 sessions of intervention (when the instruction designed provided). During the intervention phase, students engaged in self-reflection and verbalization of strategy problems were completed. The class was sorted according to planning scores, obtained using the Cognitive Processes Test (Naglieri, 2000). The results, consistent with previous research, showed that teaching content and regulation beneficial effects for all students but was especially helpful for those who were poor in planning, as do implications of these findings are provided.

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Taylor & Francis Group

J. P. Das, Danyse V. Hayward, George K. Georgiou
University of Alberta

Tony Jacobs
Taylor University College

Nevam Boora
Nipahatpashk Middle School

Comparing the Effectiveness of Two Reading Intervention Programs for Children With Reading Disabilities

Abstract

The effectiveness of two reading intervention programs (phonics-based and inductive learning) was investigated with 63 First Nations children identified as poor readers in Grades 1 and 4 in Study 1, whereas in Study 2, the efficacy of booster sessions for inductive learning or PREP (PASS Reading Enhancement Program) was examined. The major dependent variables in Study 1 were percent to posttest changes following instruction on reading tests for word reading and word decoding. Other variables included tests of phonological awareness, rapid

Journal of Psychoeducational Assessment
36(1), 2019

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

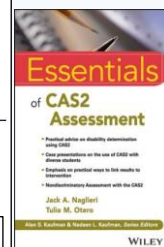
Frederick A. Haddad
Kyrene School District, Tempe, Arizona

Y. Evie Garcia
Northern Arizona University

Jack A. Naglieri
George Mason University

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

The purpose of this study was to evaluate whether instructional level was determined, a cognitive strategy instruction designed to facilitate planning would have differential benefits on reading comprehension posttest at their respective instructional levels after the intervention. Results showed that children with a Planning weakness ($n = 15$) benefited substantially more than children with a Successive weakness ($n = 7$) effect size $d = .52$ on a measure of reading comprehension. These results suggest previous research suggesting that PASS profiles are relevant to instruction.



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PASS Neurocognitive Abilities that are NOT EF


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Using good EF to overcome a neurocognitive processing disorder Ben's Problem with Successive processing

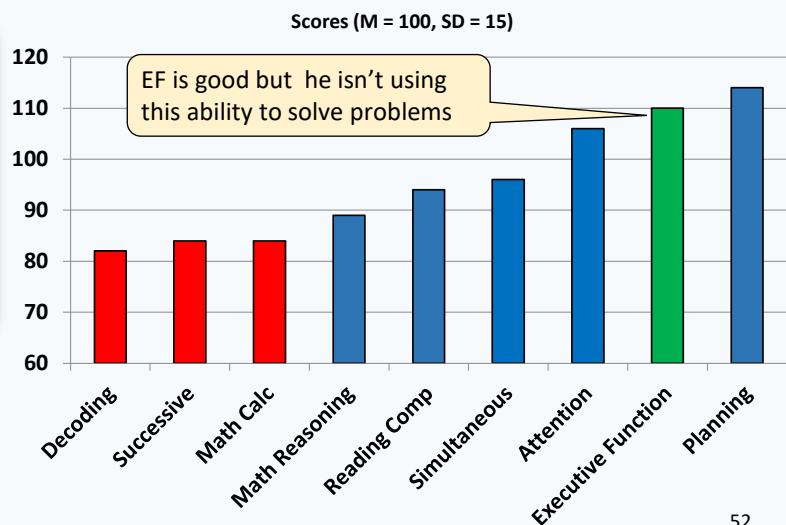
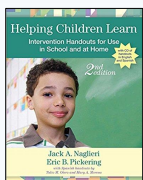
32 Helping Children Learn

Ben's Problem with Successive Processing



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

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

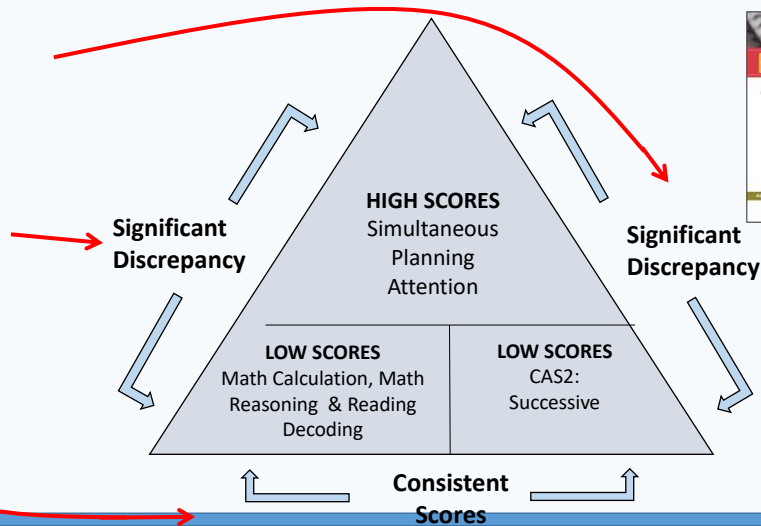


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Ben's SLD: Discrepancy Consistency Method

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



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Ben's Problem with Successive Processing

- Ben has difficulty whenever ANY task requires sequencing
 - Academic or ability tests
 - Visual or auditory tests
 - Math or spelling or reading
 - Tasks that require memory of sequence
- How do we help him learn better?

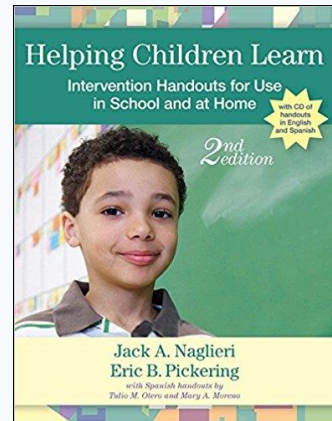


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Teach Children about their Abilities

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



55

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Ben's Problem with Successive Ability

Teach him to use his strength in EF (Planning)

How Can You Be Smarter?

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

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

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

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How to Be Smart: Planning

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

What Does Being Smart Mean?

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

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Ben's Problem with Successive Ability

Teach him to recognize sequences

How to Teach Successive Processing Ability

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

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

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Solutions for Ben- Use EF

Teach him to use strategies

Chunking for Reading/Decoding

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

How to Teach Chunking for Reading/Decoding

Teachers should first teach the children what it means to chunk or group information so that it can be remembered more easily. Use number sequences and letters for illustration (e.g., how telephone numbers are grouped). Then introduce

Plan	Action
Look at the word.	"I see the word beginning."
Find the chunk.	"I see the chunk given in the middle."
Sound out the chunk.	"I say, /chun/."

words to be read and break the words into units, such as *re-men-ber* for *remember* or *car-pet* for *carpet*. Try to organize the groups of letters in the word in a way that are natural

Segmenting Words for Reading/Decoding and Spelling

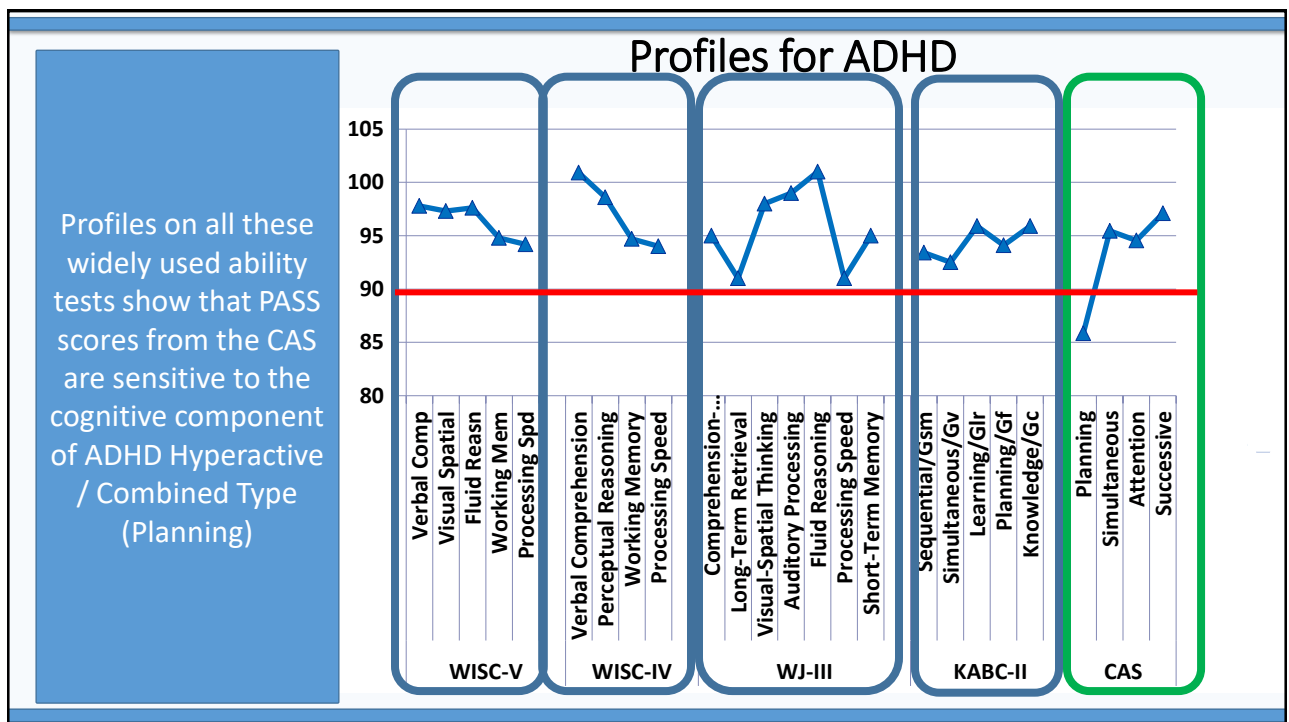
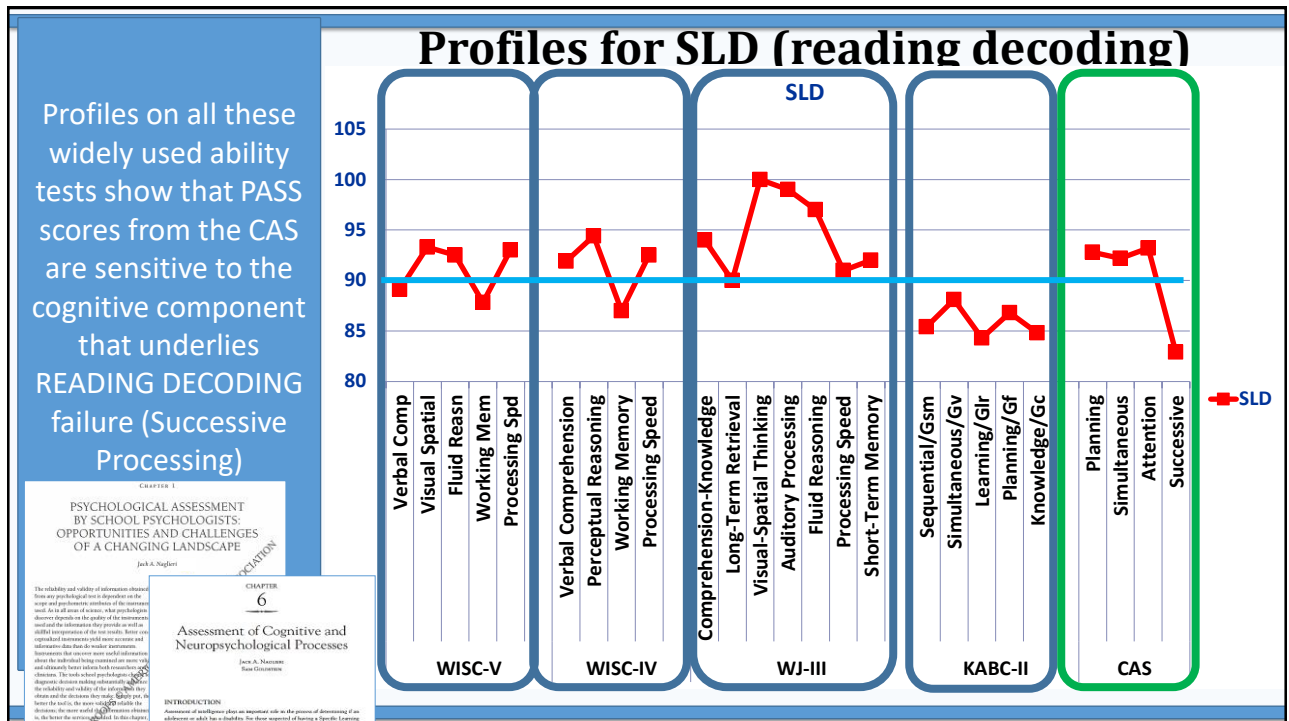
Decoding a written word requires the person to make sense out of printed letters and words and to translate letter sequences into sounds. This demands understanding the sounds that letters represent and how letters work together to make sounds. Sometimes words can be segmented into parts for easier and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

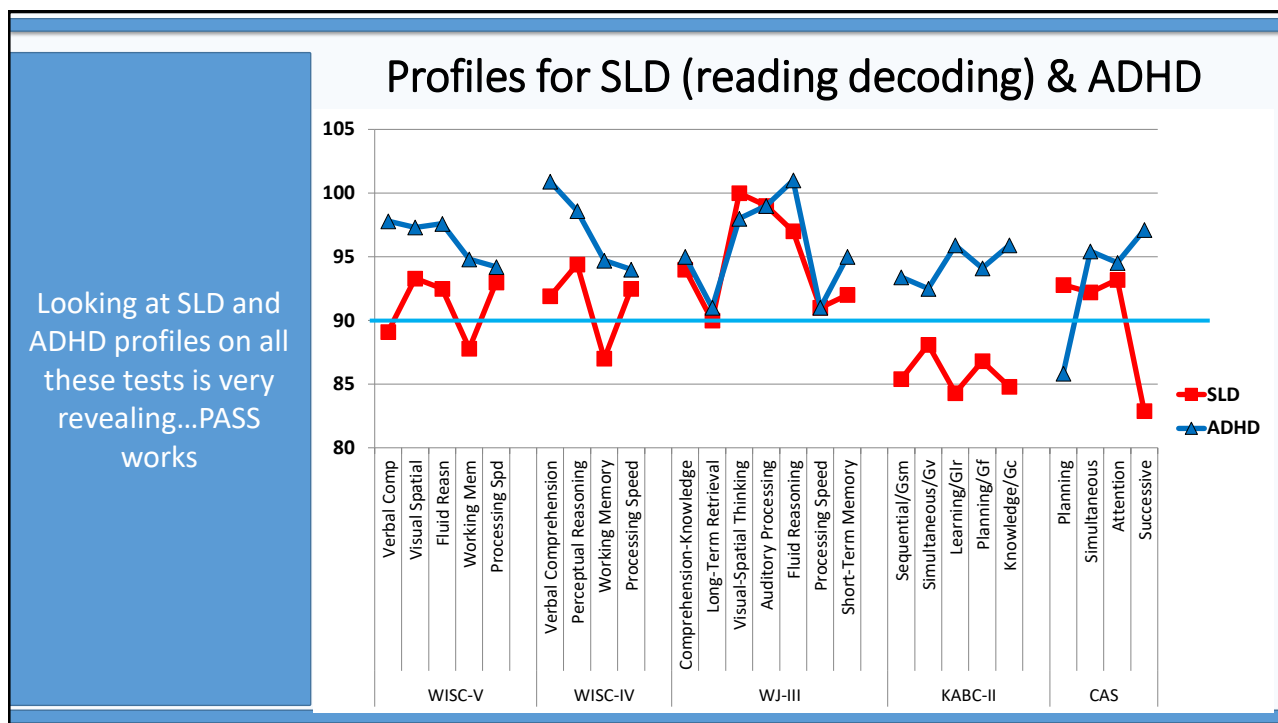
How to Teach Segmenting Words

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

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Research on PASS Profiles

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

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

Leesa V. Huang¹, Achilles N. Bardo², and Rik Carl D'Amato³

Abstract

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

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

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

Jack A. Naglieri
George Mason University

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

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

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Presentation Outline

- Introduction to Executive Function (EF)
- EF Behaviors
- EF and Cognition (intelligence)
- EF and Social Emotional Skills
- EF and Academic/Job Performance
- Research about EF as ability, behavior, and SE
- Conclusions

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63

Phineas had Social Emotional Deficit

- Phineas had profound social emotional problems after his injury to the frontal lobes
- Phineas was
 - Insulting
 - impulsively says things
 - uses vulgar language
 - can't manage his emotions
 - inconsistent in social situations
 - doesn't recognize he is offensive
 - loses control in interactions with others

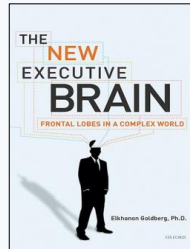
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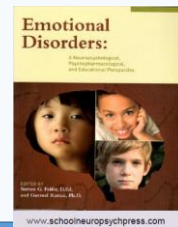
Frontal Lobes and Emotion

Goldberg (2011, p 116-117)

- the “emphasis in the classic studies of frontal lobe syndromes was on cognition [intelligence] rather than on affect [social emotional]”
- ‘very few researchers have attempted to merge cognitive and emotional aspects of frontal lobe dysfunction’



- Feifer's Emotional Disorders book contains a collection of papers on the relationship between EF and Emotional Disorders
- See Feifer@comcast.net

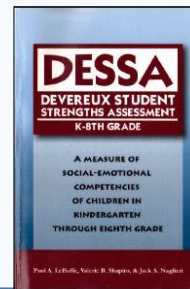


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Measures

- CogAT is based on traditional IQ (Army Alpha and Beta) containing Verbal, Quantitative, Nonverbal
- DESSA is a 72-item rating scale of social-emotional skills such as Self Awareness, Relationship Skills, etc. related to resilience
- SAT is norm-referenced achievement test

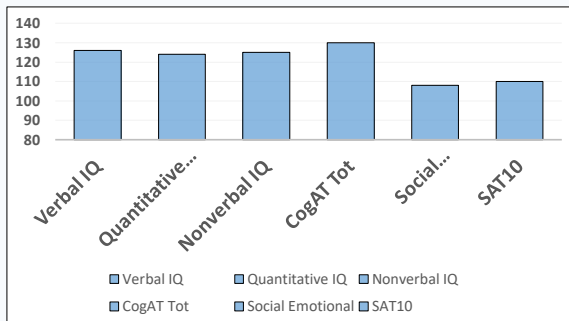


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Kong (2013): IQ, SEL & Achievement

- DESSA Total correlated .44 with Achievement (reading, math, language)
- CogAT Total correlated .36
- Hierarchical regression analysis showed that
 - CogAT did not add to the predication of achievement after DESSA scores were entered



DESSA predicted reading, language and math scores over IQ (CogAt) scores

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Presentation Outline

- Introduction to Executive Function (EF)
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Academics

- See www.jacknaglieri.com for papers on CAS2, Feifer Assessments of Reading, Math, and Writing and EF

Correspondence of FAR and PASS	Planning	Attention	Correspondence of FAM and PASS	Planning	Attention
Phonemic Awareness - measures rhyming, blending, segmenting, and manipulating sounds.			Phonemic Awareness - measures rhyming, blending, segmenting, and manipulating sounds.		
Positioning Sounds - a phonemic localization task determining sound positions.			Positioning Sounds - a phonemic localization task determining sound positions.		
Nonsense Word Decoding - the student decodes a series of nonsense words.			Nonsense Word Decoding - the student decodes a series of nonsense words.		
Isolated Word Reading Fluency - the student reads a list of words in 60 seconds.			Isolated Word Reading Fluency - the student reads a list of words in 60 seconds.		
Oral Reading Fluency - the student reads a passage composed of the same words as the Isolated Word Reading Fluency task.			Oral Reading Fluency - the student reads a passage composed of the same words as the Isolated Word Reading Fluency task.		
Rapid Automatic Naming - the student names either objects, letters, or stencils.			Rapid Automatic Naming - the student names either objects, letters, or stencils.		
Visual Perception - the student identifies letters or words printed backwards from an array.		X	Visual Perception - the student identifies letters or words printed backwards from an array.		X
Verbal Fluency - the student retrieves words from a category, or items that start with a letter.	X	X	Verbal Fluency - the student retrieves words from a category, or items that start with a letter.	X	X
Orthographic Processing - the student recalls a letter, or group of letters, from a target word.		X	Orthographic Processing - the student recalls a letter, or group of letters, from a target word.		X
Irregular Word Reading Fluency - the student reads a list of phonologically irregular words.			Irregular Word Reading Fluency - the student reads a list of phonologically irregular words.		
Semantic Concepts - the student identifies the correct antonym or synonym of a target word.	X		Semantic Concepts - the student identifies the correct antonym or synonym of a target word.	X	
Word Recall - the student repeats back a list of words over two trials.	X	X	Word Recall - the student repeats back a list of words over two trials.	X	X
Morphological Processing - the student selects the correct prefix, suffix, or stem that completes a target word.			Morphological Processing - the student selects the correct prefix, suffix, or stem that completes a target word.		
Silent Reading Fluency - the student answers questions after reading a passage silently.	X	X	Silent Reading Fluency - the student answers questions after reading a passage silently.	X	X

Note: The correspondence of PASS with FAR and FAM needs to be carefully examined for each student.

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Executive Function Behaviors, Intelligence, and Achievement test scores

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EF, WISC-IV, CAS, Achievement

- Data from Sam Goldstein's evaluation center in Salt Lake City, UT
- Children given the WISC-IV (N = 43), CAS (N = 62), and the WJIII achievement (N = 58) as part of the typical test battery

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

Demographic		CAS		WISC-IV		WJ III ACH	
		N	%	N	%	N	%
Gender	Male	38	61.3	29	67.4	36	62.1
	Female	24	38.7	14	32.6	22	37.9
Race/ Ethnic Group	Hispanic	1	1.6	1	2.3	1	1.7
	Asian	2	3.2	2	4.7	2	3.4
	White	55	88.7	38	88.4	52	89.7
	Other	4	6.5	2	4.7	3	5.2
		1	1.6	0	0.0	1	1.7
Parental Education Level	High school diploma or less	1	1.6	0	0.0	1	1.7
	Some college or associate's degree	21	33.9	12	27.9	18	31.0
	Bachelor's degree or higher	36	58.1	26	60.5	34	58.7
	Missing information	4	6.5	5	11.6	5	8.6
Diagnostic or Educational Group	ADHD	24	38.7	15	34.9	20	34.5
	Anxiety	15	24.2	9	20.9	14	24.1
	ASD	7	11.3	5	11.6	7	12.1
	LD	3	4.8	3	7.0	3	5.2
	Mood	4	6.5	3	7.0	5	8.6
	Other	9	14.5	8	18.6	9	15.5
Total		62	100.0	43	100.0	58	100.0
Age M (SD)		10.4 (2.9)		10.2 (2.6)		10.5 (2.7)	

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

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EF Behaviors (CEFI) & CAS

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

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

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

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EF and Achievement (Naglieri & Rojahn, 2004)

- Correlation between Executive Function (Planning + Attention) with achievement = **.51** (N = 1,559) is stable across 5-17 year range
- EF scores added significantly to the prediction of achievement after Simultaneous and Successive scores

Contents lists available at ScienceDirect

Learning and Individual Differences

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

Relations between executive function and academic achievement from ages 5 to 17 in a large, representative national sample

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ABSTRACT

This study examined age-related (5- to 17-year-olds) effects on the relations between complex EF and academic achievement. Results showed that complex EF tasks improved a national sample's scores on achievement tests. Finally, the correlation between developmental factors of the reading achievement, suggest

Construct Validity of the PASS Theory and CAS: Correlations With Achievement

Jack A. Naglieri and Johannes Rojahn
 George Mason University

The relationship among Planning, Attention, Simultaneous, and Successive (PASS) processing scores of the Cognitive Assessment System (CAS) and the Woodcock-Johnson Revised Tests of Achievement (WJ-R) were examined with a sample of 1,559 students aged 5-17 years. Participants were part of the CAS standardization sample and closely represented the U.S. population on a number of important demographic variables. Pearson product-moment correlations between CAS Full Scale and the WJ-R Skills cluster was .71 for the Standard and .70 for the Basic CAS Battery scores, providing evidence for the construct validity of the CAS. The CAS correlated with achievement as well if not better than tests of general intelligence. The amount of variance in the WJ-R scores the CAS accounted for increased with age between 5- to 13-year-olds. The 4 PASS scale scores cumulatively accounted for slightly more of the WJ-R variance than the CAS Full Scale score.

There are many ways in which the validity of a theory of cognitive ability may be evaluated. Psychologists often attempt to relate information about a child's cognitive characteristics to that

achievement. For instance, subtests like General Information are also included on individual achievement tests (e.g., the Peabody Individual Achievement Test—Revised; Markwardt, 1987). Some

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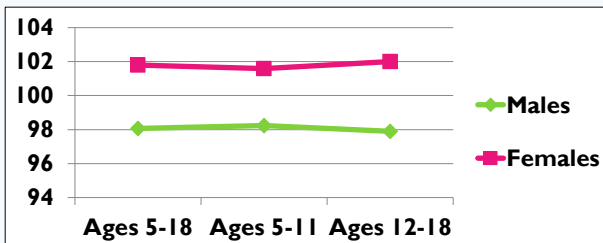
Sex Differences in Executive Function

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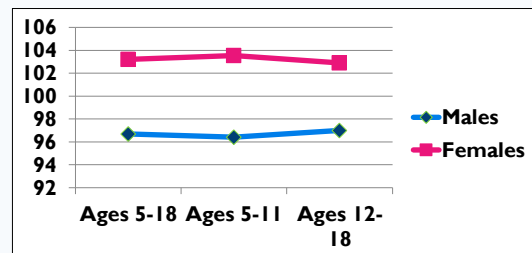
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Girls are smarter than boys

CEFI Sex Differences:
Parent Raters



CEFI Sex Differences:
Teacher Raters



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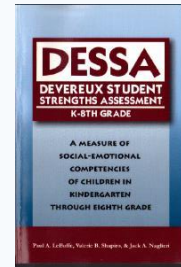
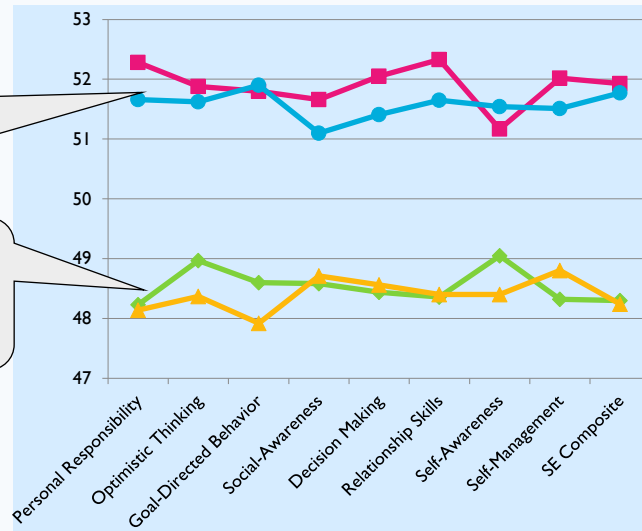
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Sex Differences: Social Emotional

Parent &
Teacher Raters
Females

Parent &
Teacher Raters
Males

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

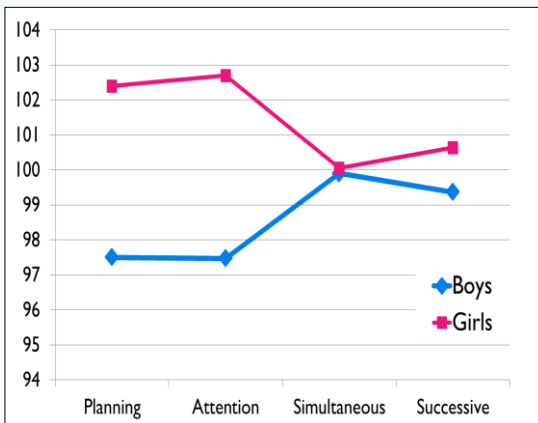


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Girls are smarter than boys

Sex Differences: Ability



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0022-0661/01/\$5.00 DOI: 10.1037/0022-0661.93.2.430

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

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George Mason University

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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.

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Conclusions

- Because so many things are **new** due to COVID, EF is the key to success
- Assessment of EF should be comprehensive and include cognition, behavior, social emotional competence and academic skills
- We can encourage the use of EF
- This is the gift of smarter thinking
- This is a gift of optimism
- This is a gift for life success

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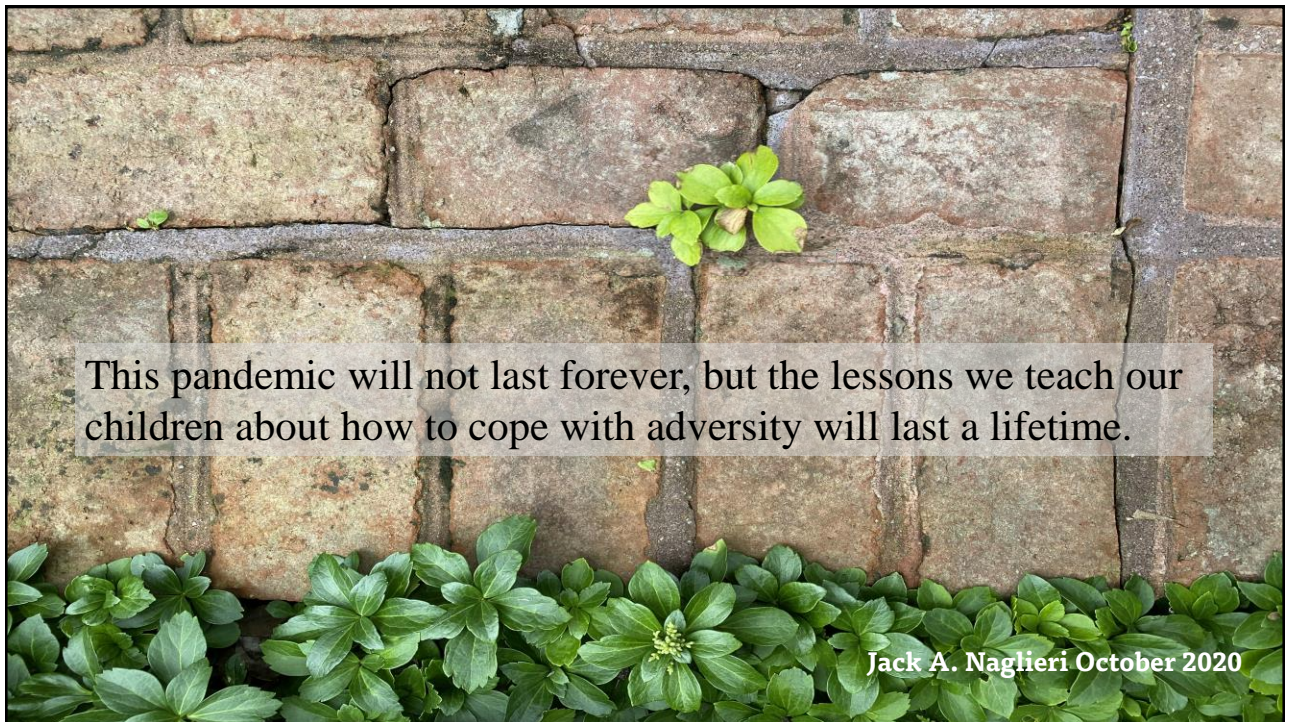
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Final QUESTIONS



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

Jack A. Naglieri October 2020

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