Think Positive Act Smart: The Role of Executive Function in Emotional Strength and Resilience (Well Being)

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Resources

FOR MORE INFORMATION
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BIG Picture

- Executive Function (EF) is an important concept in neuropsychology with considerable implications for educators
- Consumers of results from EF tests and rating scales need to know what EF is and what it is not
- A research based scientific approach to defining EF will help us better understand and apply the concept
- Teachers need to know that it is easy to help students use their EF more effectively to be successful in school AND in life
- In this session you will learn just how important EF is to emotional strength, resilience and well-being.

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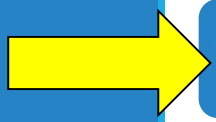
Topical Outline



- What is Executive Function?
- Is Executive Function related to Emotional Strength, Resilience, and Well-Being?
- Is Executive Function the Same as Intelligence?
- How to Measure Executive Function
- Executive Function & Thinking Smart – Instructional Implications & Sex Differences

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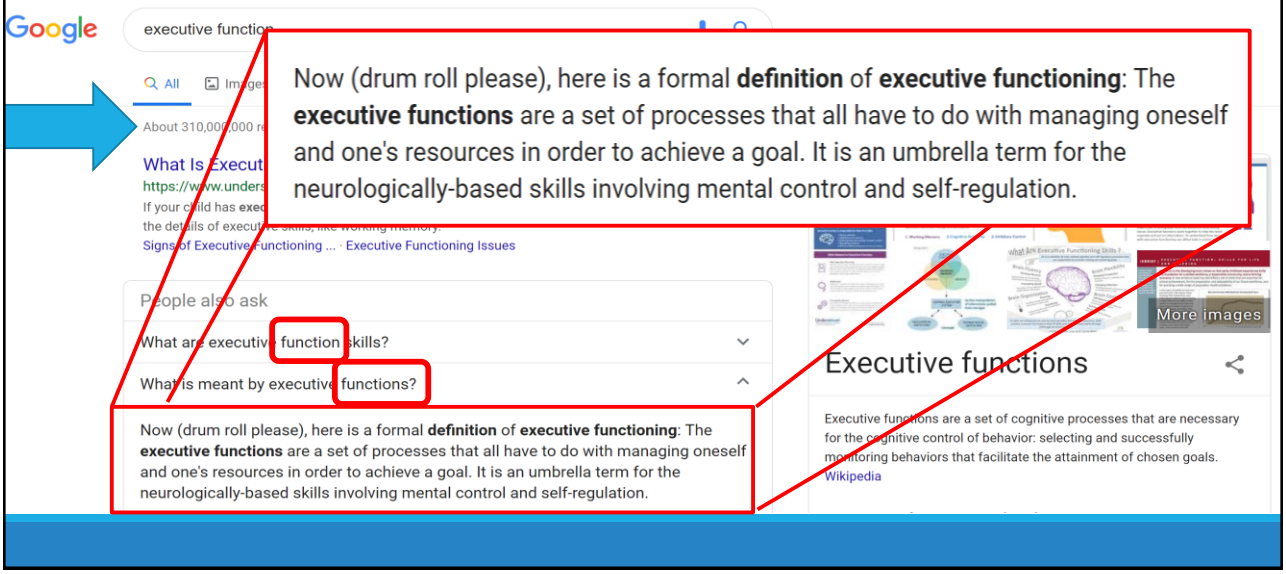
Executive Function Google Search



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So Many Different Ideas about EF

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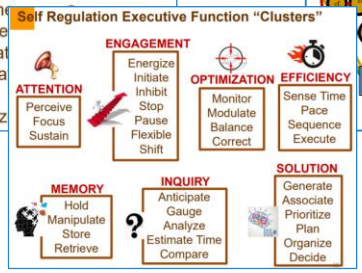
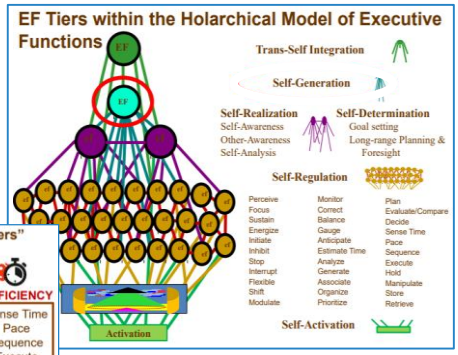
George McCloskey

- 40 + executive functions

33 Self-Regulation EFs

- Perceive
- Focus
- Sustain
- Energize
- Initiate
- Inhibit
- Stop
- Balance
- Monitor
- Correct
- Gauge
- Anticipate
- Est Time
- Analyze
- Generat
- Associa
- Plan
- Organiz
- Prioritize
- Compare/Eval
- Decide
- Sense Time
- Pace





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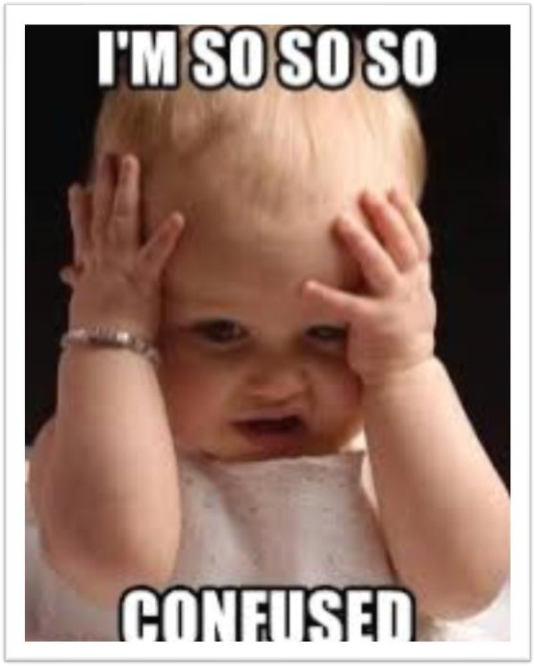

Let's Examine the Concept of Executive Function?

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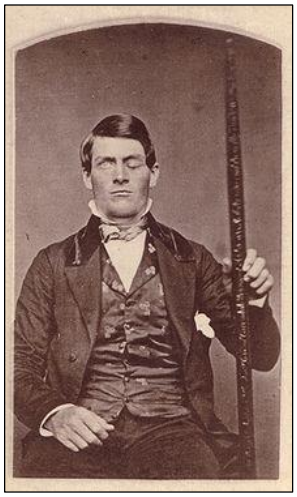
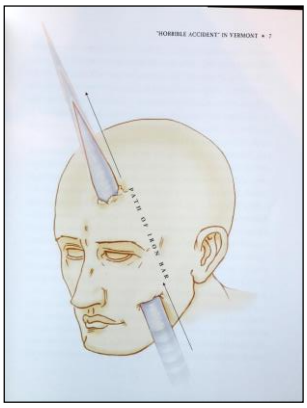
The Story of Phineas Gage & the Frontal Lobes



- September 1848
- A 26 year old Phineas Gage was in charge of a crew blasting rock
- The rod passed through his frontal cortex
- Everything changed



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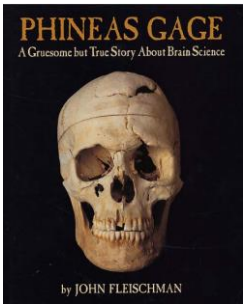
Before . . . . . & . . . . . . After

- **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 making decisions
- Impairment in
  - (1) intellect
  - (2) behavior
  - (3) Social/emotional
  - (4) work



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Executive Function (2009, p. 4)

- Elkhonon (Nick) Goldberg provides a valuable review of the frontal lobes
- He suggests that EF can be described as an orchestra leader
- Frontal lobes are about …"leadership, motivation, drive, vision, self-awareness, and awareness of others, success, creativity, sex differences, social maturity, cognitive development and learning…"

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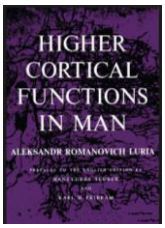
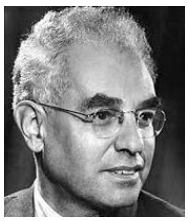
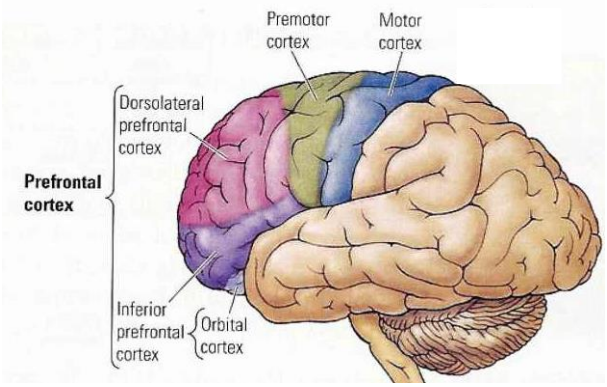
Executive Function

- In 1966 Luria first wrote and defined the concept of Executive Function (EF) as it relates to Frontal Lobes , especially the prefrontal cortex







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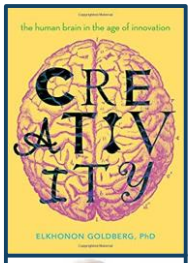
Goldberg (2018) on Prefrontal Cortex

- The prefrontal cortex is "important for setting goals, planning, making decisions, predicting the outcome of one's own and other people's actions and impulse control (p. 45)."
- The PFC also is used when we
  - decide what is important and what is not
  - connect consequences to actions
  - consider what would have happened if a different action was chosen
- All of these are needed for *Emotional Strength and Resilience*



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EF Metaphor for the Role of Frontal Lobes

- Otero and Barker (2014) suggest EF is like:
- The driver of a car who controls everything
  - That includes both carefully planned actions as well as automatic responses
- The complex action of driving demands the involvement of many different mental and physical actions interacting together.

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So is the Best Term Executive Function (Car Driver) or Functions (many abilities)?

THIS IS AN IMPORTANT QUESTION THAT INFORMS OUR CONCEPTUALIZATION, INTERPRETATION AND APPLICATION OF THE CONCEPT !

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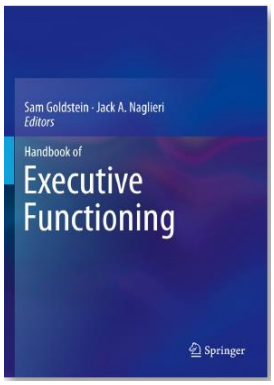
Goldstein, Naglieri, Princiotta, & Otero (2013)

- There is confusion about the definition of Executive Function or Functions
- We found more than 30 definitions of EF(s). Somme say EF is a:
  - a **unitary construct**
  - **multidimensional** concept with many independent EF abilities
  - **ONE concept** with related parts



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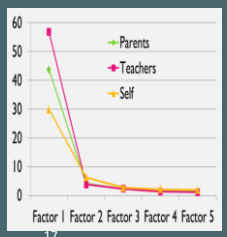
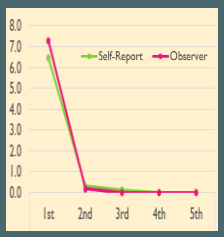
Factor Analysis of CEFI Normative Samples for those 5-80+ years of age (N = 6,700)

(Naglieri & Goldstein; 2012, 2017)





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CEFI Child:
Parent (N=1,400),
Teacher (N=1,400)
Self (N=700) ratings:
EF is ONE construct

CEFI Adult:
Self (N = 1,600) &
Observer (N = 1,600)
ratings
EF is ONE construct

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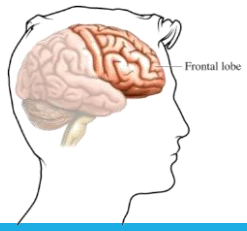
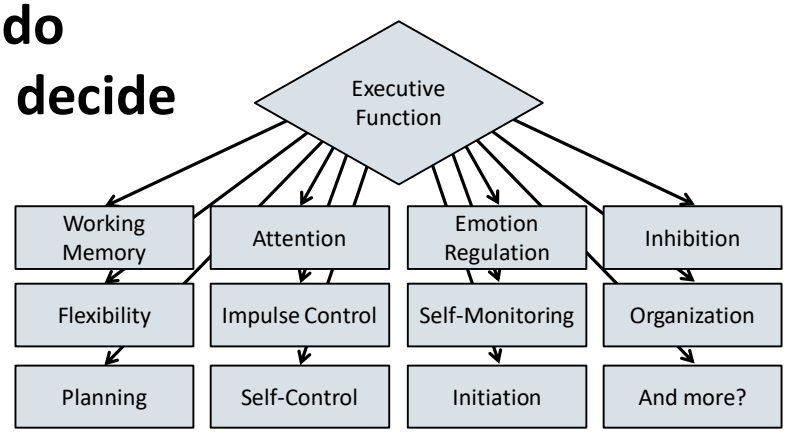
Executive Function Definition

***How* you do *what* you decide to do**





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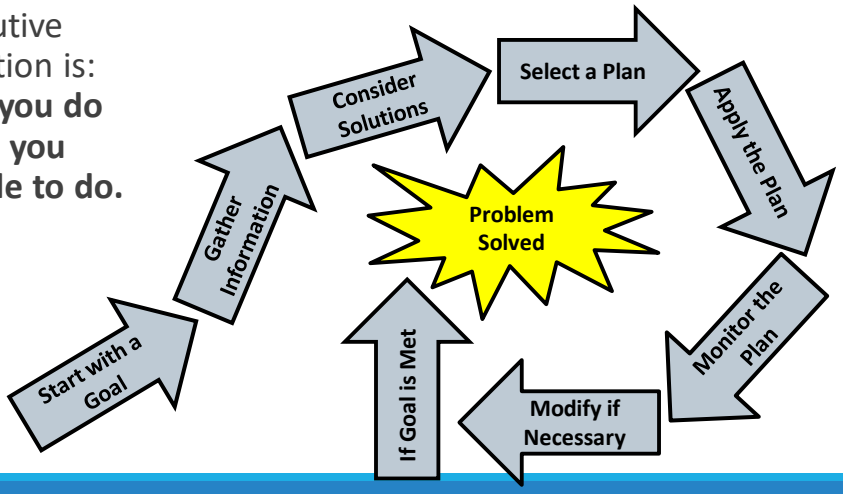
Naglieri & Goldstein, 2012

- Executive Function is: ***how*** **you do what you decide to do.**



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Why is the EF vs EFS question important?

- "Is the term Function or Functions?" is not an esoteric question
- The answer drives
  - How we understand and intervene with our students
- The research shows that EF behaviors reflect ONE concept
  - This means the parts (e.g., working memory, impulse control) do NOT indicate EF status.
- The frontal lobes are SO important for overall functioning, so if there is a true EF weakness there should be MULTIPLE areas of dysfunction – like Phineas – problems solving problems, behavioral control, social-skills, work/academic problems.

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Expressions of Executive Function

- Executive Function is a *brain-based ability* that can be seen in the *behavior* of students, their *social-emotional* competence, measures of intelligence (thinking smart or…not) and *academic and job success*.

Measurement tool	A Test of Thinking	Behavior Rating Scales	Achievement Tests
What it Measures	Intelligence	Strategic Behaviors / Social-Emotional Skills	Academic and job skills
	Neurocognitive Ability we call EF 		

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Topical Outline

- What is Executive Function?
- Is Executive Function related to Emotional Strength, Resilience, and Well-Being?
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- Executive Function & Thinking Smart – Instructional Implications & Sex Differences

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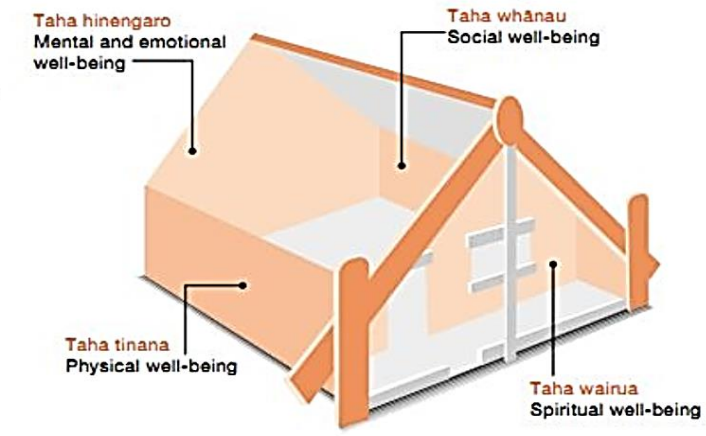

Dr Mason Durie's whare tapawha model compares hauora to the four walls of a whare, each wall representing a different dimension: taha wairua (the spiritual side); taha hinengaro (thoughts and feelings); taha tinana (the physical side); and taha whanau (family). All four dimensions are necessary for strength and symmetry. (Adapted from Mason Durie's Whaiora: Māori Health Development. Auckland: Oxford University Press, 1994, page 70).

Dr. Mason Durrie's Model

- A popular way to describe the four concepts of hauora is to liken them to the four walls of a **whare** (building). Each wall represents a different concept and are all needed for strength and symmetry of the whare.
- http://health.tki.org.nz/Teaching-in-HPE/Health-and-PE-in-the-NZC/Health-and-PE-in-the-NZC-1999/Underlying-concepts/Well-being-hauora

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https://anyquestions.govt.nz/many_answers/health-and-well-being-hauora

- The four concepts from the Ministry of Edu… Well-being, hauora page:
- **Taha tinana** - **physical well-being**: The physi… body, its growth, development, and ability to move, and ways of caring for it.
- **Taha hinengaro** - **mental and emotional wel…** Coherent thinking processes, acknowledging and expressing th… nd feelings and responding constructively.
- **Taha whānau** - **social well-being**: Family relationships, friendships, and other interpersonal relationships; feelings of belonging, compassion and caring; and social support.
- **Taha wairua** - **spiritual well-being**: The values and beliefs that determine the way people live, the search for meaning and purpose in life, and personal identity and self-awareness.

EF EF EF EF EF EF

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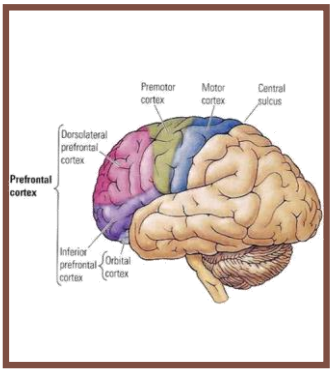
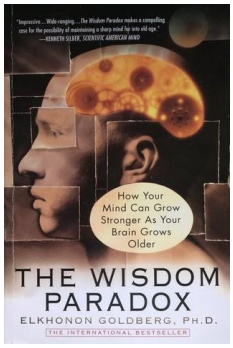


Frontal Lobes



Executive Function

- 'current research has shown beyond a doubt that the prefrontal cortex is central to those aspects of cognition that glue individuals into society'
- PFC is active when we 'ponder moral or social dilemmas, experience empathy toward others, or when we try to understand another person's perspective (theory of mind)
- Moral reasoning
- Counter-factual reflection ('if I did X not Y') reasoning = learning from experience

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Well-Being, Social Emotional Competence, IQ and Academic Achievement

Well-Being Concepts

Taha hinengaro - mental and emotional well-being: Coherent thinking processes, acknowledging and expressing thoughts and feelings and responding constructively.

Taha whānau - social well-being: Family relationships, friendships, and other interpersonal relationships; feelings of belonging, compassion and caring; and social support.

Taha wairua - spiritual well-being: The values and beliefs that determine the way people live, the search for meaning and purpose in life, and personal identity and self-awareness.

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

Self Management

Decision Making

Goal Directed Behavior

Relationship Skills

Personal Responsibility

Self Awareness

Social Awareness

Optimistic Thinking

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Let's look at some research to answer the question…

If EF is related to Social-Emotional Functioning…Is it also related to success in school?

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EF and Achievement (Naglieri & Rojahn, 2004)

- The correlation between Executive Function (Planning + Attention) and overall achievement was = **.51** (N = 1,559)
- EF added significantly to the prediction of achievement after Simultaneous and Successive scores were entered into the regression equation

Journal of Educational Psychology
2004, Vol. 96, No. 1, 174–181

Copyright 2004 by the American Psychological Association, Inc.
0022-0663/04/$12.00 DOI: 10.1037/0022-0663.96.1.174

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 correlation 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.

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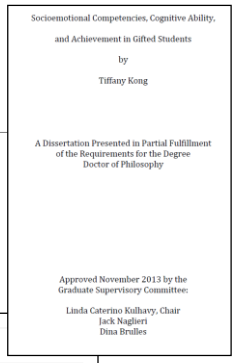
Kong (2013): IQ, SEL & Achievement

- Tiffany Kong studied CogAT, DESSA, and achievement scores for 276 elementary students in grades K-8
- All gifted based on scores on verbal, quantitative, or nonverbal test scores at least 97th percentile


Socioemotional Competencies, Cognitive Ability, and Achievement in Gifted Students

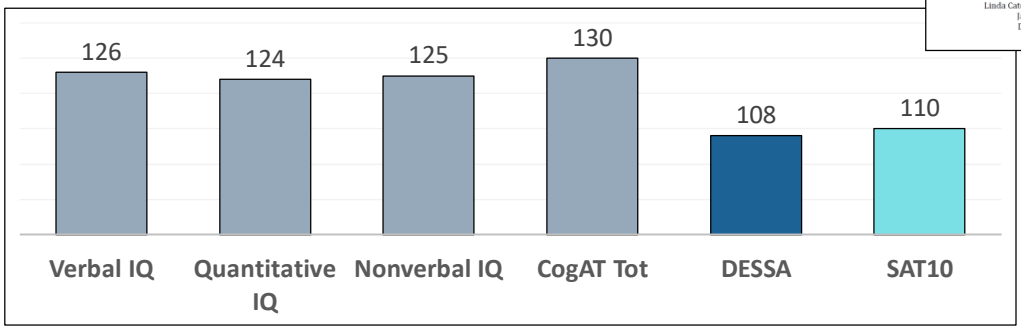
by

Tiffany Kong

A Dissertation Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy

Approved November 2013 by the Graduate Supervisory Committee:

Linda Caterino Kulhavy, Chair
Jack Naglieri
Dina Brulles



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Kong (2013) SEL Predicts Beyond IQ (p. 44)

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

Relations between Cognitive Ability, Socioemotional Competency, and

Achievement Variables

Hierarchical regression analyses were conducted to determine which
and subtests predicted the most variance in the dependent achievement varia
Composite CogAT scores were not found to significantly predict composite
achievement, $R^2\Delta = .03$, $F(1, 121) = 3.27$, $p > .05$, reading, language, or math sc
over-and-above the DESSA Total scores (Table 11). On the other hand, the DE
Total scores significantly predicted composite achievement, $R^2\Delta = .05$, $F(1, 12$
6.99, $p < .05$; language scores, $R^2\Delta = .03$, $F(1, 121) = 4.26$, $p < .05$; and math scores,
$R^2\Delta = .05$, $F(1, 121) = 6.09$, $p < .05$, over-and-above the composite CogAT scores.

I suggest that Well-Being will also be highly correlated with school and life success because

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EF and Traditional IQ

- EF is not included in any traditional IQ tests such as those published by Wechsler, Binet, or Woodcock.
- EF is included in more modern conceptualizations of intelligence and in one test called the Cognitive Assessment System – Second Edition (Naglieri, et al 2014).

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Intelligence as Neurocognitive Functions

- In Das and Naglieri's first meeting (February 11, 1984) they proposed that intelligence was better REinvented as neurocognitive processes including measurement of Executive Function

- Our definition of intelligence includes Planning (Executive Function), Attention, Simultaneous, and Successive (PASS) neurocognitive processes.

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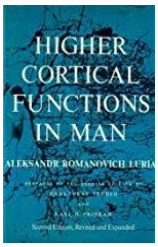
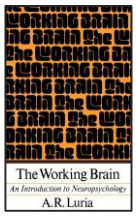
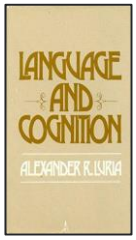
Neurocognitive function







Luria theorized that human cognitive functions can be conceptualized within a framework of three separate but related brain systems that provide four basic psychological processes called Planning, Attention, Simultaneous & Successive.

The three brain systems are referred to as **"functional units"** because the neurocognitive mechanisms work in separate but interrelated systems.

Recent neuroscience research has found cognition and behavior *are a product of* ***functional neural networks.***

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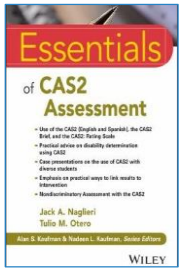
PASS Neurocognitive Theory



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

PASS = 'basic psychological processes'

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PASS Theory: Planning = EF

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

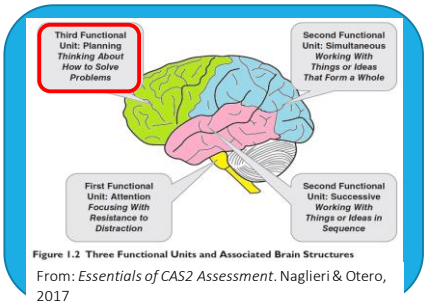

Figure 1.2 Three Functional Units and Associated Brain Structures

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

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How is Executive Function Measured?

- Usually EF is measured using rating scales, this is NOT sufficient.
- A comprehensive approach should include
  - Behavior rating scales for *cognitive* aspects
  - Behavior rating scales for *social-emotional* evidence
  - Tests of EF which assess student *thinking*
  - *Academic* Skills which are related to EF

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Evaluation of Executive Function

- Executive Function should be evaluated through assessment of overt *behavior*, *social-emotional* competence, tests of intelligence (thinking) and *academic or job perforance*.

Measurement tool	A Test of Thinking	Behavior Rating Scales	Achievement Tests
What it Measures	Intelligence	Strategic Behaviors / Social-Emotional Skills	Academic skills
	Neurocognitive Ability we call EF 		

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BIG Picture of EF and Well-Being…

- ALL FOUR concepts related to Well-Being are based on BRAIN FUNCTION with special involvement of the Frontal and especially Prefrontal Cortex (PFC)
- 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**

THURSDAY 31ST OCTOBER

1-3 pm

Professor Jack Naglieri and Kathleen Kryza

Workshop: Think Positive Act Smart: A Strength Based Approach To Understanding How Students Learn

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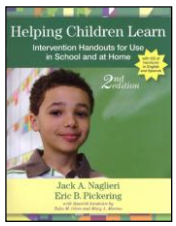
EF Instruction from Naglieri & Pickering (2010)



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.

Step 2: The teacher facilitates a discussion that asks the children about how they completed the worksheet and how they will go about completing the problems in the future. Teachers should not attempt to reinforce the children. For example, if a child says, "I used xyz strategy," the teacher should not say, "Good, and be sure to do that next time." Instead, the teacher may probe using a statement designed to encourage the child to consider the effectiveness of the strategy (e.g., "Did that work for you?"). Discussion works best in groups in which students can learn from one another. The general goals are to encourage the children to describe how they did the worksheet. The teacher's role is to encourage the children to verbalize ideas (which facilitates Planning), explain why some methods work better than others, encourage them to be self-reflective, and get them to think about what they will do the next time they do this type of work. Here is a list of suggested probes:

- "How did you do the page?"
- "Tell me how you did these problems."
- "What do you notice about how this page was completed?"
- "What is a good way to do these pages, and what did this teach you?"

Helping Children Learn: Intervention Handouts for Use in School and at Home, Second Edition, by Jack A. Naglieri & Eric B. Pickering
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- "Why did you do it that way? What did you expect to happen?"
- "How are you going to complete the page next time so that you get more correct answers?"
- "What seemed to work well for you before, and what will you do next time?"
- "What are some reasons why people make mistakes on problems such as these?"
- "You say these are hard. Can you think of any ways to make them easier?"
- "There are many problems here. Can you figure out a way to do more?"
- "Do you think you will do anything differently next time?"

Step 3: The teacher gives each child a math worksheet and says, "Here is another math worksheet for you to do. Please try to get as many of the problems correct as you can. You have 10 minutes."

Aids to Facilitate Discussion

- Project a blank worksheet so the children can see it during discussion.
- Make an overhead of a completed worksheet (with the name omitted).
- Have the children do a projected blank worksheet as a group .

It is important for teachers not to say things such as, "Watch me. This is how to do it," "That's right. Good, now you're getting it!" "You made a mistake. Fix it now," or "Remember to use your favorite strategy." This discourages discussion among the students and does not help to meet the goals of the strategy.

Who Should Learn Planning Facilitation?

This instruction is likely to benefit students who are poor at mathematics calculation. Because Planning facilitation helps students focus on their approach to solving problems, it helps them be more careful or planful. Children who score low in Planning are likely to improve the most from this instruction.

Resources

Good starting points for mathematics intervention can be found at http://www.mathgoodies.com, http://www.sitesforteachers.com, and http://www.mathprojects.com.

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Naglieri, J.A., & Johnson, D. (2000). Effectiveness of a cognitive strategy intervention to improve math calculation based on the PASS theory. *Journal of Learning Disabilities, 33*, 591–597.
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Encouraging students to use Executive Function to solve problems had a substantial impact on their performance in the classroom and on standardized tests of achievement.

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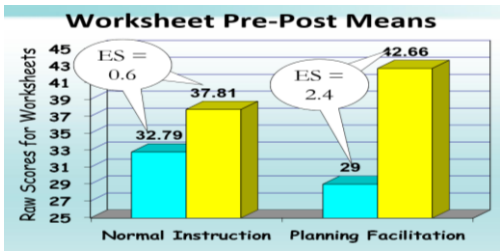
A Cognitive Strategy Instruction to Improve Math Calculation for Children With ADHD and LD: A Randomized Controlled Study

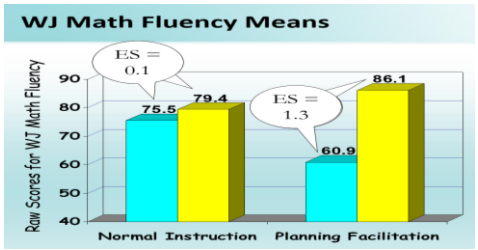
Jackie S. Iseman[1] and Jack A. Naglieri[1]

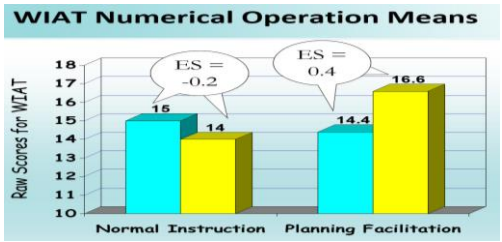
Abstract

The authors examined the effectiveness of cognitive strategy instruction based on PASS (Planning, Attention, Simultaneous, Successive) given by special education teachers to students with ADHD randomly assigned by classroom. Students in the experimental group were exposed to a brief cognitive strategy instruction for 10 days, which was designed to encourage development and application of effective planning for mathematical computation, whereas the comparison group received standard math instruction. Standardized tests of cognitive processes and math achievement were given at pretest. All students completed math worksheets throughout the experimental phase. Standardized achievement tests (*Woodcock-Johnson Tests of Achievement, Third Edition*, Math Fluency and *Wechsler Individualized Achievement Test, Second Edition*, Numerical Operations) were administered pre- and postintervention, 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, far 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.

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







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

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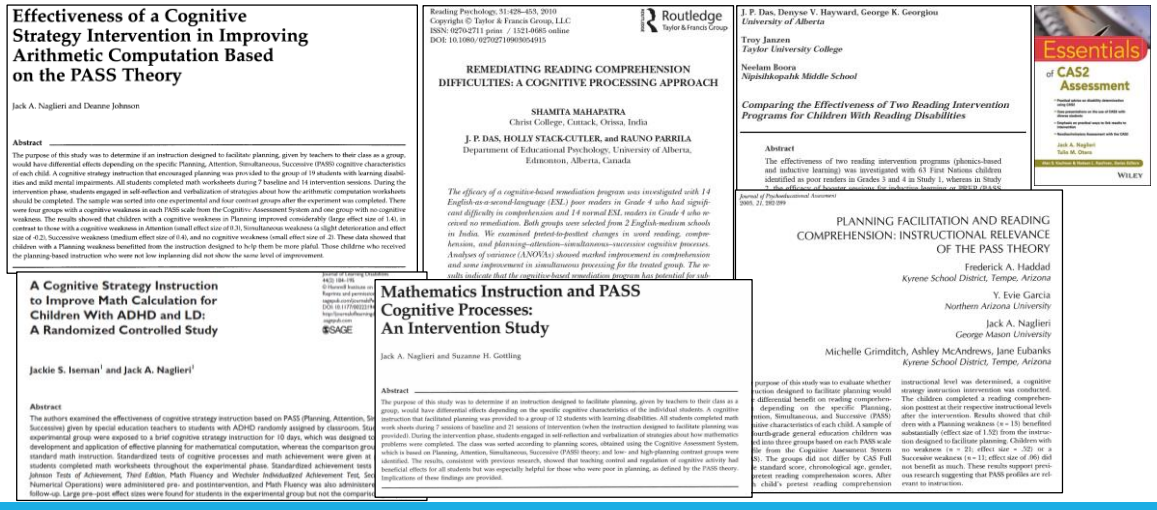
Summary of Similar Cognitive Strategy Intervention Research in Essentials of CAS2



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 16 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 contrast groups after the experiment was completed. There were four groups with a cognitive weakness in each PASS scale from the Cognitive Assessment System and one group with no cognitive weakness. The results showed that children with a cognitive weakness in Planning improved considerably (large effect size of 1.4), in contrast to those with a cognitive weakness in Attention (small effect size of 0.3), Simultaneous weakness (a slight deterioration and effect size of -0.2), Successive weakness (medium effect size of 0.4), and no cognitive weakness (small effect size of .2). These data showed that children with a Planning weakness benefitted from the instruction designed to help them be more playful. Those children who received the planning-based instruction who were not low inplanning did not show the same level of improvement.

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REMEDIATING READING COMPREHENSION DIFFICULTIES: A COGNITIVE PROCESSING APPROACH

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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 in India. We examined pretest-to-posttest changes in word reading, comprehension, and planning–attention–simultaneous–successive cognitive processes. Analyses of variance (ANOVAs) showed marked improvement in comprehension and some improvement in simultaneous processing for the treated group. The results indicate that the cognitive-based remediation program has potential for sub-

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Troy Janzen
Taylor University College

Neelam Boora
Nipisihkopahk 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 3 and 4 in Study 1, whereas in Study

Journal of Psychoeducational Assessment
2005, 23, 282-299

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

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Y. Evie Garcia
Northern Arizona University

Jack A. Naglieri
George Mason University

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

purpose of this study was to evaluate whether ...action designed to facilitate planning would ...differential benefit on reading comprehen... depending on the specific Planning, ...otion, Simultaneous, and Successive (PASS) ...nitive characteristics of each child. A sample of ...fourth-grade general educators children was ...ed into three groups based on each PASS scale ...he from the Cognitive Assessment System ...S). The groups did not differ by CAS Full ...e standard score, chronological age, gender, ...pretest reading comprehension scores. After ...h child's pretest reading comprehension ... instructional level was determined, a cognitive strategy instruction intervention was conducted. The children completed a reading comprehension posttest at their respective instructional levels after the intervention. Results showed that children with a Planning weakness (n = 13) benefited substantially (effect size of 1.52) from the instruction designed to facilitate planning. Children with no weakness (n = 21; effect size = .32) or a Successive weakness (n = 13; effect size of .06) did not benefit as much. These results support previous research suggesting that PASS profiles are relevant to instruction.

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]

SAGE

Abstract

The authors examined the effectiveness of cognitive strategy instruction based on PASS (Planning, Attention, Simultaneous, Successive) given by special education teachers to students with ADHD randomly assigned by classroom. Students in the experimental group were exposed to a brief cognitive strategy instruction for 10 days, which was designed to facilitate the development and application of effective planning for mathematical computation, whereas the comparison group received standard math instruction. Standardized tests of cognitive processes and math achievement were given at pretest. Students completed math worksheets throughout the experimental phase. Standardized achievement tests (*Wechsler Individual Achievement Test–Second Edition*, *Test of Mathematical Abilities–Third Edition*, *Woodcock Johnson Tests of Achievement, Third Edition*, Math Fluency and Wechsler *Individualized Achievement Test*, Second Edition Numerical Operations) were administered pre- and postintervention, and Math Fluency was also administered at follow-up. Large pre–post effect sizes were found for students in the experimental group but not the comparison

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 teachers to their class as a group, would have differential effects depending on the specific cognitive characteristics of the individual students. A cognitive instruction that facilitated planning was provided to a group of 12 students with learning disabilities. All students completed math work sheets during 7 sessions of baseline and 21 sessions of intervention (when the instruction designed to facilitate planning was provided). During the intervention phase, students engaged in self-reflection and verbalization of strategies about how mathematics problems were completed. The class was sorted according to planning scores, obtained using the Cognitive Assessment System, which is based on Planning, Attention, Simultaneous, Successive (PASS) theory; and low- and high-planning contrast groups were identified. The results, consistent with previous research, showed that teaching control and regulation of cognitive activity had beneficial effects for all students but was especially helpful for those who were poor in planning, as defined by the PASS theory. Implications of these findings are provided.

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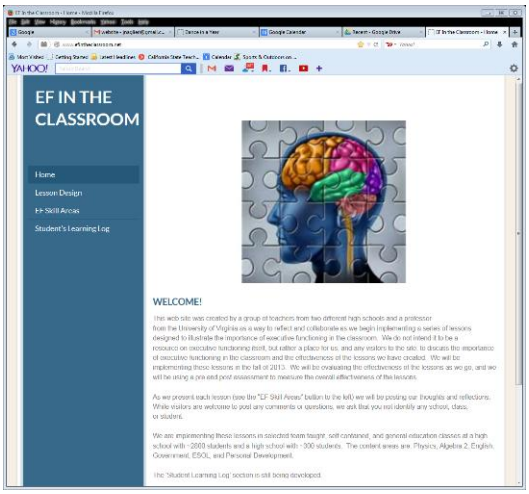
www.efintheclassroom.net

- **Weekly topics**
  - Attention
  - Emotional Control
  - Cognitive Flexibility
  - Response Inhibition
  - Task Initiation
  - Organization
  - Planning
  - Response Inhibition
  - Working Memory
  - Goal Directed Persistence



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Mountain View Alternative High School EF Lessons

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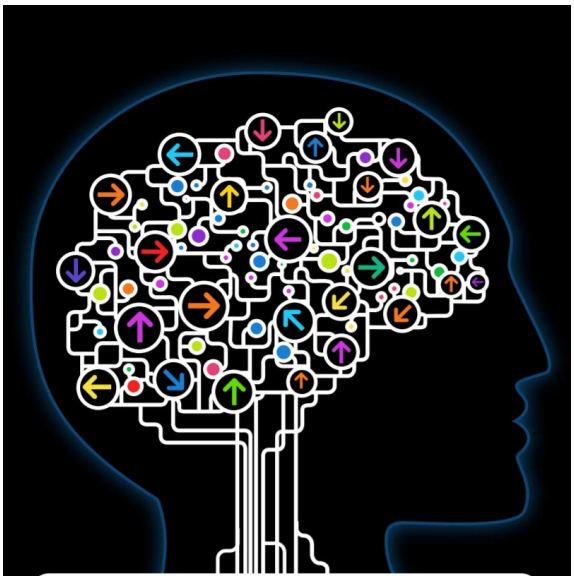

EF Developmental Changes & Sex Differences in EF Expressed as Behaviors, Intelligence and Social Emotional scores

How important is Executive Function ?

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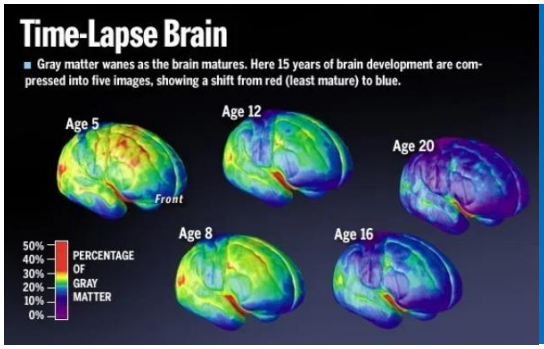
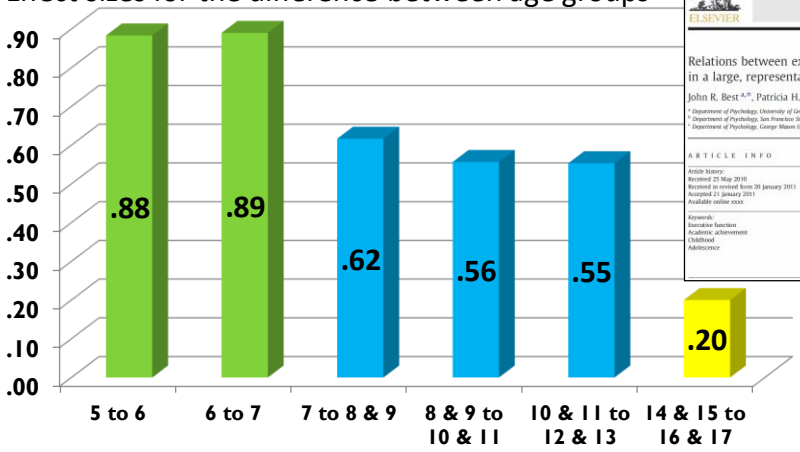


Developmental changes in Executive Function

EF Differences Between Age Groups

Effect sizes for the difference between age groups




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

John R. Best [a,*], Patricia H. Miller [b], Jack A. Naglieri [c]

ARTICLE INFO

ABSTRACT

Implications of Developmental Changes in EF

These developmental data suggest that instruction in EF Skills should be stressed when growth is most rapid, that is, during early elementary and middle school years

Students need to be TOLD what EF is and how it can be used to help them learn….so that growth in BEHAVIOR and EMOTION follow

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Sex Differences in Executive Function

There are REAL differences;
Girls are SMARTER !

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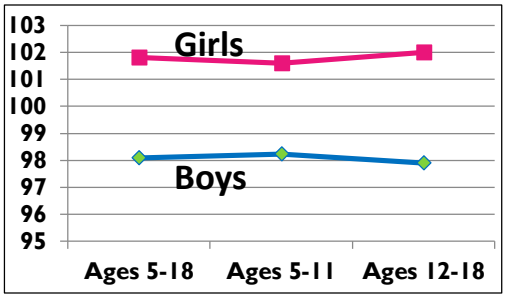
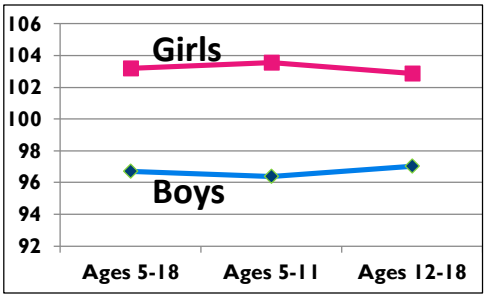
Girls > Boys on EF Behaviors (CEFI)

Parents	N	ES
Ages 5-18	700	**-0.25**
Ages 5-11	350	**-0.22**
Ages 12-18	350	**-0.28**



Teachers	N	ES
Ages 5-18	700	**-0.44**
Ages 5-11	350	**-0.49**
Ages 12-18	350	**-0.40**



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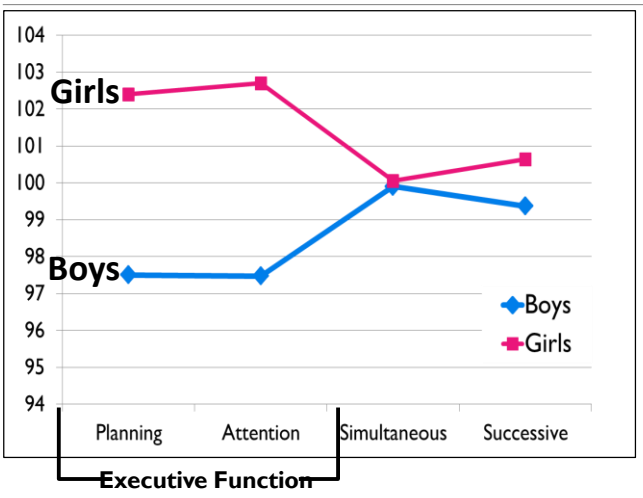
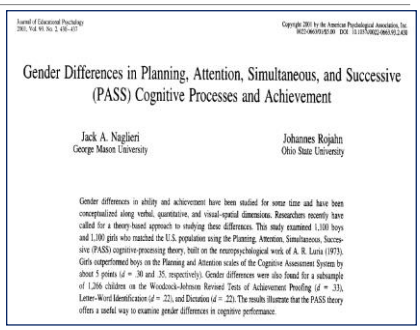
Girls > Boys in EF on an Intelligence Test





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.

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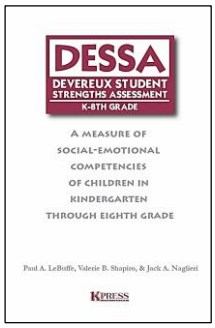
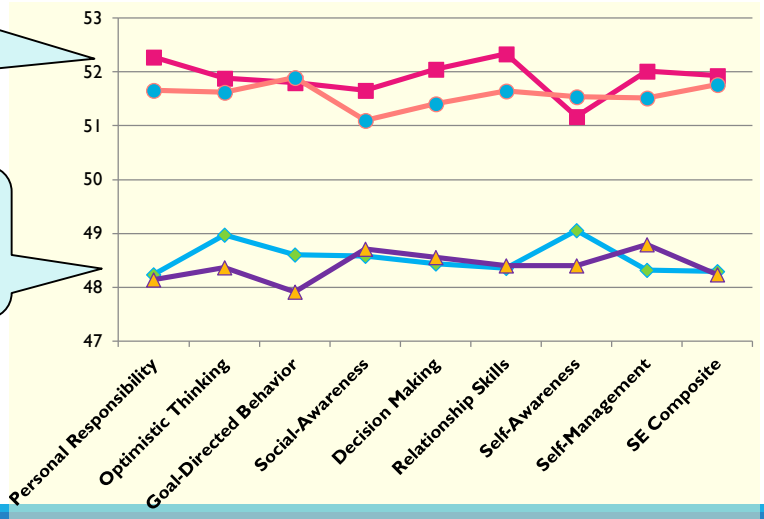
Girls > Boys on Rating Scale of Social Emotional Competence



Parent & Teacher Raters GIRLS

Parent & Teacher Raters BOYS



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

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Samantha Uses her EF

- "I forgot to bring my shorts"

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Conclusions

Think Positive Act Smart: The Role of Executive Function in Emotional Strength and Resilience (Well Being)

Frontal Lobes play a critical role in Emotional Strength and Resilience - the foundation of Well-being

You CAN improve students' use of Executive Functioning and improve their overall Well-being

Helping students be aware of the power of their frontal lobes will change… EVERYTHING !

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Thank You!

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Gender Differences in Auto Deaths

- Males are more likely to die in automobiles than women
- Results similar in US and NZ (except for ages 15-24 years)