

Understanding Executive Functioning in Children: New Ideas, New Data, and the Comprehensive Executive Functioning Inventory (CEFI)

Sam Goldstein, Ph.D.

Assistant Clinical Professor

University of Utah

School of Medicine

www.samgoldstein.com



Relevant Disclosure

➤ Co-author of

- Comprehensive Executive Functioning Inventory-Child and Adult
- Cognitive Assessment System –Second Edition
- Co-Editor Handbook of Executive Functioning
- Co-Editor Handbook of Intelligence and Achievement Testing
- Compensated Speaker


THE FIVE STUDENT CHALLENGE

What variables predict the capacity to learn and the quality of performance?

How do we help children be skillful?

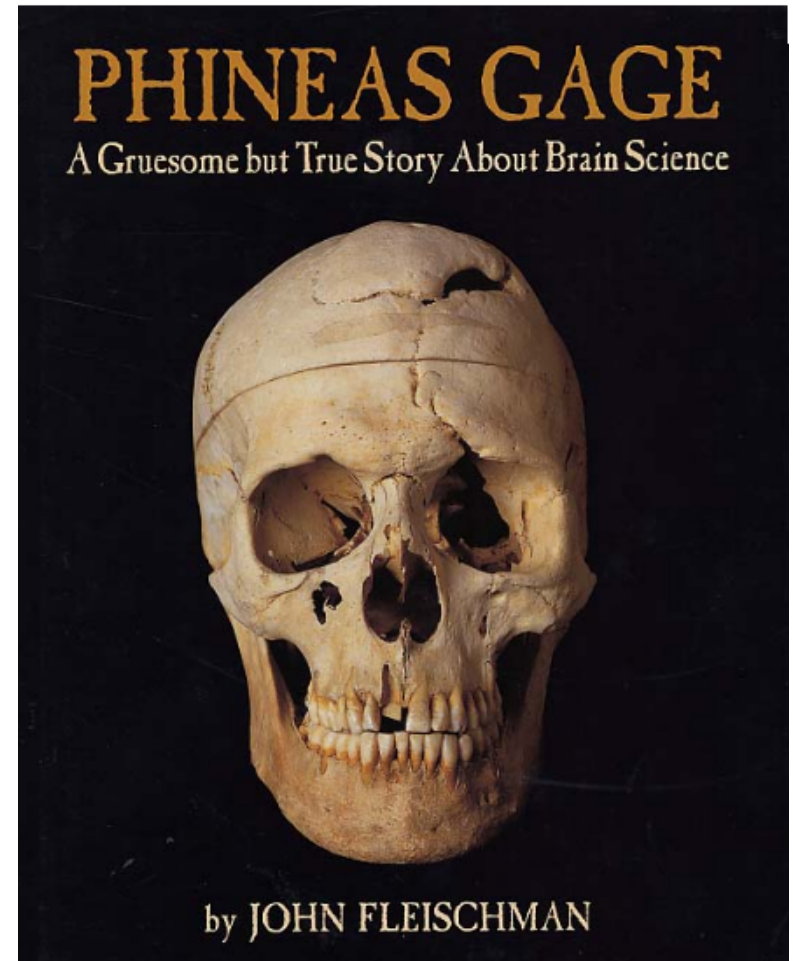


Presentation Outline

- 
- Historical Perspective
 - Definitions of Executive Function
 - Executive Function or Functions?
 - Rating Scales for EF
 - Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
 - EF and instruction

The Curious Story of Phineas Gage

John Fleischman's book "Phineas Gage: A Gruesome but True Story About Brain Science" is an excellent source of information about this person, his life, and how this event impacted our understanding of how the brain works; and particularly the frontal lobes.



The Curious Story of Phineas Gage

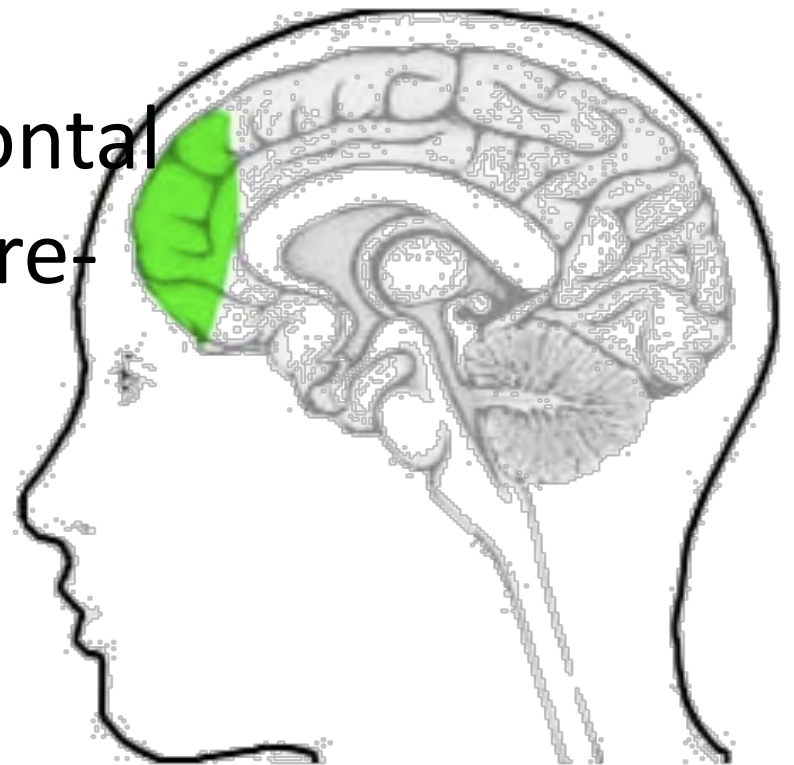
- **Before** the accident 'he possessed a well-balanced mind, was seen as a shrewd, smart business man, very energetic and persistent in executing all his plans of operation' (p 59)
- **After** the accident his mind was radically changed; so much so that his friends said he was no longer Phineas Gage
- Although most of his brain was not damaged, his frontal lobes were significantly injured.

The Curious Story of Phineas Gage

- Phineas and his tamping iron
- This presentation is about the important role of the frontal lobes and the unique function this part of the brain provides we now call “Executive Function(s)”.



The case of Phineas Gage and others spurred scientists in the mid 1800s to seek to develop an understanding of the frontal lobes in particular the prefrontal cortex.



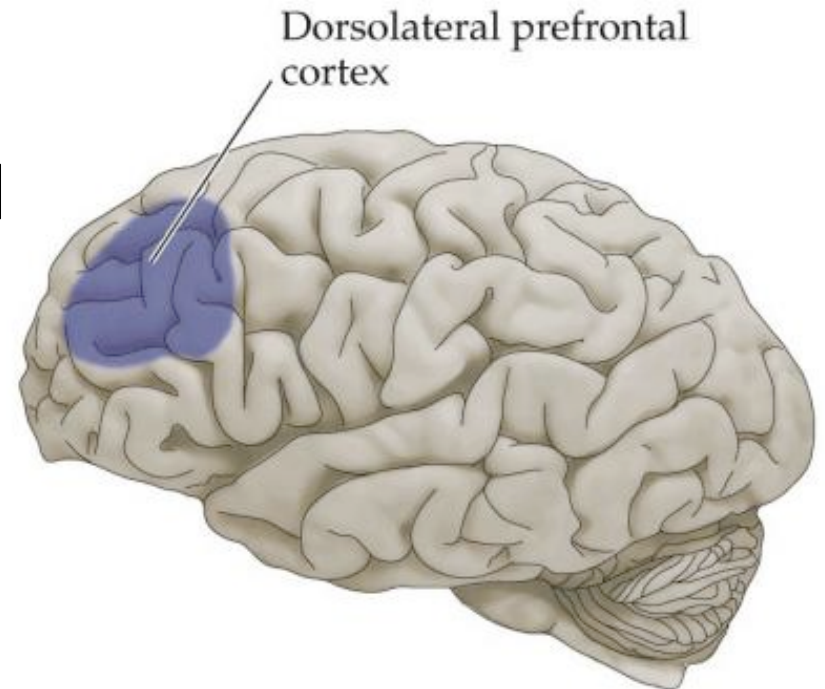
What Neural Structures are Implicated in EF?

- Prefrontal
- Rich cortical, sub-cortical and brain stem connections.
-



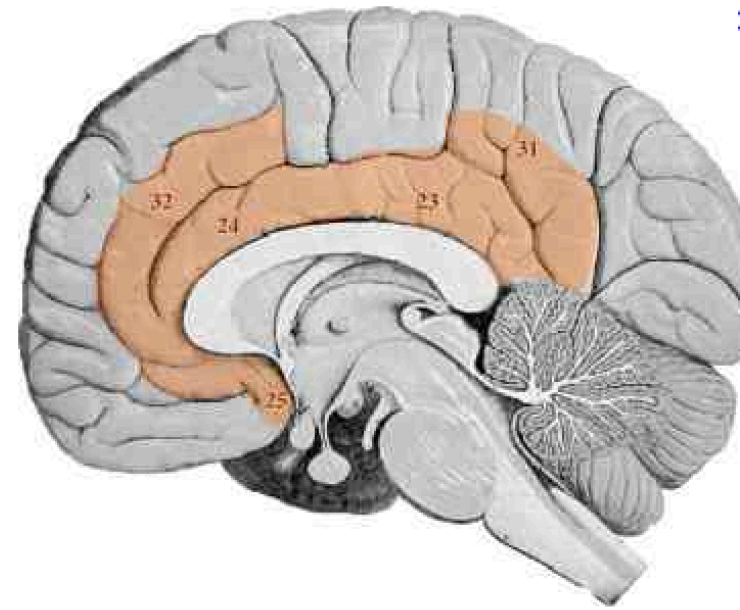
More Specifically

- The dorsolateral prefrontal cortex (DLPFC) is involved with integrating different dimensions of cognition and behavior.
- This area is associated with verbal and design fluency, ability to maintain and shift set, planning, response inhibition, working memory, organizational skills, reasoning, problem solving and abstract thinking.
- Chronic pain patients show declines in DLPFC functioning.



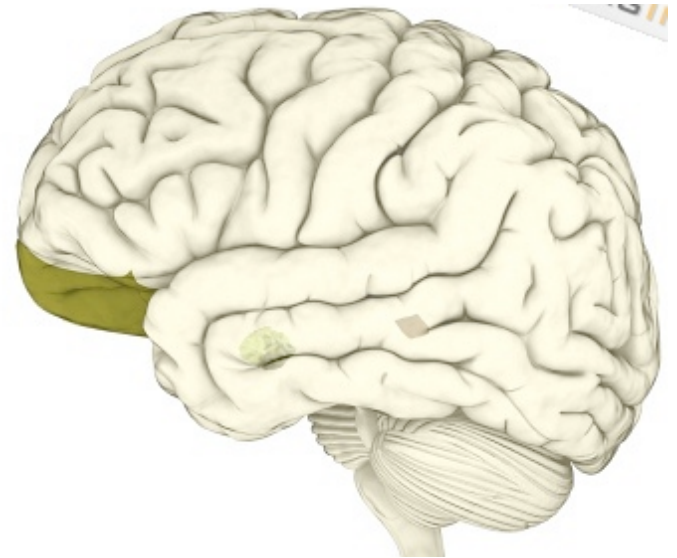
More Specifically:

- The anterior cingulate cortex (ACC) is involved in emotional drives, experience and integration, inhibition of inappropriate responses, decision making and motivation
- Lesions in this area can lead to low drive states such as apathy and may also result in low drive states for such basic needs as food or drink and possibly decreased interest in social or vocational activities and sex.
- Chronic pain patients also show declines in ACC function.



And Finally:


- The orbitofrontal cortex (OFC) plays a key role in impulse control, maintenance of set, monitoring ongoing behavior and socially appropriate behaviors.
- Lesions in this area can cause dis-inhibition, impulsivity, aggressive outbursts, sexual promiscuity and antisocial behavior.

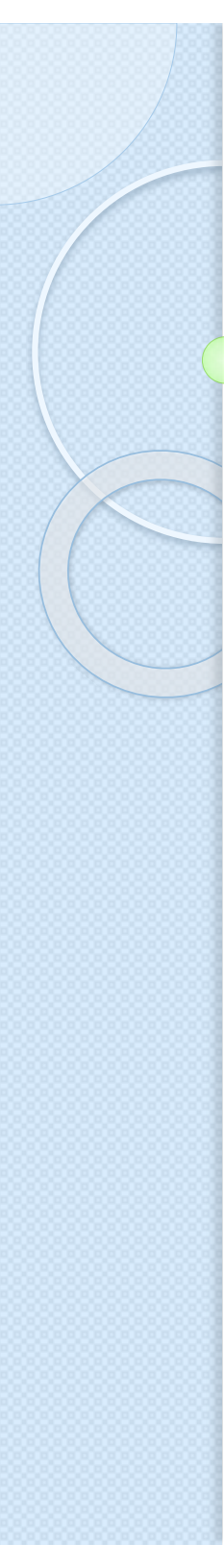


Another View: *Hot* and *Cool* EF

- Cool (metacognitive) – functions associated with cognition such as planning and problem solving (deficits leading to a Dorsolateral Syndrome).
- Hot (emotional/motivational) – functions associated with coordinating and controlling emotions (deficits leading to an Orbitofrontal/Medial Syndrome).

Presentation Outline

- 
- Historical Perspective
 - Definitions of Executive Function
 - Executive Function or Functions?
 - Rating Scales for EF
 - Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
 - EF and instruction



**What do we mean by the term
Executive Function(s)?**

Executive Function (s)

- In 1966 Alexandr Luria first wrote and defined the concept of Executive Function (EF)
- He credited Bianchi (1895) and Bekhterev (1905) with the initial definition of the process



1902 - 1977

What is/are Executive Function(s)

There is no formal excepted 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



Does Experience Shape EF?

- The Family Life Project has demonstrated that poverty is associated with elevated cortisol in infancy and early childhood.
- This association is mediated through characteristics of the household.
- Parenting sensitivity mediates the relationship between poverty and stress physiology.
- In combination parenting sensitivity and elevated cortisol mediate the association between poverty and poor EF in children.



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Family Life
PROJECT



PENNSTATE



Long-Term Cognitive Sequelae: Abused Children Without PTSD

Robert B. Perna

Behavioral Medicine Department, Walton Rehabilitation Hospital, Augusta, Georgia

Mark Kiefner

Bayside NeuroRehabilitation Services, Lewiston, Maine

Many lines of research suggest that childhood abuse and neglect are associated with later developing psychiatric diagnoses, academic problems, cognitive difficulty, and possible brain changes as measured through brain imaging. Data were collected on children ($N=41$) who completed a neuropsychological evaluation. Of those evaluated, 18 had a documented history of physical and/or emotional abuse or significant neglect and 23 had no history of abuse/neglect. When controlling for Full-Scale IQ (FSIQ), the abused children had significantly lower scores on measures of executive functioning (Wisconsin

Long-term cross-sectional analyses showed that the abused children were more likely to subsequently be diagnosed with a behavioral or emotional disorder. Consistent with psychobiological theories and imaging studies, our data are suggestive that childhood abuse and neglect are associated with later development of behavioral and emotional disorders and areas of cognitive weakness and possible impairment. Future research may be conducted to clarify these effects, the possibility of a dose-effect relationship, and

Key words: abuse/neglect, executive dysfunction, neuropsychological assessment

What Neural Activities Require EF?

- Those that involve planning or decision making.
- Those that involve error correction or troubleshooting.
- Situations when responses are not well-rehearsed or contain novel sequences of actions.
- Dangerous or technically difficult situations.
- Situations that require the overcoming of a strong habitual response or resisting temptation.



Goldstein, Naglieri, Princiotta, & Otero (2013)

- We found more than 30 definitions of EF(s).
- Executive function(s) has come to be an umbrella term used for many different abilities, including planning, working memory, attention, inhibition, self-monitoring, self-regulation and initiation carried out by pre-frontal areas of the frontal lobes.

What is Executive Function(s)

1. Barkley (2011): “EF is thus a **self-directed set of actions**)” (p. 11).
2. Dawson & Guare (2010): “Executive skills allow us **to organize our behavior over time**” (p. 1).
3. Delis (2012): “Executive functions reflect the **ability to manage and regulate one’s behavior** (p. 14).

What is Executive Function(s)

4. Denckla (1996): "EF (is) a set of **domain-general control processes...**" (p. 263).
5. Gioia, Isquith, Guy, & Kenworthy (2000): "a **collection of processes that are responsible for guiding, directing, and managing cognitive, emotional, and behavioral functions**" (p. 1).

What is Executive Function(s)

6. Pribram (1973): **"executive programmes ... to maintain brain organization "** (p. 301).
7. Roberts & Pennington (1996): EF **"a collection of related but somewhat distinct abilities such as planning, set maintenance, impulse control, working memory, and attentional control"** (p. 105).

What is Executive Function(s)

6. Stuss & Benson (1986): **"a variety of different capacities that enable purposeful, goal-directed behavior, including behavioral regulation, working memory, planning and organizational skills, and self-monitoring"** (p. 272).
7. Welsh and Pennington (1988): **"the ability to maintain an appropriate problem-solving set for attainment of a future goal"** (p. 201).

What is Executive Function(s)


10. McCloskey (2006): “a diverse group of highly specific cognitive processes collected together to direct cognition, emotion, and motor activity, including ...the ability to engage in purposeful, organized, strategic, self-regulated, goal directed behavior” (p. 1)

“think of executive functions as a set of independent but coordinated processes rather than a single trait” (p. 2).

What is Executive Function(s)

- 10. Lezak (1995): "a collection of interrelated cognitive and behavioral skills that are responsible for purposeful, goal-directed activity," ...
- 11. "how and whether a person goes about doing something" (p. 42).
- 12. Luria (1966): "... ability to correctly evaluate their own behavior and the adequacy of their actions" (p. 227).

Executive Functions



WIKIPEDIA
The Free Encyclopedia

navigation

- Main page
- Contents
- Featured content
- Current events
- Random article

languages

Help us provide free content to the world by [donating today!](#)

[Log in](#) / [create account](#)

[article](#) [discussion](#) [edit this page](#) [history](#)


Executive functions

From Wikipedia, the free encyclopedia
(Redirected from [Executive function](#))

The **executive system** is a theorized [cognitive](#) system in [psychology](#) that controls and manages other cognitive processes. It is also referred to as the **executive function**, **executive functions**, **supervisory attentional system**, or **cognitive control**.

The concept is used by [psychologists](#) and [neuroscientists](#) to describe a loosely defined collection of [brain](#) processes which are responsible for planning, cognitive flexibility, abstract thinking, rule acquisition, initiating appropriate actions and inhibiting inappropriate actions, and selecting relevant sensory information.

Psychology



[History of psychology](#)
[Branches of psychology](#)

The **executive system** is a theorized [cognitive](#) system in [psychology](#) that controls and manages other cognitive processes. It is also referred to as the **executive function**, **executive functions**, **supervisory attentional system**, or **cognitive control**.

The concept is used by [psychologists](#) and [neuroscientists](#) to describe a loosely defined collection of [brain](#) processes which are responsible for planning, cognitive flexibility, abstract thinking, rule acquisition, initiating appropriate actions and inhibiting inappropriate actions, and selecting relevant sensory information.

[citations needed]

What links here

Related changes

Upload file

Special pages

Printable version

Permanent link

Cite this page

12 External links

Hypothesized role

[edit]

The executive system is thought to be heavily involved in handling novel situations outside the domain of some of our 'automatic' psychological processes that could be explained by the reproduction of learned [schemas](#) or set behaviors. Psychologists [Don Norman](#) and [Tim Shallice](#) have outlined five types of situation where routine activation of behavior would not be sufficient for optimal performance.^[1]

School · Sport

Lists

[Outline](#) · [Publications](#)
[Topics](#) · [Therapies](#)

Portal

[v](#) · [d](#) · [e](#)



executive function



Search

About 10,100,000 results (0.15 seconds)

Everything

Images

Maps

Videos

News

Shopping

Books

More

New Orleans, LA

Change location

Any time

Past hour

Past 24 hours

Past week

Past month

Past 2 months

Past year

Custom range

[Executive functions - Wikipedia, the free encyclopedia](#)

en.wikipedia.org/wiki/Executive_functions

The **executive** system is a theorized cognitive system in psychology that controls and manages other cognitive processes. It is responsible for processes that are ...

↳ [Neuroanatomy](#) - [Hypothesized role](#) - [Historical perspective](#) - [Development](#)

[What is Executive Function? - National Center for Learning Disabilities](#)

www.ncld.org/...executive-functioning/.../what-is-executive-function

Dec 17, 2010 – **Executive Function** is a term used to describe a set of mental processes that helps us connect past experience with present action. We use ...

[Executive function - effects, person, people, used, brain, personality ...](#)

www.minddisorders.com > [Del-Fi](#)

The term **executive function** describes a set of cognitive abilities that control and regulate other abilities and behaviors. **Executive functions** are necessary for ...

[Executive Function](#)

www.chrisdendy.com/executive.htm

However, today's savvy parents and educators realize that deficits in critical cognitive skills known as **executive functions** (EF) are slower to mature in many ...

[Executive Function Fact Sheet | LD Topics | LD OnLine](#)

www.ldonline.org/article/24880/

Children use **executive function** to plan, organize, strategize, pay attention, manage details, and schedule themselves. Read this fact sheet from the National ...



executive functions of the brain and learning



Search

About 1,380,000 results (0.32 seconds)

Everything

Images

Maps

Videos

News

Shopping

More

New Orleans, LA

Change location

Show search tools

Ads related to executive functions of the brain and learning

[Why these ads?](#)

[Two Day Exec Ed Programs | executive.mit.edu](#)

[executive.mit.edu/](#)

Practical MIT Sloan Faculty Led Programs for Busy Execs. Enroll!

[Functions Of The Brain | Curiosity.Discovery.com](#)

[curiosity.discovery.com/Intel/](#)

Join Intel in Exploring the World of the Human **Brain** & How It Works!

[Executive Education - Chicago Booth School of Business.](#)

[www.chicagoexec.net/](#)

5-Day Courses in Downtown Chicago.

[What is Executive Function? - National Center for Learning Disabilit...](#)

[www.ncld.org/...executive-functioning/.../what-is-executive-function](#)

Dec 17, 2010 – The **brain** continues to mature and develop connections well into adulthood. A person's **executive function** abilities are shaped by both physical ...

[\[PDF\] MEANINGFUL LEARNING AND THE EXECUTIVE FUNCTIONS ...](#)

[cainelearning.com/files/Learning_and_the_Executive_Functions.pdf](#)

File Format: PDF/Adobe Acrobat - [Quick View](#)

by G Caine - [Cited by 25](#) - [Related articles](#)

THE EXECUTIVE FUNCTIONS OF THE BRAIN. Geoffrey Caine and Renate Nummela Caine. [Published in Caine, G., Caine, R. (2006). "Meaningful **Learning** ...



executive function therapy



Search

About 1,720,000 results (0.32 seconds)

Everything

[Images](#)[Maps](#)[Videos](#)[News](#)[Shopping](#)[More](#)[New Orleans, LA](#)[Change location](#)[Show search tools](#)[Scholarly articles for executive function therapy](#)

[... and metacognition: Innovative cognitive therapy](#) - Wells - Cited by 547
[Behavior Rating Inventory of Executive Function-\(Adult ...](#) - Arch - Cited by 66
[... therapy improves cognition, mood, and function of ...](#) - Meyers - Cited by 210

[Cognitive Connections - Center for Executive Function Skill ...](#)www.executivefunctiontherapy.com/

We develop all aspects of **executive function** skills including time management, attention, processing, organization, memory and problem solving using research ...

[The Treatment of Executive Function Skills Using Equine Assisted ...](#)www.specialeducationadvisor.com/the-treatment-of-executive-functi...

Jan 9, 2011 – Equine Assisted **Therapy** (EAT) and Hippotherapy (HPOT) can be used in the **treatment** of **Executive Function** problems. **Therapists** who utilize ...

[Therapy for your CEO: Executive Function Therapy](#)www.brainline.org > TBI Topics > Diagnosing & Treating Brain Injury

What happens rehab like physical or occupational **therapy** come to an end for someone with TBI.

[\[PDF\] The Role of Executive Functions in Childhood Learning and Be...](#)www.lanlfoundation.org/Docs/George%20McCloskey.pdf

File Format: PDF/Adobe Acrobat - [Quick View](#)

by G McCloskey - [Cited by 1](#) - [Related articles](#)

How are **executive functions** related to intelligence? ... not include **executive functions** as a distinct component to be Cognitive Behavior **Therapy**. – OT/PT ...

[Ads - Why these ads?](#)[Executive Education](#)www.chicagoexec.net/

Chicago Booth School of Business.
5-Day Courses in Downtown Chicago.

[Supply Chain Focused EMBA](#)globalsupplychainemba.utk.edu/

UT #5 in Supply Chain.
Finish in 1 year while working.

[Brain Training Exercises](#)www.lumosity.com/

Sharpen Memory and Attention with
Scientific Brain Games and Tools
511 people +1'd Lumosity

[executive functioning](#)www.parinc.com/ExecutiveFunction

BRIEF testing for ages 2-90 years
for Adults, Adolescents, & Children

[Executive Functions](#)www.attengo.com/Executive_Function

Decrease ADHD Symptoms & Improve
Planning, Organization & Inhibition

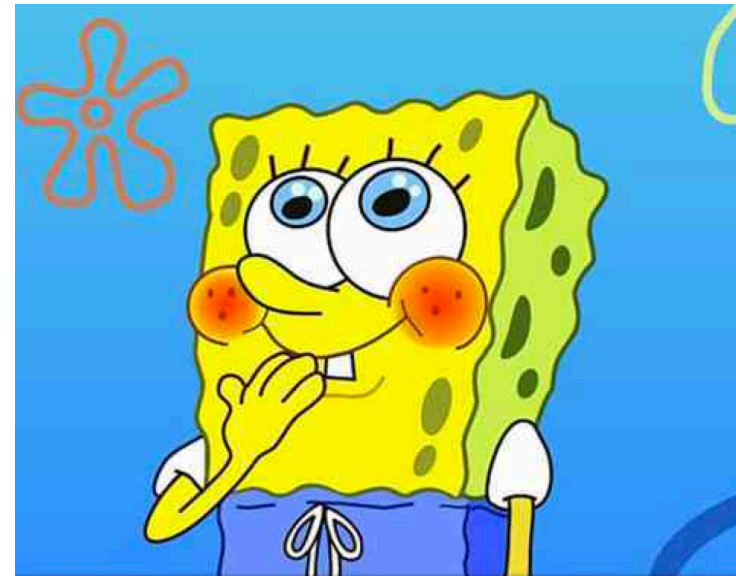
And Finally. . . .

A NICHD panel in 1994
identified 33 EFs by consensus!



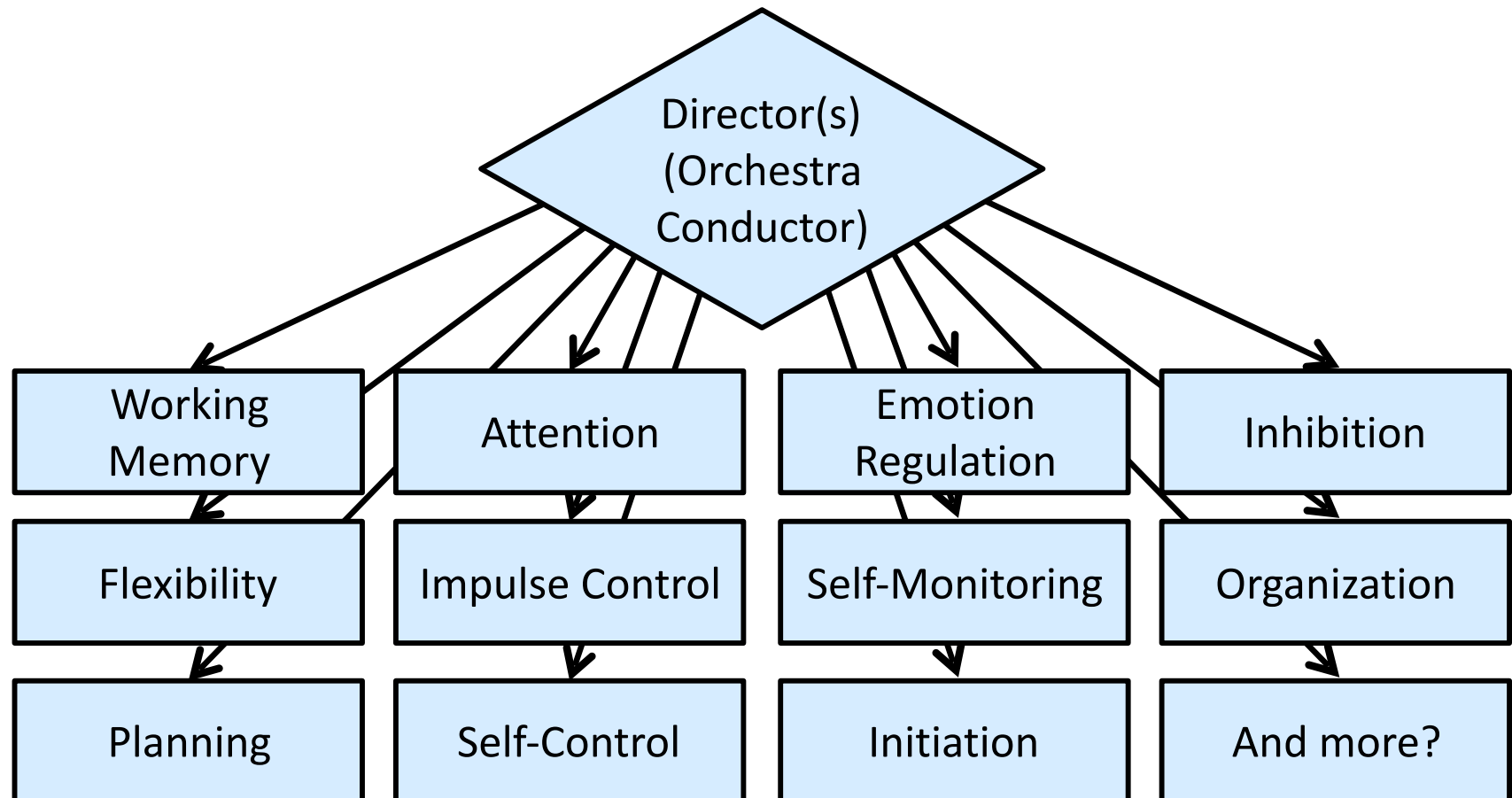
The Top Six Were:

- Self-regulation
- Sequencing of behavior
- Flexibility
- Response inhibition
- Planning
- Organization of behavior



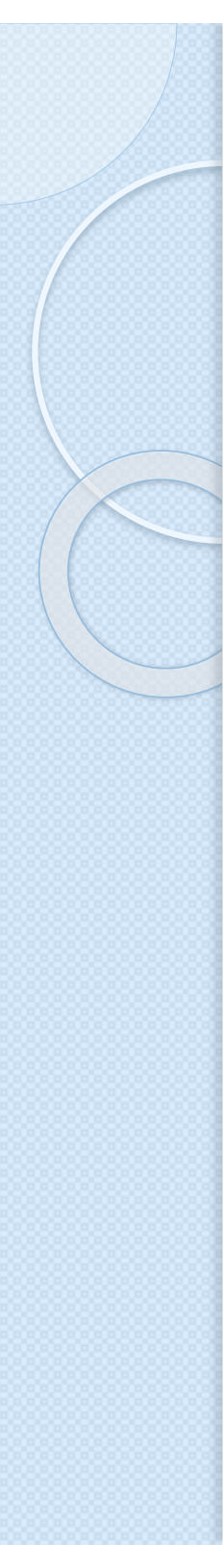
Three Categories of Theories

- Regulators that control
- Abilities (cognitive processes)
- Behaviors





**A similarly named ability and behavior (e.g. planning)
may only overlap to a small extent in explaining outcome.**



In fact EF ability likely forms the foundation reflected in behavior, achievement, emotional regulation and socialization. The contributed variance likely is impacted by a host of other variables. Ability and knowledge interact with these variables to shape skillful behavior.

Are EF challenges associated with other psychiatric and developmental conditions?



"Oh yes. We single out someone every week and highlight their performance."



EF and ADHD

EF deficits are not necessarily unique to ADHD. They are neither necessary nor sufficient to make a diagnosis of ADHD. When EF impairments are measured in children with ADHD they tend to reflect specific rather than global impairments.



EF and Other Disruptive Disorders (ODD & CD)

Early reviews reported that EF deficits were not characteristic of children and adolescents with ODD and CD after co-morbid ADHD was factored out. More recent studies, however, suggest that inhibition deficits may be characteristic of both ADHD and CD but whether children with CD display impairments on additional EF measures is equivocal.



EF and Tourette's

Distinct and robust impairments in EF do not appear to be characteristic of children with TD.



EF and Anxiety Disorders

EF deficits in set-shifting, cognitive flexibility, concept formation, interference control, and verbal fluency have been documented among children with separation anxiety disorder, overanxious disorder, and PTSD. EF in OCD has not been well addressed.



EF and Depression

Scant research has been conducted on the EF abilities among youth with depression. Studies that have included older adolescents have suggested some degree of sensitivity of EF tasks in identifying unipolar depression, but less specificity.



EF and Bi-Polar Disorder

There is a growing consensus about the nature of BD among children. Several studies have targeted its EF concomitants. Although results often have been confounded with significant co-morbidity issues, children and adolescents with BD reliably have demonstrated impairments relative to those without any history of mood disorders on several EF measures (e.g. working memory, set shifting).

EF and Traumatic Brain Injury

Dement Neuropsychol 2011 December;5(4):337-345

Original Article

Pragmatic and executive functions in traumatic brain injury and right brain damage

An exploratory comparative study

Nicolle Zimmermann^{1,2}, Gigiane Gindri^{1,3},
Camila Rosa de Oliveira^{1,2}, Rochele Paz Fonseca^{1,4}

Abstract – Objective: To describe the frequency of pragmatic and executive deficits in right brain damaged (RBD) and in traumatic brain injury (TBI) patients, and to verify possible dissociations between pragmatic and executive functions in these two groups. **Methods:** The sample comprised 7 cases of TBI and 7 cases of RBD. All participants were assessed by means of tasks from the Montreal Communication Evaluation Battery and executive functions tests including the Trail Making Test, Hayling Test, Wisconsin Card Sorting Test, semantic and phonemic verbal fluency tasks, and working memory tasks from the Brazilian Brief Neuropsychological

TBI individuals again exhibited a general profile of executive dysfunction, affecting mainly working memory, initiation, inhibition, planning and switching. Pragmatic and executive deficits were generally associated upon comparisons of RBD patients and TBI cases, except for two simple dissociations: two post-TBI cases showed executive deficits in the absence of pragmatic deficits. **Discussion:** Pragmatic and executive deficits can be very

EF Deficits and ASD

J. Child Psychol. Psychiat. Vol. 32, No. 7, pp. 1081-1105, 1991
Printed in Great Britain.

0021-9630/91 \$3.00 + 0.00
Pergamon Press plc
© 1991 Association for Child Psychology and Psychiatry

Executive Function Deficits in High-Functioning Autistic Individuals: Relationship to Theory of Mind

Sally Ozonoff,* Bruce F. Pennington* and Sally J. Rogers†

Abstract—A group of high-functioning autistic individuals was compared to a clinical control

on spatial or other control measures. Second-order theory of mind and executive function deficits were widespread among the autistic group, while first-order theory of mind deficits were found in only a subset of the sample. The relationship of executive function and theory of mind deficits to each other, and their primacy to autism, are discussed.

Keywords: Autism, executive function, theory of mind.

EF and Learning Disabilities

Working Memory Impairments in Children with Specific Arithmetic Learning Difficulties ☆☆☆

Janet F. McLean, Graham J. Hitch

Lancaster University, Lancaster, United Kingdom

<http://dx.doi.org/10.1006/jecp.1999.2516>, How to Cite or Link Using DOI

Permissions & Reprints

[View full text](#)

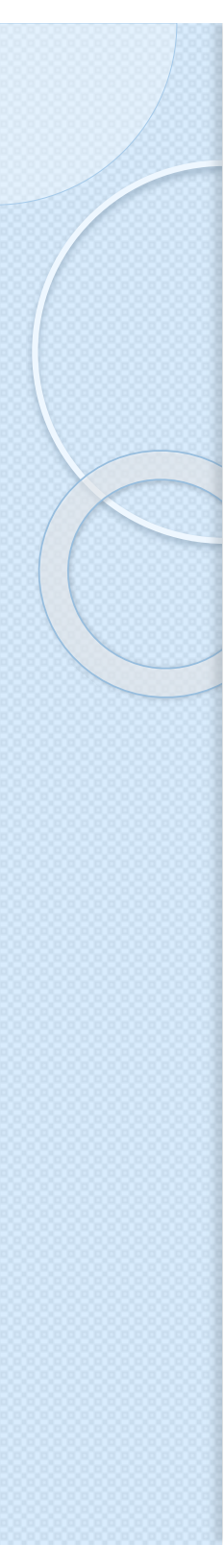


Purchase \$19.95

Abstract

Working memory impairments in children with difficulties in arithmetic have previously been investigated using questionable selection techniques and control groups, leading to problems concluding where deficits may occur. The present study attempted to overcome these criticisms by assessing 9-year-old children with difficulties specific to arithmetic, as indicated by normal reading, and comparing them with both age-matched and ability-matched controls. A battery of 10 tasks was used to assess different aspects of

and some aspects of executive processing. Compared to ability-matched controls, they were impaired only on one task designed to assess executive processes for holding and manipulating information in long-term memory. These deficits in executive and spatial aspects of working memory seem likely to be important factors in poor arithmetical attainment.



If all of these conditions are statistically related to behaviors and abilities reflecting EF than a common denominator must exist.

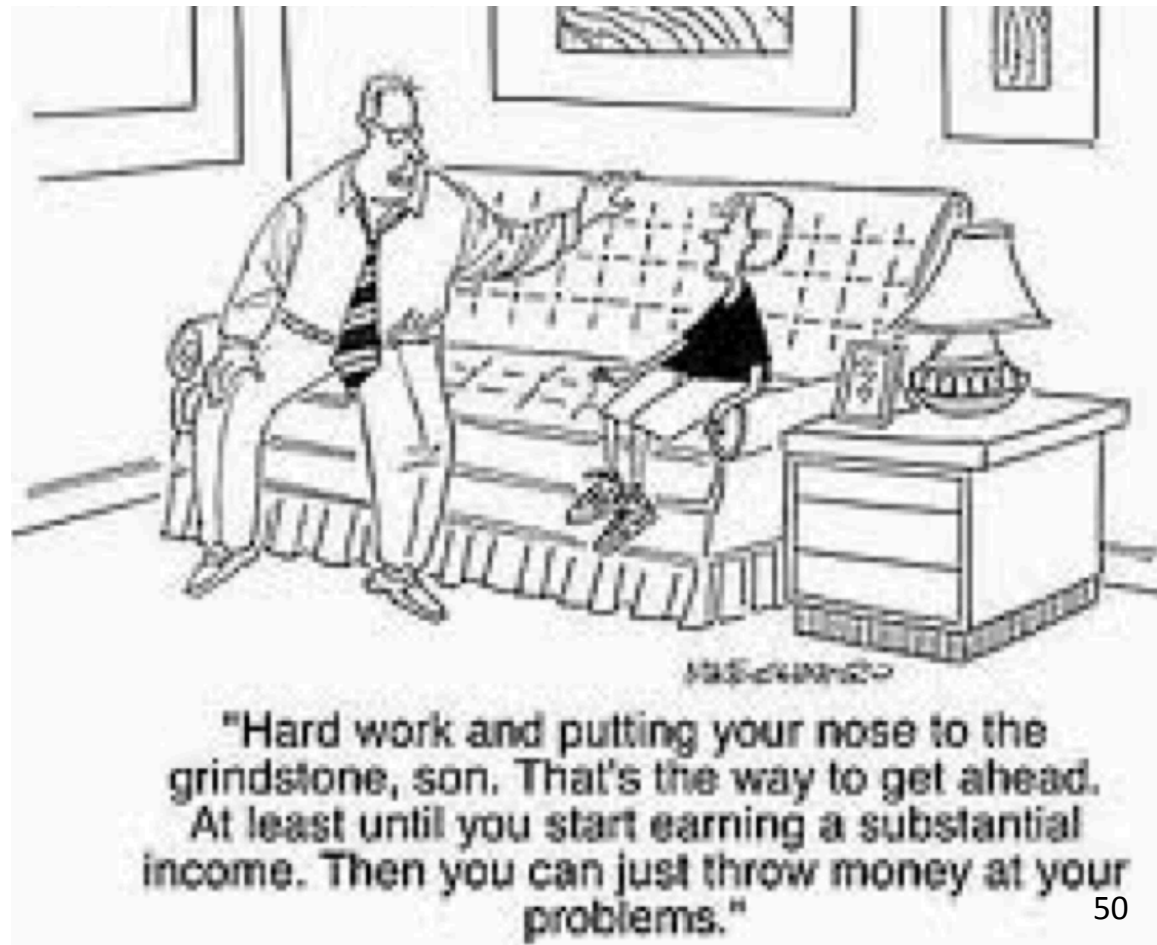
Impairment in behaviors associated with EF can have multiple etiologies often operating simultaneously.



Impaired Behavior Associated With Poor EF Can Result From:

- Lack of ability.
- Lack of knowledge.
- Lack of motivation.
- Internalizing symptoms.
- Externalizing symptoms.
- Poor impulse control.

Starting with an assessment of EF behaviors defines the real life landscape and can be used as a foundation to then explore etiologies.



Presentation Outline

- Historical Perspective
- Definitions of Executive Function
- Executive Function or Functions?
- Rating Scales for EF
- Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
- EF and instruction

Executive Function

- EF is a **unitary** construct (e.g., Duncan & Miller, 2002; Duncan & Owen, 2000).
 - EF is **unidimensional** in early childhood not adulthood.
-
- Both views are supported by some research (Miyake et al. , 2000), -- EF is a **unitary construct ...but with partially different components.**

Executive Functions

- EF has **three components**: *inhibitory control, set shifting (flexibility), and working memory* (e.g., Davidson, et al., 2006; Miyake et al., 2000).
- EF has independent **abilities** (Wiebe, Espy, & Charak, 2008).
- Executive Functions is a **multidimensional** model (Friedman et al., 2006; Miyake et al., 2000).

Executive Function(s)

- Given all these definitions of EF(s) we wanted to address the question...

Executive Function^s ... or

Executive Function?

Executive Function(s)

- One way to examine this issue is to research the factor structure of behaviors related to EF(s)
- To do so, we examined the factor structure of the Comprehensive Executive Function Inventory (CEFI)
- We conducted a series of research studies to answer the following question:
 - What is the underlying structure of the behaviors assessed on the CEFI?
 - Is there is just one underlying factor called executive function), or do the behaviors group together into different constructs suggesting a multidimensional structure?

EXPLORATORY FACTOR ANALYSES

➤ The normative samples for parents, teacher, and self ratings were randomly split into two samples and EFA conducted using

- the item raw scores
- nine scales' raw scores

➤ The sample ...

CEFI Scales

Attention

Emotion Regulation

Flexibility

Inhibitory Control

Initiation

Organization

Planning

Self-Monitoring

Working Memory

CEFI Standardization Samples

- Sample was stratified by
 - Sex, age, race/ethnicity, parental education level (PEL; for cases rated by parents), geographic region
 - Race/ethnicity of the child (Asian/Pacific Islander, Black/African American/African Canadian, Hispanic, White/Caucasian, Multi-racial by the rater
 - Parent (N=1,400), Teacher (N=1,400) and Self (N=700) ratings were obtained

ITEM FACTOR ANALYSES – PART 1

- For the *first half* of the normative sample for Parent, Teacher and Self ratings' **item scores** (90 items) was analyzed using exploratory factor analysis
- The *scree plots* and the *very simple solution* criterion both indicated that only **one factor**.
- The *ratio of the first and second eigenvalues* was greater than four for all three forms, which indicated a **one factor solution**.

Item Factor Analyses – Part 1

- Item level factor analysis clearly indicted that one factor was the best solution

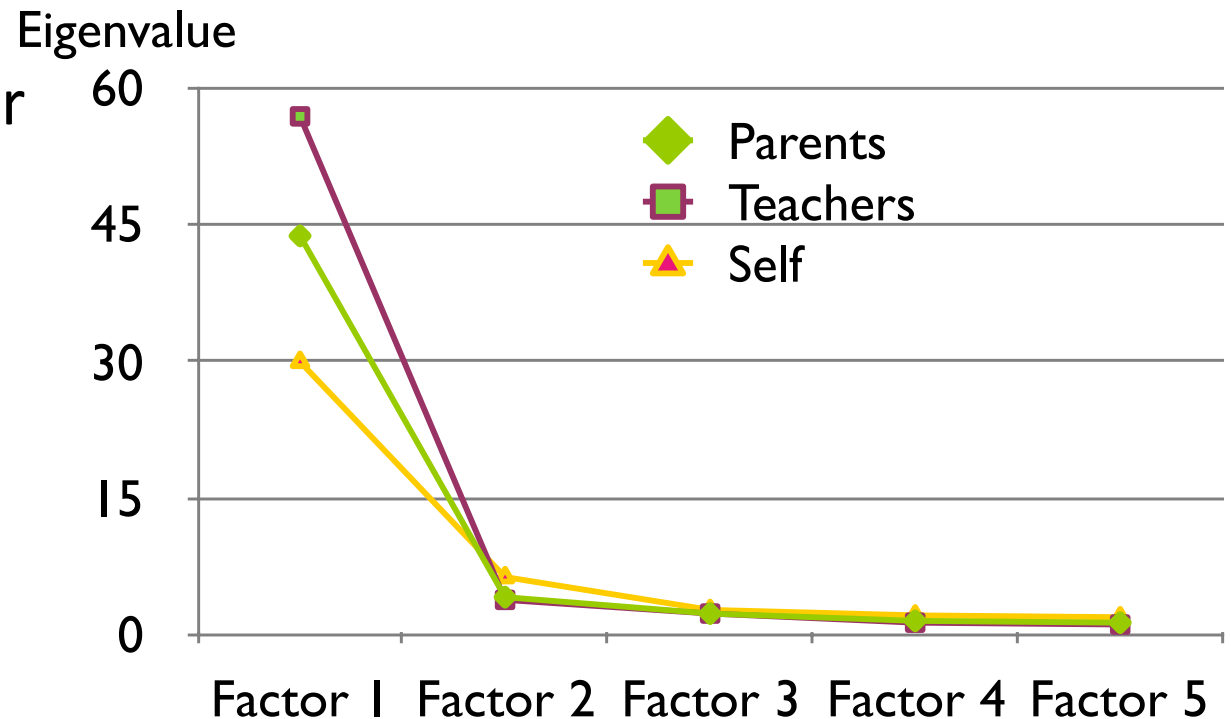


Table 8.2. Eigenvalues from the Inter-Item Correlations

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 – PART 2

- Using the *second half* of the normative sample EFA was conducted using raw scores for the Attention, Emotion Regulation, Flexibility, Inhibitory Control, Initiation, Organization, Planning, Self-Monitoring, and Working Memory scales
- Both the Kaiser rule (eigenvalues > 1) *and* the Eigenvalue Ratio criterion (> 4) unequivocally indicated **one factor**.

Item Factor Analyses – Part 1

- Scale level factor analysis clearly indicated that one factor was the best solution

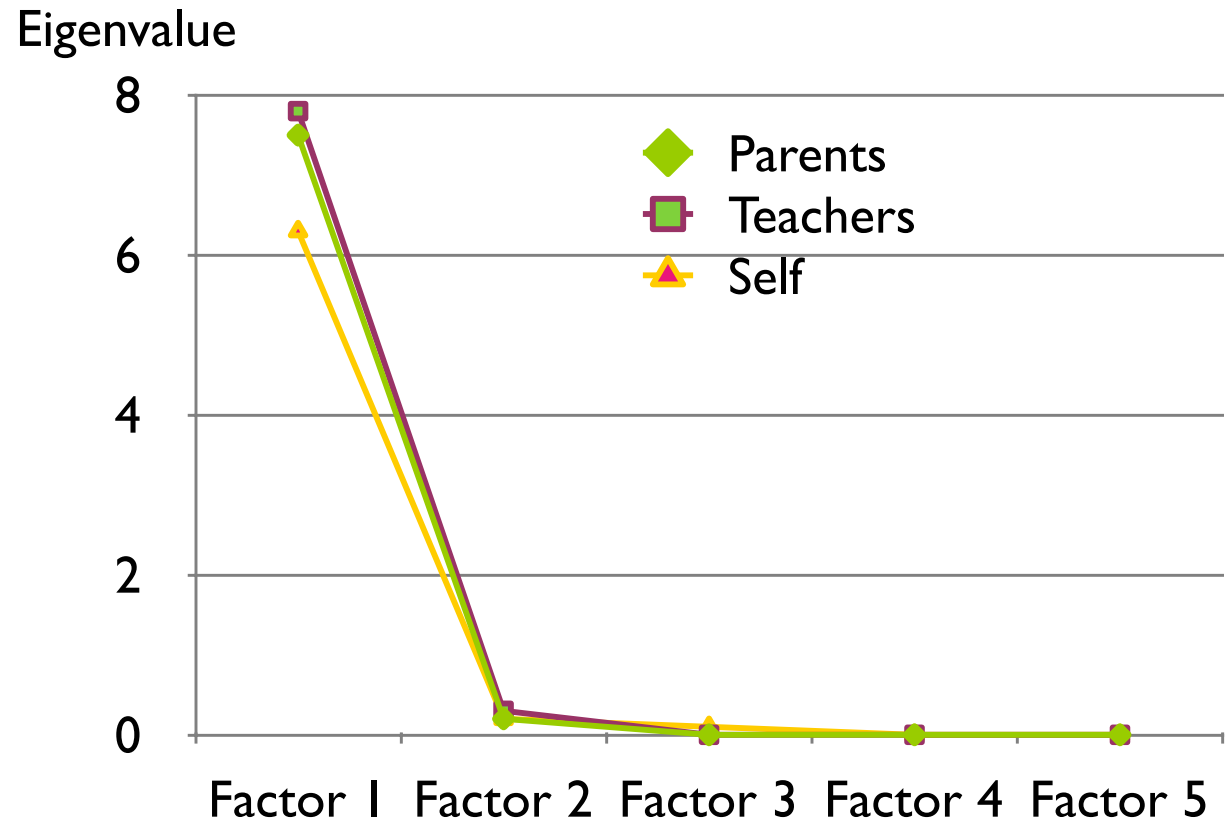


Table 8.4. Eigenvalues of the CEFI Scales Correlations

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: Png.

EXPLORATORY FACTOR ANALYSES

➤ Coefficients of Congruence – all very high

Table 8.6. Consistency of Factor Loadings Across Groups

Grouping Factor	CEFI Form	Coefficient of Congruence	Group 1				Group 2			
			Level	N	M	SD	Level	N	M	SD
Gender	Parent	.999	Male	700	98.1	14.9	Female	699	101.8	15.0
	Teacher	.999	Male	700	96.7	14.4	Female	700	103.2	15.0
	Self-Report	.992	Male	350	98.9	15.4	Female	350	101.0	14.6
Race/ Ethnic Group	Parent	.996	Non-White	615	99.8	15.6	White	784	100.0	14.6
	Teacher	.999	Non-White	609	97.8	15.3	White	791	101.6	14.6
	Self-Report	.995	Non-White	308	100.3	15.0	White	392	99.7	15.1
Age	Parent	.999	5 to 11	699	99.9	15.1	12 to 18	700	100.0	15.1
	Teacher	.999	5 to 11	700	100.0	15.1	12 to 18	700	100.0	15.0
	Self-Report	.995	12 to 15	400	98.7	15.0	16 to 18	300	101.6	15.0
Clinical/ Educational	Parent	.993	Non-Clinical	1,298	101.0	14.7	Clinical/Educational	277	84.6	12.4
	Teacher	.994	Non-Clinical	1,338	100.7	14.9	Clinical/Educational	280	87.1	12.2
	Self-Report	.976	Non-Clinical	632	100.8	14.8	Clinical/Educational	121	91.7	14.3

EXPLORATORY FACTOR ANALYSES

➤ Conclusions

- When using parent (N = 1,400), teacher (N = 1,400), or self-ratings (N = 700) based on behaviors observed and reported for a nationally representative sample (N = 3,500) aged 5 to 18 years Executive Function *not* function^s is the best term to use.

Group Differences: ADHD

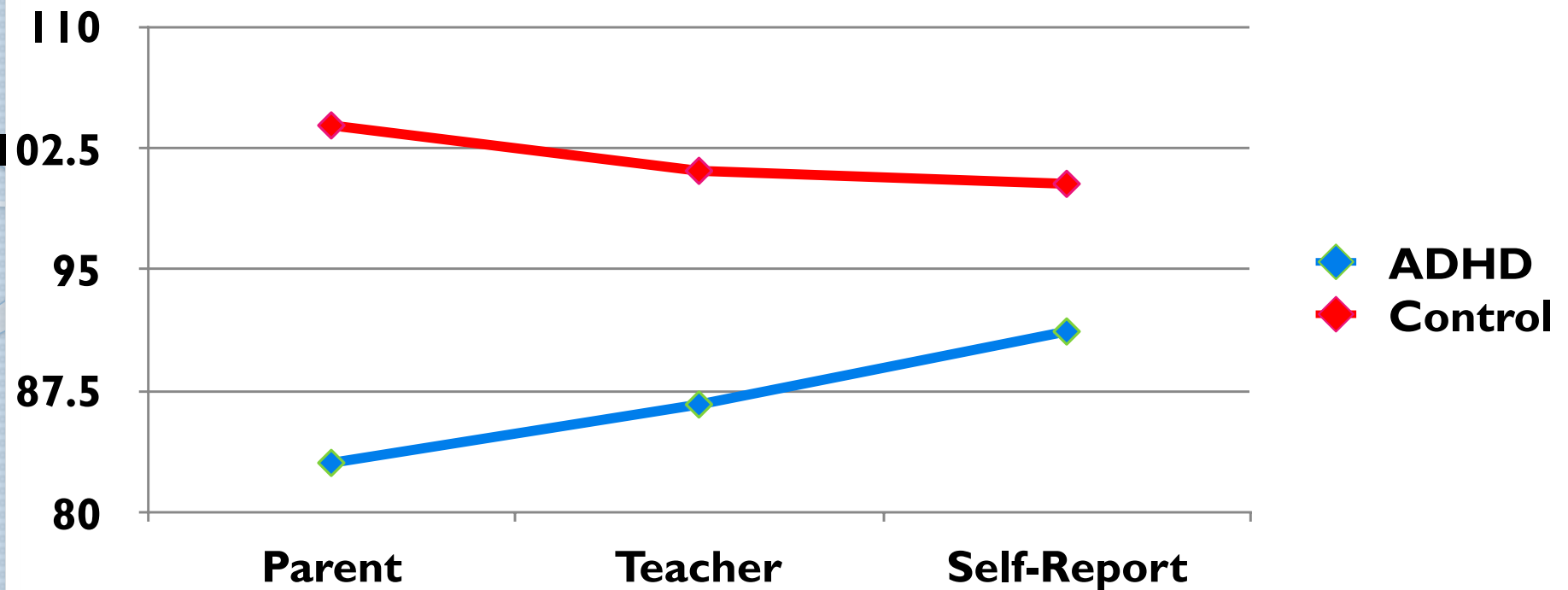


Table 8.19 Differences Between ADHD and Matched General Population Samples: CEI-FI Full Scale

Form		ADHD	Matched Gen. Pop.	d-ratio	F (df)	P
Parent	M	83.1	103.9	-1.59	216.56 (1, 340)	< .001
	SD	13.0	13.0			
	N	171	171			
Teacher	M	86.7	101.1	-1.07	79.93 (1, 278)	< .001
	SD	13.5	13.5			
	N	138	142			
Self-Report	M	91.2	100.3	-0.62	22.21 (1, 232)	< .001
	SD	14.7	14.7			
	N	117	117			

Note: ADHD = Attention Deficit/Hyperactivity Disorder; Gen. Pop. = General Population

Group Differences: ASD

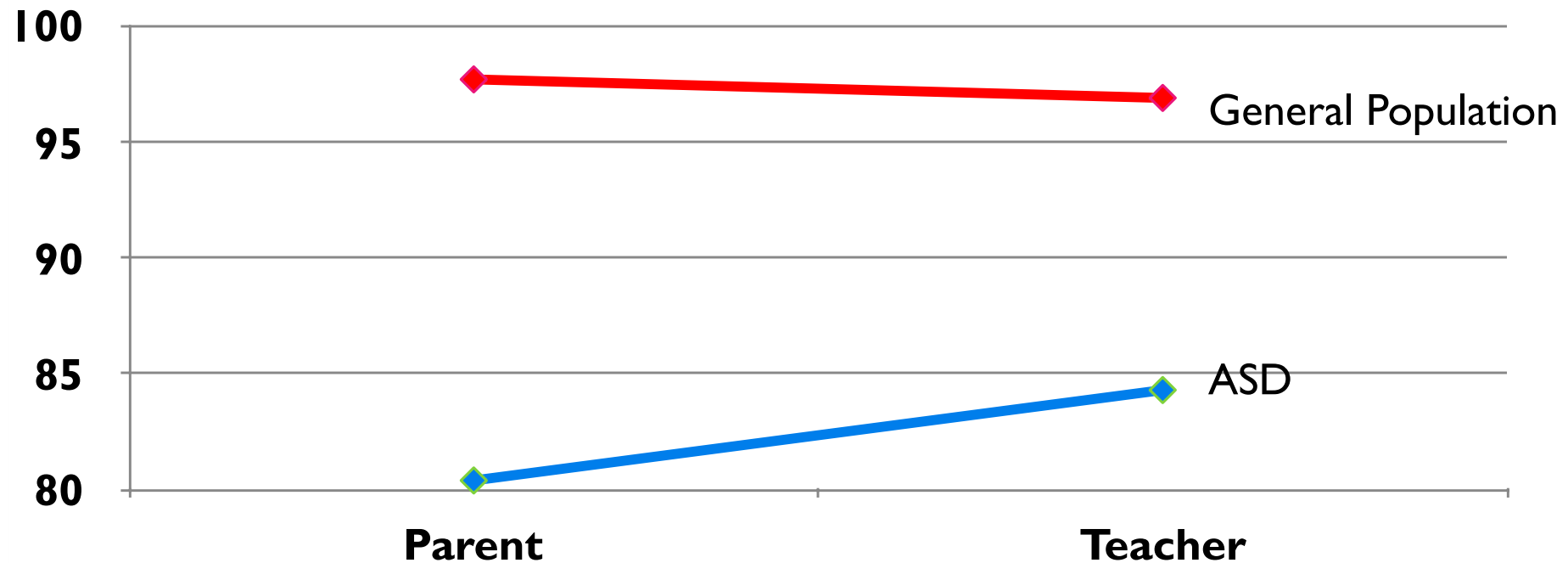


Table 8.20 Differences Between ASD and Matched General Population Samples: CEFI Full Scale

Form		ASD	Matched Gen. Pop.	d-ratio	F (df)	P
Parent	M	80.4	97.7	-1.41	48.96 (1, 96)	< .001
	SD	12.2	12.2			
	N	48	50			
Teacher	M	84.3	96.9	-0.99	23.11 (1, 92)	< .001
	SD	12.7	12.7			
	N	47	47			

Group Differences: Learning Disabilities

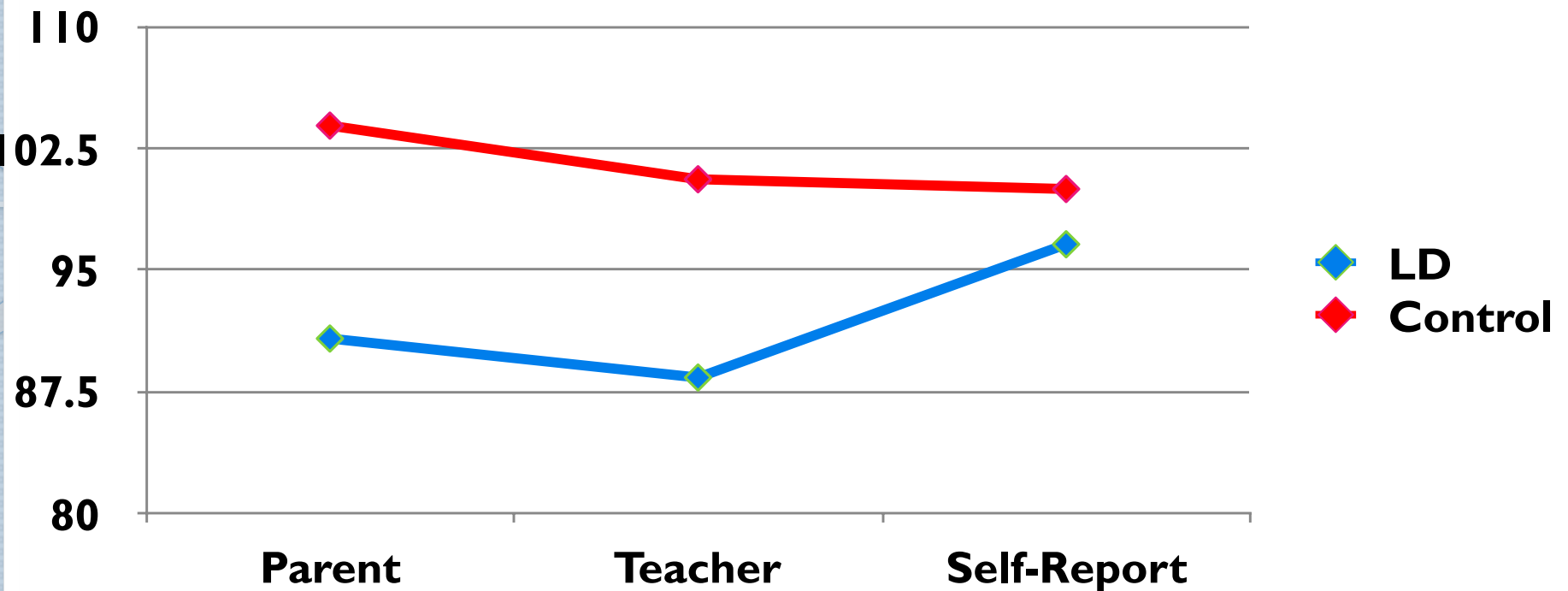


Table 8.22 Differences Between LD and Matched General Population Samples: CEFI Full Scale

Form		LD	Matched Gen. Pop.	d-ratio	F (df)	p
Parent	M	90.8	103.9	-0.92	19.89 (1, 93)	< .001
	SD	14.4	14.4			
	N	47	48			
Teacher	M	88.4	100.6	-0.91	37.29 (1, 178)	< .001
	SD	13.4	13.4			
	N	90	90			
Self-Report	M	96.6	100.0	-0.21	1.45 (1, 126)	0.231
	SD	15.9	15.9			
	N	64	64			

Group Differences: Mood Disorders

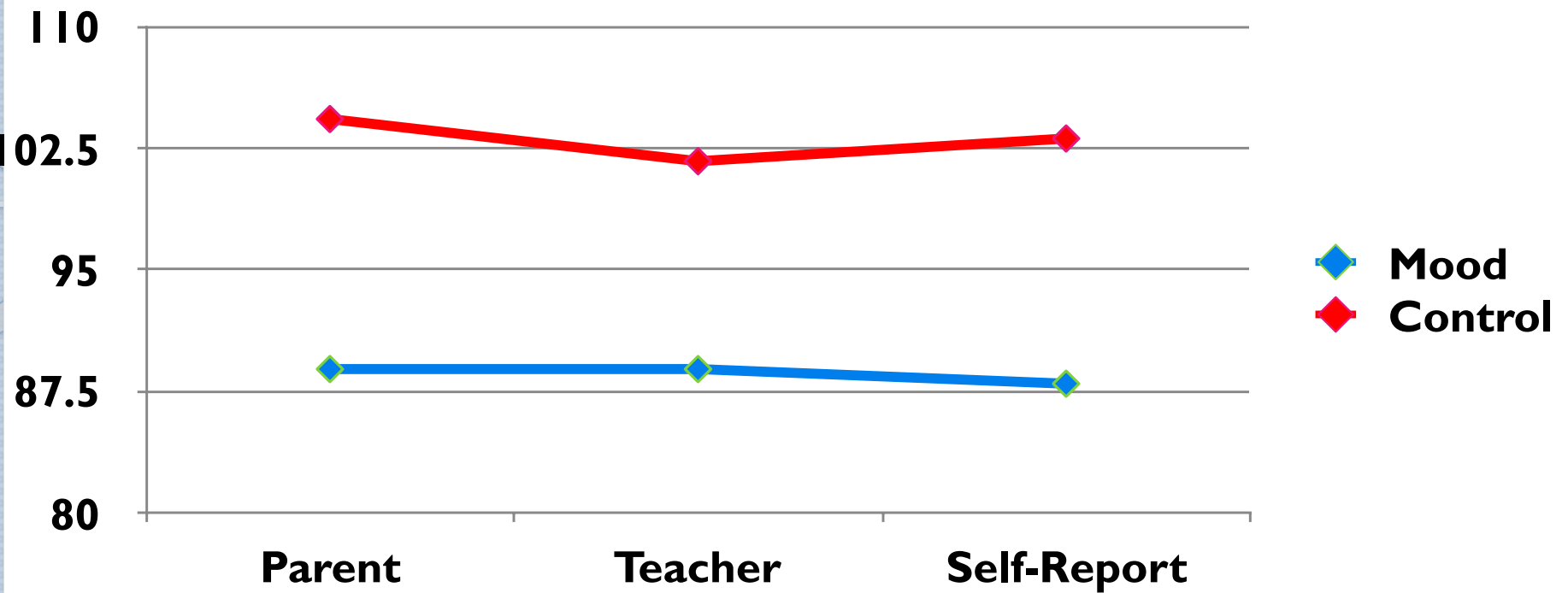


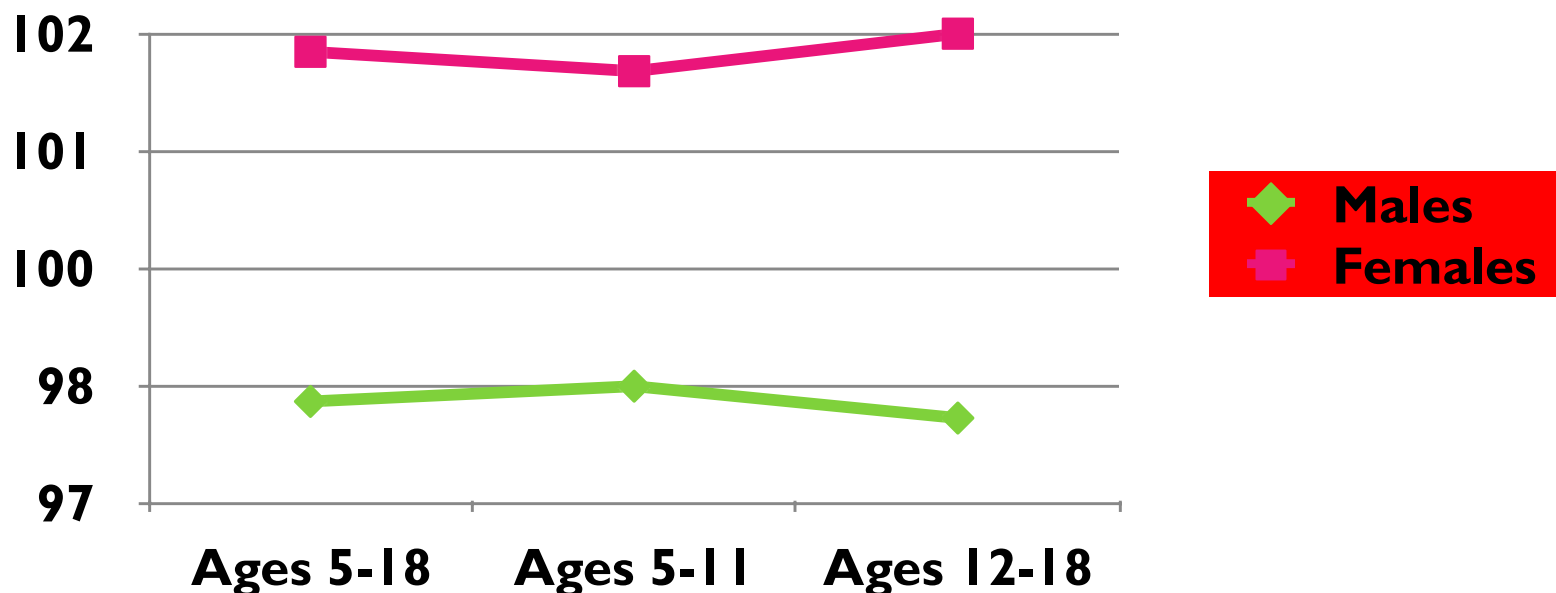
Table 8.21 Differences Between Mood Disorder and Matched General Population Samples: CEFI Full Scale

Form		Mood Disorder	Matched Gen. Pop.	<i>d</i> -ratio	<i>F</i> (<i>df</i>)	<i>p</i>
Parent	<i>M</i>	88.9	104.3	-1.11	22.66 (1, 71)	< .001
	<i>SD</i>	13.8	13.8			
	<i>N</i>	36	37			
Teacher	<i>M</i>	88.9	101.7	-1.01	14.9 (1, 57)	< .001
	<i>SD</i>	12.8	12.8			
	<i>N</i>	29	30			
Self-Report	<i>M</i>	88.0	103.1	-1.09	16.34 (1, 53)	< .001
	<i>SD</i>	13.9	13.9			
	<i>N</i>	27	28			

CEFI Gender Differences: Parent Raters

➤ Girls are Smarter than Boys

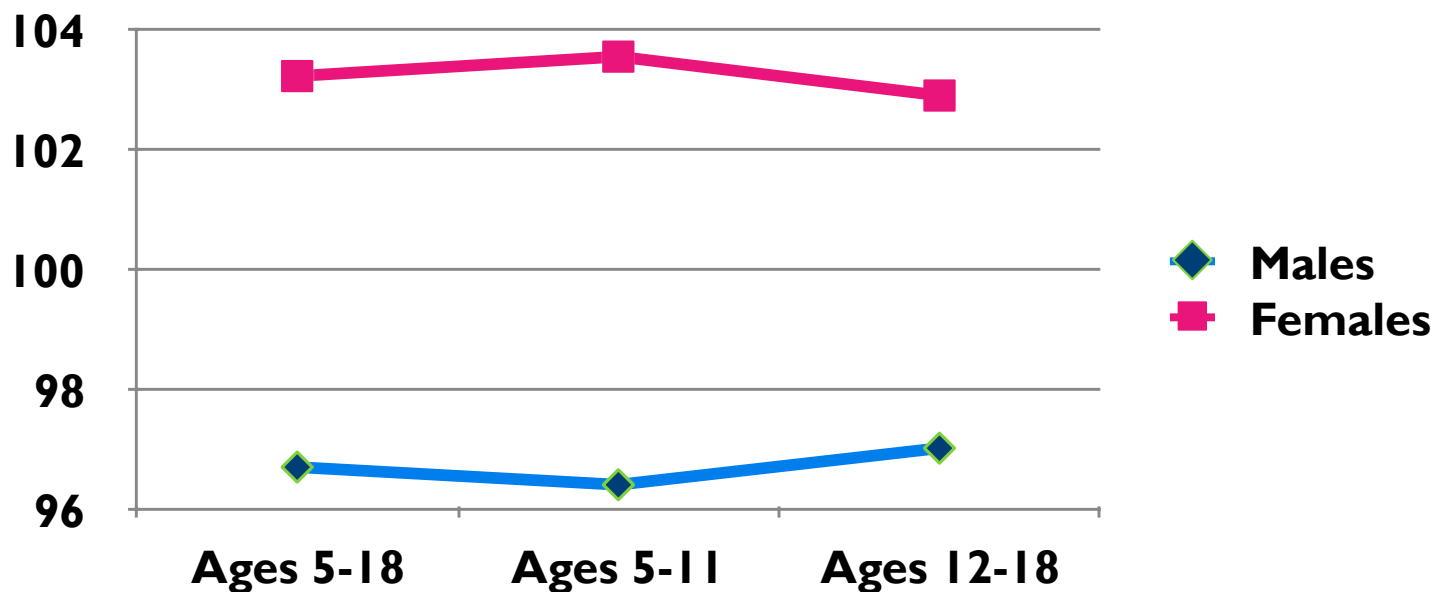
Parents	N	Mn	SD	N	Mn	SD	ES
Ages 5-18	700	98.1	14.9	699	101.8	15.0	-0.25
Ages 5-11	350	98.2	14.3	349	101.6	15.6	-0.22
Ages 12-18	350	97.9	15.4	350	102.0	14.4	-0.28



CEFI Gender Differences: Teacher Raters

➤ Girls are Smarter than Boys

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



Our Conclusion. . .

The concept of Executive Function is best defined as a unitary construct....how you do what you do.



He got in it and he drew up the covers.

CEFI: WISC-IV, CAS, and WJ III

- Data from the Neurology, Learning and Behavior Center in Salt Lake City, UT
- Children given the CEFI, WISC-IV (N = 43), CAS (N = 62), and the WJIII achievement (N = 58) as part of a typical test battery.

CEFI, WISC-IV, CAS, Achievement

Table 8.26. Demographic Characteristics of the CAS, WISC-IV, and WJ III ACH Validity Samples

Demographic		Sample					
		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
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	4.8	8	4.6	9	5.1
Total		62	100.0	43	100.0	58	100.0
Age <i>M</i> (<i>SD</i>)		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.

CEFI, WISC-IV, CAS, Achievement

Table 8.27 CEFI Manual

Other Measure		Corrected <i>r</i>	<i>N</i>	CEFI Full Scale		CAS, WISC-IV, or WJ III ACH	
				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
WISC-IV	Full Scale	.39*	41	93.1	12.0	95.5	18.1
	Working Memory	.30	42	93.0	11.9	92.6	17.5
	Verbal Comprehension	.44**	42	93.0	11.9	96.8	14.7
	Perceptual Reasoning	.27	42	93.0	11.9	101.5	17.5
	Processing Speed	.34*	42	93.0	11.9	90.7	19.4
CAS	Full Scale	.45**	60	91.4	13.2	95.8	17.1
	Attention	.37**	60	91.4	13.2	96.5	15.1
	Planning	.49**	60	91.4	13.2	92.4	14.5
	Simultaneous	.43**	60	91.4	13.2	101.6	17.0
	Successive	.32*	60	91.4	13.2	98.0	14.6
WJ III ACH	Total Achievement	.51**	40	93.4	12.1	96.6	16.8
	Broad Reading	.48**	54	91.9	12.4	98.1	14.2
	Broad Math	.49**	53	92.0	11.9	97.7	16.9
	Broad Written Language	.47**	41	93.5	12.3	94.9	16.8

CEFI & WISC-IV

Table H.25. Correlations Between the CEFI (5–18 Years) Teacher Form and the WISC-IV

CEFI	WISC-IV										CEFI	
	Full Scale		Working Memory		Verbal Comprehension		Perceptual Reasoning		Processing Speed			
	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>	<i>M</i>	<i>SD</i>
Full Scale	.37*	.39*	.28	.30	.35*	.44**	.25	.27	.35*	.34*	93.0	11.9
Attention	.36*	.39*	.36*	.40**	.25	.33*	.28	.32*	.34*	.35*	91.8	11.2
Emotion Regulation	.17	.14	-.07	-.06	.24	.25	.09	.08	.14	.11	97.2	14.7
Flexibility	.52**	.57**	.40**	.46**	.55**	.68**	.40**	.45**	.35*	.37*	93.8	11.0
Inhibitory Control	.22	.21	.09	.08	.18	.20	.13	.13	.32*	.27	97.7	13.5
Initiation	.30	.25	.24	.21	.31*	.31*	.17	.14	.32*	.25	91.2	15.1
Organization	.16	.15	.15	.14	.15	.17	.07	.06	.20	.17	92.2	13.6
Planning	.42**	.46**	.34*	.38*	.42**	.54**	.27	.31*	.37*	.39*	93.6	11.1
Self-Monitoring	.36*	.39*	.29	.33*	.35*	.45**	.28	.31*	.26	.27	92.0	11.3
Working Memory	.41**	.38*	.38*	.36*	.39*	.43**	.33*	.31*	.26	.23	92.5	13.6
WISC-IV <i>M</i>	95.5		92.6		96.8		101.5		90.7			
WISC-IV <i>SD</i>	18.1		17.5		14.7		17.5		19.4			

Note. Pair-wise deletion of missing cases was used ($N = 41-43$); Obt. *r* = Obtained *r*; Cor. *r* = Corrected *r*.

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

CEFI & CAS

Table H.18. Correlations Between the CEFI (5–18 Years) Teacher Form and the CAS

CEFI	CAS										CEFI	
	Full Scale		Attention		Planning		Simultaneous		Successive		<i>M</i>	<i>SD</i>
	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>	Obt. <i>r</i>	Cor. <i>r</i>		
Full Scale	.45**	.45**	.33*	.37**	.43**	.49**	.42**	.43**	.28*	.32*	91.4	13.2
Attention	.40**	.41**	.26*	.30*	.36**	.42**	.38**	.39**	.30*	.35**	90.3	12.8
Emotion Regulation	.26*	.24	.24	.24	.21	.22	.26*	.23	.12	.13	96.9	14.7
Flexibility	.52**	.53**	.35**	.40**	.47**	.54**	.50**	.51**	.37**	.42**	92.2	13.0
Inhibitory Control	.27*	.25*	.17	.18	.26*	.29*	.24	.22	.19	.21	96.0	13.9
Initiation	.40**	.33**	.33**	.30*	.38**	.37**	.38**	.31*	.21	.20	89.0	16.3
Organization	.29*	.27*	.19	.20	.33**	.36**	.23	.21	.21	.23	90.5	14.3
Planning	.47**	.49**	.31*	.37**	.46**	.54**	.44**	.46**	.31*	.38**	92.5	12.4
Self-Monitoring	.48**	.50**	.37**	.43**	.42**	.50**	.46**	.49**	.29*	.35**	91.2	12.4
Working Memory	.48**	.45**	.36**	.38**	.42**	.46**	.47**	.45**	.27*	.30*	91.0	14.0
CAS <i>M</i>	95.8		96.5		92.4		101.6		98.0			
CAS <i>SD</i>	17.1		15.1		14.5		17.0		14.6			

Note. Pair-wise deletion of missing cases was used ($N = 60\text{--}62$); Obt. *r* = Obtained *r*; Cor. *r* = Corrected *r*.
 * $p < .05$; ** $p < .01$.

CEFI & WJ-III *Total* Achievement

**Table H.26. Correlations Between the CEFI (5–18 Years)
III ACH Total Achievement Cluster**

	WJ III ACH Total Achievement		CEFI	
	Obt. <i>r</i>	Cor. <i>r</i>	<i>M</i>	<i>SD</i>
Full Scale	.47**	.51**	93.4	12.1
Attention	.51**	.59**	92.5	10.9
Emotion Regulation	.22	.18	96.5	16.1
Flexibility	.56**	.61**	94.0	11.9
Inhibitory Control	.24	.23	97.8	14.0
Initiation	.37*	.32*	91.5	15.6
Organization	.32*	.32*	92.5	13.5
Planning	.51**	.58**	94.1	11.3
Self-Monitoring	.46**	.53**	92.7	11.1
Working Memory	.57**	.57**	93.2	13.1
WJ III ACH <i>M</i>	96.6			
WJ III ACH <i>SD</i>	16.8			

Note. Pair-wise deletion of missing cases was used ($N = 40-41$); Obt. $r =$

CEFI & WJ-III *Reading*

**Table H.27. Correlations Between the CEFI (5–18 Years)
WJ ACH Broad Reading Cluster**

	WJ III ACH Broad Reading		CEFI	
	Obt. <i>r</i>	Cor. <i>r</i>	<i>M</i>	<i>SD</i>
Full Scale	.39**	.48**	91.9	12.4
Attention	.41**	.52**	90.9	11.7
Emotion Regulation	.25	.27*	96.9	14.6
Flexibility	.43**	.50**	92.5	12.8
Inhibitory Control	.26	.32*	96.6	13.0
Initiation	.26	.26	89.1	16.1
Organization	.27*	.31*	91.0	13.9
Planning	.43**	.54**	92.8	11.5
Self-Monitoring	.40**	.51**	91.4	11.7
Working Memory	.43**	.48**	91.5	13.7
WJ III ACH <i>M</i>	98.1			
WJ III ACH <i>SD</i>	14.2			

Note. Pair-wise deletion of missing cases was used ($N = 54-55$); Obt. $r =$

CEFI & WJ-III Broad *Math*

**Table H.28. Correlations Between the CEFI (5–18 Years)
III ACH Broad Math Cluster**

	WJ III ACH Broad Math		CEFI	
	Obt. <i>r</i>	Cor. <i>r</i>	<i>M</i>	<i>SD</i>
Full Scale	.44**	.49**	92.0	11.9
Attention	.40**	.46**	90.7	11.4
Emotion Regulation	.16	.15	96.7	14.8
Flexibility	.52**	.55**	93.0	12.1
Inhibitory Control	.15	.15	96.6	13.0
Initiation	.43**	.38**	89.9	15.1
Organization	.33*	.33*	90.8	13.4
Planning	.49**	.57**	93.1	10.8
Self-Monitoring	.46**	.51**	91.6	11.4
Working Memory	.59**	.60**	91.6	13.1
WJ III ACH <i>M</i>	97.7			
WJ III ACH <i>SD</i>	16.9			

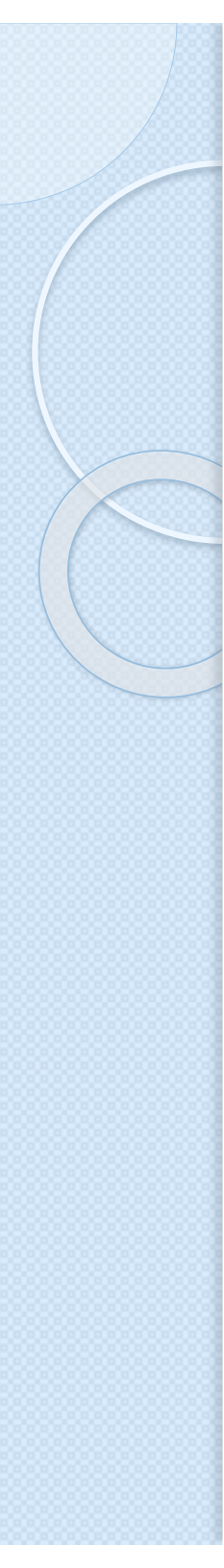
Note. Pair-wise deletion of missing cases was used ($N = 53-54$); Obt. $r =$

CEFI & WJ-III Written Language

**Table H.29. Correlations Between the CEFI (5–18 Years)
III ACH Broad Written Language Cluster**

	WJ III ACH Broad Written Language		CEFI	
	Obt. <i>r</i>	Cor. <i>r</i>	<i>M</i>	<i>SD</i>
Full Scale	.44**	.47**	93.5	12.3
Attention	.47**	.55**	92.5	10.9
Emotion Regulation	.20	.17	97.4	15.9
Flexibility	.50**	.54**	94.2	12.2
Inhibitory Control	.27	.26	98.1	13.8
Initiation	.33*	.28	91.6	15.6
Organization	.34*	.33*	92.0	13.8
Planning	.44**	.50**	94.4	11.5
Self-Monitoring	.44**	.49**	92.5	11.5
Working Memory	.47**	.47**	93.4	13.5
WJ III ACH <i>M</i>	94.9			
WJ III ACH <i>SD</i>	16.8			

Note. Pair-wise deletion of missing cases was used ($N = 41-42$); Obt. $r =$



Latent class analysis of frontal lobe tasks strongly suggests a general EF that reflects the efficiency and perhaps automaticity of the executive management system.

Miyake, Friedman, et al
Cognitive Psychology



Conclusive evidence concerning the developmental trajectories of the different EF components on neuropsychological tests has yet to be established.

Huizinga, Dolan et al, 2006
Neuropsychologica



An examination of factor analytic studies examining EF in children finds only a single factor- planning – common to all studies.

Anderson, 2002
Clin. Neuropsych.



**EF skills may develop in different tracks
but merge in function as children develop.**

Wasserman and Wasserman, 2013
Applied Neuropsych. Child

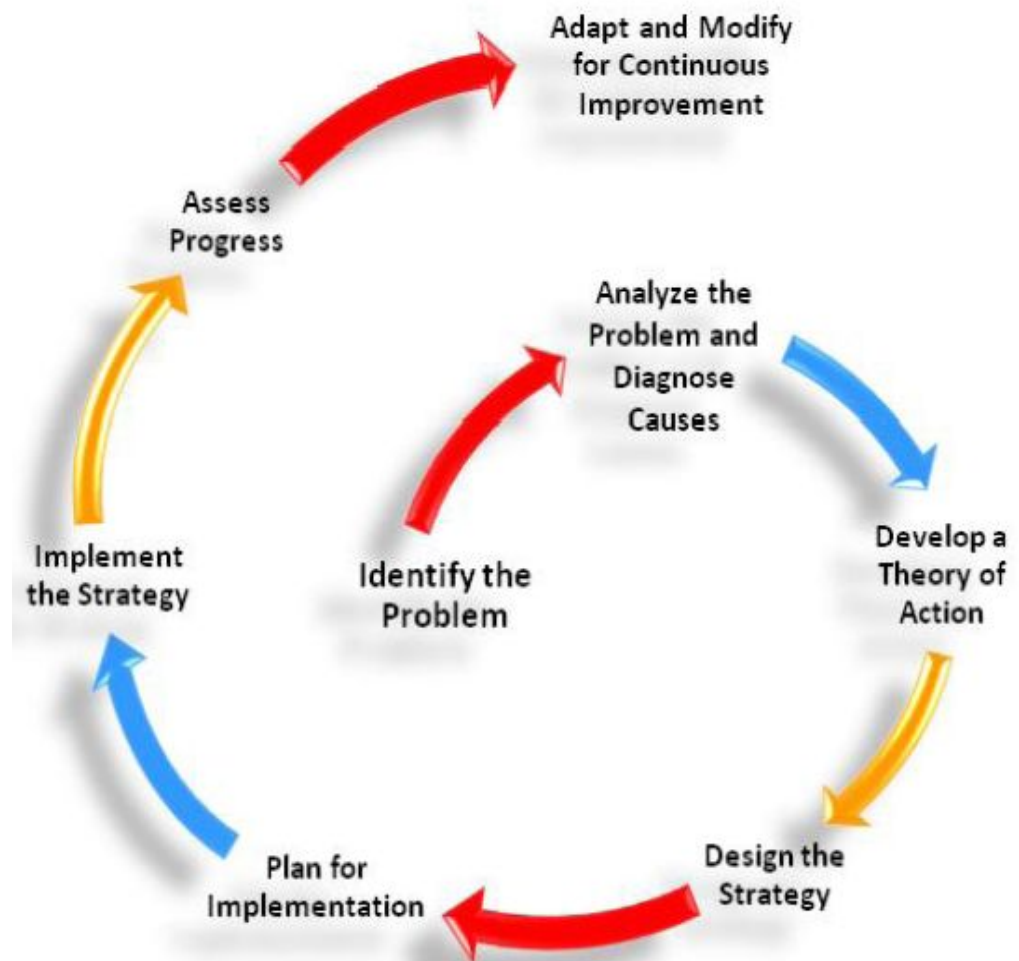


EF appears to be a unitary, more domain specific process in children

Wiebe, Scheffield, et al, 2011
J. Of Exp. Child Psych.

Naglieri & Goldstein, 2012


Executive Function is how efficiently you do what you decide to do.



EF as a Mediator of Ability and Knowledge

- Ability: The skills we use to acquire and manipulate knowledge to solve problems. Also referred to as intelligence.
- Knowledge: Everything we learn in life. Also referred to as achievement.
- Executive Function: How efficiently or skillfully you do what you decide to do.

Presentation Outline

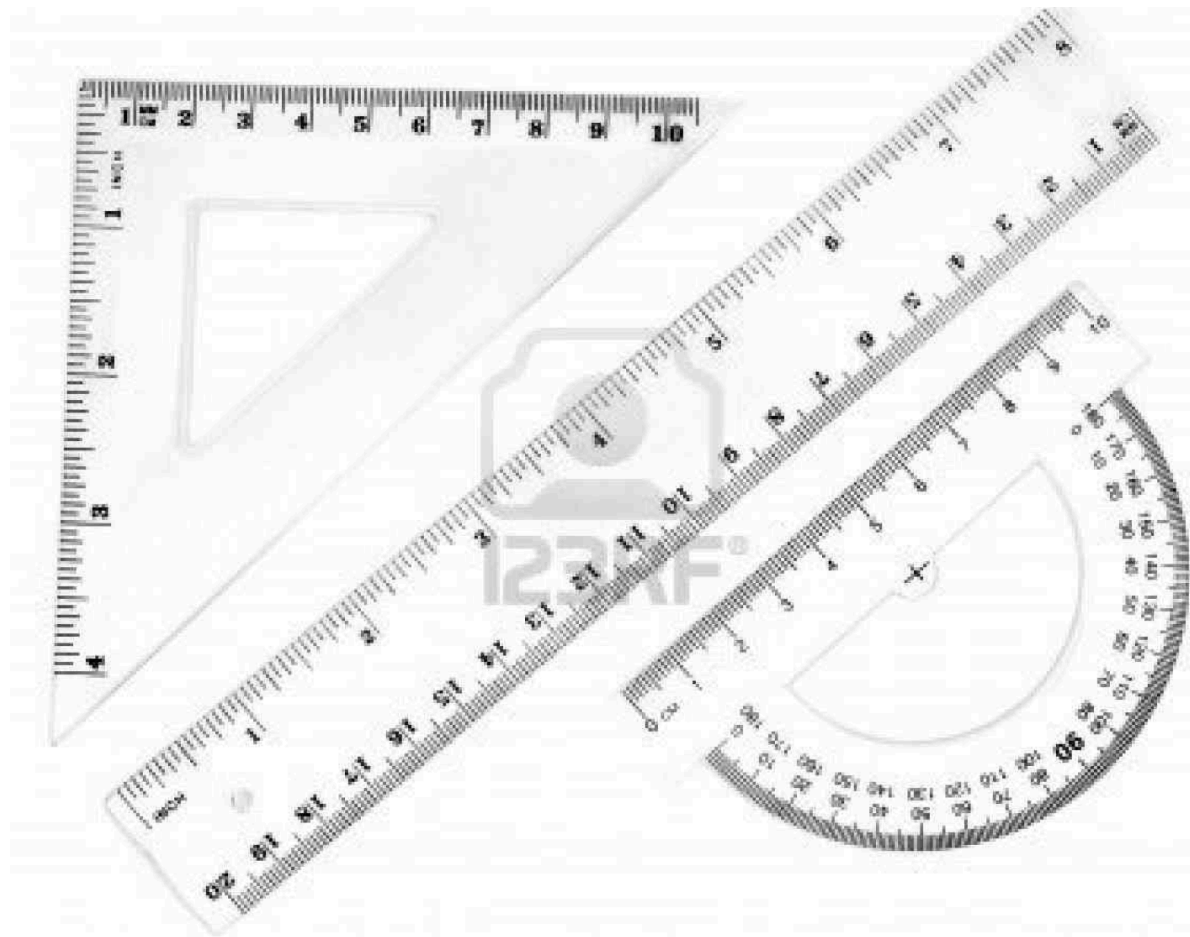
- Historical Perspective
- Definitions of Executive Function
- Executive Function or Functions?
- ➤ Rating Scales for EF
- Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
- EF and instruction

What comprises the best means of assessment of EF?



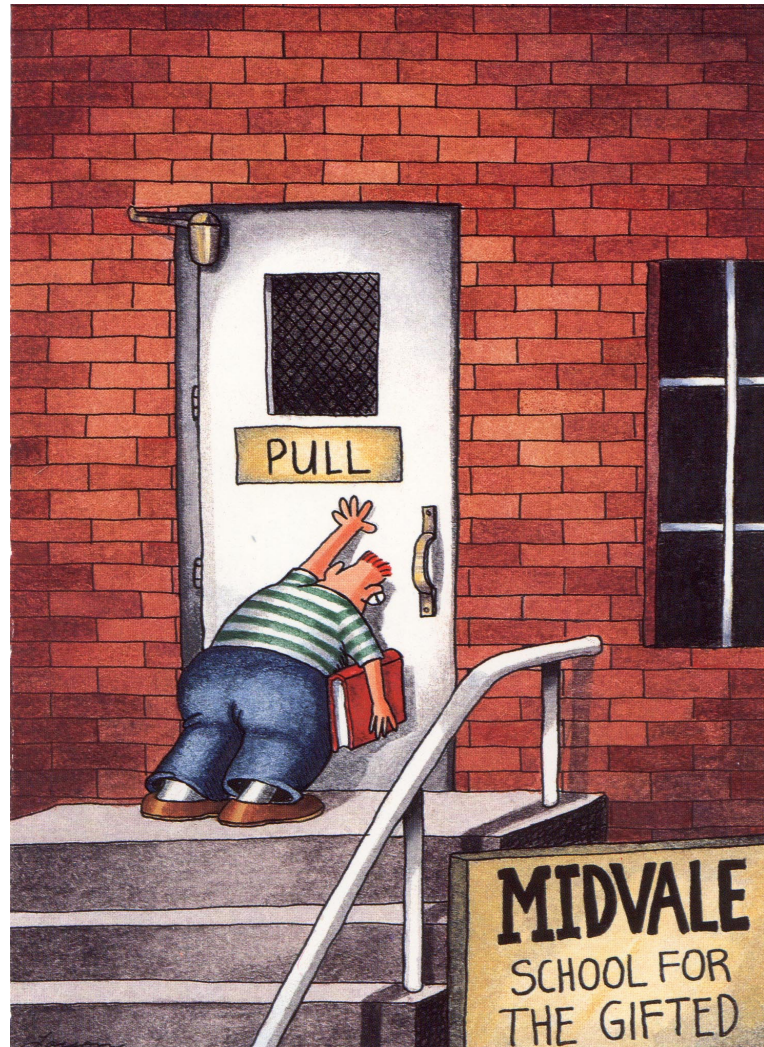
How to Measure Executive Function(s)

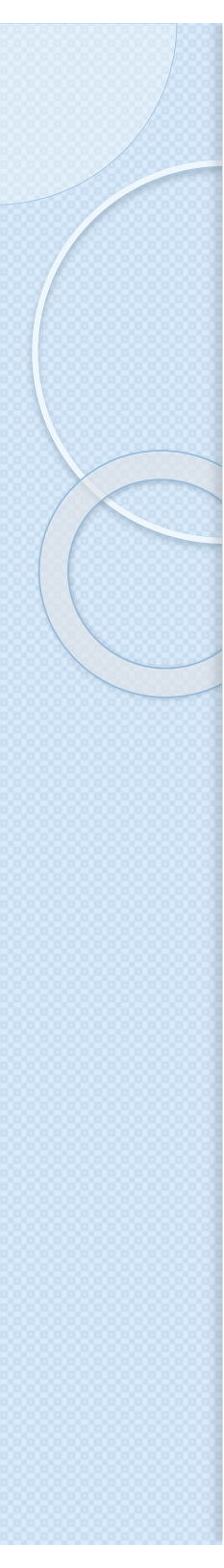
A recent review by Weyandt et al (2012) found 168 measures used to evaluate EF.



Executive Function Test	Number of Times Used	Sensitivity to Group Differences	Percentage of Significant Differences Between Clinical and Control Groups	Percentage of Significant Group Differences Between Two Clinical Groups
<u>Stroop</u> Color and Word Test and variants	41	28/73 = 38%	22/37 = 59%	6/36 = 17%
Wisconsin Card Sorting Test (including computerized and non-computerized versions)	34	75/226 = 33%	60/139 = 43%	14/88 = 16%
Trail Making Test and variants	26	43/121 = 36%	35/79 = 44%	8/42 = 19%
Continuous Performance Test and variants	19	31/72 = 43%	26/52 = 50%	5/15 = 33%
BRIEF	16	177/266 = 67%	88/104 = 85%	24/64 = 38%
Go/No-Go Test	14	37/81 = 46%	23/41 = 56%	7/17 = 41%
Tower of London test and Variants	13	3/75 = 4%	1/39 = 3%	2/39 = 5%
<u>Rey-Osterith</u> Complex Figure Test (ROCF) or Rey Complex Figure Test (RCFT)	12	31/93 = 33%	24/56 = 43%	7/37 = 19%

How can we reliably and validly evaluate EF?





In general single EF tests share at most 10% of the variance with EF ratings and observations of everyday behavior.



**Batteries of combined EF tests fare a bit better sharing up to
20% of the variance with observation and reported behavior**



The more tests in an EF battery the more factors identified in both exploratory and confirmatory studies.

Importance of a National Norm

- The diagnostic conclusions we reach are greatly influenced by the tools we use.
- The composition of the reference group can make a substantial difference in the conclusions reached.
- Norms that represent a typical population are needed for all assessment tools.
- We have an obligation to use the highest quality tests.

Importance of a National Norm

- What is one problem with scores based on a sample that is not representative of the U.S. populations?
 - You don't know how much the score you get is influenced by demographic variables
 - Let's look at some data ...
- We created norms from our CEFI data for groups of children based on PEL levels to see just how much influence this variable could have on a standard score (Mean = 100, SD = 15).

Importance of a National Norm

Calibration of Standard Scores (Mn = 100; SD = 15) Across Parental Educational Levels for CEFI Parent Ratings.

Raw Score	Standard Scores				
	<HS	HS Grad	Some Coll	Coll Grad	National
230	96	91	88	85	90
235	97	92	89	87	91
240	98	93	90	88	92
245	99	95	92	89	93
250	100	96	93	90	94
255	101	97	94	92	95
260	102	98	95	93	97
265	103	99	96	94	98
270	104	100	98	95	99
275	105	101	99	96	100
280	106	102	100	98	101
285	107	103	101	99	102
290	108	105	102	100	103
295	109	106	103	101	105
300	110	107	105	103	106
305	111	108	106	104	107
310	112	109	107	105	108
315	113	110	108	106	109

Importance of a National Norm

- Only tests that yield standard scores based on a ***representative*** normal sample should be used in clinical practice.
- A comparison of EF symptoms to a normative group is essential.
- Comparisons to children who do not represent the US population can be misleading.
- The use of raw scores should be avoided in all tests (especially achievement tests).

Importance of a National Norm

- A normative sample that is representative of the US population is absolutely required.
- The sample should be stratified carefully and that sample should be thoroughly described in the test Manual.
- Remember the key question is not how similar someone is to an impaired group but how dissimilar they are to the norm.

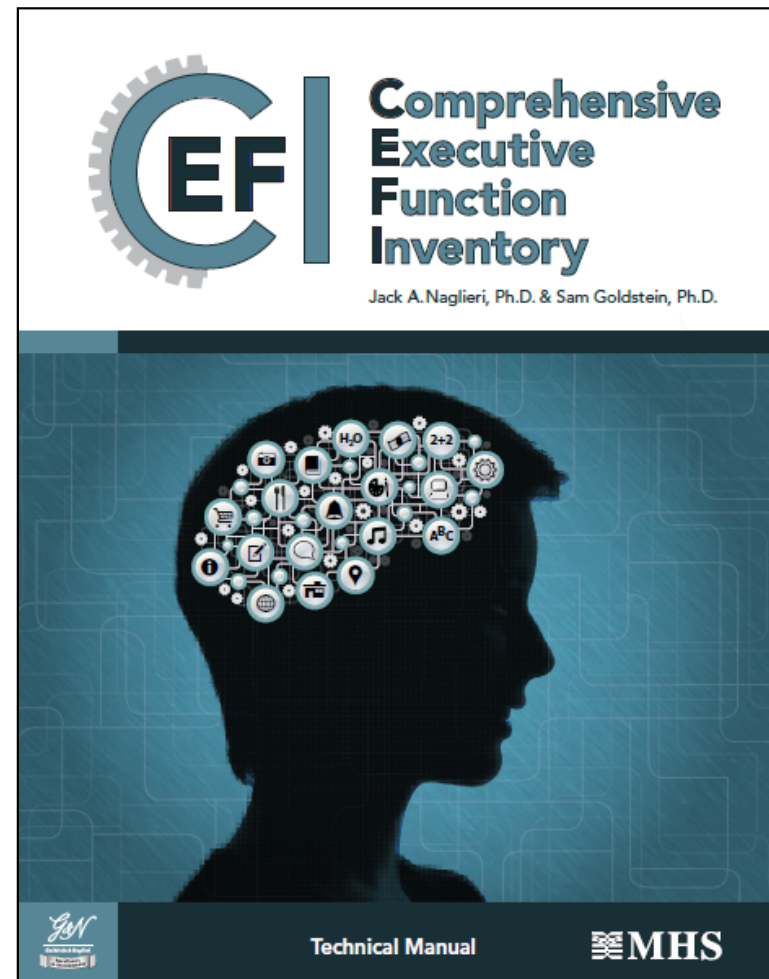
Presentation Outline

- Historical Perspective
- Definitions of Executive Function
- Executive Function or Functions?
- Rating Scales for EF
- Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
- EF and instruction

Comprehensive Executive Function Inventory (CEFI)

Jack A. Naglieri
Sam Goldstein


A rating scale designed to measure behaviors association with Executive Function for ages 5-18 years rated by a parent, teacher, or the child/youth.




CEFI

- The Comprehensive Executive Function Inventory (CEFI) is a rating scale designed to measure behaviors that are associated with Executive Function (EF) for children and youth aged 5 through 18 years.
- The rating scale can be completed by a parent, teacher, or the child/youth.
- The CEFI is composed of items evaluating behaviors associated with to attention, emotion regulation, flexibility, inhibitory control, initiation, organization, planning, self-monitoring, and working memory.
- The rating scale has been developed to demonstrate the highest psychometric qualities.

CEFI (Naglieri & Goldstein, 2012)



**Comprehensive
Executive
Function
Inventory**



Goldstein & Naglieri
Publishers
of the CEF

(5–18 Years)

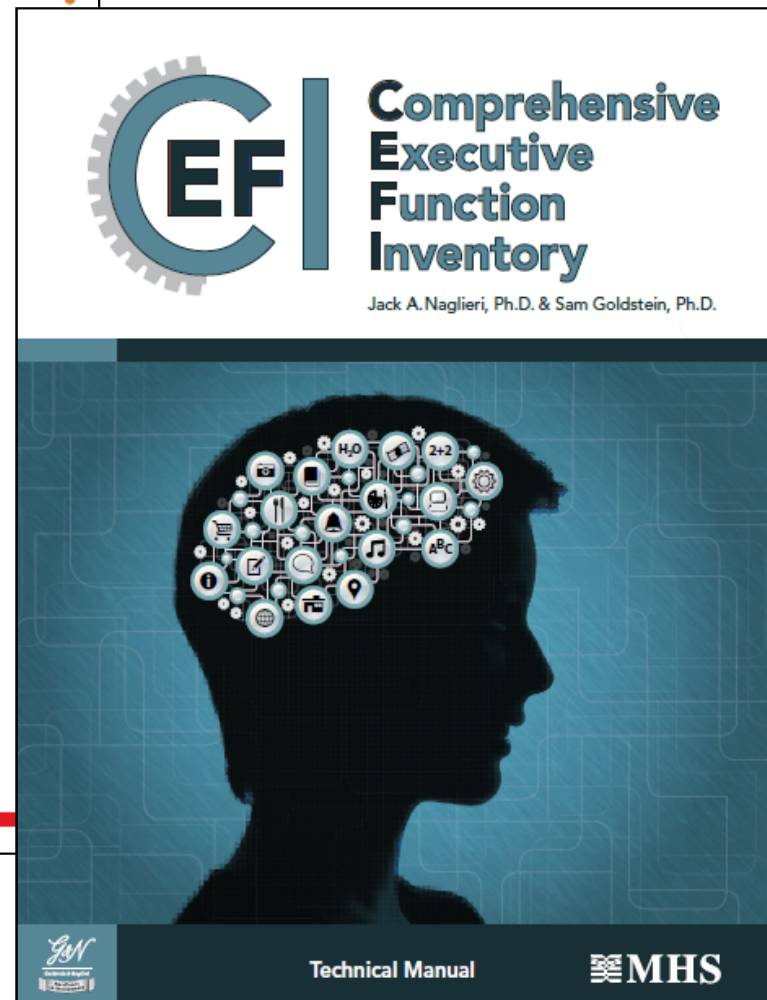
TEACHER FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Child's Name/ID: _____	Today's Date: _____ Year / Month / Day
Gender: M F (Circle One)	Birth Date: _____ Year / Month / Day
Grade: _____	Age: _____ Years / Months / Days
Teacher's Name/ID: _____	Class(es) Taught: _____
School: _____	Time Known Child: _____ Years / Months
Examiner: _____	

Copyright © 2013 Multi-Health Systems Inc. All rights reserved.
In the U.S.A., P.O. Box 950, North Tonawanda, NY 14120-0950, 1-800-456-3003.
In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M5, 1-800-268-6011.
International, +1-416-492-2027. Fax, +1-416-492-3343 or 1-800-540-4086.

THIS FORM CONTAINS A COPY PROTECTION FEATURE TO PREVENT UNAUTHORIZED REPRODUCTION. TO OBTAIN FORMS GO TO CEFI.COM, legal@cefi.com



Three CEFI Rating Forms



(5–18 Years) TEACHER FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Child's Name/ID: _____	Today's Date: ____/____/____ Year Month Day
Gender: M F (Circle One)	Birth Date: ____/____/____ Year Month Day
Grade: _____	Age: ____ Years ____ Months ____ Days
Teacher's Name/ID: _____	Class(es) Taught: _____
School: _____	Time Known Child: ____/____ Years Months
Examiner: _____	



Copyright © 2013 Multi-Health Systems Inc. All rights reserved.
In the U.S.A., P.O. Box 950, North Tonawanda, NY 14124
In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6
International, +1-416-492-2627. Fax, +1-416-492-3343 or



(5–18 Years) PARENT FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Child's Name/ID: _____	Today's Date: ____/____/____ Year Month Day
Gender: M F (Circle One)	Birth Date: ____/____/____ Year Month Day
Grade: _____	Age: ____ Years ____ Months ____ Days
Parent's Name/ID: _____	School: _____
Relationship to Child: _____	Examiner: _____



Copyright © 2013 Multi-Health Systems Inc. All rights reserved.
In the U.S.A., P.O. Box 950, North Tonawanda, NY 14124
In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6
International, +1-416-492-2627. Fax, +1-416-492-3343 or



(12–18 Years) SELF-REPORT FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Name/ID: _____	Today's Date: ____/____/____ Year Month Day
Gender: M F (Circle One)	Birth Date: ____/____/____ Year Month Day
Grade: _____	Age: ____ Years ____ Months ____ Days
School: _____	Examiner: _____



Copyright © 2013 Multi-Health Systems Inc. All rights reserved.
In the U.S.A., P.O. Box 950, North Tonawanda, NY 14124-0950, 1-800-436-3003.
In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, 1-800-268-6011.
International, +1-416-492-2627. Fax, +1-416-492-3343 or 1-888-540-4488.

THIS FORM CONTAINS A COPY PROTECTION FEATURE TO PREVENT UNAUTHORIZED REPRODUCTION. TO OBTAIN PERMISSION TO COPY, EMAIL: legal@aphi.com

CEFI Forms

- Each 100-item form yields scales set at a mean of 100 and SD of 15

**English
Parent Form
(5-18 years)**

**English
Teacher
Form (5-18
years)**

**English Self-
Report Form
(12-18 years)**

**Spanish
Parent Form
(5-18 years)**

**Spanish
Teacher
Form (5-18
years)**

**Spanish Self-
Report Form
(12-18 years)**

CEFI Scales

Each form
yields a **Full
Scale** score
and 9
separate
content scales
which contain
items as
follows...

Consistency Index
Negative Impression Scale
Positive Impression Scale

Full Scale

CEFI Scales

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

CEFI Items by Scale

Table C.4. Attention (12 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
3.	finish a boring task?	finish a boring task?
11.	work well in a noisy environment?	work well in a noisy environment?
21.	work well for a long time?	work well for a long time?
25.	concentrate while reading?	concentrate while reading?
36.	stay on topic when talking?	stay on topic when talking?

Table C.5. Emotion Regulation (9 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
10.	control emotions when under stress?	control emotions when under stress?
12.	stay calm when handling small problems?	stay calm when handling small problems?
42.	find it hard to control his/her emotions? (R)	find it hard to control your emotions? (R)
47.	get upset when plans were changed? (R)	get upset when plans were changed? (R)
64.	wait patiently?	wait patiently?

CEFI Items by Scale

Table C.6. Flexibility (7 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
7.	come up with a new way to reach a goal?	come up with a new way to reach a goal?
41.	come up with different ways to solve problems?	come up with different ways to solve problems?
45.	have many ideas about how to do things?	have many ideas about how to do things?

Table C.7. Inhibitory Control (10 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
1.	think before acting?	think before acting?
19.	find it hard to control his/her actions? (R)	find it hard to control your actions? (R)
32.	think of the consequences before acting?	think of the consequences before acting?
38.	maintain self-control?	maintain self-control?
49.	have trouble waiting to get what he/she wanted? (R)	have trouble waiting to get what you wanted? (R)

CEFI Items by Scale

Table C.8. Initiation (10 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
16.	start something without being asked?	start something without being asked?
30.	start conversations?	start conversations?
39.	take on new projects?	take on new projects?
40.	need others to tell him/her to get started on things? (R)	need others to tell you to get started on things? (R)
55.	take initiative?	take initiative?
58.	appear motivated?	appear motivated?

Table C.9. Organization (10 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
5.	complete one task before starting a new one?	complete one task before starting a new one?
13.	organize his/her thoughts well?	organize your thoughts well?
18.	appear disorganized? (R)	appear disorganized? (R)
27.	complete homework or tasks on time?	complete homework or tasks on time?
34.	work neatly?	work neatly?
52.	keep track of belongings?	keep track of belongings?

CEFI Items by Scale

Table C.10. Planning (11 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
9.	prepare for school or work?	prepare for school or work?
15.	solve problems creatively?	solve problems creatively?
22.	do things in the right order?	do things in the right order?
28.	plan for future events?	plan for future events?

Table C.11. Self-Monitoring (10 items)

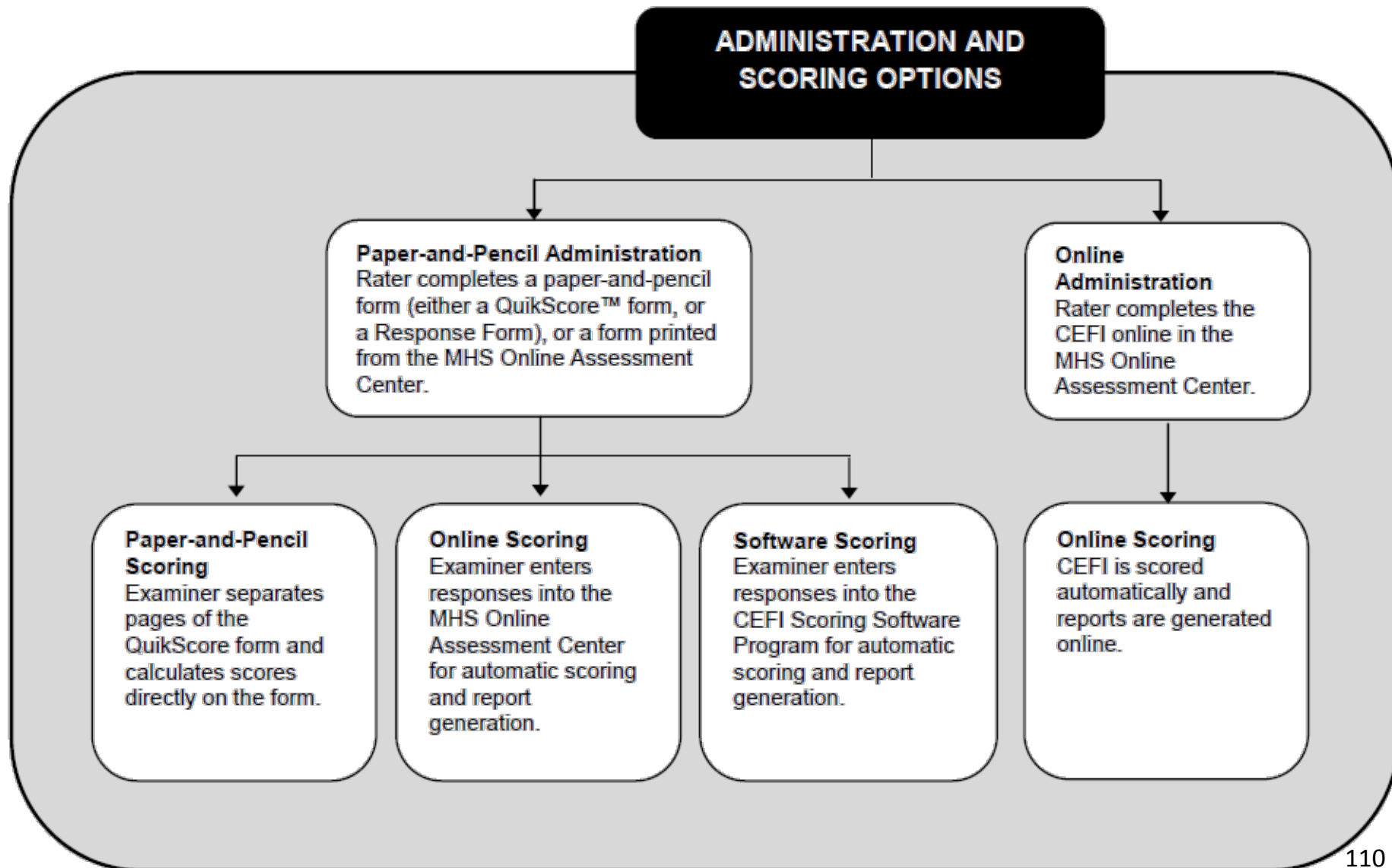
Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
6.	ask for help when needed?	ask for help when needed?
14.	fix his/her mistakes?	fix your mistakes?
17.	change a plan that was not working?	change a plan that was not working?
29.	learn from past mistakes?	learn from past mistakes?

Table C.12. Working Memory (11 items)

Item #	Parent/Teacher Item <i>During the past 4 weeks, how often did the child...</i>	Self-Report Item <i>During the past 4 weeks, how often did you...</i>
4.	forget instructions? (R)	forget instructions? (R)
8.	remember how to do something?	remember how to do something?
23.	forget instructions with many steps? (R)	forget instructions with many steps? (R)
26.	remember many things at one time?	remember many things at one time?

CEFI Administration & Scoring

Figure 3.1. Overview of Administration and Scoring Options



CEFI Rating Form



(5–18 Years)

PARENT FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Child's Name/ID: <u>Meagan</u>	Today's Date: <u>2012</u> / <u>01</u> / <u>05</u> <small>Year Month Day</small>
Gender: M <input checked="" type="radio"/> (Circle ONE)	Birth Date: <u>1996</u> / <u>12</u> / <u>21</u> <small>Year Month Day</small>
Grade: <u>9</u>	Age: <u>16</u> / <u>11</u> / <u>16</u> <small>Years Months Days</small>
Parent's Name/ID: <u>Darlene</u>	School: _____
Relationship to Child: <u>Mother</u>	Examiner: <u>DH</u>



Copyright © 2013 Multi-Health Systems Inc. All rights reserved.
In the U.S.A., P.O. Box 950, North Tonawanda, NY 14120-0950, 1-800-456-3003.
In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, 1-800-268-6011.
International, +1-416-492-2627, Fax, +1-416-492-3343 or 1-888-540-4484.

CEFI Rating Form

CEFI™ (5-18 Years) PARENT FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

INSTRUCTIONS: Read each statement that follows the phrase, "During the past four weeks, how often did the child..." then circle the letter under the word that tells how often you saw the behavior. Read each question carefully; then mark how often you saw the behavior in the past four weeks. Answer every question without skipping any. If you want to change your answer, put an X through it and circle your new choice. Be sure to answer every question.

During the past four weeks, how often did the child...

	Never	Rarely	Sometimes	Often	Very Often
1. think before acting?	N	R	<u>S</u>	O	V
2. have good thoughts about everyone?	N	R	S	O	<u>V</u>
3. finish a boring task?	N	<u>R</u>	S	O	V
4. forget instructions?	N	R	S	O	<u>V</u>
5. complete one task before starting a new one?	N	R	<u>S</u>	O	V
6. ask for help when needed?	N	R	S	O	<u>V</u>
7. come up with a new way to reach a goal?	N	R	S	O	V
8. remember how to do something?	N	R	<u>S</u>	O	V
9. prepare for school or work?	N	R	S	O	V
10. control emotions when under stress?	N	R	S	O	V
11. work well in a noisy environment?	N	R	S	O	V
12. stay calm when handling small problems?	N	R	S	O	V
13. organize his/her thoughts well?	N	<u>R</u>	S	O	V
14. fix his/her mistakes?	N	R	<u>S</u>	O	V
15. solve problems creatively?	N	R	S	O	V
16. start something without being asked?	N	R	<u>S</u>	O	V
17. change a plan that was not working?	N	R	S	O	V
18. appear disorganized?	N	R	S	O	V
19. find it hard to control his/her actions?	N	R	S	O	V
20. only care about what is best for others?	N	R	S	O	V
21. work well for a long time?	N	R	<u>S</u>	O	V
22. do things in the right order?	N	R	S	O	V
23. forget instructions with many steps?	N	R	S	O	<u>V</u>
24. get bothered by something?	N	R	S	O	V
25. concentrate while reading?	N	R	<u>S</u>	O	V
26. remember many things at one time?	N	<u>R</u>	S	O	V
27. complete homework or tasks on time?	N	R	<u>S</u>	O	V
28. plan for future events?	N	R	<u>S</u>	O	V
29. learn from past mistakes?	N	R	S	O	V
30. start conversations?	N	R	<u>S</u>	O	V
31. keep goals in mind when making decisions?	N	R	<u>S</u>	O	V
32. think of the consequences before acting?	N	R	<u>S</u>	O	V
33. have a bad day?	N	R	S	O	<u>V</u>
34. work neatly?	N	<u>R</u>	S	O	V
35. find a strategy that worked?	N	R	S	O	V
36. stay on topic when talking?	N	R	<u>S</u>	O	V
37. keep track of time?	N	R	S	O	V
38. maintain self-control?	N	R	S	O	V
39. take on new projects?	N	R	<u>S</u>	O	V
40. need others to tell him/her to get started on things?	N	R	S	O	V
41. come up with different ways to solve problems?	N	R	<u>S</u>	O	V
42. find it hard to control his/her emotions?	N	R	<u>S</u>	O	V
43. forget to do things?	N	R	S	O	V
44. pay attention for a long time?	N	R	<u>S</u>	O	V
45. have many ideas about how to do things?	N	R	<u>S</u>	O	V
46. do things the wrong way?	N	R	<u>S</u>	O	V
47. get upset when plans were changed?	N	R	<u>S</u>	O	V
48. arrive late?	N	R	<u>S</u>	O	V
49. have trouble waiting to get what he/she wanted?	N	R	S	O	V
50. know what to do first?	N	R	S	O	V

MHS Copyright © 2013 Multi-Health Systems Inc. All rights reserved. In the United States, P.O. Box 950, North Tonawanda, NY 14120-0950, 1-800-456-3003. In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, 1-800-268-6011, 1-416-492-2627, Fax 1-416-492-3363.

CEFI™ (5-18 Years) PARENT FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

INSTRUCTIONS: Transfer each circled number into the unshaded box to its left. Sum the scores in each column and record these values in the Sum of Items boxes. Add the Sum of Items 51-100 score and Sum of Items 1-50 score to get the Scale Raw Scores. Sum all of the Scale Raw Scores to obtain the Full Scale Raw Score. Circle raw scores in the Norms Conversion Table on page 4 if the child is 5-11 years of age, or page 5 if the child is 12-18 years of age.

During the past four weeks, how often did the child...

	AT	ER	FX	IC	IT	OG	PL	SM	WM					
1. think before acting?				<u>2</u>						0	1	<u>2</u>	3	4
2. have good thoughts about everyone?										0	1	2	3	<u>4</u>
3. finish a boring task?	<u>1</u>									0	<u>1</u>	2	3	4
4. forget instructions?									<u>1</u>	5	4	3	2	<u>1</u>
5. complete one task before starting a new one?						<u>2</u>				0	1	<u>2</u>	3	4
6. ask for help when needed?							<u>4</u>			0	1	2	3	<u>4</u>
7. come up with a new way to reach a goal?			<u>3</u>							0	1	2	<u>3</u>	4
8. remember how to do something?								<u>2</u>		0	1	<u>2</u>	3	4
9. prepare for school or work?							<u>3</u>			0	1	2	<u>3</u>	4
10. control emotions when under stress?		<u>3</u>								0	1	2	<u>3</u>	4
11. work well in a noisy environment?	<u>3</u>									0	1	2	<u>3</u>	4
12. stay calm when handling small problems?		<u>3</u>								0	1	2	<u>3</u>	4
13. organize his/her thoughts well?					<u>1</u>					0	<u>1</u>	2	3	4
14. fix his/her mistakes?								<u>2</u>		0	1	<u>2</u>	3	4
15. solve problems creatively?							<u>3</u>			0	1	2	<u>3</u>	4
16. start something without being asked?					<u>2</u>					0	1	2	<u>3</u>	4
17. change a plan that was not working?								<u>3</u>		0	1	2	<u>3</u>	4
18. appear disorganized?						<u>2</u>				5	4	3	2	<u>1</u>
19. find it hard to control his/her actions?				<u>2</u>						5	4	3	2	<u>1</u>
20. only care about what is best for others?										0	1	2	<u>3</u>	4
21. work well for a long time?	<u>2</u>									0	1	<u>2</u>	3	4
22. do things in the right order?							<u>3</u>			0	1	2	<u>3</u>	4
23. forget instructions with many steps?								<u>1</u>		5	4	3	2	<u>1</u>
24. get bothered by something?										5	4	3	2	<u>1</u>
25. concentrate while reading?	<u>2</u>									0	1	2	<u>3</u>	4
26. remember many things at one time?								<u>1</u>		0	<u>1</u>	2	3	4
27. complete homework or tasks on time?						<u>2</u>				0	1	2	<u>3</u>	4
28. plan for future events?							<u>2</u>			0	1	<u>2</u>	3	4
29. learn from past mistakes?								<u>3</u>		0	1	2	<u>3</u>	4
30. start conversations?					<u>2</u>					0	1	2	<u>3</u>	4
31. keep goals in mind when making decisions?								<u>2</u>		0	1	2	<u>3</u>	4
32. think of the consequences before acting?			<u>2</u>							0	1	2	<u>3</u>	4
33. have a bad day?										5	4	3	2	<u>1</u>
34. work neatly?						<u>1</u>				0	<u>1</u>	2	3	4
35. find a strategy that worked?							<u>3</u>			0	1	2	<u>3</u>	4
36. stay on topic when talking?	<u>2</u>									0	1	2	<u>3</u>	4
37. keep track of time?								<u>3</u>		0	1	2	<u>3</u>	4
38. maintain self-control?				<u>3</u>						0	1	2	<u>3</u>	4
39. take on new projects?					<u>2</u>					0	1	2	<u>3</u>	4
40. need others to tell him/her to get started on things?					<u>2</u>					5	4	3	2	<u>1</u>
41. come up with different ways to solve problems?			<u>2</u>							0	1	2	<u>3</u>	4
42. find it hard to control his/her emotions?		<u>3</u>								5	4	<u>3</u>	2	<u>1</u>
43. forget to do things?								<u>2</u>		5	4	3	2	<u>1</u>
44. pay attention for a long time?	<u>2</u>									0	1	2	<u>3</u>	4
45. have many ideas about how to do things?			<u>2</u>							0	1	2	<u>3</u>	4
46. do things the wrong way?										5	4	3	2	<u>1</u>
47. get upset when plans were changed?		<u>3</u>								5	4	3	2	<u>1</u>
48. arrive late?							<u>3</u>			5	4	3	2	<u>1</u>
49. have trouble waiting to get what he/she wanted?				<u>2</u>						5	4	3	2	<u>1</u>
50. know what to do first?							<u>3</u>			0	1	2	<u>3</u>	4
Sum of Items 1-50	12	12	7	11	8	8	17	18	9					

MHS Copyright © 2013 Multi-Health Systems Inc. All rights reserved. In the United States, P.O. Box 950, North Tonawanda, NY 14120-0950, 1-800-456-3003. In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, 1-800-268-6011, 1-416-492-2627, Fax 1-416-492-3363.

CEFI Rating Form

CEFI™ (5-18 Years) PARENT FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

INSTRUCTIONS: Transfer each circled number into the unshaded box to its left. Sum the scores in each column and record these values in the Sum of Items boxes. Add the Sum of Items 51-100 score and Sum of Items 1-50 score to get the Scale Raw Scores. Sum all of the Scale Raw Scores to obtain the Full Scale Raw Score. Circle raw scores in the Norms Conversion Table on page 4 if the child is 5-11 years of age, or page 5 if the child is 12-18 years of age.

During the past four weeks, how often did the child...

	AT	ER	FX	IC	IT	OG	PL	SM	WM	
1. think before acting?				2						0 1 2 3 4 5
2. have good thoughts about everyone?										0 1 2 3 4 5
3. finish a boring task?	1									0 1 2 3 4 5
4. forget instructions?									1	5 4 3 2 1 0
5. complete one task before starting a new one?					2					0 1 2 3 4 5
6. ask for help when needed?							4			0 1 2 3 4 5
7. come up with a new way to reach a goal?			3							0 1 2 3 4 5
8. remember how to do something?								2		0 1 2 3 4 5
9. prepare for school or work?										0 1 2 3 4 5
10. control emotions when under stress?			3							0 1 2 3 4 5
11. work well in a noisy environment?	3	3								0 1 2 3 4 5
12. stay calm when handling small problems?		3								0 1 2 3 4 5
13. organize his/her thoughts well?				1						0 1 2 3 4 5
14. fix his/her mistakes?								2		0 1 2 3 4 5
15. solve problems creatively?						3				0 1 2 3 4 5
16. start something without being asked?					2					0 1 2 3 4 5
17. change a plan that was not working?							3			0 1 2 3 4 5
18. appear disorganized?					2					5 4 3 2 1 0
19. find it hard to control his/her actions?				2						5 4 3 2 1 0
20. only care about what is best for others?										0 1 2 3 4 5
21. work well for a long time?	2									0 1 2 3 4 5
22. do things in the right order?							3			0 1 2 3 4 5
23. forget instructions with many steps?								1		5 4 3 2 1 0
24. get bothered by something?										5 4 3 2 1 0
25. concentrate while reading?	2									0 1 2 3 4 5
26. remember many things at one time?									1	0 1 2 3 4 5
27. complete homework or tasks on time?					2					0 1 2 3 4 5
28. plan for future events?						2				0 1 2 3 4 5
29. learn from past mistakes?							3			0 1 2 3 4 5
30. start conversations?				2						0 1 2 3 4 5
31. keep goals in mind when making decisions?								2		0 1 2 3 4 5
32. think of the consequences before acting?			2							0 1 2 3 4 5
33. have a bad day?										5 4 3 2 1 0
34. work neatly?							1			0 1 2 3 4 5
35. find a strategy that worked?								3		0 1 2 3 4 5
36. stay on topic when talking?	2									0 1 2 3 4 5
37. keep track of time?									3	0 1 2 3 4 5
38. maintain self-control?				3						0 1 2 3 4 5
39. take on new projects?					2					0 1 2 3 4 5
40. need others to tell him/her to get started on things?										5 4 3 2 1 0
41. come up with different ways to solve problems?			2							0 1 2 3 4 5
42. find it hard to control his/her emotions?			3							5 4 3 2 1 0
43. forget to do things?								2		5 4 3 2 1 0
44. pay attention for a long time?	2									0 1 2 3 4 5
45. have many ideas about how to do things?			2							0 1 2 3 4 5
46. do things the wrong way?										5 4 3 2 1 0
47. get upset when plans were changed?			3							5 4 3 2 1 0
48. arrive late?									3	5 4 3 2 1 0
49. have trouble waiting to get what he/she wanted?				2						5 4 3 2 1 0
50. know what to do first?							3			0 1 2 3 4 5
Sum of Items 1-50	12	12	7	11	8	8	17	18	9	

During the past four weeks, how often did the child...

	AT	ER	FX	IC	IT	OG	PL	SM	WM	
51. need instructions to be repeated?									1	5 4 3 2 1 0
52. keep track of belongings?						2				0 1 2 3 4 5
53. notice his/her mistakes?								2		0 1 2 3 4 5
54. get embarrassed?										5 4 3 2 1 0
55. take initiative?					2					0 1 2 3 4 5
56. concentrate?	2									0 1 2 3 4 5
57. remember important things?									2	0 1 2 3 4 5
58. appear motivated?					2					0 1 2 3 4 5
59. show bad judgment when making decisions?							3			5 4 3 2 1 0
60. change his/her behavior as needed?			3							0 1 2 3 4 5
61. do things perfectly?										0 1 2 3 4 5
62. pay attention during a boring task?	2									0 1 2 3 4 5
63. manage several tasks at once?							1			0 1 2 3 4 5
64. wait patiently?			3							0 1 2 3 4 5
65. need help to get started on a task?					2					5 4 3 2 1 0
66. like everyone he/she met?										0 1 2 3 4 5
67. solve a problem in different ways?				2						0 1 2 3 4 5
68. become upset in new situations?			3							5 4 3 2 1 0
69. make careless errors?								2		5 4 3 2 1 0
70. keep a commitment?				2						0 1 2 3 4 5
71. have trouble solving problems?							2			5 4 3 2 1 0
72. remember what he/she read?								1		0 1 2 3 4 5
73. respond calmly to delays?			3							0 1 2 3 4 5
74. have trouble waiting his/her turn?					2					5 4 3 2 1 0
75. get distracted?	2									5 4 3 2 1 0
76. organize tasks well?						2				0 1 2 3 4 5
77. know the right answer?										0 1 2 3 4 5
78. fail to put plans into action?					1					5 4 3 2 1 0
79. react well to surprises?			3							0 1 2 3 4 5
80. pay attention to details?	2									0 1 2 3 4 5
81. react with the right level of emotion?			4							0 1 2 3 4 5
82. know when a task was completed?							3			0 1 2 3 4 5
83. manage money?						2				0 1 2 3 4 5
84. start tasks easily?							2			0 1 2 3 4 5
85. forget where he/she put things?								3		5 4 3 2 1 0
86. think through his/her decisions?								2		0 1 2 3 4 5
87. remember what he/she heard?									1	0 1 2 3 4 5
88. use the same strategy even when it didn't work?					3					5 4 3 2 1 0
89. manage time effectively?							2			0 1 2 3 4 5
90. plan ahead?								2		0 1 2 3 4 5
91. listen closely to instructions?	2									0 1 2 3 4 5
92. keep a promise?				2						0 1 2 3 4 5
93. need others to tell him/her to do things?					2					5 4 3 2 1 0
94. make a lot of mistakes?								2		5 4 3 2 1 0
95. get upset?										5 4 3 2 1 0
96. respond thoughtfully?										0 1 2 3 4 5
97. focus on one thing?	2				2					0 1 2 3 4 5
98. complete a task that took a long time?					2					0 1 2 3 4 5
99. accept a different way of doing things?						4				0 1 2 3 4 5
100. make good decisions?								3		0 1 2 3 4 5
Sum of Items 51-100	12	16	12	10	11	9	12	9	8	
Sum of Items 1-50	12	12	7	11	8	8	17	18	9	
Scale Raw Scores	24	28	19	21	19	17	29	27	17	

Sum of Items 51-100

Sum of Items 1-50

Scale Raw Scores

AT + ER + FX + IC + IT + OG + PL + SM + WM =

201

Full Scale Raw Score



Copyright © 2013 Multi-Health Systems Inc. All rights reserved. In the United States, P.O. Box 950, North Tonawanda, NY 14120-0950, 1-800-456-3003. In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, 1-800-258-6011, 1-416-492-2627, Fax: 1-416-492-3343.

CEFI Rating Form

CEFI™ (5-18 Years) PARENT FORM

Jack A. Naglieri, Ph.D. & Sam Goldstein, Ph.D.

Norms Conversion Table for Parent Form Ages 12-18 Years

Description	Standard Score	Consistency Index	Negative Impression	Positive Impression
Not Indicated	130	2-43	2-32	
	129			
	128			
	127	41	31	
	126			
	125			
	124	40	30	
	123			
	122	39	29	
	121			
	120			
	119	38	28	
	118			
	117	37	27	
	116			
	115			
	114	36	26	
	113			
	112	35	25	
	111			
	110	34	24	
	109			
	108			
	107	33	23	
	106			
	105	32	22	
	104			
	103	31	21	
	102			
	101	30	20	
	100			
	99	29	19	
	98			
	97	28	18	
	96			
	95	27	17	
	94			
	93	26	16	
	92			
	91	25	15	
	90			
	89	24	14	
	88			
	87	23	13	
	86			
	85	22	12	
	84			
	83	21	11	
	82			
	81	20	10	
	80			
	79	19	9	
	78			
	77	18	8	
	76			
	75	17	7	
	74			
	73	16	6	
	72			
	71	15	5	
	70			
	69	14	4	
	68			
	67	13	3	
	66			
	65	12	2	
	64			
	63	11	1	
	62			
	61	10	0	
	60			
	59	9		
	58	8		
	57	7		
	56	6		
	55	5		
	54	4		
	53	3		
	52	2		
	51	1		
	50	0		

Ages 12-18 Years

Page 5

ABOUT THE RATINGS: If the Consistency Index, Negative Impression Scale, and Positive Impression Scale standard scores are less than 76, they are described as "Indicated", these should be discussed with the rater. Please refer to chapter 4, *Interpretation in the CEFI Technical Manual* for more information.

Consistency Index

- Transfer the item scores from Page 3 into the Item Score boxes.
- Subtract the lower score from the higher score for each item pair. Write the differences in the Difference boxes.
- For the Consistency Index (CI) raw score, sum all item differences greater than 1 (ignore a 1).
- Circle the raw score in the Norms Conversion Table. Locate the Standard Score and Description.

Item Score: 10 11 22 35 28 30 41 47 44 56 70 92 80 91 96 100

Difference: 0 + 0 + 0 + 0 + 0 + 0 + 0 + 1 = 0

Consistency Index (CI) = 0

Standard Score = 110

Description = Not Indicated

Negative Impression and Positive Impression Scales

- Transfer the item scores from Page 3 into the Item Score boxes.
- Sum the scores (Negative Impression raw score). Subtract the NI raw score from 50 (Positive Impression raw score).
- Circle the raw scores for each scale in the Norms Conversion Table. Locate the Standard Score and Description.

Item Score: 2 10 24 33 46 54 61 66 77 95

Negative Impression (NI) = 24

Standard Score = 85

Description = Not Indicated

Positive Impression (PI) = 26

50 - NI = 26

Standard Score = 115

Description = Not Indicated

Number of Omitted Items: 0

CEFI RESULTS: See chapter 3 of the *CEFI Technical Manual* for complete scoring instructions.

- See the circled raw scores in the Norms Conversion Table to find the **Standard Score**, **Percentile Rank**, and **Classification** for each scale.
- Youth's Average:** Sum the CEFI Scales' standard scores and divide the total by nine. Round to one decimal place.
- Difference from Youth's Average:** Subtract the standard score for each CEFI Scale from the Youth's Average. Retain positive and negative signs.
- Determine if **Differences from Youth's Average** are **Statistically Significant** (see Table 3.4 in chapter 4).
- Determine if each CEFI Scale is an **Executive Function Strength** (standard score is greater than 109 and significantly higher than Youth's Average), or an **Executive Function Weakness** (standard score is less than 90 and significantly lower than Youth's Average).
- 90%/95% Confidence Intervals:** Locate values in appendix B of the *CEFI Technical Manual*.

Full Scale	Standard Score	90%/95% (circle one) Confidence Interval	Percentile Rank	Classification
	83	80 to 86	13	Low Average

CEFI Scales	Standard Score	Difference From Youth's Average	Statistically Significant? (Yes/No)	Executive Function Strength/Weakness	90%/95% (circle one) Confidence Interval	Percentile Rank	Classification
Attention (AT)	83	-1.9	No	-	78 to 90	13	Low Average
Emotion Regulation (ER)	100	+15.1	Yes	-	93 to 107	50	Average
Flexibility (FI)	97	+12.1	Yes	-	89 to 106	42	Average
Inhibitory Control (IC)	79	-5.9	No	-	74 to 89	8	Below Average
Initiation (IT)	79	-5.9	No	-	74 to 89	8	Below Average
Organization (OG)	79	-5.9	No	-	74 to 89	8	Below Average
Planning (PL)	90	+5.1	No	-	84 to 97	25	Average
Self-Monitoring (SM)	91	+6.1	No	-	84 to 100	27	Average
Working Memory (WM)	66	-18.9	Yes	Weakness	60 to 77	1	Well Below Average
Sum of Standard Scores	764.9						
		= 84.9		Youth's Average			

CEFI Rating Form

Ages 12–18 Years

Page 5

ABOUT THE RATINGS: If the Consistency Index, Negative Impression Scale, and Positive Impression Scale standard scores are less than 76, they are described as "Indicated"; these should be discussed with the rater. Please refer to chapter 4, *Interpretation* in the *CEFI Technical Manual* for more information.

Consistency Index

1. Transfer the item scores from Page 3 into the Item Score boxes.
2. Subtract the lower score from the higher score for each item pair. Write the differences in the Difference boxes.
3. For the Consistency Index (CI) raw score, sum all item differences greater than 1 (ignore a 1).
4. Circle the raw score in the Norms Conversion Table. Locate the Standard Score and Description.

Item	10	12	22	35	28	90	41	67	44	56	70	92	80	91	86	100
Score	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	3

Ignore any item differences of 1

Difference: $0 + 0 + 0 + 0 + 0 + 0 + 0 + 1 = 0$

Consistency Index (CI) = 0

Standard Score = 110

Description = Not Indicated

Negative Impression and Positive Impression Scales

1. Transfer the item scores from Page 3 into the Item Score boxes.
2. Sum the scores (Negative Impression raw score). Subtract the NI raw score from 50 (Positive Impression raw score).
3. Circle the raw scores for each scale in the Norms Conversion Table. Locate the Standard Score and Description.

Item	2	20	24	33	46	54	61	66	77	95
Score	4	3	2	1	3	3	1	3	2	2

Negative Impression (NI) = 24

Standard Score = 85

Description = Not Indicated

50 - NI = 26

Positive Impression (PI) = 26

Standard Score = 115

Description = Not Indicated

Number of Omitted Items

1. Count the number of omitted items from Page 3.
2. If Number of Items Omitted is greater than 5, see chapter 4 in the *CEFI Technical Manual*.

Number of Items Omitted
0

CEFI Rating Form

CEFI RESULTS: See chapter 3 of the *CEFI Technical Manual* for complete scoring instructions.

1. See the circled raw scores in the Norms Conversion Table to find the *Standard Score*, *Percentile Rank*, and *Classification* for each scale.
2. *Youth's Average:* Sum the CEFI Scales' standard scores and divide the total by nine. Round to one decimal place.
3. *Difference from Youth's Average:* Subtract the standard score for each CEFI Scale from the Youth's Average. Retain positive and negative signs.
4. Determine if *Differences from Youth's Average* are *Statistically Significant* (see Table 3.4 in chapter 4).
5. Determine if each CEFI Scale is an *Executive Function Strength* (standard score is greater than 109 and significantly higher than Youth's Average), or an *Executive Function Weakness* (standard score is less than 90 and significantly lower than Youth's Average).
6. *90%/95% Confidence Intervals:* Locate values in appendix B of the *CEFI Technical Manual*.

Full Scale	Standard Score	90%/95% (circle one) Confidence Interval	Percentile Rank	Classification
	83	80 to 86	13	Low Average

CEFI Scales	Standard Score	Difference From Youth's Average	Statistically Significant? (Yes/No)	Executive Function Strength/Weakness	90%/95% (circle one) Confidence Interval	Percentile Rank	Classification
Attention (AT)	83	-1.9	No	-	78 to 90	13	Low Average
Emotion Regulation (ER)	100	+15.1	Yes	-	93 to 107	50	Average
Flexibility (FX)	97	+12.1	Yes	-	89 to 106	42	Average
Inhibitory Control (IC)	79	-5.9	No	-	74 to 89	8	Below Average
Initiation (IT)	79	-5.9	No	-	74 to 89	8	Below Average
Organization (OG)	79	-5.9	No	-	74 to 87	8	Below Average
Planning (PL)	90	+5.1	No	-	84 to 97	25	Average
Self-Monitoring (SM)	91	+6.1	No	-	84 to 100	27	Average
Working Memory (WM)	66	-18.9	Yes	Weakness	62 to 77	1	Well Below Average
Sum of Standard Scores	764.9	=	84.9	Youth's Average			



Copyright © 2013 Multi-Health Systems Inc. All rights reserved. In the United States, P.O. Box 950, North Tonawanda, NY 14120-0950, 1-800-456-3003. In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, 1-800-268-6011, 1-416-492-2627, Fax 1-416-492-3343.

CEFI Readability

- Reading levels were determined using the Flesch-Kincaid Grade Level Formula which is based on the total number of words, syllables, and sentences

Table 3.1. CEFI Readability Levels

Form	Readability Score		
	Overall	Instructions	Items
CEFI (5–18 Years) Parent Form	5.4	7.4	5.3
CEFI (5–18 Years) Teacher Form	5.4	7.4	5.3
CEFI (12–18 Years) Self-Report Form	5.2	6.7	5.2

CEFI Standardization

- Data collection: January – December, 2011
- Standardization and related research data (N = over 5,000 forms) were collected from 50 US states
- Data were collected using paper and pencil and online administration formats

Table 6.1. Differences Between Online and Paper Administrations: Cohen's d Effect Size Ratios

Rater	Full Scale	CEFI Scales	
		Median	Range
Parent	0.03	0.02	0.00–0.09
Teacher	0.01	0.04	0.01–0.06
Self	0.02	0.03	0.00–0.10

Note. Guidelines for interpreting $|d|$ = small effect size = 0.2; medium effect size = 0.5; large effect size = 0.8. N = 60, 59, and 52 for the parent, teacher, and self-report studies, respectively.

CEFI Normative Samples

- 1,400 ratings by Parents for children aged 5-18 years
- 1,400 ratings by Teachers for children aged 5-18 years
- 700 ratings from the self-report form for those aged 12-18 years
- There were equal numbers of ratings of or by males and females

CEFI Normative Samples

- Stratified according to the 2009 US Census by race/ethnicity, parental education, region, age, and sex
- The samples included students in special education

Table 6.15. Categories of Eligibility to Receive Educational Services across Normative Samples

Eligibility/Diagnostic Category	Parent		Teacher		Self-Report		% Dept. Education ^a
	N	%	N	%	N	%	
ADHD	62	4.4	55	3.9	43	6.1	4.7
Autism Spectrum Disorder	9	0.6	6	0.4	0	—	0.7
Communication ^b	13	0.9	20	1.4	0	—	2.9
Emotional	8	0.6	16	1.1	7	1.0	0.9
Hearing	0	—	5	0.4	0	—	0.2
Intellectual	2	0.1	6	0.4	0	—	1.0
Specific Learning	56	4.0	67	4.8	18	2.6	5.0
Traumatic Brain Injury	2	0.1	2	0.1	0	—	0.1
Visual	1	0.1	1	0.1	0	0.0	0.1
Other	9	0.6	15	1.1	0	0.0	-
TOTAL	162	10.9	193	12.7	68	9.7	-

^a SOURCE for all disorders except ADHD: Digest of Education Statistics, National Center for Education Statistics. SOURCE for ADHD: National Center for Health Statistics (Pastor & Reuben, 2008).

Age x (Race/Ethnicity) x Gender

Table 6.2. Age x Race/Ethnicity x Gender Distribution: CEFI Parent Normative Sample

Age	Males						Females						Total					
	Hispanic	Asian	Black	White	Other	Subtotal	Hispanic	Asian	Black	White	Other	Subtotal	Hispanic	Asian	Black	White	Other	Total
5	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
6	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
7	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
8	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
9	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
10	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
11	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
12	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
13	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
14	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
15	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
16	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
17	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
18	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
Total	154	28	98	392	28	700	154	28	98	392	28	700	308	56	196	784	56	1,400
Total (%)	11.0	2.0	7.0	28.0	2.0	50.0	11.0	2.0	7.0	28.0	2.0	50.0	22.0	4.0	14.0	56.0	4.0	100.0
U.S. Population (%)													21.1	4.2	13.9	56.5	4.2	100.0

Note. U.S. Population data are from the American Community Survey, 2009.

Table 6.3. Age x Race/Ethnicity x Gender Distribution: CEFI Teacher Normative Sample

Age	Males						Females						Total					
	Hispanic	Asian	Black	White	Other	Subtotal	Hispanic	Asian	Black	White	Other	Subtotal	Hispanic	Asian	Black	White	Other	Total
5	11	1	7	30	1	50	11	2	6	29	2	50	22	3	13	59	3	100
6	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
7	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
8	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
9	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
10	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
11	11	2	7	28	2	50	11	2	7	29	1	50	22	4	14	57	3	100
12	11	1	7	30	1	50	11	2	7	28	2	50	22	3	14	58	3	100
13	11	1	7	29	2	50	11	2	7	28	2	50	22	3	14	57	4	100
14	11	2	7	28	2	50	11	2	8	27	2	50	22	4	15	55	4	100
15	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
16	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
17	11	2	7	28	2	50	11	2	7	28	2	50	22	4	14	56	4	100
18	11	2	7	29	1	50	11	2	7	28	2	50	22	4	14	57	3	100
Total	154	25	98	398	25	700	154	28	98	393	27	700	308	53	196	791	52	1,400
Total (%)	11.0	1.8	7.0	28.4	1.8	50.0	11.0	2.0	7.0	28.1	1.9	50.0	22.0	3.8	14.0	56.5	3.7	100.0
U.S. Population (%)													21.1	4.2	13.9	56.5	4.2	100.0

Other Tables of Demographics (N=12)

Table 6.5. Age × Region × Race/Ethnicity: CEFI Parent Normative Sample (5–11-Year-Olds)

Age	Region	Hispanic	Asian	Black	White	Other	Subtotal	Subtotal (%)	U.S. Population (%)
5 Years	Northeast	2	2	2	10	0	16	16.0	17.0
	Midwest	2	0	2	17	2	23	23.0	21.7
	South	8	0	8	19	2	37	37.0	37.2
	West	10	2	2	10	0	24	24.0	24.1
	Subtotal	22	4	14	56	4	100	100.0	100.0

Table 6.11. Age × PEL × Race/Ethnicity: CEFI Parent Normative Sample (12–18-Year-Olds)

Age	PEL	Hispanic	Asian	Black	White	Other	Subtotal	Subtotal (%)	U.S. Population (%)
6 Years	12 Years	8	0	2	4	0	14	14.0	14.7
	PEL 2	6	0	4	16	2	28	28.0	28.5
	PEL 3	4	2	4	18	2	30	30.0	28.9
	PEL 4	2	2	2	12	0	18	18.0	17.6
	PEL 5	2	0	2	6	0	10	10.0	10.3
	Subtotal	22	4	14	56	4	100	100.0	100.0
U.S. Population (%)		22.0	4.0	14.0	56.0	4.0	100.0		
7 Years	13 Years	8	0	2	4	0	14	14.0	14.7
	PEL 2	6	0	4	16	2	28	28.0	28.5
	PEL 3	4	2	4	18	2	30	30.0	28.9
	PEL 4	2	2	2	12	0	18	18.0	17.6
	PEL 5	2	0	2	6	0	10	10.0	10.3
	Subtotal	22	4	14	56	4	100	100.0	100.0
U.S. Population (%)		22.0	4.0	14.0	56.0	4.0	100.0		
14 Years	14 Years	8	0	2	4	0	14	14.0	14.7
	PEL 2	6	0	4	16	2	28	28.0	28.5
	PEL 3	4	2	4	18	2	30	30.0	28.9
	PEL 4	2	2	2	12	0	18	18.0	17.6
	PEL 5	2	0	2	6	0	10	10.0	10.3
	Subtotal	22	4	14	56	4	100	100.0	100.0
U.S. Population (%)		22.0	4.0	14.0	56.0	4.0	100.0		
15 Years	15 Years	8	0	2	4	0	14	14.0	14.7
	PEL 2	6	0	4	16	2	28	28.0	28.5
	PEL 3	4	2	4	18	2	30	30.0	28.9
	PEL 4	2	2	2	12	0	18	18.0	17.6
	PEL 5	2	0	2	6	0	10	10.0	10.3
	Subtotal	22	4	14	56	4	100	100.0	100.0
U.S. Population (%)		22.0	4.0	14.0	56.0	4.0	100.0		

Presentation Outline

- Historical Perspective
- Definitions of Executive Function
- Executive Function or Functions?
- Rating Scales for EF
- Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
- EF and instruction



CEFI Scale Reliabilities

Table 7.1. Cronbach's Alpha: CEFI Normative and Clinical/Educational Samples

Scale	Number of Items	Parent			Teacher			Self-Report	
		Normative Samples		Clinical/ Educational Sample	Normative Samples		Clinical/ Educational Sample	Normative Sample	Clinical/ Educational Sample
		5–11 Years	12–18 Years		5–11 Years	12–18 Years			
		<i>N</i> = 682– 698	<i>N</i> = 676– 698	<i>N</i> = 250– 331	<i>N</i> = 690– 700	<i>N</i> = 682– 700	<i>N</i> = 232– 325	<i>N</i> = 667– 700	<i>N</i> = 148– 205
Full Scale	90	.98	.99	.97	.99	.99	.99	.97	.97
Attention	12	.92	.93	.87	.96	.96	.94	.86	.86
Emotion Regulation	9	.88	.90	.87	.93	.93	.93	.78	.83
Flexibility	7	.84	.85	.78	.90	.90	.86	.77	.72
Inhibitory Control	10	.89	.90	.87	.94	.94	.91	.80	.80
Initiation	10	.88	.90	.84	.92	.93	.91	.80	.70
Organization	10	.89	.92	.85	.93	.94	.91	.85	.84
Planning	11	.91	.93	.88	.95	.96	.93	.85	.82
Self-Monitoring	10	.85	.89	.78	.91	.92	.86	.78	.74
Working Memory	11	.88	.89	.86	.94	.94	.91	.83	.81

Note. Sample sizes vary due to omitted items.

Inter-Rater Reliability

- Parent Form (5-18 yrs) shows very good consistency and similar mean scores

Scale	Obtained <i>r</i>	Corrected <i>r</i>	<i>N</i>	Parent 1		Parent 2		<i>d</i> -ratio
				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Full Scale	.83	.88	100	96.5	13.4	97.6	13.2	0.08
Attention	.79	.86	100	97.8	13.3	98.1	12.8	0.03
Emotion Regulation	.65	.73	98	94.7	13.5	95.6	13.4	0.07
Flexibility	.64	.76	99	97.8	13.0	97.9	12.3	0.01
Inhibitory Control	.80	.84	100	95.9	14.6	97.6	13.8	0.12
Initiation	.78	.84	100	96.8	13.7	98.8	13.3	0.15
Organization	.81	.86	99	96.5	13.2	97.9	13.9	0.10
Planning	.78	.85	100	98.0	13.6	98.4	13.0	0.03
Self-Monitoring	.70	.80	100	96.5	13.0	96.7	12.9	0.02
Working Memory	.81	.82	100	97.4	15.1	99.2	14.5	0.12

Note: All missing values deletion of missing cases was used

Inter-Rater Consistency

- Teacher Form (5-18 yrs) shows good consistency and similar mean scores

Scale	Obtained <i>r</i>	Corrected <i>r</i>	<i>N</i>	Teacher 1		Teacher 2		<i>d</i> -ratio
				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Full Scale	.70	.68	98	94.4	17.0	96.8	13.8	0.16
Attention	.64	.63	98	93.5	16.8	96.4	13.9	0.19
Emotion Regulation	.56	.54	98	97.6	16.1	98.4	14.7	0.05
Flexibility	.66	.63	98	94.7	17.2	97.1	13.9	0.15
Inhibitory Control	.64	.64	98	96.5	16.0	98.2	14.2	0.11
Initiation	.64	.57	98	93.9	18.3	97.5	14.7	0.22
Organization	.67	.67	96	94.4	16.6	96.4	13.6	0.13
Planning	.70	.68	98	94.4	17.0	97.0	13.7	0.17
Self-Monitoring	.68	.68	98	94.4	16.4	96.1	13.7	0.11
Working Memory	.65	.61	98	94.3	18.0	97.2	13.9	0.18

Note. All *rs* significant. Pair-wise deletion of missing cases was used.

Intra-Rater Consistency

- Self-Rating Form (12-18 yrs) two ratings over time shows very good consistency and similar means

Scale	Obtained <i>r</i>	Corrected <i>r</i>	<i>N</i>	Time 1		Time 2		<i>d</i> -ratio
				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Full Scale	.78	.77	200	101.9	15.1	101.8	15.6	0.01
Attention	.74	.74	200	100.7	14.8	100.7	15.0	0.00
Emotion Regulation	.71	.74	200	100.7	14.2	102.6	14.6	0.13
Flexibility	.86	.86	200	101.9	14.4	101.3	15.1	0.04
Inhibitory Control	.77	.79	200	103.2	14.2	101.7	14.8	0.10
Initiation	.77	.79	200	101.7	14.8	100.7	14.2	0.07
Organization	.85	.86	200	101.7	14.0	101.1	14.9	0.04
Planning	.80	.82	200	101.7	14.1	101.2	14.4	0.03
Self-Monitoring	.74	.74	200	101.5	14.7	100.1	15.1	0.09
Working Memory	.75	.79	200	101.8	14.3	100.8	14.2	0.07

Presentation Outline

- Historical Perspective
- Definitions of Executive Function
- Executive Function or Functions?
- Rating Scales for EF
- Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
- EF and instruction



CEFI Interpretation

Step 1: Examine Quality of the Ratings:
Consistency, Positive and Negative
Impression

Step 2: Interpret Scale Scores

Step 3: Compare CEFI Scale Scores

Step 4: Examine Item-Level Responses

Step 5: Compare Results Across Raters

Step 6: Compare Results Over Time

Step 1: Consistency Index

- The Consistency Index provides information about whether the rater responded to similar items differently.
- Inconsistent responding can occur intentionally or unintentionally, and could be due to deliberate non-compliance, fatigue, a misunderstanding of the items or instructions, inattention, disinterest, or a lack of motivation

Step 1: Impression Scales

- The Negative Impression scale evaluates the likelihood that the rater underestimated the individual's functioning.
- The Positive Impression scale evaluates the likelihood that the rater overestimated the individual's functioning.

Step 1: Impression Scales

➤ Negative and Positive Impression Scale Items

Table 5.3. CEFI Negative Impression Scale and Positive Impression Scale Items

Negative Impression Scale

Item
2. have good thoughts about everyone? (R)
20. only care about what is best for others? (R)
24. get bothered by something?
33. have a bad day?
46. do things the wrong way?
54. get embarrassed?
61. do things perfectly? (R)
66. like everyone he/she met? (R)
77. know the right answer? (R)
95. get upset?

Positive Impression Scale

Item
2. have good thoughts about everyone?
20. only care about what is best for others?
24. get bothered by something? (R)
33. have a bad day? (R)
46. do things the wrong way? (R)
54. get embarrassed? (R)
61. do things perfectly?
66. like everyone he/she met?
77. know the right answer?
95. get upset? (R)

Note. (R) = Reverse scored item.

Step 1: Impression Scales

- A particular response style is indicated if the standard score is less than 76 (< 5% of the normative sample).

Scale	Interpretive Text	
	Standard Score ≤ 75	Standard Score > 75
Consistency Index	The rater responded in a different way to similar items. This rating pattern is not typical and should be further investigated.	The pattern of ratings is typical.
Negative Impression Scale	The pattern of ratings may underestimate the child's behavior. This rating pattern is not typical and should be further investigated.	The pattern of ratings is typical.
Positive Impression Scale	The pattern of ratings may overestimate the child's behavior. This rating pattern is not typical and should be further investigated.	The pattern of ratings is typical.
Time to Completion	The rater spent considerably less time than is usual completing the CEFI.	The time the rater took to complete the CEFI was typical.

**Time to Completion
is only for online
administration**

CEFI Interpretation

Step 1: Examine Quality of the ratings:
Consistency, Positive and Negative
Impression

Step 2: Interpret Scale Scores

Step 3: Compare CEFI Scale Scores

Step 4: Examine Item-Level Responses

Step 5: Compare Results Across Raters

Step 6: Compare Results Over Time

Step 2: Interpret Scale Scores

- All scales are set at mean of 100, SD of 15
- Low scores mean poor EF

Table 4.3. Interpretation Guidelines for Examining Scale Scores

Scale	Interpretation Guidelines
Full Scale	Reflects overall executive function. The Full Scale score is made up of 90 items from nine different areas that are conceptually related to executive function (i.e., Attention, Emotion Regulation, Flexibility, Inhibitory Control, Initiation, Organization, Planning, Self-Monitoring, and Working Memory). The CEFI Scales describe the content of the items for intervention purposes. If there is significant variation among the CEFI Scales, the Full Scale score will sometimes be higher and other times lower than scores on these scales. However, the Full Scale score is a good description of a child's/youth's executive function behaviors if there is no significant variation among the CEFI Scales.
Attention	Describes how well a child/youth can avoid distractions, concentrate on tasks, and sustain attention.
Emotion Regulation	Indicates the child's/youth's control and management of emotions, including staying calm when handling small problems and reacting with the right level of emotion.
Flexibility	Reflects a child's/youth's skill at adjusting behavior to meet circumstances, including coming up with different ways to solve problems, having many ideas about how to do things, and being able to solve problems using different approaches.

Step 2: Interpret Scale Scores

Table 4.3. Interpretation Guidelines for Examining Scale Scores

Scale	Interpretation Guidelines
Inhibitory Control	Describes the child's/youth's ability to control behavior or impulses, including thinking about consequences before acting, maintaining self-control, and keeping commitments.
Initiation	Indicates a child's/youth's skill at beginning tasks or projects on his/her own including starting tasks easily, being motivated, and taking the initiative when needed.
Organization	Reflects the child's/youth's ability to manage personal effects, work, or multiple tasks, including organizing tasks and thoughts well, managing time effectively, and working neatly.
Planning	Describes how well a child/youth can develop and implement strategies to accomplish tasks, including planning ahead and making good decisions.
Self-Monitoring	Indicates the child's/youth's ability to evaluate his/her own behavior in order to determine when a different approach is necessary, including noticing and fixing mistakes, knowing when help is required, and understanding when a task is completed.
Working Memory	Reflects how well a child/youth can keep information in mind that is important for knowing what to do and how to do it, including remembering important things, instructions, and steps.

Classification of Standard Scores

Standard Score	Percentile Rank	Classification
≥ 130	≥ 98	Very Superior
120–129	91–97	Superior
110–119	75–90	High Average
90–109	25–73	Average
80–89	9–23	Low Average
70–79	2–8	Below Average
≤ 69	≤ 2	Well Below Average

Step 2: Interpret Estimated True Score Based Confidence Intervals

TABLE B.1. CEFI (5–18 Years) Parent Form: 90% Confidence Intervals for 5–11-Year-Olds

Standard Score	Full Scale	Attention (AT)	Emotion Regulation (ER)	Flexibility (FX)	Inhibitory Control (IC)	Initiation (IT)	Organization (OG)	Planning (PL)	Self-Monitoring (SM)	Working Memory (WM)	Standard Score
145	.	.	.	.	.	.	.	.	.	.	145
144	.	.	.	128–146	.	.	.	.	.	.	144
143	139–145	.	.	127–145	.	.	.	.	.	.	143
142	138–144	.	.	126–144	.	.	.	.	.	.	142
141	137–143	.	.	125–143	.	.	.	.	.	.	141
140	136–142	.	.	125–143	.	127–143	.	.	125–143	.	140
139	135–141	129–143	126–142	124–142	.	126–142	127–142	.	124–142	126–142	139
138	134–140	128–142	125–141	123–141	.	125–142	126–142	.	124–141	125–141	138
137	133–140	127–141	124–141	122–140	125–141	125–141	125–141	127–141	123–140	125–141	137
136	132–139	127–140	123–140	121–139	124–140	124–140	125–140	126–140	122–139	124–140	136
135	131–138	126–139	123–139	120–138	123–139	123–139	124–139	125–139	121–139	123–139	135
134	130–137	125–138	122–138	120–138	122–138	122–138	123–138	124–138	120–138	122–138	134
133	129–136	124–137	121–137	119–137	121–137	121–137	122–137	123–137	119–137	121–137	133
132	128–135	123–136	120–136	118–136	121–136	120–136	121–136	122–136	118–136	120–136	132
131	127–134	122–135	119–135	117–135	120–135	119–135	120–135	121–135	118–135	119–135	131
130	126–133	121–134	118–134	116–134	119–134	118–134	119–134	120–134	117–134	118–134	130
129	125–132	120–133	117–133	115–133	118–134	118–134	118–134	119–133	116–133	118–133	129
128	124–131	119–132	116–133	114–133	117–133	117–133	117–133	118–132	115–133	117–133	128
127	123–130	118–131	116–132	114–132	116–132	116–132	116–132	118–132	114–132	116–132	127
126	122–129	117–131	115–131	113–131	115–131	115–131	116–131	117–131	113–131	115–131	126

Step 2: Interpret Scale Scores Using the Prorating Tables

- If items are not completed by the rater, you can prorate the scores

TABLE A.1. CEFI Full Scale Prorated Values: 1 to 5 Omitted Items

Raw Score	Prorated Value					Raw Score
	1 Omitted Item	2 Omitted Items	3 Omitted Items	4 Omitted Items	5 Omitted Items	
445	450					445
444	449					444
443	448					443
442	447					442
441	446					441
440	445	450				440
439	444	449				439
438	443	448				438
437	442	447				437
436	441	446				436
435	440	445	450			435
434	439	444	449			434

Step 2: Interpret Scale Scores Using the Prorating Tables

- If 1 item on each scale is not completed by the rater, you can prorate that scale's score

TABLE A.2. CEFI Scales Prorated Values: 1 Omitted Item

Raw Score	Prorated Values									Raw Score
	Attention (AT)	Emotion Regulation (ER)	Flexibility (FX)	Inhibitory Control (IC)	Initiation (IT)	Organization (OG)	Planning (PL)	Self-Monitoring (SM)	Working Memory (WM)	
27	29	30	32	30	30	30	30	30	30	27
26	28	29	30	29	29	29	29	29	29	26
25	27	28	29	28	28	28	28	28	28	25
24	26	27	28	27	27	27	26	27	26	24
23	25	26	27	26	26	26	25	26	25	23
22	24	25	26	24	24	24	24	24	24	22
21	23	24	25	23	23	23	23	23	23	21
20	22	23	23	22	22	22	22	22	22	20
19	21	21	22	21	21	21	21	21	21	19
18	20	20	21	20	20	20	20	20	20	18
17	19	19	20	19	19	19	19	19	19	17
16	17	18	19	18	18	18	18	18	18	16
15	16	17	18	17	17	17	17	17	17	15
14	15	16	16	16	16	16	15	16	15	14

CEFI Interpretation

Step 1: Examine Quality of the ratings:
Consistency, Positive and Negative
Impression

Step 2: Interpret Scale Scores

Step 3: Compare CEFI Scale Scores

Step 4: Examine Item-Level Responses

Step 5: Compare Results Across Raters

Step 6: Compare Results Over Time

Step 3: Compare CEFI Scale Scores

- Compare CEFI Scales to the child's mean *and* the normative mean

Step 3: Compare CEFI Scale Scores

Table 3.4. Critical Values for Significance Testing (at $p \leq .05$ and $p \leq .10$) when Comparing CEFI Scale Standard Scores with Individual's Average CEFI Scale Standard Score

Scale	Parent Form				Teacher Form				Self-Report Form	
	5–11 Years		12–18 Years		5–11 Years		12–18 Years		12–18 Years	
	$p < .05$	$p < .10$	$p < .05$	$p < .10$	$p < .05$	$p < .10$	$p < .05$	$p < .10$	$p < .05$	$p < .10$
Attention	9.1	7.6	8.5	7.1	6.6	5.5	6.6	5.5	11.8	9.9
Emotional Regulation	11.0	9.3	10.0	8.4	8.4	7.0	8.3	7.0	14.4	12.1
Flexibility	12.3	10.3	11.8	9.9	9.9	8.3	9.8	8.2	14.8	12.5
Inhibitory Control	10.6	8.9	10.0	8.4	8.0	6.7	7.9	6.6	13.9	11.7
Initiation	10.9	9.1	10.0	8.4	8.8	7.4	8.6	7.2	14.1	11.8
Organization	10.3	8.7	9.0	7.5	8.3	7.0	8.1	6.8	12.3	10.3
Planning	9.6	8.0	8.7	7.3	7.2	6.1	6.9	5.8	12.3	10.3
Self-Monitoring	11.9	10.0	10.5	8.8	9.4	7.9	9.0	7.6	14.6	12.2
Working Memory	10.8	9.1	10.2	8.5	7.8	6.6	8.0	6.7	13.1	11.0

Step 3: Compare CEFI Scale Scores

Figure 4.1. Illustration of Executive Function Weakness and Strengths on the CEFI (5–18 Years Teacher Form

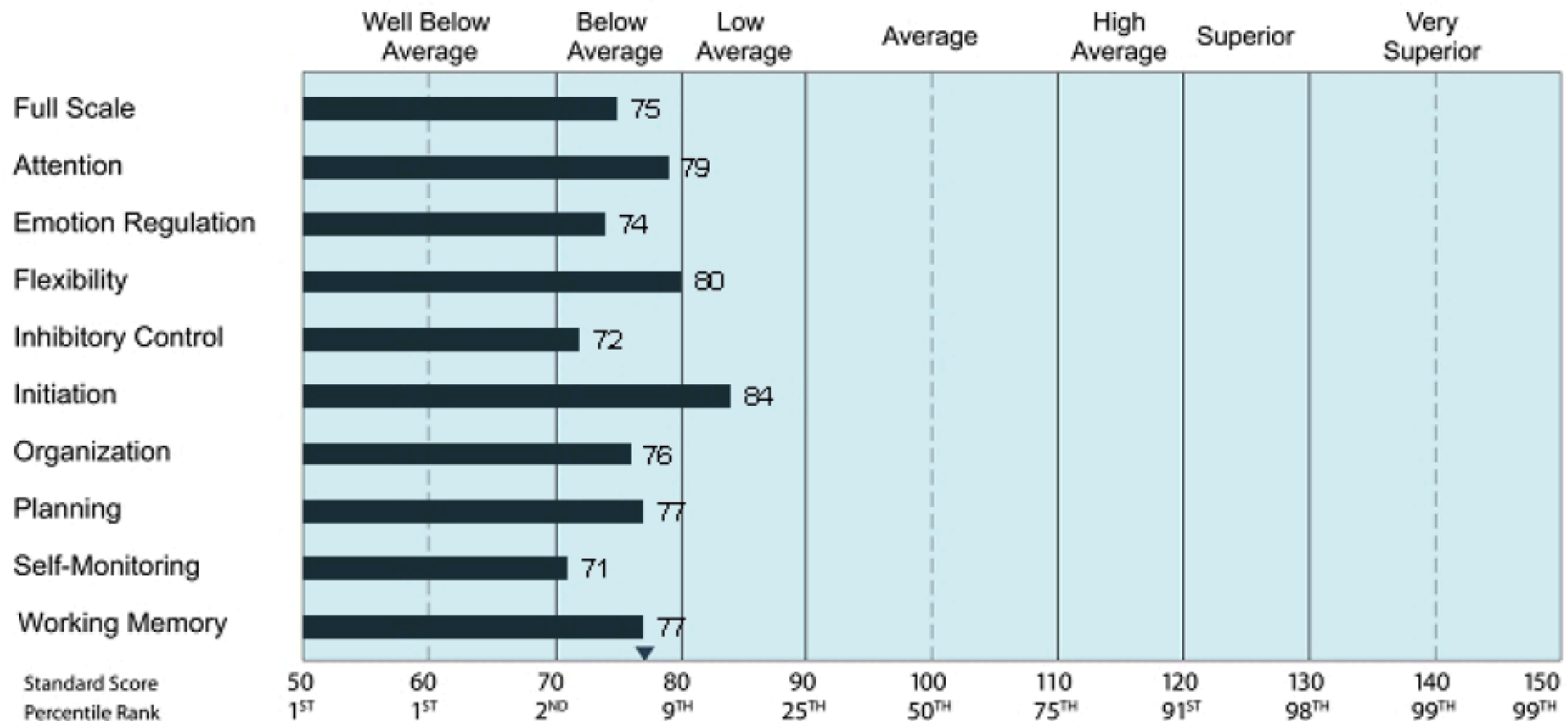
CEFI Scales	Standard Score	Difference From Youth's Average	Statistically Significant? (Yes/No)	Executive Function Strength/Weakness	90%/95% (circle one) Confidence Interval	Percentile Rank	Classification
Attention (AT)	95 <input type="text"/>	-6.7	Yes	—	<u>90</u> to <u>100</u>	37	Average
Emotion Regulation (ER)	82 <input type="text"/>	-19.7	Yes	Weakness	<u>77</u> to <u>90</u>	12	Low Average
Flexibility (FX)	112 <input type="text"/>	10.3	Yes	Strength	<u>103</u> to <u>118</u>	79	High Average
Inhibitory Control (IC)	99 <input type="text"/>	-2.7	No		<u>93</u> to <u>105</u>	47	Average
Initiation (IT)	120 <input type="text"/>	18.3	Yes	Strength	<u>112</u> to <u>125</u>	91	Superior
Organization (OG)	99 <input type="text"/>	-2.7	No		<u>93</u> to <u>105</u>	47	Average
Planning (PL)	101 <input type="text"/>	-0.7	No		<u>96</u> to <u>106</u>	53	Average
Self-Monitoring (SM)	102 <input type="text"/>	0.3	No		<u>95</u> to <u>109</u>	55	Average
Working Memory (WM)	105 <input type="text"/>	3.3	No		<u>99</u> to <u>111</u>	63	Average
Sum of Standard Scores	915 <input type="text"/>	101.7	Youth's Average				

Note. Differences from the Child's/Youth's Average are significant at $p < .10$.

Scores in Relation to the Norm

Brittany Ambers's results are provided in the graph below.

▼ Youth's Average



Scores in Relation to the Norm and the Individual

Brittany Ambers's results are detailed in the tables that follow. These scores show how Brittany Ambers compares to the normative sample. They also provide an analysis of the variability of scores on the separate CEFI Scales. Differences between Brittany Ambers's average score and her standard scores on each scale are presented, as is a summary column that indicates whether or not these differences were statistically significant. If a standard score on any of the CEFI Scales is greater than 109 and significantly higher than the youth's average score on the CEFI Scales, or less than 90 and significantly lower than the youth's average score, then that score represents an Executive Function Strength (Strength) or an Executive Function Weakness (Weakness), respectively.

Full Scale			
Standard Score	90% Confidence Interval	Percentile Rank	Classification
75	73-78	5	Below Average

CEFI Scales							
Scale	Standard Score	90% Confidence Interval	Percentile Rank	Classification	Difference from Youth's Average (76.7)	Statistically Significant? (p < .05)	Executive Function Strength/Weakness
Attention	79	74-87	8	Below Average	2.3	No	-
Emotion Regulation	74	69-84	4	Below Average	-2.7	No	-
Flexibility	80	74-92	9	Low Average	3.3	No	-
Inhibitory Control	72	67-82	3	Below Average	-4.7	No	-
Initiation	84	78-93	14	Low Average	7.3	No	-
Organization	76	71-85	5	Below Average	-0.7	No	-
Planning	77	72-85	6	Below Average	0.3	No	-
Self-Monitoring	71	67-82	3	Below Average	-5.7	No	-
Working Memory	77	72-87	6	Below Average	0.3	No	-

CEFI Interpretation

Step 1: Examine Quality of the ratings:
Consistency, Positive and Negative
Impression

Step 2: Interpret Scale Scores

Step 3: Compare CEFI Scale Scores

Step 4: Examine Item-Level Responses

Step 5: Compare Results Across Raters

Step 6: Compare Results Over Time

Step 4: Examine Item-Level Scores

Table C.1. CEFI (5–18 Years) Parent Form: Item-Level Classifications for 5–11-Year-Olds

Item		Item Score						Scale
		0	1	2	3	4	5	
1	think before acting?	Below Average	Below Average	Average	Average	Above Average	Above Average	IC
3	finish a boring task?	Below Average	Below Average	Average	Average	Above Average	Above Average	AT
4	forget instructions?	Below Average	Below Average	Below Average	Average	Average	Above Average	WM
5	complete one task before starting a new one?	Below Average	Below Average	Average	Average	Above Average	Above Average	OG
6	ask for help when needed?	Below Average	Below Average	Below Average	Average	Average	Above Average	SM
7	come up with a new way to reach a goal?	Below Average	Below Average	Average	Average	Above Average	Above Average	FX
8	remember how to do something?	Below Average	Below Average	Below Average	Average	Average	Above Average	WM
9	prepare for school or work?	Below Average	Below Average	Below Average	Average	Average	Above Average	PL
10	control emotions when under stress?	Below Average	Below Average	Average	Average	Above Average	Above Average	ER
11	work well in a noisy environment?	Below Average	Below Average	Average	Average	Above Average	Above Average	AT
12	stay calm when handling small problems?	Below Average	Below Average	Average	Average	Average	Above Average	ER
13	organize his/her thoughts well?	Below Average	Below Average	Below Average	Average	Average	Above Average	OG
14	fix his/her mistakes?	Below Average	Below Average	Average	Average	Average	Above Average	SM
15	solve problems creatively?	Below Average	Below Average	Average	Average	Average	Above Average	PL

CEFI Interpretation

Step 1: Examine Quality of the ratings:
Consistency, Positive and Negative
Impression

Step 2: Interpret Scale Scores

Step 3: Compare CEFI Scale Scores

Step 4: Examine Item-Level Responses

Step 5: Compare Results Across Raters

Step 6: Compare Results Over Time

Step 5: Compare Results Across Raters

Table 4.5. Critical Values ($p < .10$) Denoting Statistically Significant Differences Between

Scale	Parent to Parent		Teacher to Teacher		Parent to Teacher		Parent to Self-Report	Teacher to Self-Report
	5-11 Years	12-18 Years	5-11 Years	12-18 Years	5-11 Years	12-18 Years	12-18 Years	12-18 Years
Full Scale	5	5	4	4	4	4	8	5
Attention	10	10	7	7	9	9	13	11
Emotion Regulation	13	12	10	10	11	11	15	14
Flexibility	14	14	12	12	13	13	15	15
Inhibitory Control	12	12	9	9	11	10	14	13
Initiation	13	12	10	10	12	11	14	14
Organization	12	10	10	9	11	10	12	12
Planning	11	10	8	8	10	9	13	11
Self-Monitoring	14	12	11	11	13	11	15	14
Working Memory	13	12	9	9	11	11	11	13

CEFI Interpretation

Step 1: Examine Quality of the ratings:
Consistency, Positive and Negative
Impression

Step 2: Interpret Scale Scores

Step 3: Compare CEFI Scale Scores

Step 4: Examine Item-Level Responses

Step 5: Compare Results Across Raters

Step 6: Compare Results Over Time

Step 6: Compare Results Over Time

- Determine if CEFI pre post scores differ significantly – but also if the post-test standard score is in the Average range or higher

Table 4.6. Critical Values Denoting Statistically Significant Change Over Time

Scale	Parent Form				Teacher Form				Self-Report Form	
	5–11 Years		12–18 Years		5–11 Years		12–18 Years		12–18 Years	
	$p < .05$	$p < .10$	$p < .05$	$p < .10$	$p < .05$	$p < .10$	$p < .05$	$p < .10$	$p < .05$	$p < .10$
Full Scale	6	5	5	5	4	4	4	4	8	6
Attention	12	10	11	10	9	7	9	7	16	13
Emotion Regulation	15	13	14	12	11	10	11	10	20	17
Flexibility	17	14	16	14	14	12	14	12	20	17
Inhibitory Control	15	12	14	12	11	9	11	9	19	16
Initiation	15	13	14	12	12	10	12	10	19	16
Organization	14	12	12	10	11	10	11	9	17	14
Planning	13	11	12	10	10	8	9	8	17	14
Self-Monitoring	17	14	14	12	13	11	12	11	20	17
Working Memory	15	13	14	12	11	9	11	9	18	15

Presentation Outline

- Historical Perspective
- Definitions of Executive Function
- Executive Function or Functions?
- Rating Scales for EF
- Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity



EF and instruction

Validity of the CEFI Scales

- Factor analysis is a valuable tool to understand how items group.
- But we also need to know if the items have validity.
- Discriminating children with EF deficits from the regular population is important.
- Discriminating children with EF deficits from those who are not in the regular population and have other problems is very important.

Content Validity

Table 8.1 Sample Items for Each CEFI Component

Component	CEFI Definition	Example Item Content
Attention	Describes how well a child/youth can avoid distractions, concentrate on tasks, and sustain attention.	focus on one thing?
		pay attention for a long time?
Emotion Regulation	Indicates control and management of emotions, including staying calm when handling small problems and reacting with the right level of emotion.	stay calm when handling small problems?
		respond calmly to delays?
Flexibility	Reflects how well a child/youth adjusts his/her behavior to meet circumstances, including coming up with different ways to solve problems, having many ideas about how to do things, and being able to solve problems using different approaches.	come up with different ways to solve problems?
		have many ideas about how to do things?
Inhibitory Control	Describes the ability to control behavior or impulses, including thinking about consequences before acting, maintaining self-control, and keeping commitments.	think of the consequences before acting?
		maintain self-control?
Initiation	Indicates how a child/youth begins tasks or projects on his/her own, including starting tasks easily, being motivated, and taking the initiative when needed.	appear motivated?
		start tasks easily?

Content Validity

Table 8.1 Sample Items for Each CEFI Component

Component	CEFI Definition	Example Item Content
Organization	Reflects the ability to manage personal effects, work, or multiple tasks, including organizing tasks and thoughts well, managing time effectively, and working neatly.	organize tasks well?
		manage time effectively?
Planning	Describes how well a child/youth can develop and implement strategies to accomplish tasks, including planning ahead and making good decisions.	find a strategy that worked?
		plan ahead?
Self-Monitoring	Indicates the child's/youth's ability to evaluate his/her own behavior in order to determine when a different approach is necessary, including noticing and fixing mistakes, knowing when help is required, and understanding when a task is completed.	fix his/her/your mistakes?
		notice his/her/your mistakes?
Working Memory	Reflects how well a child/youth can keep information in mind that is important for knowing what to do and how to do it, including remembering important things, instructions, and steps.	remember many things at one time?
		remember important things?

US vs Canada

- Samples were matched on age, gender, race/ethnicity, and parental education levels

Table 8.13. Differences Between Canadian and U.S. Matched Samples: CEFI Full Scale

Form		Canadian	U.S.	<i>d-ratio</i>	<i>F</i> (<i>df</i>)	<i>p</i>
Parent	<i>M</i>	101.5	102.7	0.08	0.87 (1, 521)	0.351
	<i>SD</i>	15.5	15.6			
	<i>N</i>	263	263			
Teacher	<i>M</i>	98.3	100.5	0.16	1.75 (1, 272)	0.187
	<i>SD</i>	14.0	14.0			
	<i>N</i>	137	137			
Self-Report	<i>M</i>	102.0	101.4	-0.04	0.10 (1, 196)	0.750
	<i>SD</i>	15.4	14.9			
	<i>N</i>	101	101			

CEFI Consistency Between Raters

- Comparisons across parent, teacher, and self-report ratings show good correlations and good mean score consistency

Table 8.15. Correlations Between CEFI Forms: CEFI Full Scale

Comparison	Obtained <i>r</i>	Corrected <i>r</i>	<i>N</i>	Rater Type	<i>M</i>	<i>SD</i>	Rater Type	<i>M</i>	<i>SD</i>	<i>d</i> -ratio
Parent to Teacher	.719	.791	126	Parent	96.2	14.3	Teacher	97.2	12.6	-0.08
Parent to Self-Report	.669	.705	126	Parent	96.2	14.3	Self-Report	94.4	14.3	0.12
Teacher to Self-Report	.594	.679	126	Teacher	97.2	12.6	Self-Report	94.4	14.3	-0.21

Note. All *rs* significant, $p < .001$.

CEFI Scores by Diagnosis

- We expected that individuals with ADHD, mood disorders, and Autism Spectrum Disorders might earn a low CEFI Full Scale score.
- We compared groups matched on gender, race/ethnicity, and parental education

Impairment in executive function is common in a number of internalizing and externalizing forms of psychopathology (Willcutt et al., 2005; see chapter 2, *Theory and Research*, for further discussion). For instance, research and theory has pointed to executive function deficits in Attention-Deficit/Hyperactivity Disorder (ADHD) and mood disorders (e.g., Weyandt et al., in press), as well as Autism Spectrum Disorders (ASD; e.g., Gilbert, Bird, Brindley, Frith, & Burgess, 2008; Gilotty, Kenworthy, Sirian, Black, & Wagner, 2002; Happé, Booth, Charlton, & Hughes, 2006; Ozonoff, Pennington, & Rogers, 1991; Solomon, Ozonoff, Ursu, Ravizza, Cummings, Ly, & Carter, 2009).

Gender Differences: Abilities Associated With EF

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

Copyright 2001 by the American Psychological Association, Inc.
0022-0663/01/\$5.00 DOI: 10.1037//0022-0663.93.2.430

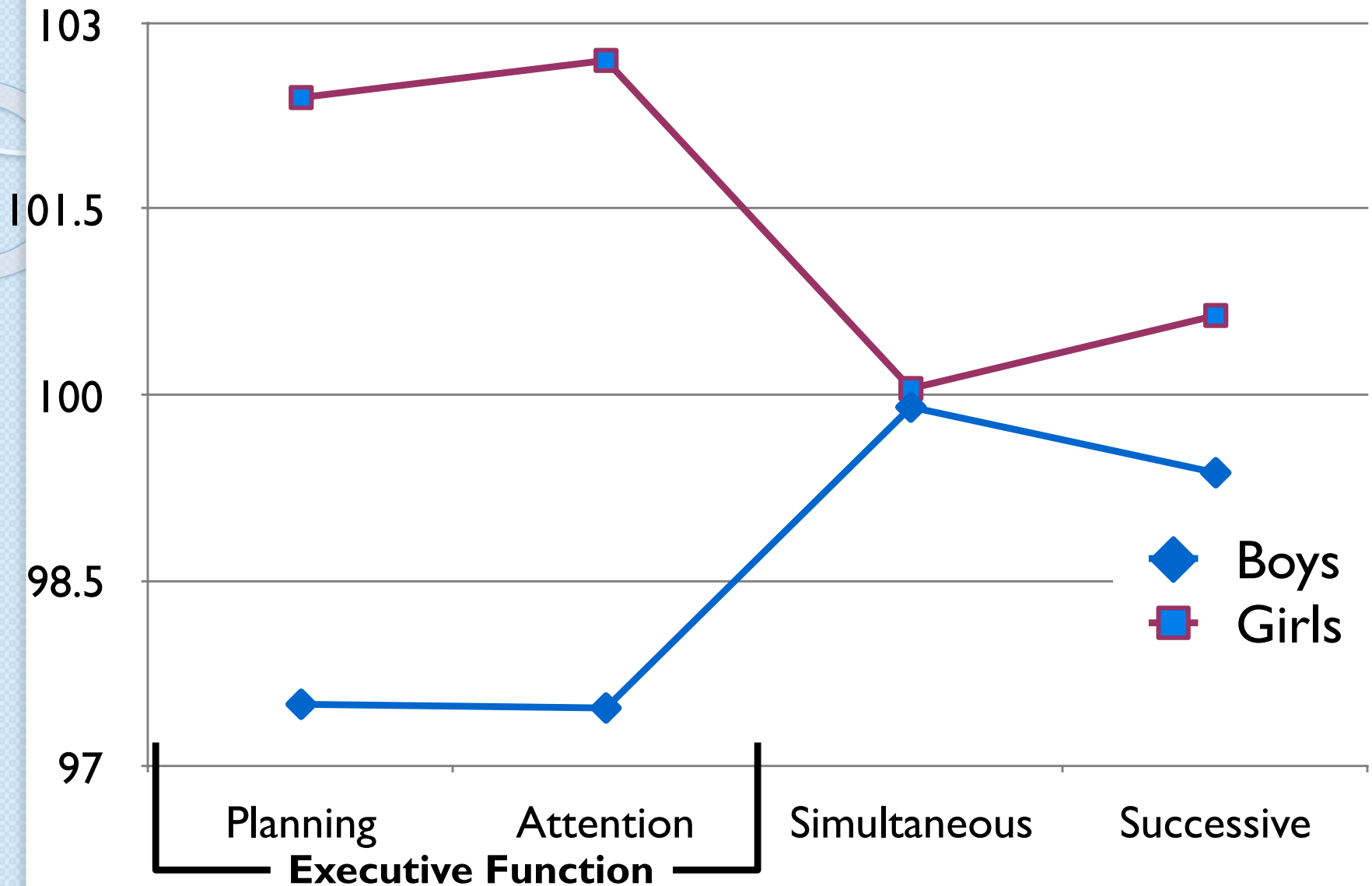
Gender Differences in Planning, Attention, Simultaneous, and Successive (PASS) Cognitive Processes and Achievement

Jack A. Naglieri
George Mason University

Johannes Rojahn
Ohio State University

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

Gender Differences: Abilities Associated With EF



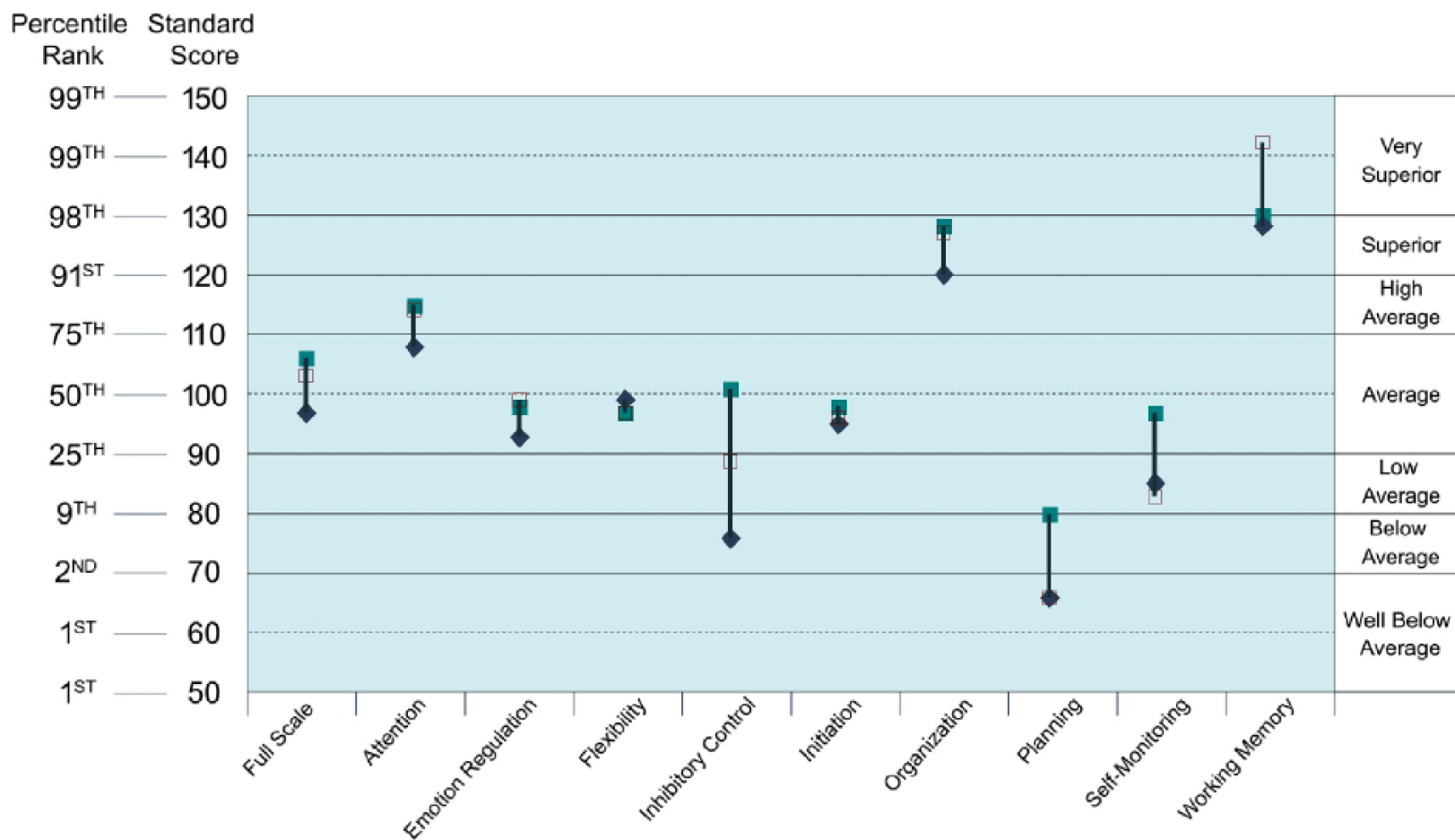
Computer Scored Printout

Classification: Well Below Average ≤ 69 ; Below Average = 70–79; Low Average = 80–89; Average = 90–109; High Average = 110–119; Superior = 120–129; Very Superior ≥ 130 .

Full Scale					
Score		P (10/15/2012)	T (10/15/2012)	SR (10/15/2012)	Significant Differences Between Raters P > T; SR > T
Standard Score		106	97	103	
90% CI		103-109	95-99	99-107	
Percentile Rank		66	42	58	
CEFI Scales					
Score		P (10/15/2012)	T (10/15/2012)	SR (10/15/2012)	Significant Differences Between Raters
Attention	Standard Score	115	108	114	No significant differences
	90% CI	108-120	103-112	104-121	
	Percentile Rank	84	70	82	
	EFS/EFW	Strength	-	Strength	
Emotion Regulation	Standard Score	98	93	99	No significant differences
	90% CI	91-106	87-100	89-109	
	Percentile Rank	45	32	47	
	EFS/EFW	-	-	-	
Flexibility	Standard Score	97	99	97	No significant differences
	90% CI	89-106	92-106	87-108	
	Percentile Rank	42	47	42	
	EFS/EFW	-	-	-	
Inhibitory Control	Standard Score	101	76	89	P > T
	90% CI	93-108	72-83	81-101	
	Percentile Rank	53	5	23	
	EFS/EFW	-	Weakness	-	

Overview of Results Between Raters for John Hancock

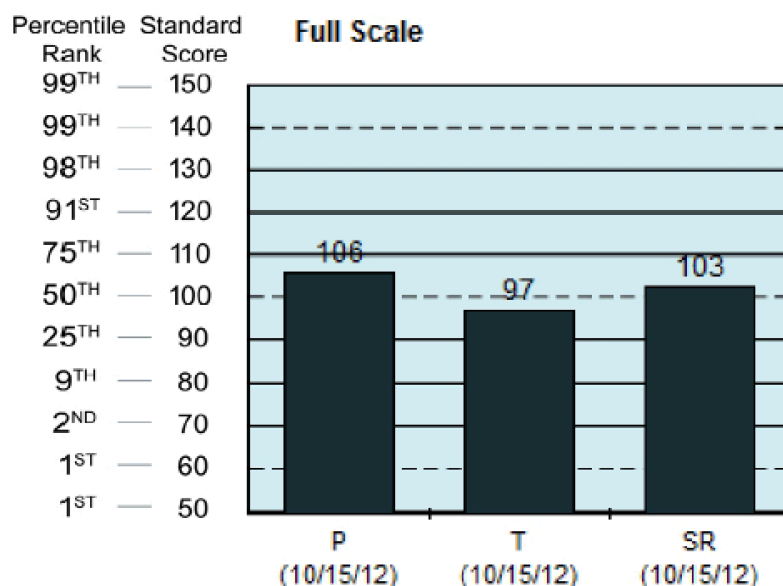
John Hancock's ratings from different raters are provided in the graph below.



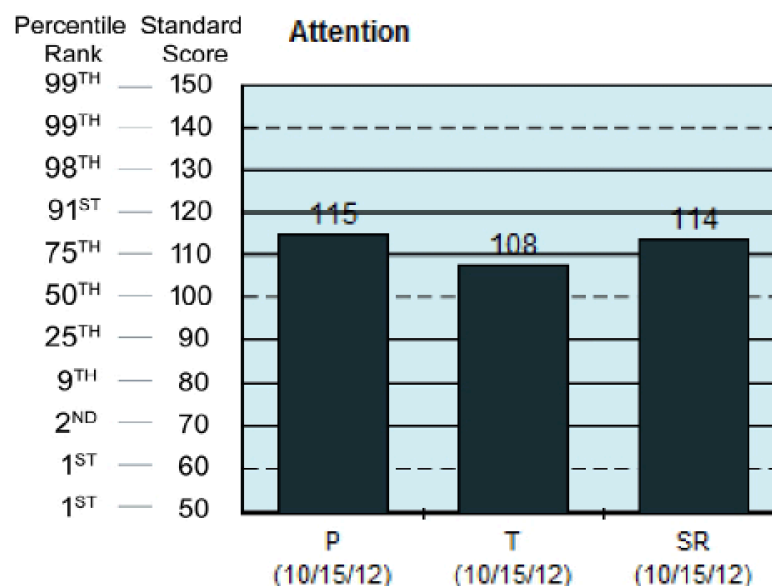
Scale-Level Scores and Significant Differences Between Raters

John Hancock's CEFI results from different raters are provided in the graphs that follow. Any statistically significant ($p < .05$) differences between raters' scores are noted below each graph. **Note:** P = Parent, T = Teacher, and SR = Self-Report.

Classification: Well Below Average ≤ 69 ; Below Average = 70–79; Low Average = 80–89; Average = 90–109; High Average = 110–119; Superior = 120–129; Very Superior ≥ 130 .



P significantly higher than T.
SR significantly higher than T.



No significant differences.

Extensive Section on Strategies

CEFI (5–18 Years) Teacher Interpretive Report for John Hancock

Admin Date: 10/15/2012

Intervention Strategies

This section provides intervention strategies for improving upon the weaknesses identified by *Low Average* to *Well Below Average* scores on the CEFI Scales. References for the sources of these strategies are provided at the end of the Intervention Strategies section. (See *CEFI Items by Scale* for a full list of items with below average scores for item-level indicators of specific weaknesses.)

Executive Function

Executive function is a dynamic system; its successful operation involves the inhibition and activation of various processes in an integrated effort to direct goal-oriented behavior. Additionally, executive function has a developmental trajectory. As the brain develops, executive function behaviors are acquired and progressively refined. Since executive function involves the integrated effort of multiple processes, a wide range of abilities or behaviors are implicated in its operation. Any single behavior or domain of behaviors can present as a symptom of a problem if the executive function system is impaired. As such, specific behaviors can be targeted through intervention strategies that will have a broad impact on executive function behaviors in general.

General Intervention Strategies

- Take a child's natural development into account when planning intervention strategies. Executive function behaviors require greater effort and are less accurate in early stages of development.
- Develop intervention strategies that initially incorporate external controls, prompts and cues to help the child learn and develop new abilities.
- Have strategies in place that gradually remove external controls to promote internalization of new behaviors. Encourage a child to self-prompt so that newly acquired skills become habit.
- State behavioral challenges in a positive manner that indicates change is possible with intervention.

Intervention Strategies for Inhibitory Control

Teaching a Child to Stop and Think!

To encourage positive self-control, a student should be first directly taught to pay attention to and think about his or her behavior. Teachers can explicitly teach the student that when the phrase “Stop and think!” is said, the student should think about what he or she is doing. The student then should be taught to ask him- or herself appropriate questions about actions, such as “What am I doing?” and “Is what I’m doing okay?” If the child is about to do something, the questions “What do I want to do?” and “Is what I want to do okay?” may be posed. Initially, these questions could be put on the student’s desk or posted on the wall as a reminder.

The student may be given the following plan to follow to determine what is going on in a situation, think about what his or her options are, and choose the best one.

- Stop and think.
- Identify the situation.
- Ask, “What do I want to do?”
- Ask, “Is there a problem?”
- Ask, “What are possible solutions?”
- Consider the consequences to each solution.
- Choose the best solution.
- Evaluate the results.

Naglieri, J. A., & Pickering, E. B., *Helping Children Learn: Intervention Handouts for Use at School and at Home*, Second Edition, 2010. Baltimore: Paul H. Brookes Publishing Co., Inc. www.brookespublishing.com. Used with the permission of the publisher.

Comprehensive Executive Function Inventory (5–18 Years) Teacher Feedback Report

Child's Name/ID: John Hancock
Age: 6 years
Gender: Male
Birth Date: October 15, 2006
Grade: 1

Teacher's Name/ID: Mr. Lincoln
Date of Assessment: October 15, 2012
School: DC
Examiner:

Note: This feedback report is intended to provide a record of scores obtained on the CEFI. It does not replace a detailed explanation of the scores by the examiner, identified at the top of this report. If you have any questions or concerns regarding the material herein, please speak to the examiner.

About the CEFI

The Comprehensive Executive Function Inventory (CEFI) is a rating scale that is used to measure Attention, Emotion Regulation, Flexibility, Inhibitory Control, Initiation, Organization, Planning, Self-Monitoring, and Working Memory. The CEFI gives an overall score and scores on nine separate scales.

What CEFI Scores Mean

This report provides standard scores that are based on ratings of children in the normative sample (that is, children who represent the general population). The scores are set so that 100 is *Average*, and equal to the 50th percentile rank. This means that when a child obtains a score of 100, he did as well as or better than 50 percent of children his age. The *Average* category includes scores that range from 90 (25th percentile) to 109 (75th percentile). Scores below 90 may suggest difficulties in specific areas. Scores above 109 may suggest strengths in specific areas.

A Case Study: Barry

- Barry is a 17-year-old, 11th grader with a long standing history of good academic, social and behavioral functioning.
- 5 years ago Barry's parents divorced; his mother remarried. His relationship with his mother is good but inconsistent with his father.
- Over the past year, he became increasingly depressed and socially isolated. School work has declined.
- This past fall he took a number of advanced placement classes, he was also a starter on his high school football team.
- As the season ended his school work declined precipitously and a long standing relationship with a girlfriend ended.

Barry

- Barry's self-report: Revised Children's Manifest Anxiety Scale = 99th percentile.
- His self-report: Reynolds Adolescent Depression Scale = 96th percentile.
- His Millon profile was characteristic of a youth feeling vulnerable, anxious, misunderstood, unappreciated, angry, depressed and disconnected from others.

Barry

Full Scale							
Standard Score		90% Confidence Interval		Percentile Rank		Classification	
70		68-73		2		Below Average	
CEFI Scales							
Scale	Standard Score	90% Confidence Interval	Percentile Rank	Classification	Difference from Youth's Average (72.4)	Statistically Significant? (p < .10)	Executive Function Strength/Weakness
Attention	72	68-80	3	Below Average	-0.4	No	-
Emotion Regulation	78	73-88	7	Below Average	5.6	No	-
Flexibility	75	70-87	5	Below Average	2.6	No	-
Inhibitory Control	82	76-91	12	Low Average	9.6	Yes	-
Initiation	68	64-79	2	Well Below Average	-4.4	No	-
Organization	76	71-85	5	Below Average	3.6	No	-
Planning	62	58-71	1	Well Below Average	-10.4	Yes	Weakness
Self-Monitoring	62	59-74	1	Well Below Average	-10.4	Yes	Weakness
Working Memory	77	72-87	6	Below Average	4.6	No	-

Barry

Scores	
Consistency Index	Standard Score = 110 Inconsistent response style is not indicated.
Negative Impression Scale	Standard Score = 72 Negative impression response style is indicated.
Positive Impression Scale	Standard Score = 128 Positive impression response style is not indicated.
Number of Omitted Items	Number of Items Omitted = 0 None of the items were omitted.

Barry

CEFI Scales

Note: For the CEFI Scales, item scores that are substantially above the average are indicated by a lightly shaded cell (i.e.,), and those substantially below the average rating are in a darker cell (i.e.,).

Attention	
Item	Score
3. finish a boring task?	1
11. work well in a noisy environment?	2
21. work well for a long time?	2
25. concentrate while reading?	1
36. stay on topic when talking?	2
44. pay attention for a long time?	2
56. concentrate?	1
62. pay attention during a boring task?	1
75. get distracted? (R)	1
80. pay attention to details?	1
91. listen closely to instructions?	2
97. focus on one thing?	0

Emotion Regulation	
Item	Score
10. control emotions when under stress?	1
12. stay calm when handling small problems?	2
42. find it hard to control his/her emotions? (R)	1
47. get upset when plans were changed? (R)	3
64. wait patiently?	3
68. become upset in new situations? (R)	3
73. respond calmly to delays?	2
79. react well to surprises?	2
81. react with the right level of emotion?	1

Barry

CEFI Scales

Note: For the CEFI Scales, item scores that are substantially above the average are indicated by a lightly shaded cell (i.e.,), and those substantially below the average rating are in a darker cell (i.e.,).

Attention	
Item	Score
3. finish a boring task?	1
11. work well in a noisy environment?	2
21. work well for a long time?	2
25. concentrate while reading?	1
36. stay on topic when talking?	2
44. pay attention for a long time?	2
56. concentrate?	1
62. pay attention during a boring task?	1
75. get distracted? (R)	1
80. pay attention to details?	1
91. listen closely to instructions?	2
97. focus on one thing?	0

Emotion Regulation	
Item	Score
10. control emotions when under stress?	1
12. stay calm when handling small problems?	2
42. find it hard to control his/her emotions? (R)	1
47. get upset when plans were changed? (R)	3
64. wait patiently?	3
68. become upset in new situations? (R)	3
73. respond calmly to delays?	2
79. react well to surprises?	2
81. react with the right level of emotion?	1

Barry - Conclusions

- Barry's depression has a significant influence on what he does and how he performs on a daily basis
- Barry is intellectually capable (WAIS and CAS) and good in Planning and Attention on the CAS, but his behavior reflects poor application of those neurocognitive abilities

Presentation Outline

- Historical Perspective
- Definitions of Executive Function
- Executive Function or Functions?
- Rating Scales for EF
- Comprehensive Executive Function Inventory (CEFI)
 - Structure – Normative Sample
 - Reliability
 - Interpretation
 - Validity
- EF and instruction



EF Interventions

- Can strategic, instructional interventions provide remedial and compensatory support for children with EF deficits?

Cognitive Strategy = EF Instruction

- A strategy is a procedure that the learner uses to perform academic tasks
- Using a strategy means the child thinks about 'how you do what you do'
- Successful learners use many strategies.
- Some of these strategies include visualization, verbalization, making associations, chunking, questioning, scanning, using mnemonics, sounding out words, and self-checking and monitoring.

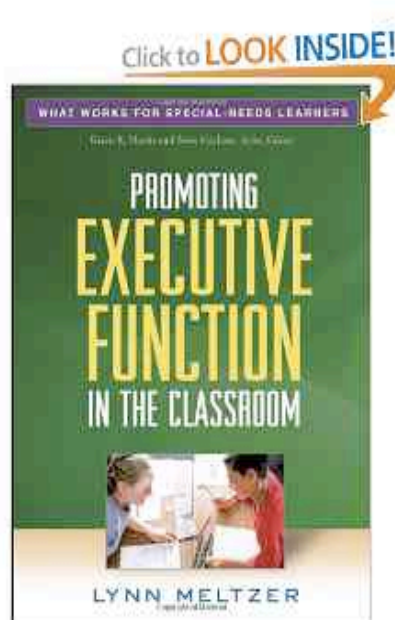
My Granddaughter Hones Her EF Skills



Practice Pays Off!



EF Instruction



Promoting Executive Function in the Classroom (What Works for Special-Needs Learners) [Paperback]

[Lynn Meltzer PhD](#) (Author)

★★★★★ ☒ (1 customer review) |

List Price: **\$35.00**

Price: **\$30.45** & this item ships for **FREE with Super Saver Shipping**. [Details](#)

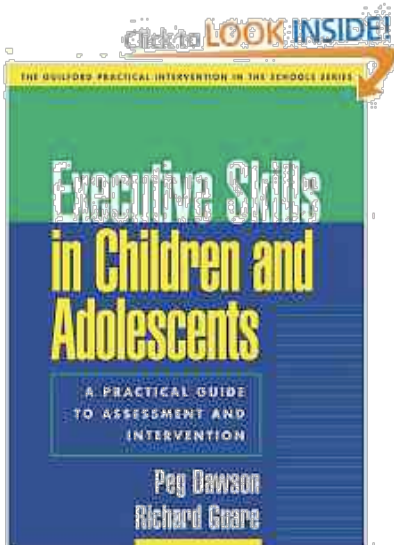
You Save: **\$4.55 (13%)**

In Stock.

Ships from and sold by **Amazon.com**. Gift-wrap available.

Want it delivered Tuesday, November 29? Order it in the next **29 hours and 9 minutes**, and choose **One-Day Shipping** at checkout. [Details](#)

Ordering for Christmas? To ensure delivery by December 24, choose **FREE Super Saver Shipping** at checkout. [Read more about holiday shipping.](#)



Executive Skills in Children and Adolescents: A Practical Guide to Assessment and Intervention (The Guilford Practical Intervention in Schools Series) [Paperback]

[Peg Dawson EdD](#) (Author), [Richard Guare PhD](#) (Author)

★★★★★ ☒ (9 customer reviews) |

Available from [these sellers](#).

9 new from **\$49.45** **23 used** from **\$37.50**



FREE Two-Day Shipping for Students. [Learn more](#)

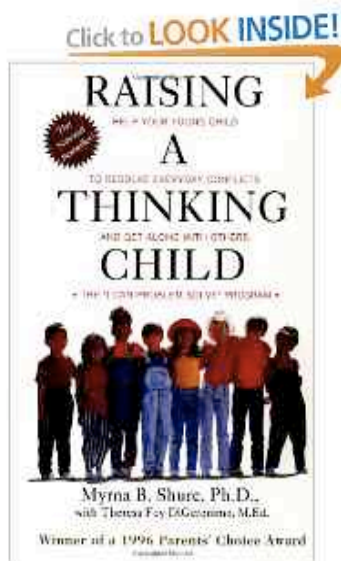
Book

Sell Back Your Copy for \$20.50

Hard Drive

\$37.50

180



Raising a Thinking Child: Help Your Young Child to Resolve Everyday Conflicts and Get Along with Others [Paperback]

[Myrna Shure](#) (Author), [Theresa Foy DiGeronimo](#) (Author)

★★★★★ (10 customer reviews) |

List Price: ~~\$14.99~~

Price: **\$10.11** & eligible for **FREE Super Saver Shipping** on orders over \$25. [Details](#)

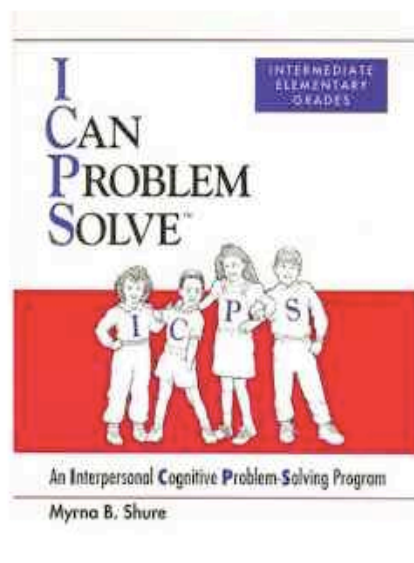
You Save: **\$4.88 (33%)**

In Stock.

Ships from and sold by **Amazon.com**. Gift-wrap available.

Want it delivered Tuesday, November 29? Order it in the next **28 hours and 4 minutes**, and choose **One-Day Shipping** at checkout. [Details](#)

Ordering for Christmas? To ensure delivery by December 24, choose **FREE Super Saver Shipping** at checkout. [Read more about holiday shipping.](#)



I Can Problem Solve: An Interpersonal Cognitive Problem-Solving Program : Intermediate Elementary Grades [Paperback]

[Myrna B. Shure](#) (Author)

★★★★★ (6 customer reviews) |

List Price: ~~\$41.95~~

Price: **\$34.11** & this item ships for **FREE with Super Saver Shipping**. [Details](#)

You Save: **\$7.84 (19%)**

In Stock.

Ships from and sold by **Amazon.com**. Gift-wrap available.

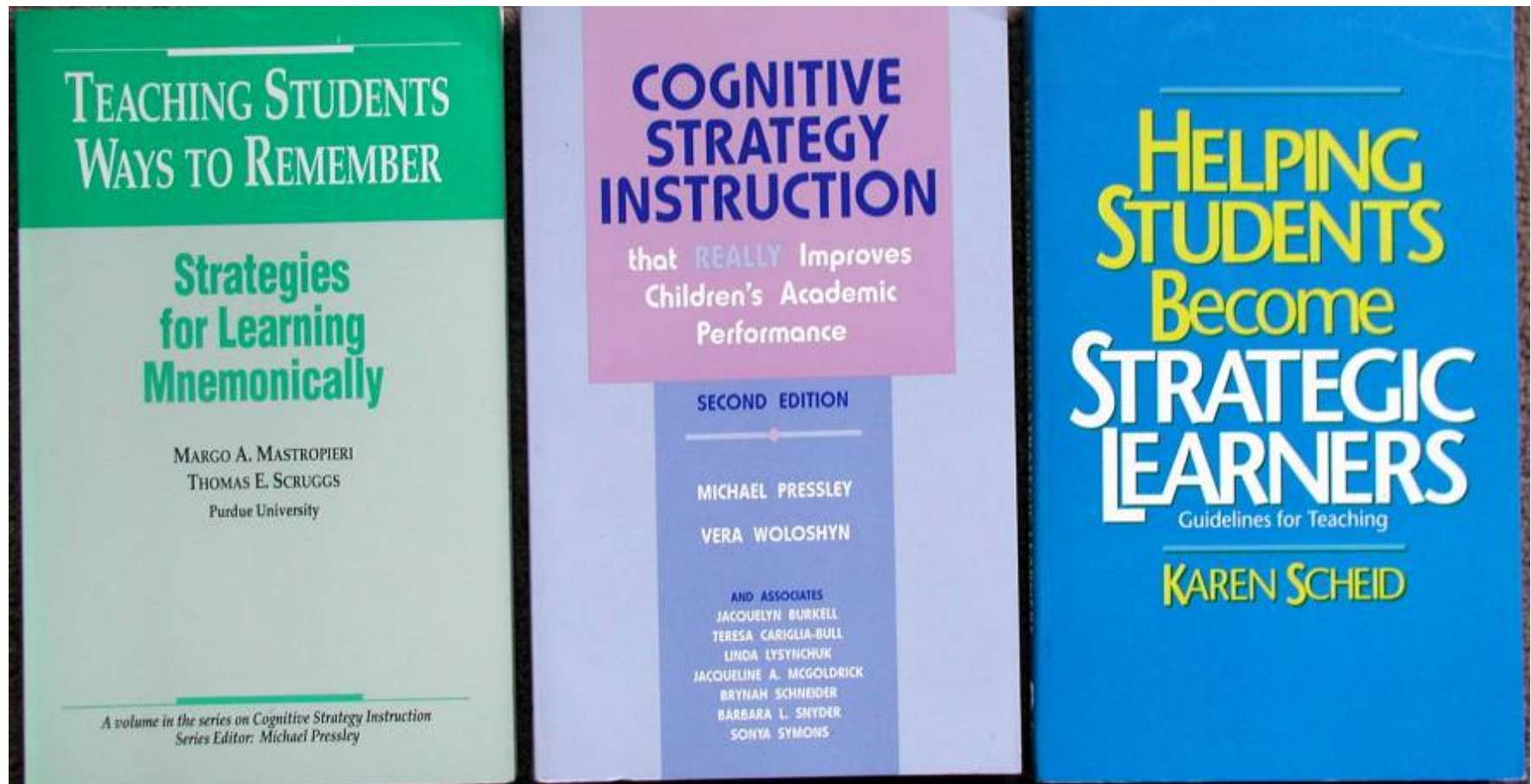
Only 19 left in stock--order soon (more on the way).

Want it delivered Tuesday, November 29? Order it in the next **28 hours and 34 minutes**, and choose **One-Day Shipping** at checkout. [Details](#)

Ordering for Christmas? To ensure delivery by December 24, choose **FREE Super Saver Shipping** at checkout. [Read more about holiday shipping.](#)

[See larger image](#)

Cognitive Instructional Methods



RAISING A SELF- DISCIPLINED CHILD

★★

Help Your Child Become
More Responsible, Confident,
and Resilient

★★



Robert Brooks, Ph.D. and Sam Goldstein, Ph.D.

AUTHORS OF RAISING RESILIENT CHILDREN

Helping Children Learn

Intervention Handouts for
Use in School and at Home

Jack A. Naglieri
Eric B. Pickering

Tools of the Mind



Tools of The Mind

- HOME
- ABOUT
- CURRICULUM
- PARENTS
- PROFESSIONAL DEVELOPMENT
- ETOOLS
- CONTACT



New York Times article: "Training Brains to Behave"

Focus on Self-Regulation

A growing body of research indicates that many children start school not ready to learn not because they do not know their letters or numbers but because they lack one critical ability: the ability to regulate their social, emotional, and cognitive behaviors. Current research shows that self-regulation – often called executive function -- has a stronger association with academic achievement than IQ or entry-level reading or math skills.

Today's children come to school with lower levels of self-regulation and early childhood teachers report that they are ill equipped to deal with these problems. [More...](#)

Research indicates that interventions at the early childhood level can have a positive influence on self-regulation and the development of executive function in the early years and beyond. [More...](#)

Tools of the Mind is a research-based early childhood program that builds strong foundations for school success in preschool and kindergarten children by promoting their intentional and self-regulated learning. In a series of rigorous experimental trials, Tools of the Mind has been shown to have a significant impact on self-regulation of preschool children. The study also found these gains in self-regulation to be related to scores in child achievement in early literacy and mathematics.

In a Tools classroom:

- Teachers systematically scaffold children's moving along the continuum of self-regulation from being regulated by others to engaging in "shared" regulation to eventually becoming "masters of their own behavior."
- Children gain control of their social, emotional, and cognitive behaviors by learning how to use a variety of "mental tools."



<http://www.hoagiesgifted.org/eric/e638.html>



ERIC EC on...
[Hoagies' Gifted Education Page](#)

Hoagies' Page



[Support Hoagies' Page!](#)



Click on
[Shop](#)
[Hoagies'](#)
[Page](#) before
you visit your
favorite
on-line stores
including
[Amazon](#),
[Highlights](#),
[Chinaberry](#),



ERIC
CLEARINGHOUSE ON DISABILITIES
AND GIFTED EDUCATION

Google™ Custom Search

[Home](#) [Parents](#) [Educators](#) [Kids](#) [What's New?](#) [Gifted 101](#) [Community](#) [Conferences](#) [Shop](#) [Support](#) [About](#) [PC Security](#)

Strategy Instruction

The ERIC Clearinghouse on Disabilities and Gifted Education (ERIC EC)

E-mail: webmaster@hoagiesgifted.org

Internet: <http://eric.hoagiesgifted.org>

ERIC EC Digest #E638

Author: Pat Beckman

December 2002

For more than two decades there has been an abundance of research regarding strategy instruction. Originally, most of this research focused on the effects of strategy instruction on students with learning disabilities. Researchers are currently looking at how strategy instruction affects all learners.

What is a strategy?

In general, a strategy is a tool, plan, or method used for accomplishing a task. Below are other terms associated with strategy instruction, some of which are discussed in this digest:

- **Cognitive Strategy:** a strategy or group of strategies or procedures that the learner uses to perform academic tasks or to improve social skills. Often, more than one cognitive strategy is used with others, depending on the learner and his/her schema for learning. In fact, research indicates that successful learners use numerous strategies. Some of these strategies include visualization, verbalization, making associations, chunking, questioning, scanning, underlining, accessing cues, using mnemonics, sounding out words, and self-checking and monitoring.
- **Cues:** visual or verbal prompts to either remind the student what has already been learned or provide an opportunity to learn something new. Cues can also be employed to prompt student use of a strategy.
- **Independent, Strategic Learner:** the student who uses cues and strategies within his/her learning schema, asks clarifying questions, listens,

<http://nichcy.org/research/ee/learning-strategies>



National Dissemination Center
for Children with Disabilities

Search this website...



SEARCH

[Home](#)

[Disabilities](#)

[Babies & Toddlers](#)

[Children \(3 to 22\)](#)

[Disability & Education Laws](#)

[Research](#)

[En Español](#)

You are here: [Home](#) / [Research Center](#) / [Evidence for Education](#) / [The Power of Strategy Instruction](#)

The Power of Strategy Instruction

by Stephen D. Luke, Ed.D.

Evidence for Education, Volume 1, Issue 1, 2006

Links updated, October 2010

[Download PDF](#)

[Table of Contents](#)

[Introduction](#)

[Early Studies of the Good Learner](#)

[Spotlight on...the SIM Model](#)

[SIM Content Literacy Continuum: A Working Example](#)

[Spotlight on...SRSD for Writing](#)

[Combining Strategy Instruction with Direct Instruction](#)

[Promise Beyond LD](#)

[Conclusion](#)



Tags

[direct instruction](#), [Evidence for Education](#), [learning disabilities](#), [learning strategy instruction](#), [research](#), [Self-Regulated Strategy Development/SRSD](#), [SIM Model](#)

Quick Links

[Topics, A-Z](#)

[Publications](#)

[State Organizations](#)

[National Organizations](#)

ESPECIALLY FOR...

[Families and Communities](#)

[Early Intervention Providers](#)

[Schools and Administrators](#)

If you've ever played the game of chess, chances are you used a fairly unsophisticated approach when first making your way around the board. It's also likely that basic tactics quickly emerged after just a few games—moves that were at first aimless and erratic became much more planned and organized. You may

<http://www.ncld.org/at-school/especially-for-teachers/effective-teaching-practices/strategic-instruction-model-sim-how-to-teach-how-to-learn>

LD.org
National Center for
Learning Disabilities

> LD Basics

> In the Home

> At School

Your Child's Rights

Supporting Learning in School

Especially for Teachers

- Effective Teaching Practices

- Monitoring Progress

- Universal Design for Learning

> College & Work

> On Capitol Hill

> LD Insights Blog

> Publications & More

> Resource Locator

About Us | Contact Us | Login

Google™ Custom Search

GO

→ Donate Now

At School | Especially for Teachers | Effective Teaching Practices

Strategic Instruction Model: How to Teach, How to Learn

By Sheldon H. Horowitz, Ed.D.
Published: December 1 2005

Share |    

Almost 25 years ago, a group of researchers at the University of Kansas set out to change "business as usual" in terms of instruction for students with learning disabilities (LD). They recognized that adolescents were especially vulnerable to school failure, especially in the area of literacy (reading, writing, comprehension), and that these students were likely to continue to fall further behind unless they were helped to be more "strategic" in their approach to learning. Decades of classroom research and thousands of professional development hours later, we are fortunate to have an approach to teaching students (and training educators) that can help students build essential skills and learn complex subject matter as well as assist teachers imbed effective strategies into classroom instruction. And most recently, we have gained an understanding of how whole schools can adopt and support strategic approaches to teaching and learning across content areas.

Literacy First

The SIM model was developed for students who already have basic decoding and word recognition skills. That said, even students who struggle with these early reading skills need to "learn how to learn" and could benefit from classroom routines and strategies that help teachers ensure that students are learning critical content (the course material students need to meet standards) in ways that prepare them for class promotion, high school graduation, and a success after school.



Related Content

Building and Maintaining a Good Relationship with Your Child's Teacher >

Advocating for Your School-Aged Child >

IDEA Parent Guide >

Assistive Technology >

Knowing Your Child's Rights >

187



Browse by Stage

Browse by Age

1 My child is struggling in school with learning.
What should I do?

2 Now that my child has been identified with LD, **what's next?**

3 How do I ensure my child's success and plan for the future?

Types of LD

General LD Info

Dyslexia

TYPES OF LD

FOR PARENTS

AT SCHOOL

ADULTS WITH LD

GET INVOLVED

RESOURCES

DONATE

Home > Types of LD > Executive Functioning

Executive Functioning

Many people with LD struggle with executive function, which can make activities like planning, organizing, strategizing, remembering details and managing time and space difficult. Problems with executive function—a set of mental processes that helps connect past experience with present action—can be seen at any age and often contribute to the challenges individuals with LD face in academic learning.

Like 200

Tweet 23

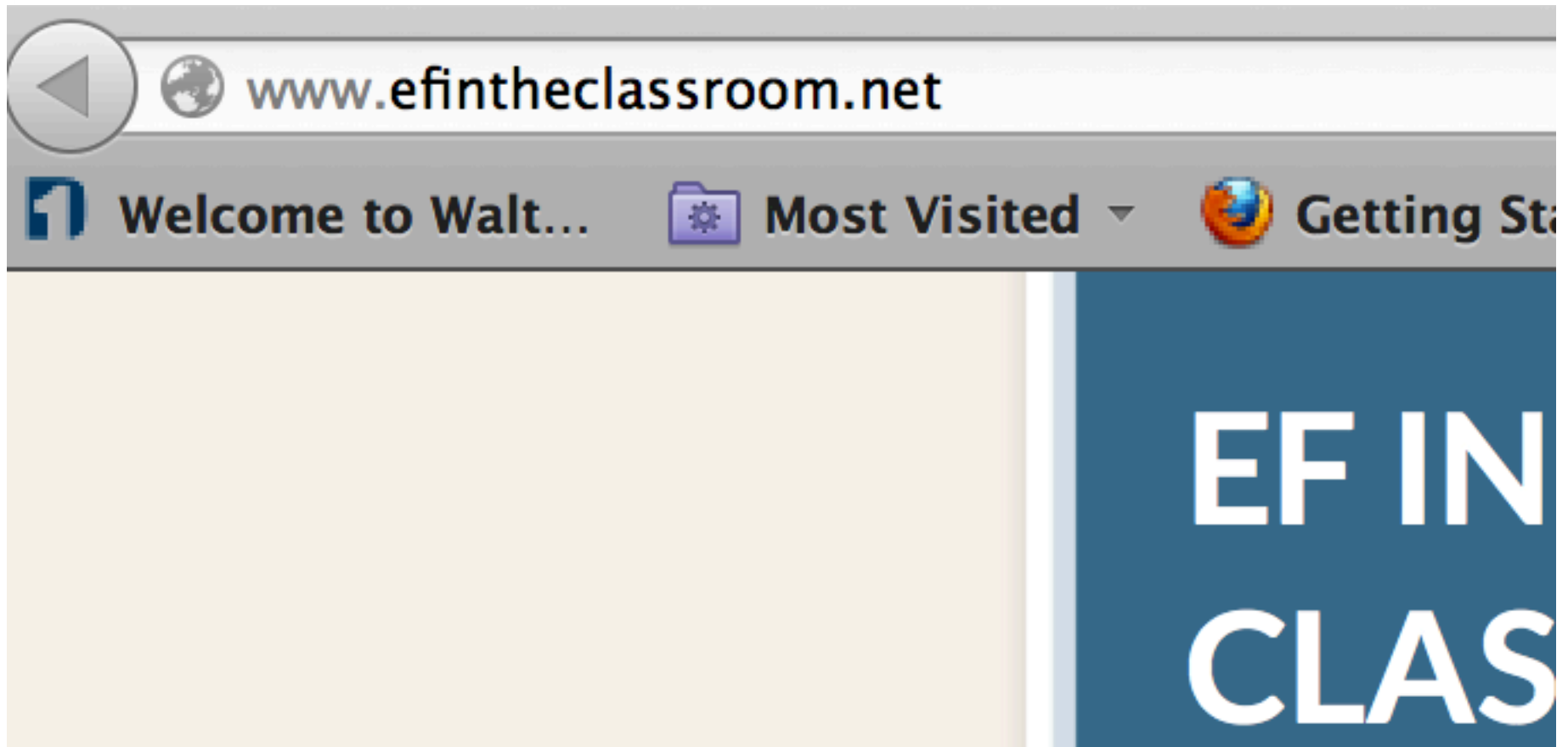


Download: Free Executive Function E-Book and Infographic

Does your child have trouble with motivation, flexible thinking or working memory? Register now for our free infographic and e-book, which offer an in-depth look into executive function issues. [More >](#)

Like 1

Tweet 3



EF IN THE CLASSROOM

[Home](#)[Lesson Design](#)[EF Skill Areas](#)[Student's Learning Log](#)

WELCOME!

This web site was created by a group of teachers from two different high schools and a professor from the University of Virginia as a way to reflect and collaborate as we begin implementing a series of lessons designed to illustrate the importance of executive functioning in the classroom. We do not intend it to be a resource on executive functioning itself, but rather a place for us, and any visitors to the site, to discuss the importance of executive functioning in the classroom and the effectiveness of the lessons we have created. We will be implementing these lessons in the fall of 2013. We will be evaluating the effectiveness of the lessons as we go, and we will be using a pre and post assessment to measure the overall effectiveness of the lessons.

As we present each lesson (see the "EF Skill Areas" button to the left) we will be posting our thoughts and reflections. While visitors are welcome to post any comments or questions, we ask that you not identify any school, class, or student.

We are implementing these lessons in selected team taught, self contained, and general education classes at a high school with ~2800 students and a high school with ~300 students. The content areas are: Physics, Algebra 2, English, Government, ESOL, and Personal Development.

EF IN THE CLASSROOM

Home

Lesson Design

EF Skill Areas

Student's Learning Log

Introductory Lesson

Sustained Attention

Task Initiation

Planning

Organization

Time Management

Cognitive Flexibility

Emotional Control

Response Inhibition

Working Memory

MetaCognition

Goal Directed Persistence

Culminating Lesson



a group of teachers from two different high schools and a professor as a way to reflect and collaborate as we begin implementing a series of lessons on the importance of executive functioning in the classroom. We do not intend it to be a place for us, but rather a place for us, and any visitors to the site, to discuss the importance of executive functioning in the classroom and the effectiveness of the lessons we have created. We will be posting our thoughts and reflections in the fall of 2013. We will be evaluating the effectiveness of the lessons as we go, and we will be using the data from the assessment to measure the overall effectiveness of the lessons.

As we begin to post the "EF Skill Areas" button to the left) we will be posting our thoughts and reflections. If you have any comments or questions, we ask that you not identify any school, class,

Lessons in selected team taught, self contained, and general education classes at a high school and a high school with ~300 students. The content areas are: Physics, Algebra 2, English, and Personal Development.

[Home](#) > my Livescribe

Sharing Preferences

- ✉ Email a Friend!
- 📄 Download as PDF
- 🔗 Get a link to this file
- 📘 Share on Facebook
- 🔗 Embed this file

This page belongs to **tsmcelroy**

Shared Files

1-Subject Notebook 5
p. 9

full screen ↗

MONDAY → CLASS DISCUSSION VIDEO

TUESDAY → CLASS DISCUSSION VIDEO

WEDNESDAY → CLASS DISCUSSION VIDEO

THURSDAY → CLASS DISCUSSION VIDEO

FRIDAY → CLASS DISCUSSION VIDEO

LOG

SET A GOAL FOR THE WEEK AND CREATE A PLAN

PHASE OF THE WEEK WHAT IS YOUR PLAN?

M T W Th F

FRIDAY → CLASS DISCUSSION VIDEO

HOW WELL DID YOU DO WITH YOUR PLAN FOR THE WEEK?

LOG

1-Subject Notebook 5 p. 9



Posted by: tsmcelroy
on: Aug 29, 2013

File Size: 1.3MB

Category: Unspecified

Views: 18

Rating: ★★★★★

Description:

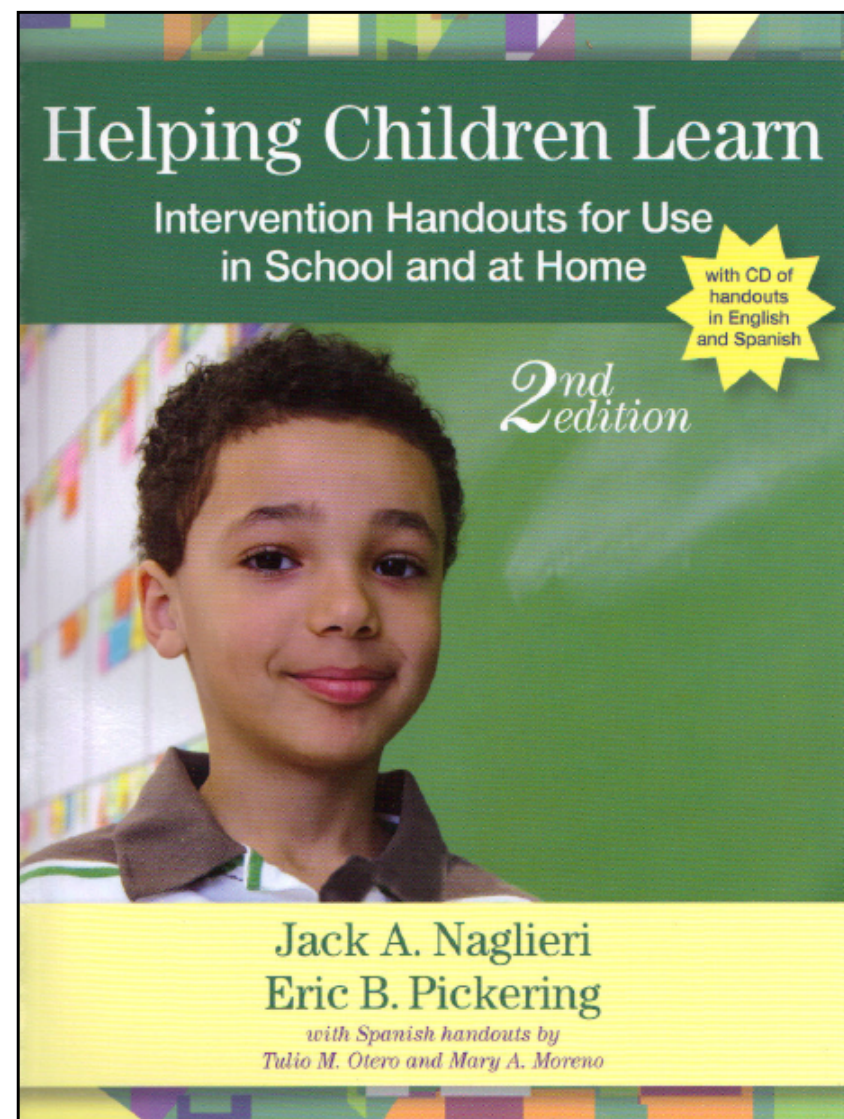
Viewer Comments

Be the first to add a comment!

Want to leave a comment? [Log In](#) or [Sign Up](#) first!

Teaching Children to use EF

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



Four Ways to Think Smart!

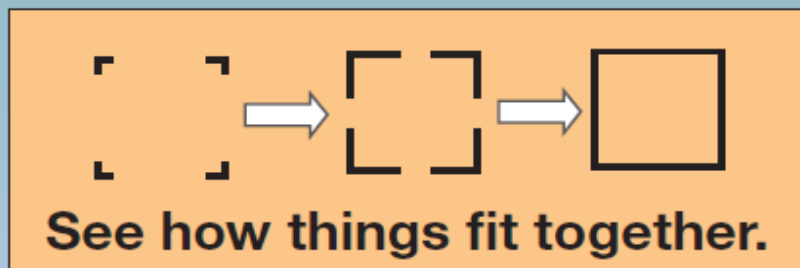
Think smart
and use a plan!



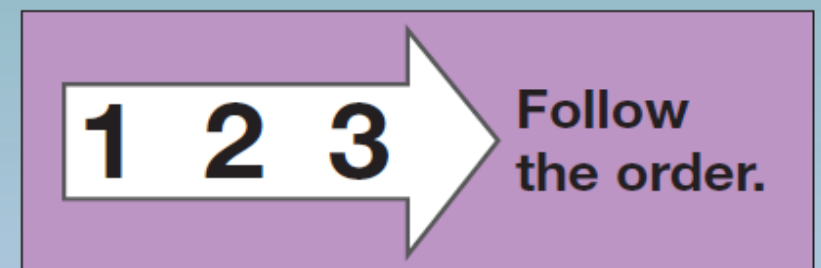
Think smart and
look at the details!



Think smart and put
the pieces together!



Think smart and
follow the sequence!



Steps to Strategic Instruction:

- **Describe the strategy.** Students obtain an understanding of the strategy and its purpose-why it is important, when it can be used, and how to use it.
- **Model its use.** The teacher models the strategy, explaining to the students how to perform it.
- **Provide ample assisted practice time.** The teacher monitors, provides cues, and gives feedback. Practice results in automaticity so the student doesn't have to "think" about using the strategy.
- **Promote student self-monitoring and evaluation of personal strategy use.** Students will likely use the strategy if they see how it works for them; it will become part of their learning schema.
- **Encourage continued use and generalization of the strategy.** Students are encouraged to try the strategy in other learning situations.

Benefits of Strategy Instruction

- Students trust their minds
- Students know there is more than one right way to do things
- They acknowledge their mistakes and try to rectify them
- They evaluate their products and behavior
- Memories are enhanced
- Learning increases
- Self-esteem increases
- Students feel a sense of power
- Students become more responsible
- Work completion and accuracy improve
- Students develop and use a personal study process
- They know how to "try"
- On-task time increases: students are more "engaged"

Conclusions

- The concept of EF is evolving.
- We need to evaluate EF.
- Data from the CEFI Standardization indicate that when measured using observable behaviors the term Executive Function is supported.
- The CEFI provides a well normed measure of EF that has demonstrated reliability & validity.
- There is emerging evidence that children can be taught to be more strategic – an important indication of good EF behavior and outcome.

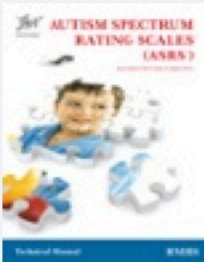


Continuing Education



CEFI® [\[Manual Quiz: 3 CE Credits\]](#)

The Comprehensive Executive Function Inventory™ is a comprehensive evaluation of executive function strengths and weaknesses in youth aged 5 to 18 years.



ASRS® [\[Manual Quiz: 4 CE Credits\]](#)

The Autism Spectrum Rating Scales™ identifies symptoms, behaviors, and associated features of Autism Spectrum Disorders in youth

www.samgoldstein.com

www.MHS.com



Sam Goldstein, Ph.D.

sam@samgoldstein.com

The Power Of Resilience

https://www.youtube.com/watch?v=isfw8JJ-eWM&feature=youtube_gdata