Comprehensive Executive Function Inventory

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

G&N ™
Goldstein & Naglieri
Excellence In Assessments

Executive Function Scores You Can **Trust!**

Comprehensive Executive Function Inventory

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

Technical Manual **MHS**

Provides a Comprehensive Evaluation of Executive Function **Strengths** and **Weaknesses** in Youth Aged 5 to 18 Years.

MHS Beyond Assessments

SPANISH Available
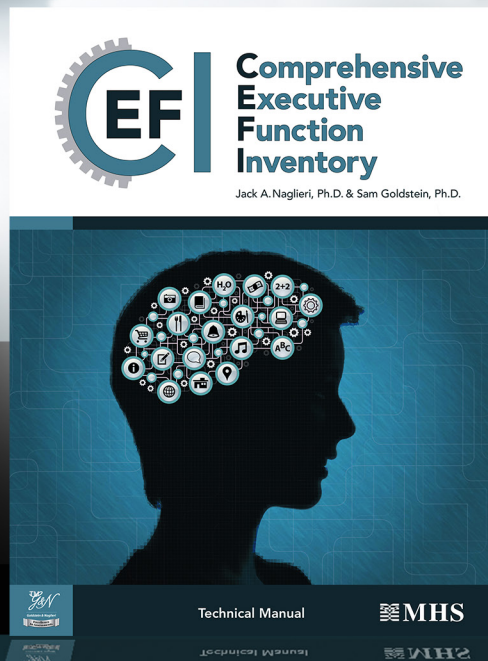
MHS.com/CEFI

How the *CEFI*™ works

The CEFI is the most representative nationally standardized behavior rating scale of executive function. Reliability and validity data indicate it has strong psychometric qualities. Data from our large normative sample reveal that the behaviors which are rated on the CEFI represent a single construct: executive function. The CEFI was developed to measure a wide spectrum of behaviors associated with executive function. In addition to the Full Scale score, the CEFI utilizes nine scales to pinpoint targets for intervention (See Figure 1.0).

With 100 items on a Likert-type scale–90 are distributed among the CEFI Scales and 10 on the Positive and Negative Impression Scales – the CEFI offers Parent (5 to 18 years), Teacher (5 to 18 years), and Self-Report (12 to 18 years) Forms. The CEFI can be administered online, via email link, or printed form. Following administration, CEFI forms can be scored online, using the MHS Online Assessment Center+.

CEFI results provide information not only on overall level of executive function, but also on specific strengths and weaknesses among the nine CEFI Scales. In this way, it is possible to pinpoint targets for intervention even if scores on all of the CEFI Scales are uniformly below average. In the Interpretive Report, intervention strategies are provided for areas of executive function where an individual scored below average. The analysis indicates whether there are strengths and weaknesses, such that a child's strengths could be utilized when targeting executive function behaviors that the child or youth has trouble with.

Generate up to three user-friendly reports using the MHS Online Assessment Center+.

**1.** The *Interpretive Report* provides information about a single administration.

Scores in Relation to the Norm and the Individual

Full Scale

Standard Score	90% Confidence Interval	Percentile Rank	Classification
83	80-86	13	Low Average

CEFI Scales

| Scale	Standard Score	90% Confidence Interval	Percentile Rank	Classification	Difference from Youth's Average (84.9)	Statistically Significant? (p < .05)	Executive Function Strength/ Weakness
Attention	83	78-90	13	Low Average	-1.9	No	-
Emotion Regulation	100	93-107	50	Average	15.1	Yes	-
Flexibility	97	89-106	42	Average	12.1	Yes	-
Inhibitory Control	79	74-89	8	Below Average	-5.9	No	-
Initiation	79	74-89	8	Below Average	-5.9	No	-
Organization	79	74-87	8	Below Average	-5.9	No	-
Planning	90	84-97	25	Average	5.1	No	-
Self-Monitoring	91	84-100	27	Average	6.1	No	
Working Memory	66	62-77	1	Well Below Average	-18.9	Yes	Weakness

Intervention Strategies for Working Memory

- **Help the child to ...**
- **Provide feedback on ...**
- **Model strategies that ...**

2. The *Progress Monitoring and Treatment Effectiveness Report* combines results from up to four ratings over time by the same rater.

Overview of Results Across Administrations for HP
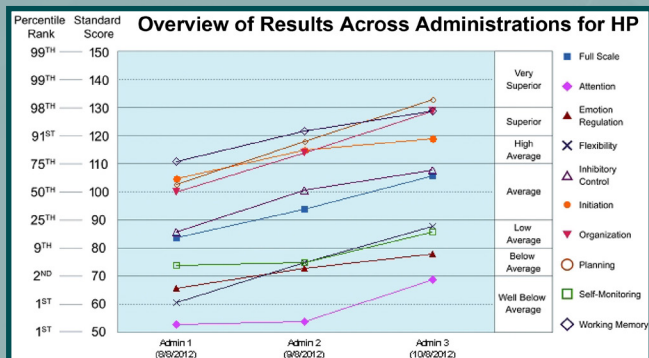
3. The *Comparative Report* provides a multi-rater perspective by combining results from up to five different raters.

Overview of Results Between Raters for Brittany Ambers
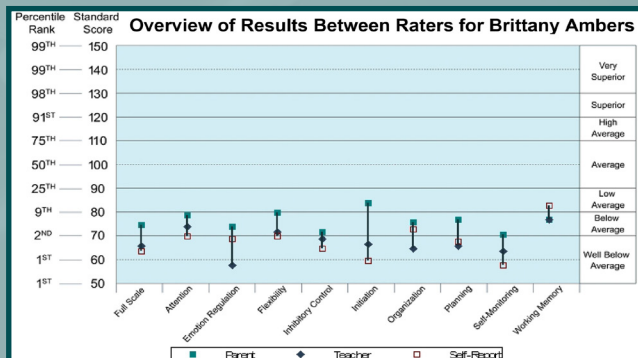
About the CEFI™

The Comprehensive Executive Function Inventory™ (CEFI™) is a comprehensive behavior rating scale of executive function **strengths** and **weaknesses** in youth aged 5 to 18 years. Executive function is important for problem solving and reasoning. Problems with executive function can often make simple tasks challenging. Assessing a youth's executive function is an important step to formulate a diagnosis and treatment plan.

AGE
5–18 years

ADMINISTRATION
Parent Form
Teacher Form
Self-Report Form (ages 12-18)

ADMINISTRATION TIME
15 minutes

NUMBER OF ITEMS
100

FORMATS
Online

TRANSLATIONS
Spanish

QUALIFICATION LEVEL
B-level

- *Scores You Can Trust*
  The most representative nationally standardized behavior rating scale of executive function. The large scale normative sample is representative of the U.S. population on a number of key demographic variables including U.S. Census region.

- *A Comprehensive Evaluation of Executive Function Behaviors*
  Strengths and weaknesses in executive function scores are measured across nine CEFI

- *Implement Intervention Strategies*
  When scores on the CEFI Scales are below average, intervention strategies are provided within the Interpretive Report.

- *Easy to understand Reports and Findings*
  Items are consistent across all rater forms (Parent, Teacher & Self-Report) providing reports which can be easily communicated.

- *Useful in a Variety of Settings*
  Diagnostic evaluations, intervention strategies, response to intervention programs, individualized educational plans, treatment and monitoring plans, and in research environments.

Supports **Student Success** ✓

Figure 1.0

EXECUTIVE FUNCTION
(Full Scale)

Attention
Measures how well a youth can avoid distractions, concentrate on tasks, and sustain attention

Inhibitory Control
Reflects a youth's control over behavior or impulses

Planning
Reflects how well a youth develops and implements strategies to accomplish tasks

Emotion Regulation
Measures a youth's control and management of emotions

Initiation
Describes a youth's ability to begin tasks or projects without being prompted

Self-Monitoring
Describes a youth's self-evaluation of his/her performance or behavior

Flexibility
Describes how well a youth can adapt to circumstances, including problem solving ability

Organization
Describes how well a youth manages personal effects, work, or multiple tasks

Working Memory
Measures how a youth keeps important information in mind in order that he/she know what to do and how to do it, including remembering important things, instructions, & steps

The Most Representative Executive Function Behavior Rating Scale

Providing scores you can depend on, the CEFI is the most representative nationally standardized behavior rating scale of executive function. The large scale normative sample was stratified to match the U.S. Census on a number of key demographic variables including region, race/ethnicity, and parental education level (see Figure 2.0). The proportion of the demographic variables in the normative samples fell within 1% of Census targets. At each year of age (Parent and Teacher 5–18 yrs, Self-Report 12–18 yrs), 50 males and 50 females were collected for each form, resulting in 1,400 rated youth (age M=11.5, SD=4.0) for the parent and teacher normative samples and 700 youth for the self-report (age M=15.0, SD=2.0). Additionally, the normative samples included ratings of children who had a clinical diagnosis, or were eligible to receive special educational services according to IDEA criteria (parent = 10.9%, teacher = 12.7%, self-report = 9.7%).

Race/Ethnic Distribution: CEFI Normative Samples

Race/Ethnicity	Parent (%)	Teacher (%)	Self-Report (%)	U.S. Population (%)
Hispanic	22.0	22.0	22.0	21.1
Asian	4.0	3.8	4.0	4.2
Black	14.0	14.0	14.0	13.9
White	56.0	56.5	56.0	56.5
Other	4.0	3.7	4.0	4.2

U.S. Region Distribution: CEFI Normative Samples

Region	Parent (%)	Teacher (%)	Self-Report (%)	U.S. Population (%)
Northeast	16.0	16.1	16.0	17.0
Midwest	22.1	22.0	22.0	21.7
South	37.9	37.9	38.0	37.2
West	24.1	24.0	24.0	24.1

Parental Education Level Distribution: CEFI Normative Samples

Parental Education Level	Parent (%)	Self-Report (%)	U.S. Population (%)
No high school diploma	14.1	13.9	14.7
High school diploma/GED	27.9	28.0	28.5
Some college or associate's degree	29.9	30.0	28.9
Bachelor's degree	18.0	18.1	17.6
Graduate or professional degree	10.1	10.0	10.3

Dependable, Reliable, and Valid

Internal Consistency Reliability

- **Cronbach's alpha values for the Full Scale and the nine CEFI Scales were strong:**
  - Parent Full Scale α=.98 (CEFI Scales median= .89)
  - Teacher Full Scale α= .99 (CEFI Scales median= .93)
  - Self-Report Full Scale α=.97 (CEFI Scales median= .80)
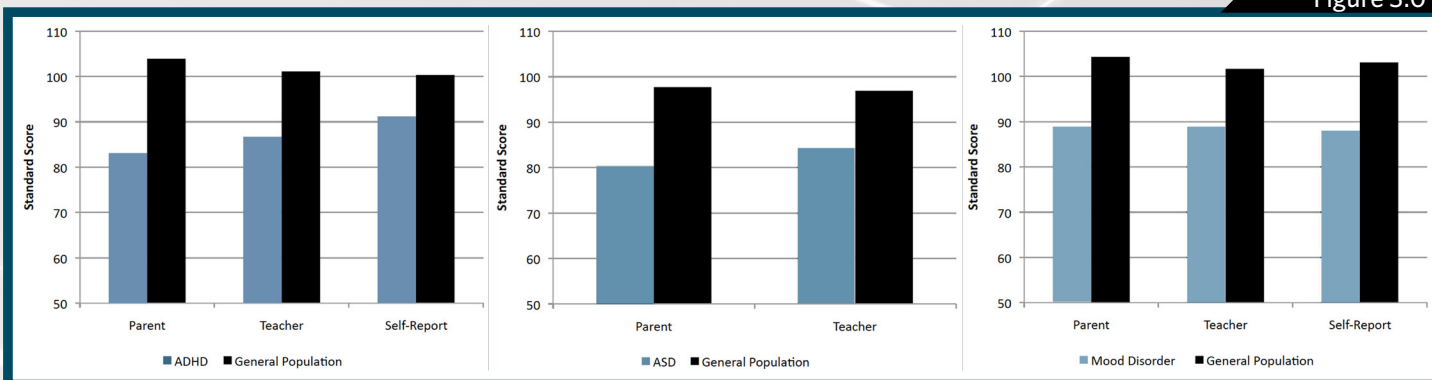
Test–Retest Reliability

- **Interval between test administrations: 7 to 30 days.**
- **Excellent test-retest reliability was found:**
  - Parent Full Scale *r*=.91 (CEFI Scales median= .87)
  - Teacher Full Scale *r*= .88 (CEFI Scales median= .88)
  - Self-Report Full Scale *r*=.77 (CEFI Scales median= .79)

Mean Score
Differences by Group

Figure 3.0 shows mean CEFI Full Scale comparisons between clinical samples (ADHD, ASD, Mood Disorder), and matched general population samples. Youth from the three clinical groups were expected to have executive function deficits when compared to general population samples. All contrasts were significant with medium to large effect sizes (*d* = -0.62 to –1.59). Overall, results were consistent with the expected effects. The CEFI is sensitive to differences in behaviors between the general population and these clinical groups.

Figure 3.0