

Classroom Level Data & Continuous Improvement: What, How, & Why

Jacqueline Cossentino, Ed.D.

NATIONAL CENTER for
MONTESSORI in the PUBLIC SECTOR

Outcomes that Matter



Outcomes that Matter

Initiation &
Concentration

Inhibitory
Control

Working
Memory

Linguistic & Cultural
Fluency


Social fluency
& Emotional
Flexibility

Executive Functions

**Initiation &
Concentration**

**Inhibitory
Control**

**Working
Memory**

- 
- Self-directed control over your own thoughts, actions, and emotions
 - Essential for self-discipline, problem-solving, critical thinking, creativity, adaptation
 - Predictive of later academic performance (for very young children)
 - Develops most rapidly in early childhood
 - Can be trained and practiced at any age

Outcomes that Matter



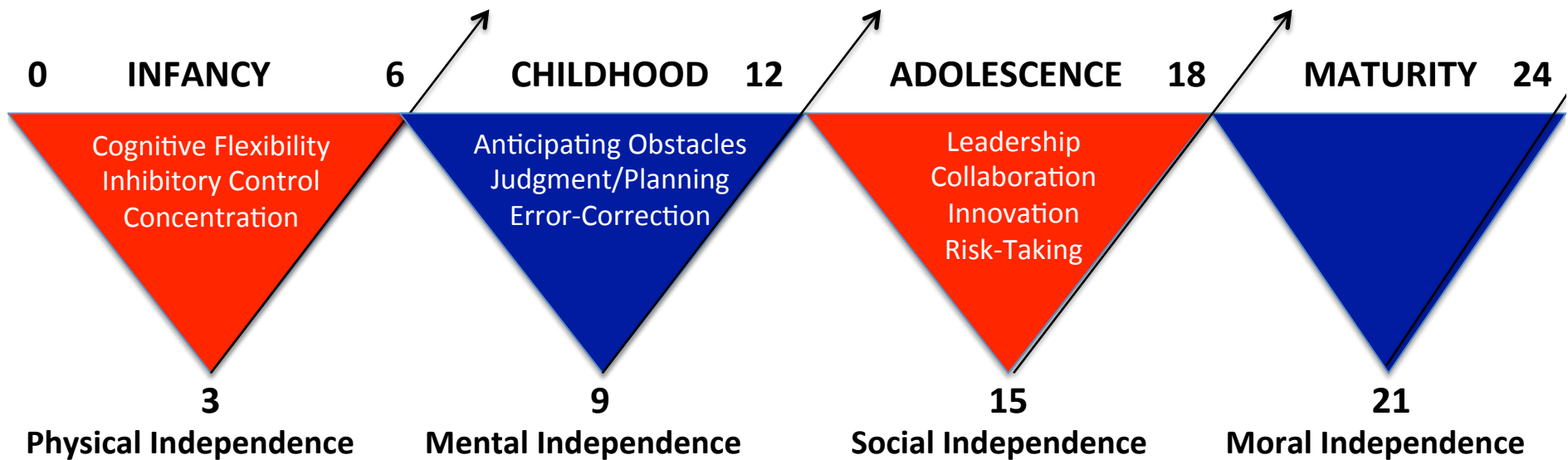
Outcomes that Matter

Initiation & Concentration	Inhibitory Control	Working Memory	Linguistic & Cultural Fluency	Social fluency & Emotional Flexibility
<p>Attention/Focus Being Alert Orienting</p>	<p>Screening out distraction Resisting impulses Shifting when necessary</p>	<p>Holding and updating information at the same time Relating one idea to another</p>	<p>Proficiency in spoken and written language Proficiency in interpreting cultural attitudes & expectations</p>	<p>Responding to social cues Understanding emotions; recovering from disappointment</p>

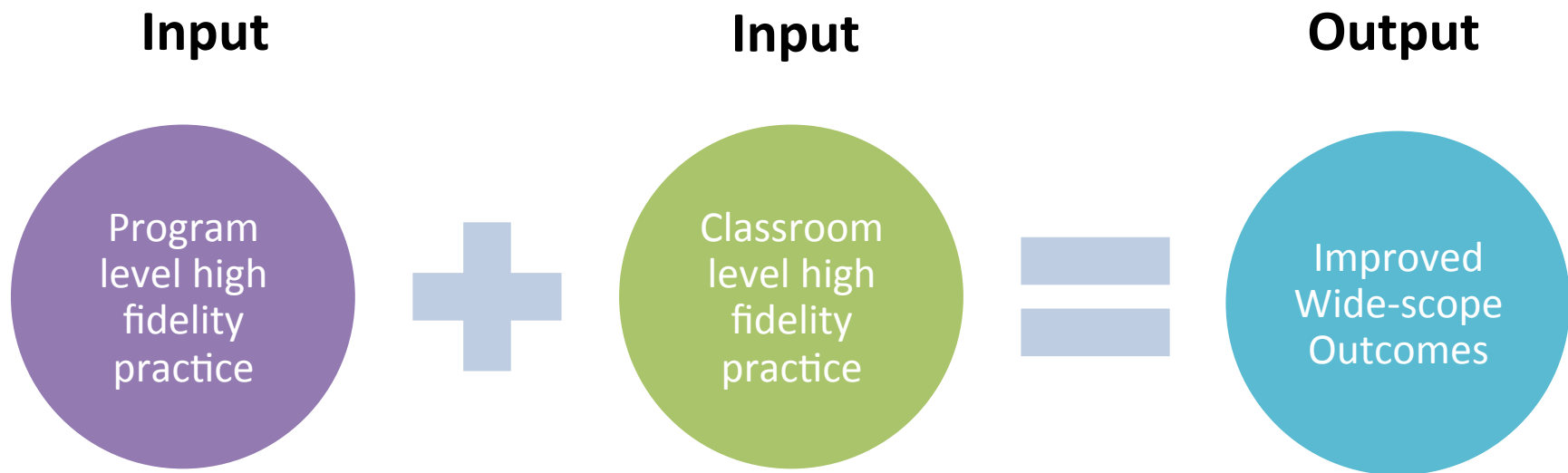
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<p>Persistence Cognitive Flexibility Adaptation Self Regulation</p>		<p>Planning Prioritizing Reflecting</p>	<p>Perspective Taking Adaptability</p>	<p>Empathy Compassion Resilience</p>

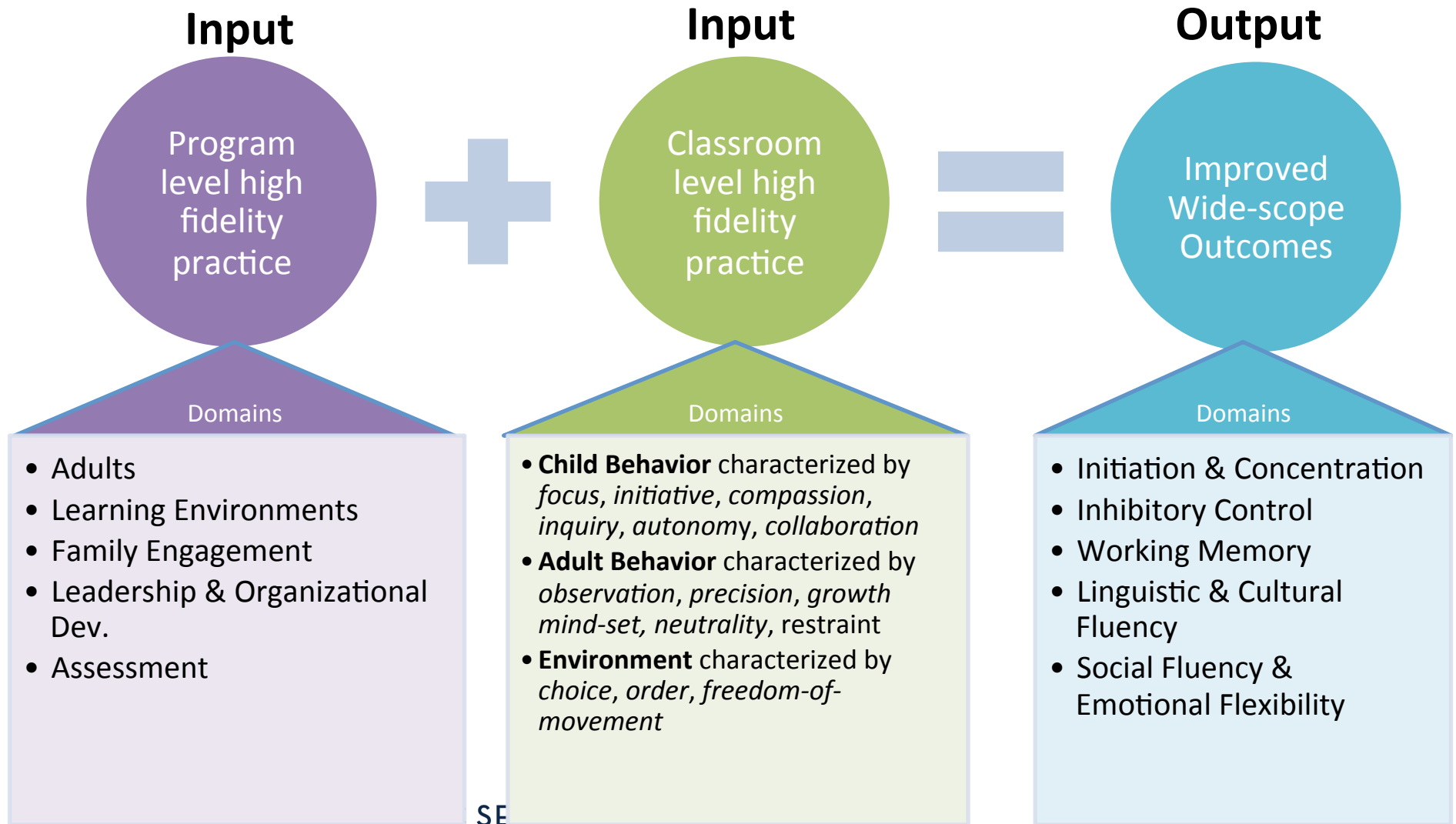
EFs and Human Development



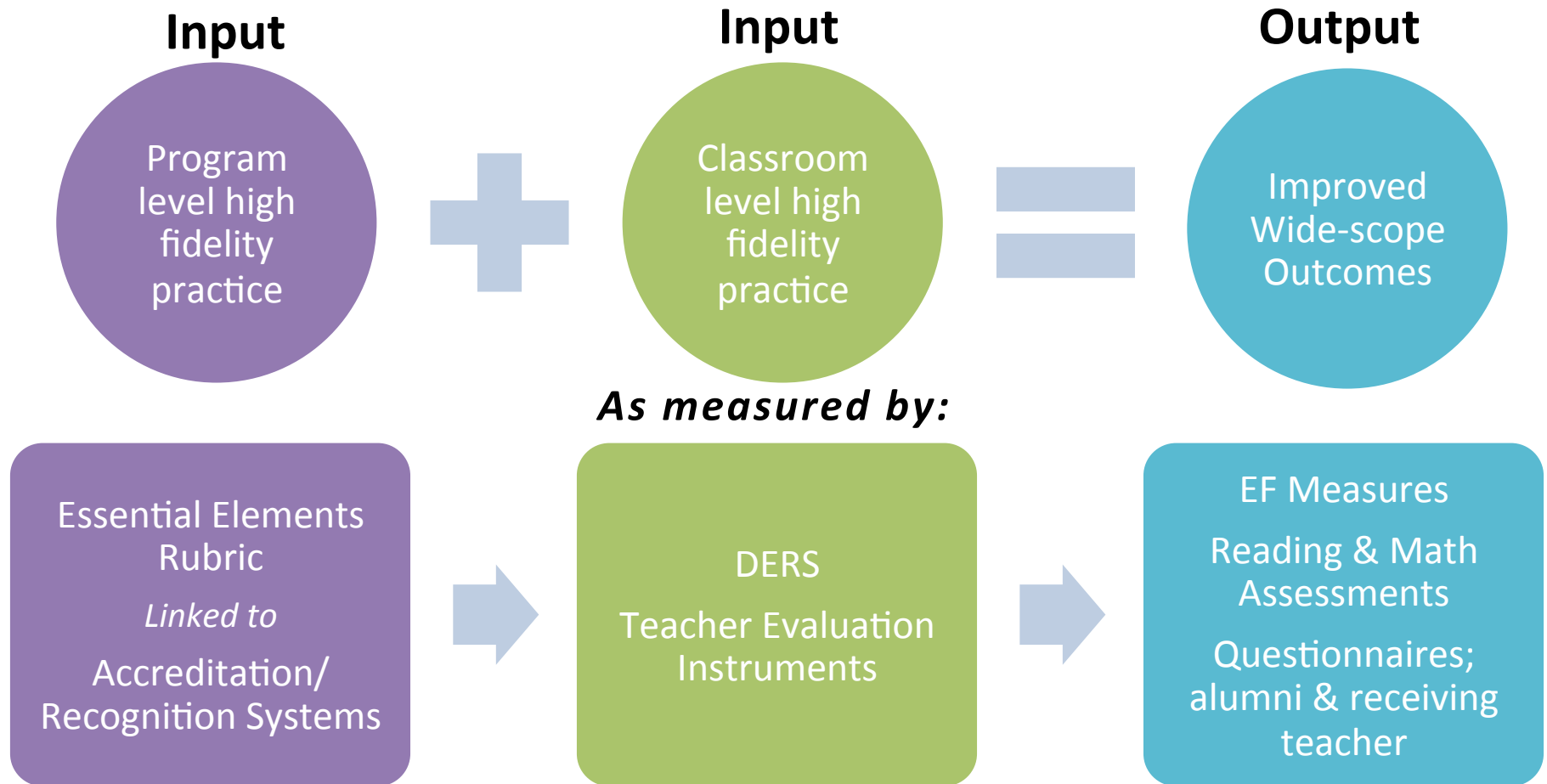
Basic Improvement Logic



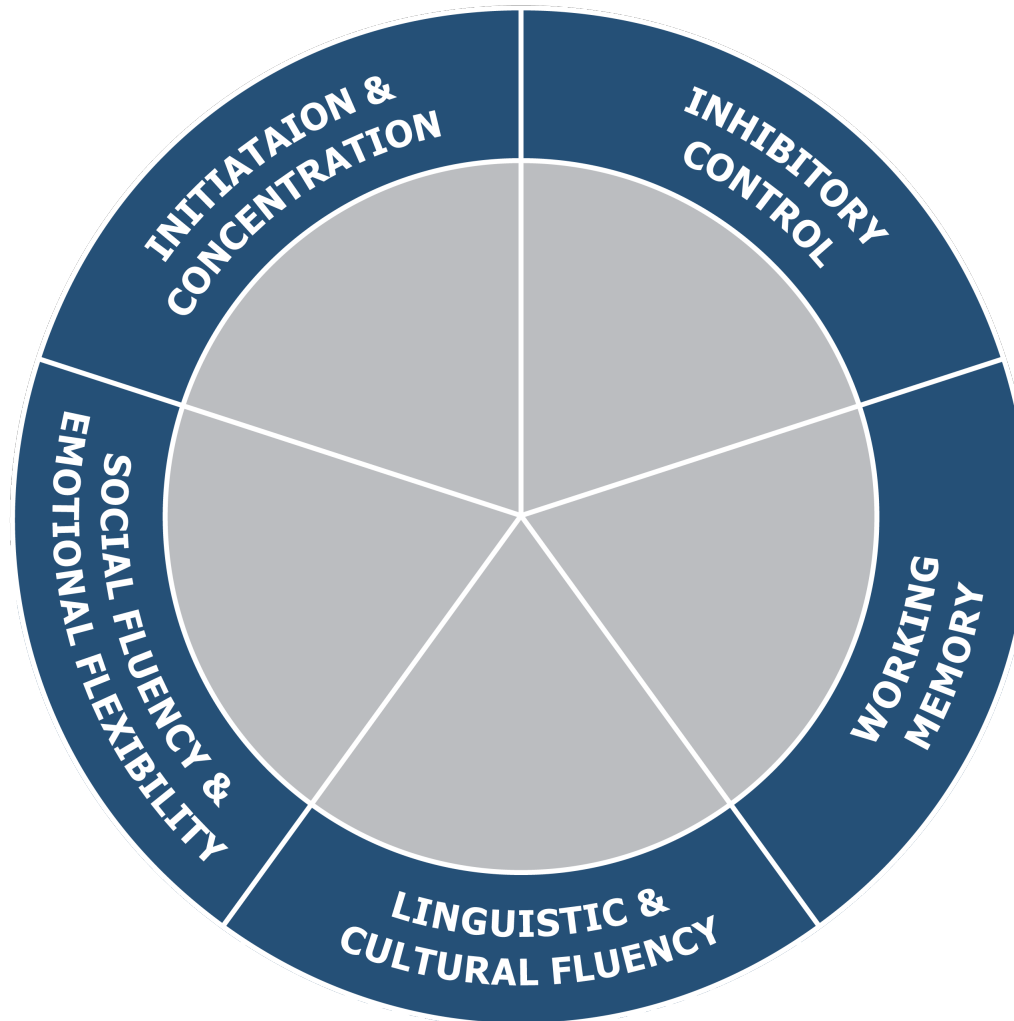
Aligning Inputs & Outputs



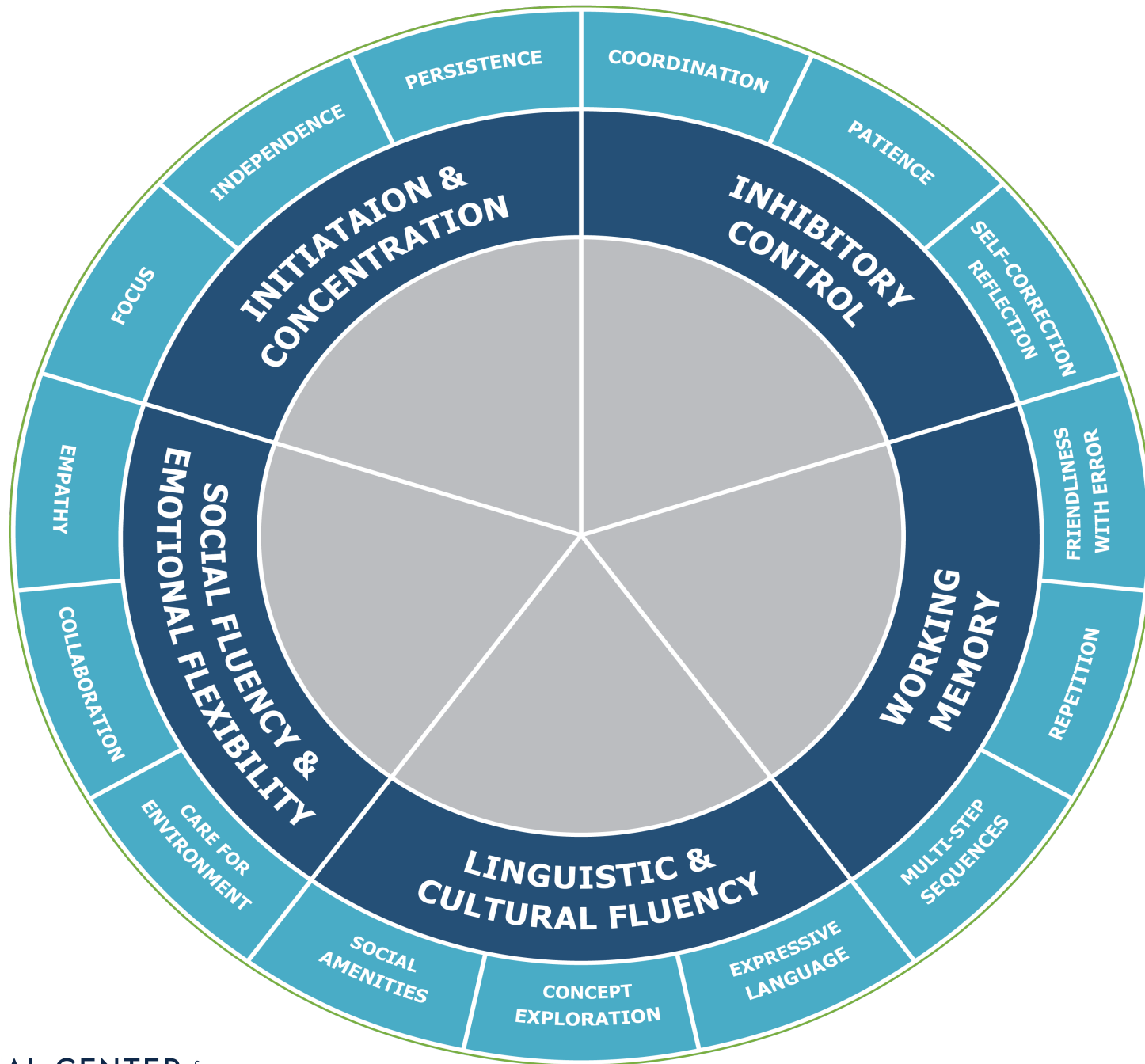
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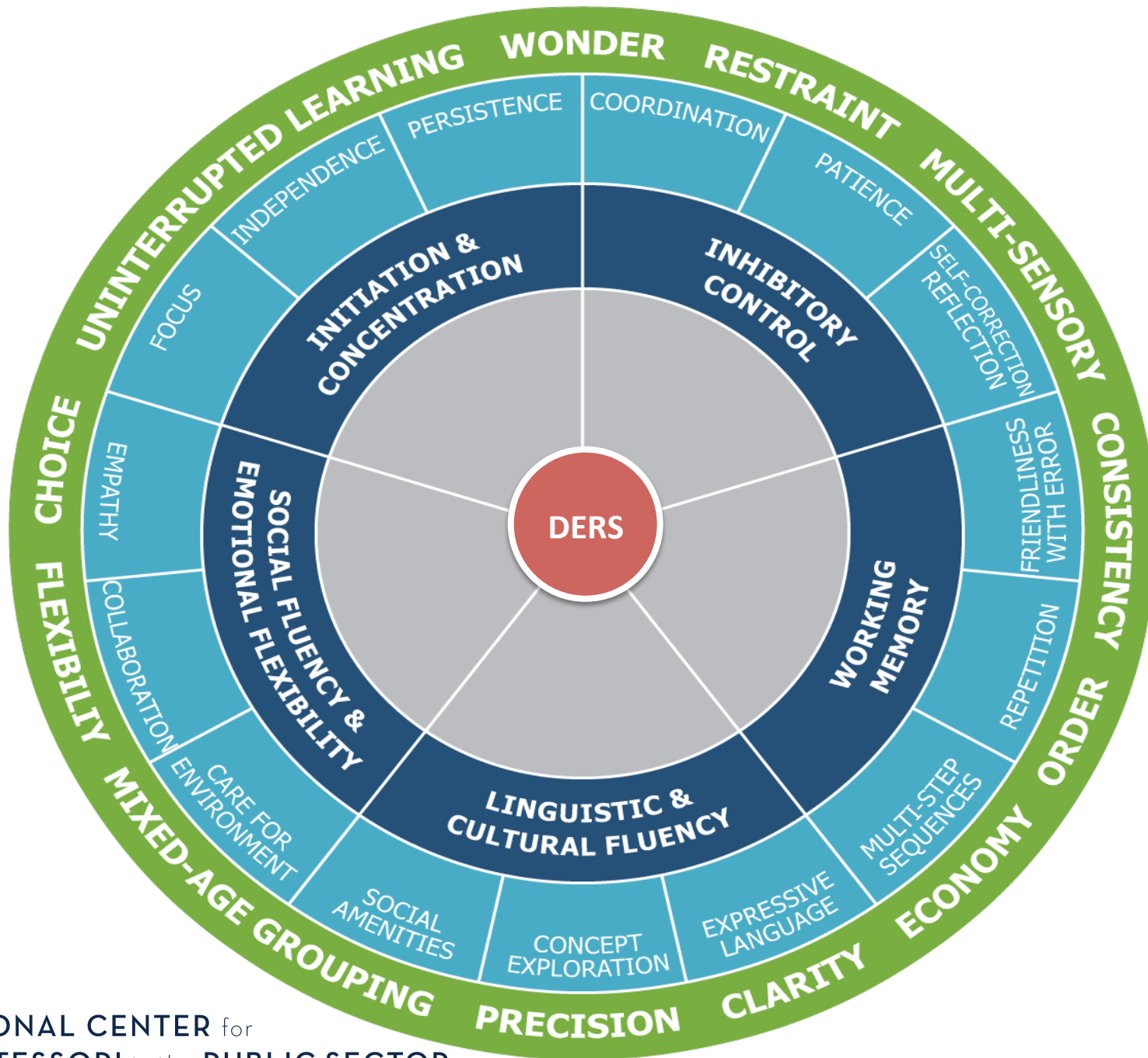
Outcomes that Matter



Five Domains



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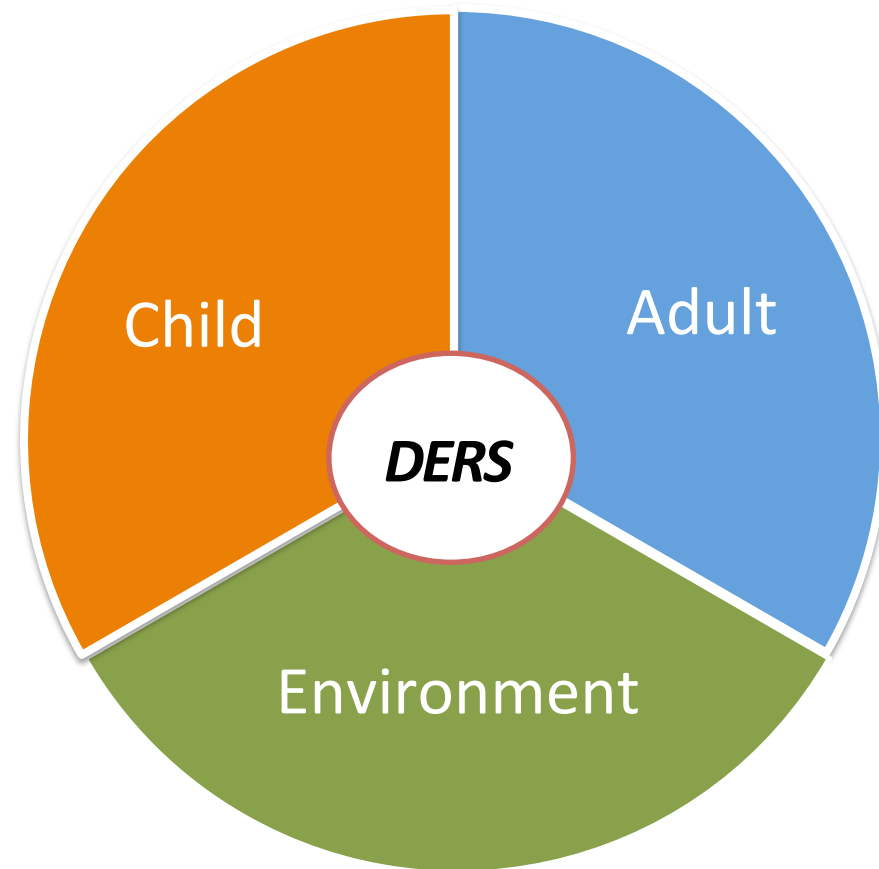
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Executive Function and Montessori

- Some controlled studies show positive benefits on EF (Lillard & Else-Quest, 2006)
- Order, limited choice, mindfulness
- Agency & Autonomy



Classroom-Level Ecosystem



3-6 Classroom Level Indicators

Child Indicators	Adult Indicators	Environment Indicators
Attention (focus)	Observation & Documentation	Order
Independence	Repertoire	Multi-sensory
Coordination	Respect for Engagement	Uninterrupted Learning Time
Self-Correction	Precision	Mixed-Age
Inhibition	Clarity	Language-Rich
Persistence	Economy	Reality-Based
Expressive Language	Invitation & Choice	Contact with Nature
Repetition	Consistency & Predictability	Dynamic
Shifting	Flexibility	Personalized
Friendliness with Error	Wonder	Beautiful (simple, natural)

6-12 Classroom Level Indicators

Child Indicators	Adult Indicators	Environment Indicators
Focus	Observation & Documentation	Order
Independence	Repertoire	Multi-sensory
Friendliness with Error	Respect for Engagement	Uninterrupted Learning Time
Self-Correction	Storytelling	Mixed-Age
Collaboration	Clarity	Language-Rich
Persistence	Economy	Reality-Based
Expressive Language	Invitation & Choice	Contact with Nature
Judgment	Consistency & Predictability	Dynamic
Gratitude	Flexibility	Personalized
Planning	Wonder/ Curiosity/Challenge	Beautiful (simple, natural)

12-18 Classroom Level Indicators

Child Indicators	Adult Indicators	Environment Indicators
Tolerating Ambiguity	Observation & Documentation	Order
Self Awareness	Repertoire	Multi-sensory
Friendliness with Error	Respect for Engagement	Uninterrupted Learning Time
Innovation	Enthusiasm	Mixed-Age
Collaboration	Clarity	Language-Rich
Persistence	Economy	Reality-Based
Expressive Language	Content Mastery	Contact with Nature
Judgment	Consistency & Predictability	Dynamic
Empathy	Flexibility	Personalized
Planning	Trustworthiness	Beautiful (simple, natural)



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3-6 Environmental Attributes

Child-sized
Materials &
Furnishings

Cleanliness

Extended Period
of Uninterrupted
Work

All Materials
Ready for Use

Mixed Age
Grouping

Natural Materials
(minimal plastic)

Multisensory

Language Rich

Links to
Community

Choice/Access

Clutter

Easy Access to
Nature/Outdoors

Absence of
Digital
Technology

Food

Animals

Plants

Activities in Use
that Require
Turn-Taking

Real Tools and
Real Work

Curated

Child Directed
Interaction

3-6 Environmental Attributes

Child-sized Materials & Furnishings	Cleanliness	Extended Period of Uninterrupted Work	All Materials Ready for Use	Mixed Age Grouping
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3-6 Child Behaviors

Magnitude measures

Rate Holistically

Joy	Caring for Classroom	Engaging with Purpose	Offering/Receiving Help
Disruptive	Social Graces ("please," "thank you")	Conversation	Careful Physical Navigation
Shifting	Misusing Materials	Seeking Adult Approval	Completing a Work Cycle
	Persisting in the Face of Challenge	Resolving Needs with Words	

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3-6 Adult Behaviors

Magnitude measures
Rate Holistically

Clarity	Precision	Protected Lessons	Observation
Focus on Monitoring	Soft, Conversational Voice	Offering Children Options	Prompting Children to Help One Another
Loud Didactic Talk	Warmth/ Connection	Calm	Calling Across the Room
	Wonder	Responding to inappropriate behavior	

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3-6 Child/Adult Behaviors

Frequency Measures

This screen will appear every ten minutes for 90 seconds

Scan and Tap or Tap whenever observed

Work as Prop

Waiting Turn

Interrupting
Concentrating
Students

Praising to
Flatter

Handling
Materials with
Care

Interrupting

Warning/
Correcting

Moving/
Bending to
speak to child

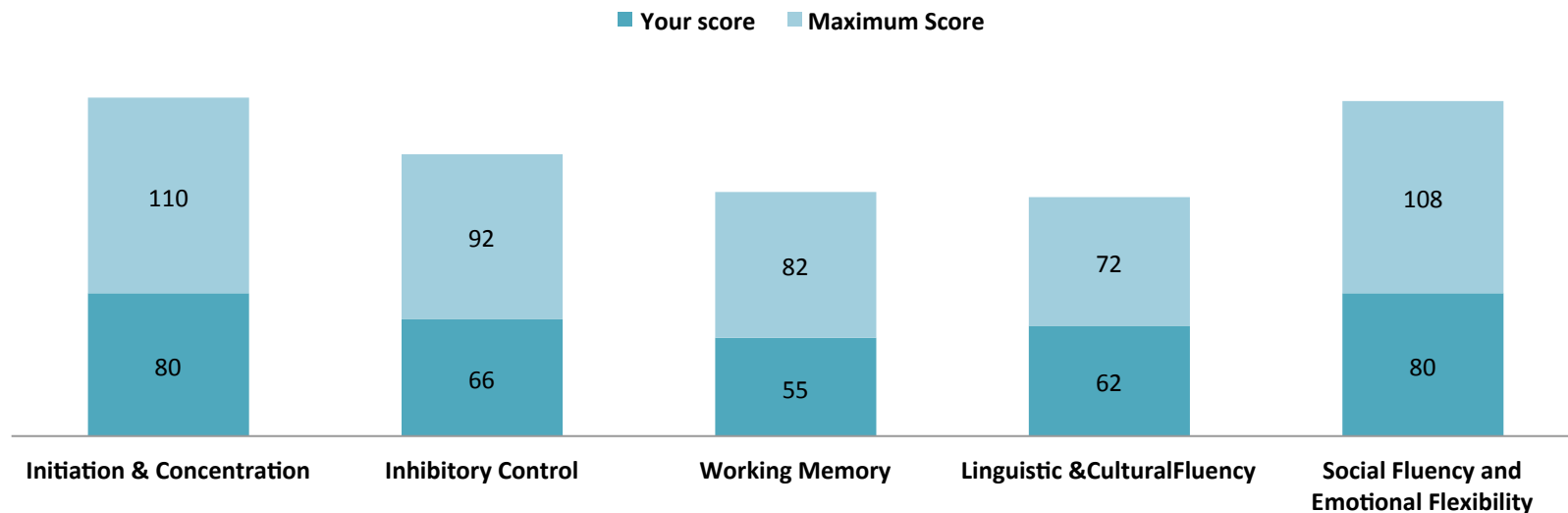
Initiating
without Adult
Prompt

Observing with
Disturbing
Others

Social Graces
("please," "thank you")

Results for Johnny C's Classroom

I. Domain Summary



II. Domain Narratives

I: Initiation & Concentration

Children initiated work without adult assistance, frequently used learning materials for their intended purpose, and navigated the room with care and precision. Adults encouraged exploration and extended periods of focus, and usually refrained from interrupting students who are concentrating. The environment supports concentration through carefully organized, child-sized materials and furnishings, ongoing opportunities for choice and free movement, and an extended period of uninterrupted work.

Results for Johnny C's Classroom

II. Domain Narratives

II. Inhibitory Control

Children's consistent ability to select meaningful work was balanced by less well-developed skills at turn-taking, refocusing, and persisting at difficult challenges. Adults usually used a soft, conversational voice. Limit setting was inconsistent, and adults tended to warn and correct rather than demonstrate a friendly relationship with error. There is limited use of digital technology, including a lap top computer used by the adults to record activity, and which during the observation was playing background music.

III. Working Memory

Children observed others' work and completed multi-step sequences. Children were less frequently observed repeating work multiple times. Adults supported the development of working memory by using language intentionally, with specific attention to voice modulation and diction. Some movements were hurried and occasionally adults were imprecise in the presentation of material. There are several areas of the classroom that contain extraneous materials and clutter.

IV. Linguistic & Cultural Fluency

There was ongoing conversation between peers as well between children and adults. Adults modeled fluent spoken language and supported the development of reading and writing skills through the use of multiple materials and activities designed to build phonological awareness and concepts of print. The environment is equipped with a variety of age-appropriate print material and children have multiple opportunities to select high interest reading material. While functional child-sized tools are available, the environment contains a limited array of artifacts drawn from the children's ethnic and cultural backgrounds. There are multiple opportunities for children to engage in the care of the environment, including caring for plants, gardening and flower setting tables for lunch and snack. There is an animal in the environment, but no evidence that children care for it.

Social Fluency & Emotional Flexibility

Children are able to solve conflicts peacefully, frequently using social graces such as "please," "thank-you." And "I'm sorry." Older children were frequently seen assisting younger students with activities such as tying shoes and rolling rugs. Students of multiple ages spontaneously chose to work or socialize together (though snack was not available during the observation), and most students were able to ask for help from either peers or adults. Adults usually spoke to children in a soft, conversational tone and made a point of moving/bending to the child's level in order to converse with them.

Minnesota EF Scale (MEFS™)

Carlson & Zelazo, 2014



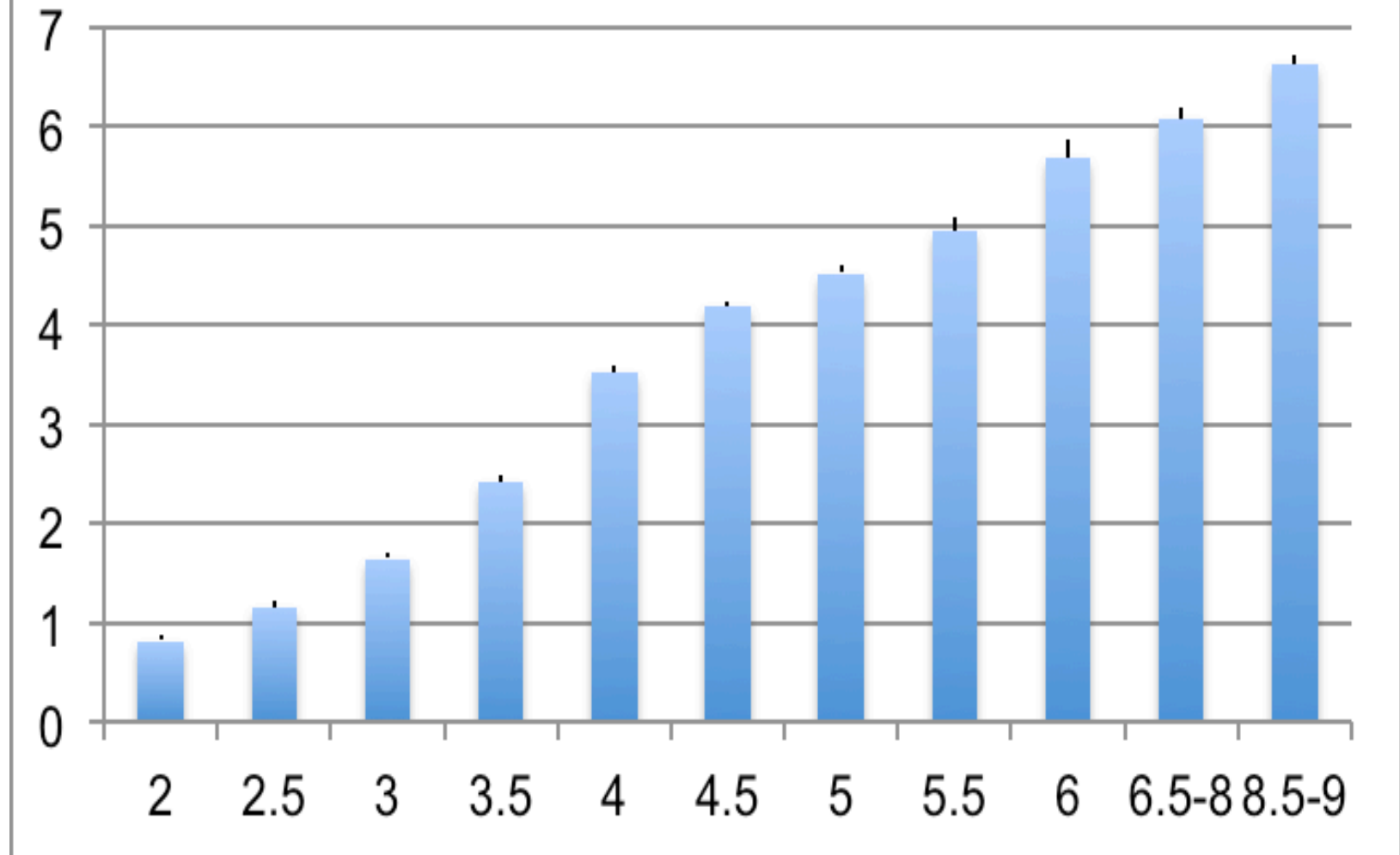
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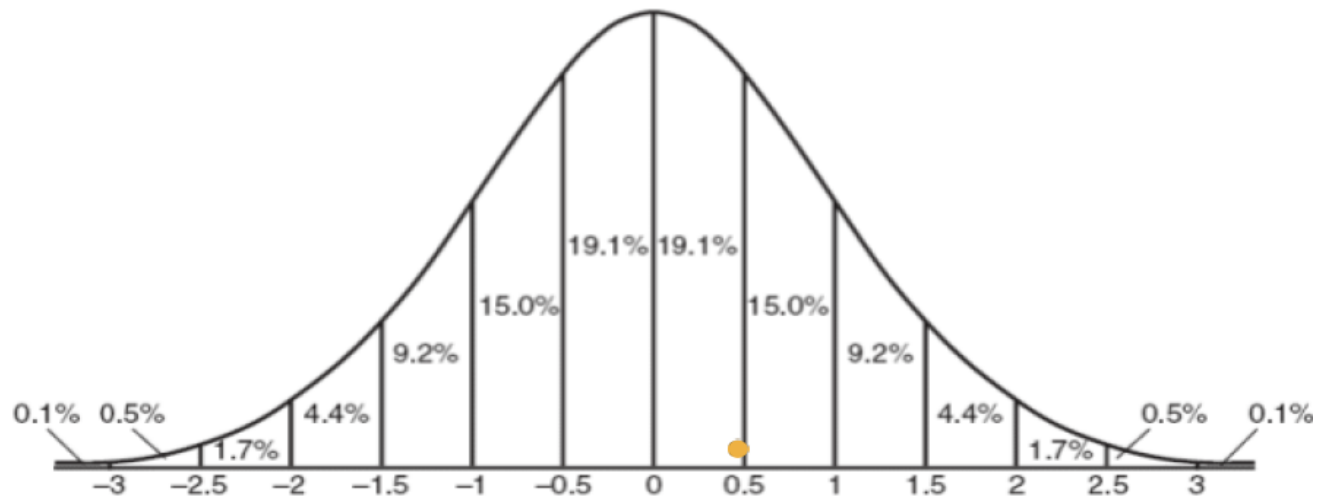


Minnesota Executive Function Scale

- The first objective, scientifically based measure of executive function that can be completed in under 5 minutes and is normed down to 24 months of age
- Developed at the University of Minnesota
 - Over 9 years of research
 - \$1.3 million of funding from the National Institutes of Health
- Released in 2014, MEFS has been used to assess executive function over 10,000 times

Rapid Changes in MEFS Performance





Description

Well below age norms	Moderately below age norms	Age typical (low)	Age typical (high)	Moderately above age norms	Well above age norms
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Interpretation Key

Well below age norms: Compared to other children at this age, child lacks proficiency in executive function.

Moderately below age norms: Compared to other children at this age, child is somewhat less proficient in executive function.

Age typical (low): Child's proficiency in executive function is typical for children at this age.

Age typical (high): Child's proficiency in executive function is typical for children at this age.

Moderately above age norms: Compared to other children at this age, child is somewhat more proficient in executive function.

Well above age norms: Compared to other children at this age, child is highly proficient in executive function.