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**System Design:  
Applying 21<sup>st</sup> Century Science  
to Improve Outcomes for  
Children**

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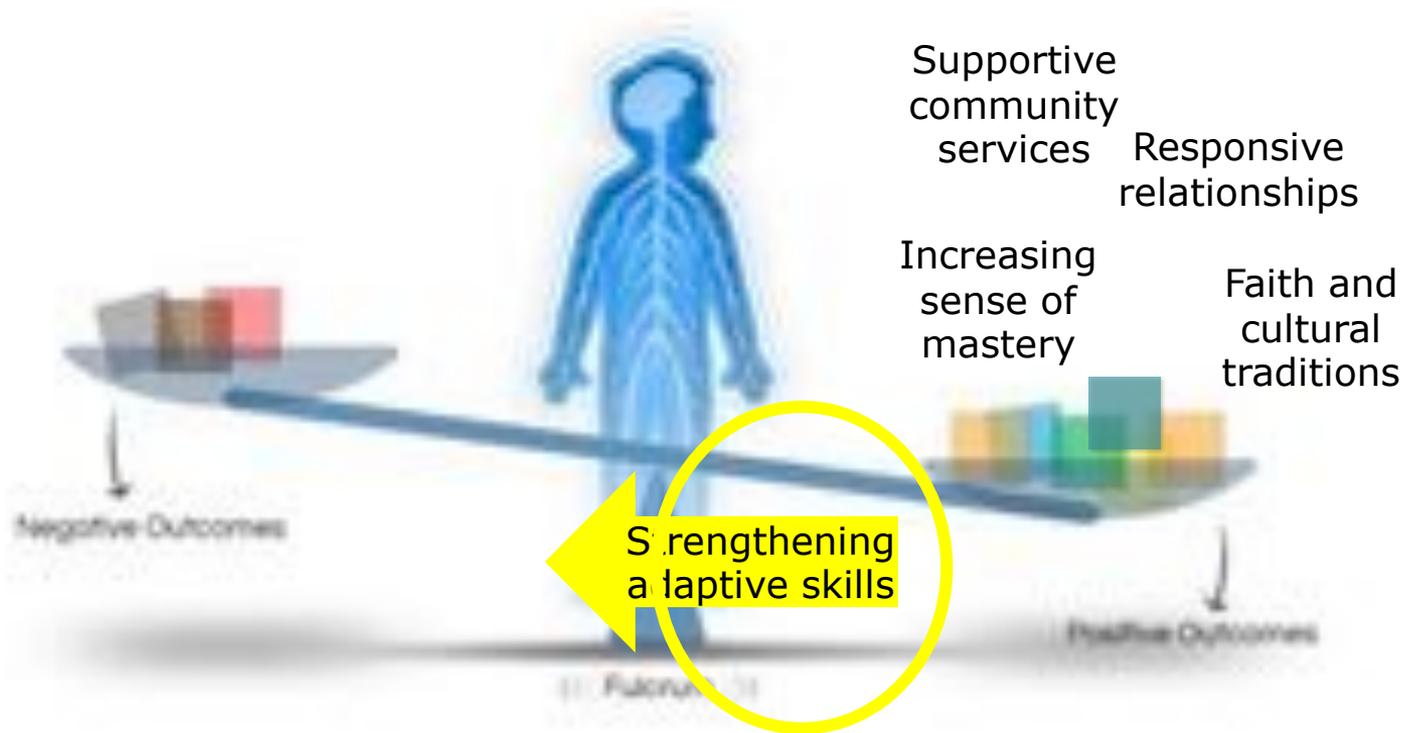
Let's Talk Webinar Series  
June 10, 2019



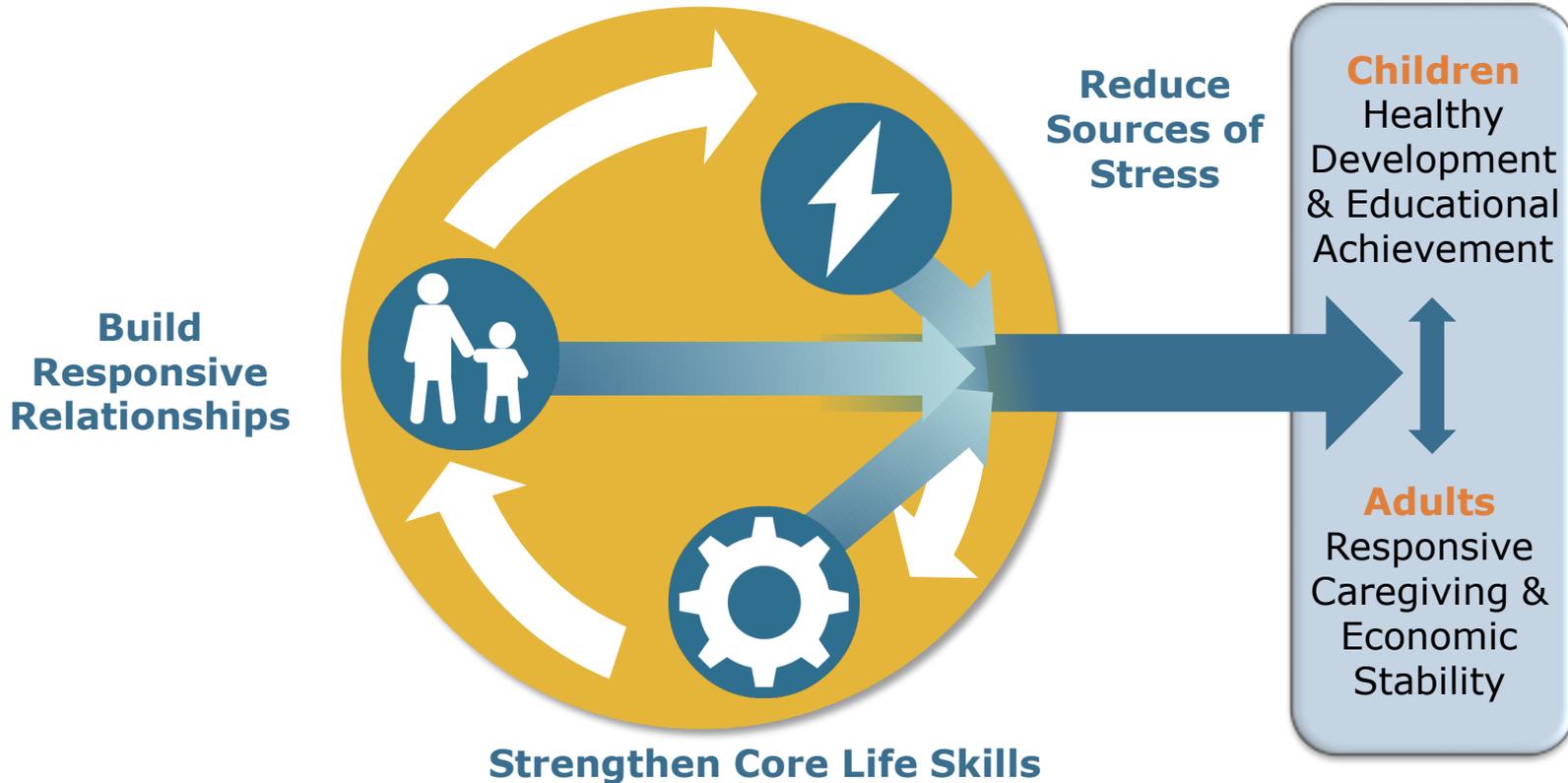
# Advances in Science Are Revealing the Underlying Causes of Disparities in Learning, Health, and Development



# Resilience Can Be Strengthened by Supportive Relationships and Skill-Building



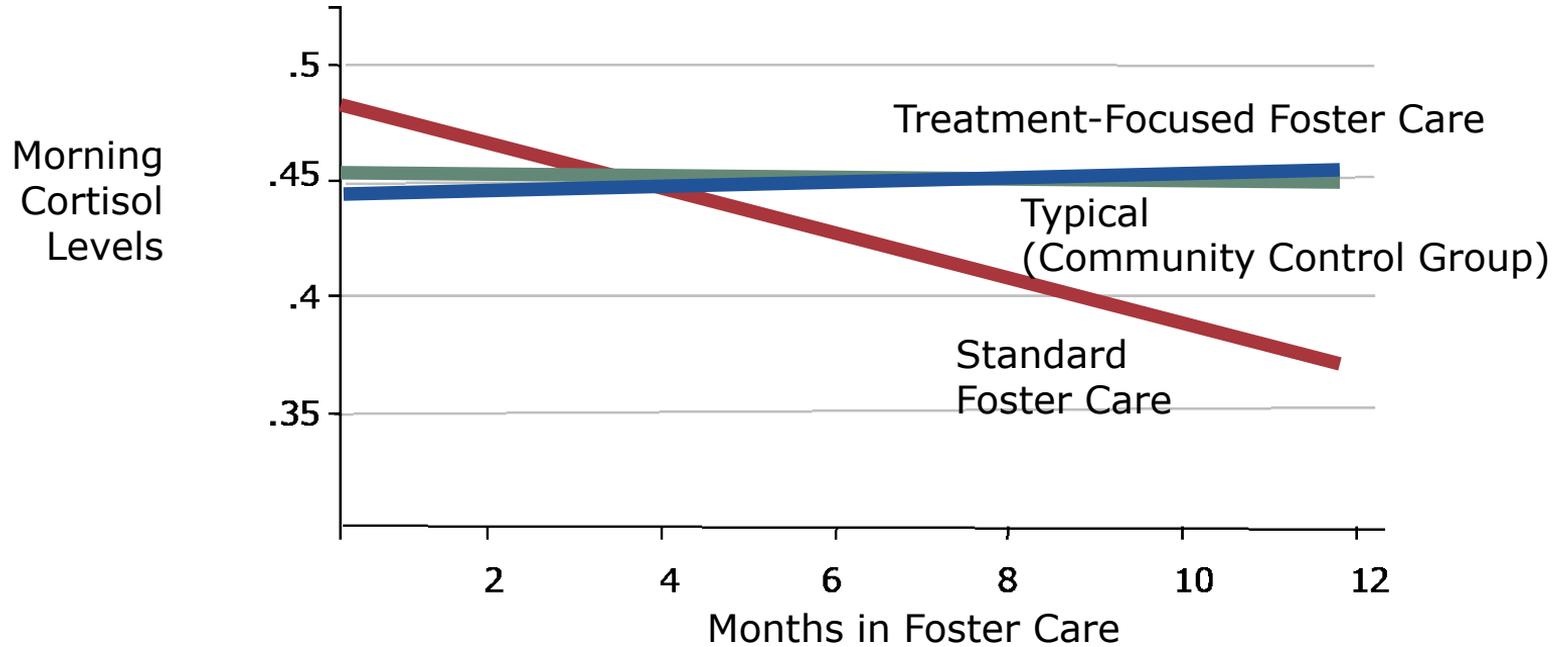
# 3 Principles: A Lens on How to Improve Outcomes for Children and Families



# The Neuroscience of Relationships: Experiences Shape Brain Architecture



# Instability Disrupts the Stress Response System — But Relationships Reverse the Effect



Source: Fisher, Stoolmiller & Gunnar (2007)

# Why These Three Principles?



## **Build Responsive Relationships**

For children:

- promotes healthy development of brain architecture, biological stress response, attachment & social-emotional skills
- provides buffering needed to prevent even very challenging experiences from producing a toxic stress response

For adults:

- provides practical and emotional support
- helps build hope and confidence
- models relationship skills
- reduces stress

# The Science of Core Skills for Learning and Health: An “Air Traffic Control System” in the Brain

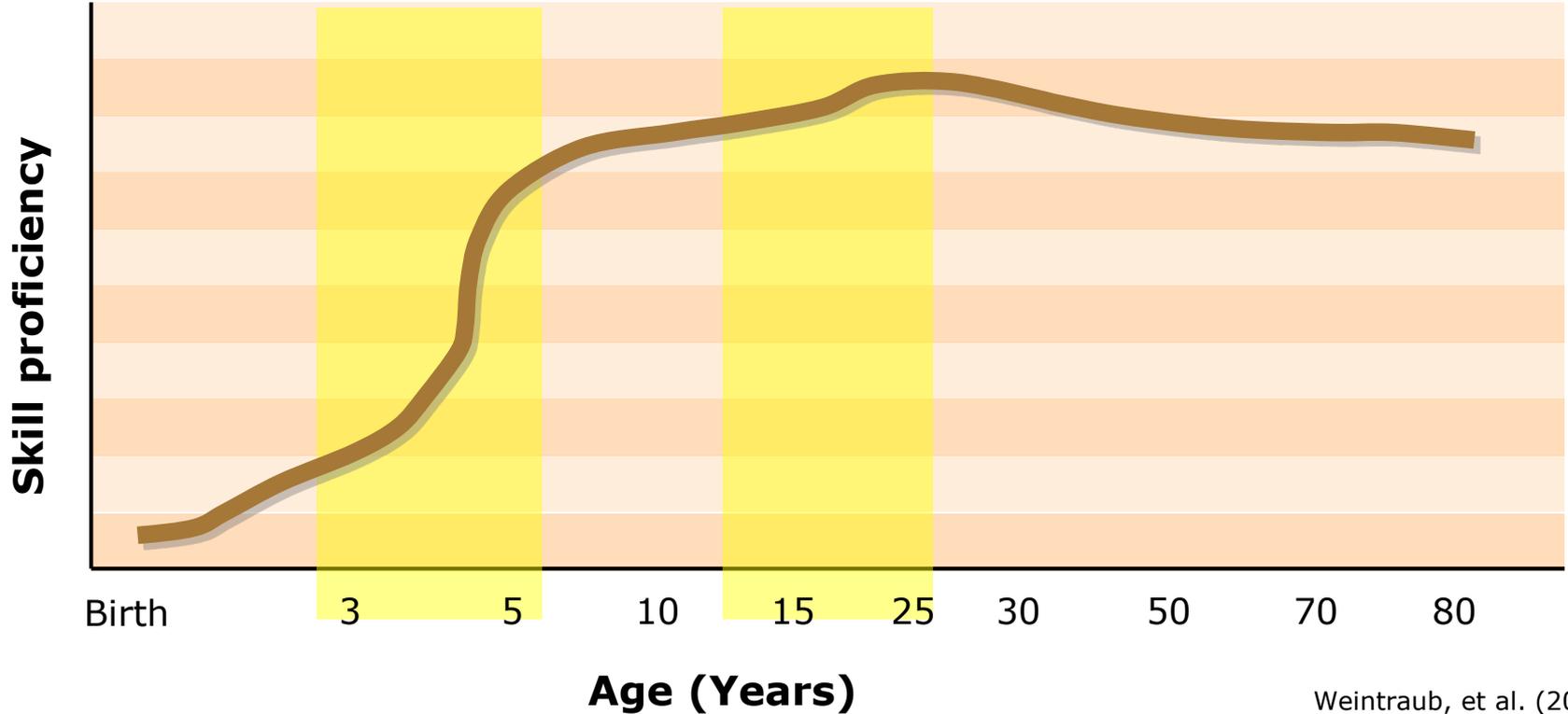


Executive function and self-regulation are a foundational set of capabilities that help us:

- focus and sustain attention
- set goals, make plans, and monitor actions
- make decisions and solve problems
- follow rules, control impulses, and delay gratification

Affected by stress, but can be strengthened through modeling and practice!

# Executive Function Skills Develop Most Rapidly During Early Childhood and Continue into Adulthood



Weintraub, et al. (2011)

# Why These Three Principles?



## Strengthen Core Life Skills

For children:

- Support educational & social success
- Resist decisions that risk health

For adults:

- Needed to thrive in the workplace
- Better able to provide responsive care
- Better able to maintain predictable, safe, supportive home environment

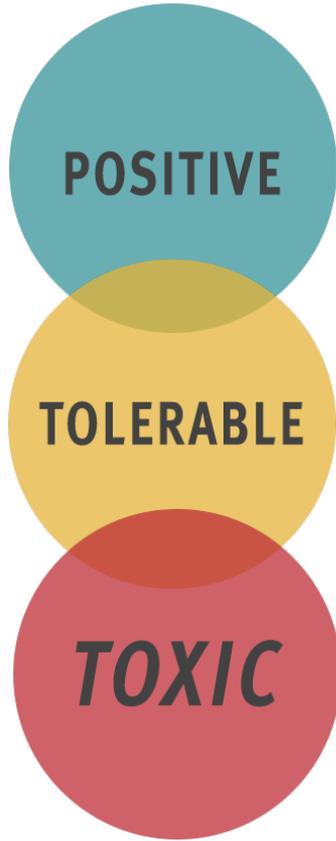
For both:

- Promote agency, belief in self
- Better able to manage stress

# How Excessive Stress Affects the Development and Use of Core Capabilities



# Toxic Stress Can Weaken Developing Brain Architecture



**POSITIVE**

Brief increases in heart rate,  
mild elevations in stress hormone levels.

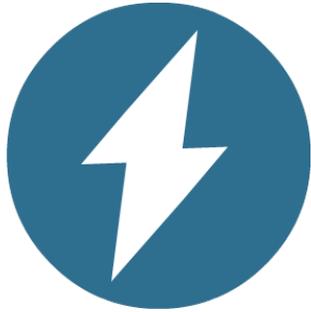
**TOLERABLE**

Serious, temporary stress responses,  
buffered by supportive relationships.

***TOXIC***

Prolonged activation of stress response  
systems in the absence of protective  
relationships.

# Why These Three Principles?



## **Reduce Sources of Stress**

For children:

- Encounter fewer and briefer situations that trigger an extreme stress response
- Directly promotes brain development, health, and well-being

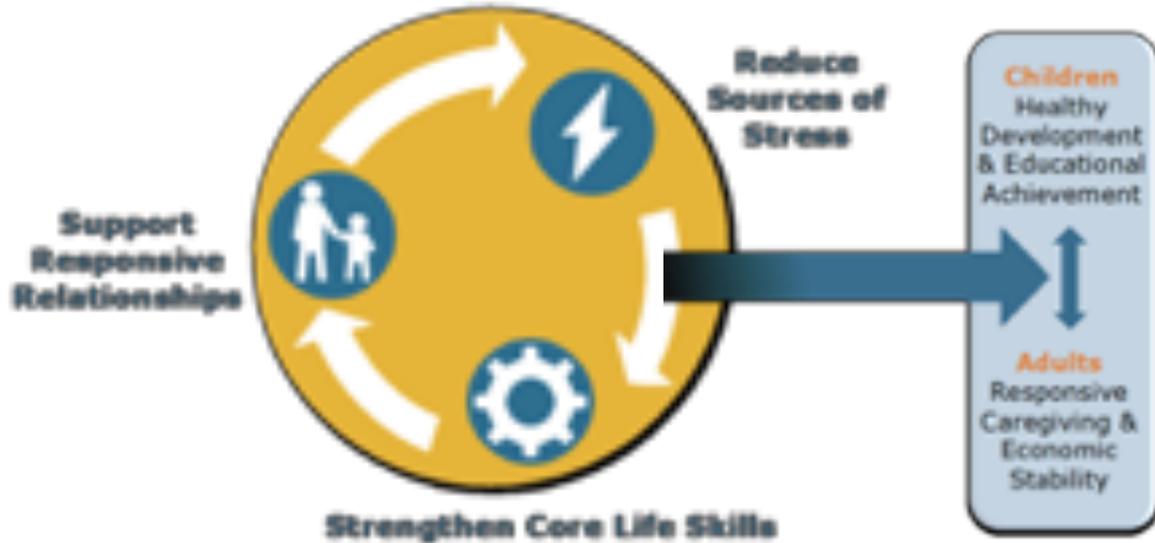
For adults:

- Open up “bandwidth” to promote the healthy development of children
- Enable more effective problem-solving, planning, and goal achievement
- More opportunities for responsive caregiving

**Questions?**

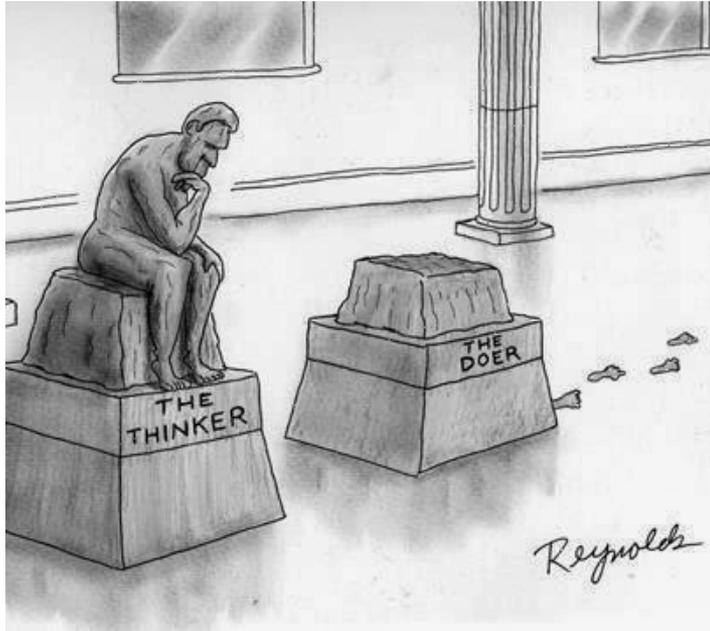
# Applying Science-Based Design Principles to Help You Not Just Change Systems—But Change Lives

- Systems, programs, and practice create conditions and life experiences that get under the skin.
- Use these principles as your “north star” to guide program improvement.



- Focus on these principles as *targets* on the pathway to the child and family outcomes you ultimately want to achieve.

# Moving from Thinking to Doing: 4 Ways to Apply the Principles



- 1. Problem identification:** How are current programs/systems working *toward* or *against* these principles?
- 2. Solution generation:** *How might we...* do X in a way that better supports these principles?
- 3. Systems alignment:** How might we use these principles as *common language and goals to support cross-agency collaboration*?
- 4. Impact design:** Can you assess the effects that aligning policy and practice with these principles has on *child and family outcomes*?



# Selecting Your Unit of Focus



## Needs to be:

- **Neither too wide nor too narrow**
- **Something you could change with policy or practice adaptations**
- **Something you are excited about!**

# Case Study #1 Problem Identification

## The Liberty Bell Early Learning Center

Subsidized early care and education program in Philadelphia that offers family engagement activities using a case management model.

- parenting program that helps adult caregivers learn about using play as a mechanism for serve and return.
- support adult caregivers set goals and track progress during monthly check in meetings.

But...constructive dissatisfaction

- Parent interviews guided by the 3 science design principles
- Staff interviews to gather their observations about the program's ability to support parents, again using the 3 science design principles
- Program leadership and direct service staff used the 3Ps matrix to identify areas ripe for adaption.



# Applying the Principles:

## How Does the Unit of Focus Support (or Not) the 3 Science Principles?

### Family Engagement Program at Liberty Bell Early Education Center

Unit of Focus:	Build Positive Relationships (Goals):	Strengthen Low Life Skills (Goal children and adults):	Reduce Sources of Stress (Goals):
 Describe unit of focus:	<ul style="list-style-type: none"><li>Adult caregiver to child</li><li>Adult to adult</li><li>Professional to family caregiver</li><li>Professional to child</li></ul>	<ul style="list-style-type: none"><li>Planning skills</li><li>Goal setting skills</li><li>Self-control strategies</li><li>Stress management strategies</li></ul>	<ul style="list-style-type: none"><li>Management of family processes</li><li>Reducing staff stress</li><li>Partnerships with other providers that provide services and/or basic needs</li></ul>
...align with each principle? (yes/no)	Partnership with local Families First program to offer workshops on using play to do serve and return.	Case managers support families as they set goals and monitor progress toward them.	
...work against each principle? (yes/no)			Parents report high levels of stress, with management of daily routines being a pain point.

# Case study #2: Impact Design

## Assessing RFP Respondents for Alignment with the 3Ps

Children's Home Society of America: providers of family services to large number of vulnerable children/families in US

- Used Matrix to identify a problem to be solved, discovered that they wanted to strengthen core life skills
- Open RFP, received 19 responses
- Identifying the 'biggest bang for the buck' but using Matrix to look for alignment across other two principles

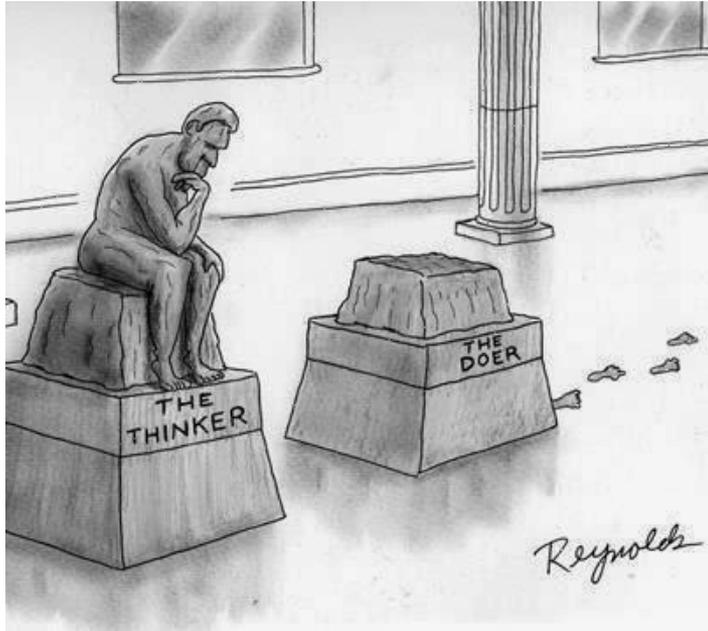


# Applying the Principles:

## Fathers4Fun

 <p>Does this unit of focus...</p>	<p><b>Build Responsive Relationships</b> (Consider)</p> <ul style="list-style-type: none"> <li>Adult caregiver to child</li> <li>Adult to adult</li> <li>Professional to family caregiver</li> <li>Professional to child</li> </ul>	<p><b>Strengthen Core Life Skills</b> (Most children and adults)</p> <ul style="list-style-type: none"> <li>Planning skills</li> <li>Goal setting skills</li> <li>Self-control strategies</li> <li>Stress management strategies</li> </ul>	<p><b>Reduce Sources of Stress</b> (Consider)</p> <ul style="list-style-type: none"> <li>Awareness of family processes</li> <li>Reducing staff stress</li> <li>Partnerships with other providers that provide services and/or basic needs</li> </ul>
<p>...align with each principle? How?</p>	<p>Provide fathers with information on serve and return and child brain development.</p>	<p>Match fathers with a life coach to provide information on SMART goal setting and support them in setting a fatherhood goal.</p>	<p>Facilitated peer groups to build social networks among fathers</p>
<p>...work against each principle? How?</p>			<p>Potential to increase father's stress levels</p>

# Moving from Thinking to Doing: 4 Ways to Apply the Principles



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# What You Can Do Next

- Use the Matrix: Unpack and challenge assumptions
- Explain your Matrix to a diverse set of key stakeholders & get further insights about its value
- Share your 3 Principles or Matrix impact story with us by contacting: [developingchild@harvard.edu](mailto:developingchild@harvard.edu)
- Visit [www.developingchild.harvard.edu](http://www.developingchild.harvard.edu) to learn more about the 3 principles and the IDEAS framework for science-based innovation
- Request a facilitated workshop or individual/team consultation around impact design or impact evaluation



# Center on the Developing Child HARVARD UNIVERSITY



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