As Scientists explore how we can best Help Children Thrive, they are Confirming the Wisdom of Traditional Ways for Promoting Well-Being

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What do children need most?

Answer: to be loved

To know that you care about them

"Children who are truly loved…know themselves to be valued. This knowledge is worth more than any gold."

Scott Peck, *The Road Less Traveled*

Jerome Frank conducted a study comparing many different forms of psychotherapy to.

He concluded:

Regardless of which form of psychotherapy, the most successful clinical outcomes were achieved by….

those who cared deeply about their patients and were able to communicate that caring to the patients

The best body of work on the relative effectiveness of different forms of psychotherapy

can be found in Bruce Wampold's 2001 book:

The Great Psychotherapy Debate: Models, Methods, and Findings

He concluded that:

the client-therapist relationship trumps technique hands down.

The same is true for parents and teachers

What matters most in Early Childhood Education?

Not the # of children

Not the caregiver:children ratio

Not having the best materials

but the caring relationship between the teacher and the children

As international studies show (e.g.,

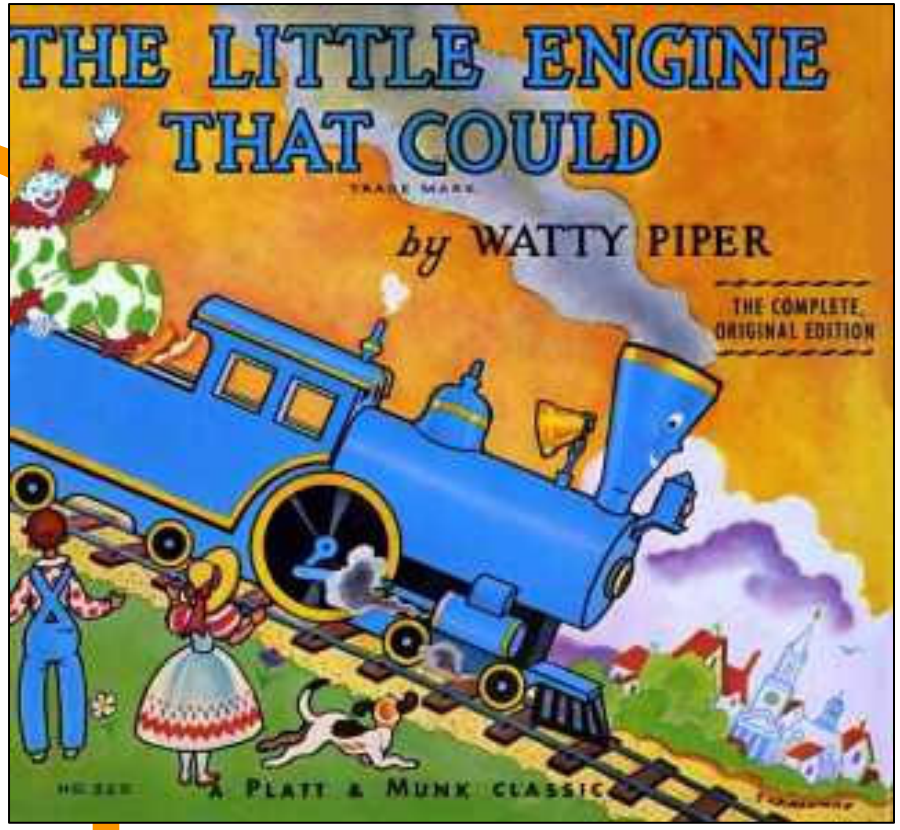



Don't have much money? Can't afford the newest toys or gadgets? Relax.

Your humanity is more important than material possessions or even doing the textbook-perfect thing.

What else do children need?

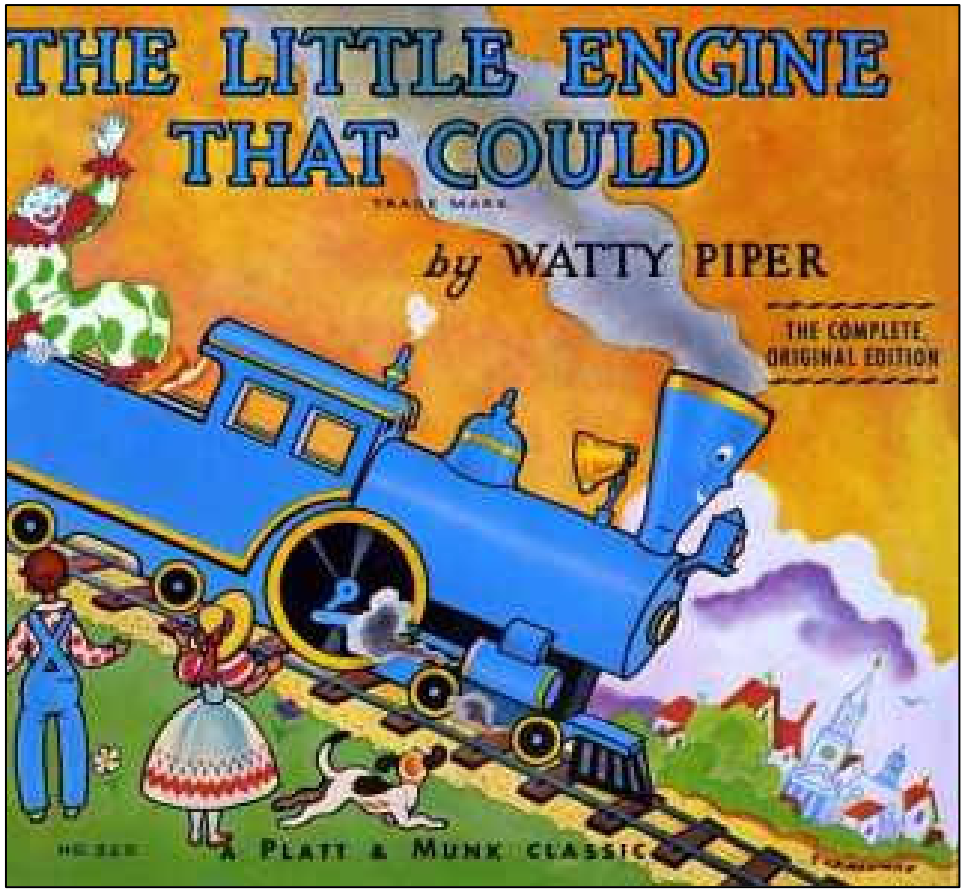
Children need to believe in themselves.



A major source of stress for many children is feeling that they're not smart enough, they can't learn, and will never succeed…

CHILDREN NEED TO BE PROUD OF WHO THEY ARE.

THEY NEED TO BELIEVE THEY CAN SUCCEED.



Three routes to that:

- They need to feel you believe in them - that you fully expect them to succeed.
- They need do-able challenges. They need opportunities to do things that enable them to see for themselves that they are capable.
- They need to feel connected to their heritage & proud of their cultural identity.

Our expectations for how a child will perform have a HUGE effect on how that child does perform.

If we expect a child to succeed, that child often will;

but sadly if we expect a child to fail, that child often will.

A famous study called Pygmalion in the Classroom showed that.

"Treat people as if they were what they ought to be and you help them become what they are capable of being."

– Johann W. van Goethe

It's important to communicate loud and clear the faith and expectation that each child will succeed.

When a toddler falls while trying to walk, we would never say ….

“You get a ‘D’ in walking today;”

it would never occur to us.

Instead we say, “Don’t worry;

I’m sure you’re going to be able

to do this.”

How different is that from what children hear in school. They hear:

"You get a D."

instead of "There's no question you are going to be able to do this. And we, together, are going to figure out a way to make that happen."

A school in BC
has as its motto:
If you can't learn the
way we teach, we will
teach the way you learn.

Powerful Role of the Expectations a Child has for Him- or Herself

Pygmalion in the Classroom -- powerful role of expectations Robert Rosenthal

Stereotype threat - female performance on math exams Claude Steele

For ex., there's a stereotype in our culture that men are better in math than women.

And sure enough when a group of researchers went to a univ. & gave a standardized math test, **As a group,** the male students scored higher than the female students.

Then the researchers tested another group of entirely comparable university students on exactly the same test
– the ONLY difference was they **added** one sentence before giving the exam.

They said, "This particular test has been designed to be gender-neutral; on this particular test women score as well as men."

And what happened? The women scored as well as the men.

It was the **SAME** test as the first group got.

The only difference was whether the women expected themselves to do well or not.

Our expectations for ourselves often become self-fulfilling prophecies

The second route is:

- They need to feel you believe in them - that you fully expect them to succeed.
- **They need do-able challenges. They need opportunities to do things that enable them to see for themselves that they are capable.**
- They feel connected to their heritage & proud of their cultural identity.

Do-able challenges:

Pride, self-confidence, joy come from seeing yourself succeed at something that you know is not easy.

Another way to show children we believe in them and have faith in them is to give them an important responsibility.

the ‘Coca Cola’ study

Child-to-child teaching has been found *repeatedly* to produce better (often dramatically better) outcomes than teacher-led instruction.

(review by Hall & Stegila, 2003; Miller, 2005)

The third route is:

- They need to feel you believe in them - that you fully expect them to succeed.
- They need do-able challenges. They need opportunities to do things that enable them to see for themselves that they are capable.
- **They need to feel connected to their heritage & proud of their cultural identity.**

"When we honor our customs …we have everything we need to heal ourselves within ourselves." -- Olowan Thunder Hawk Martinez of the Oglala Lakota

Suicide rates vary widely across BC's nearly 200 First Nations.

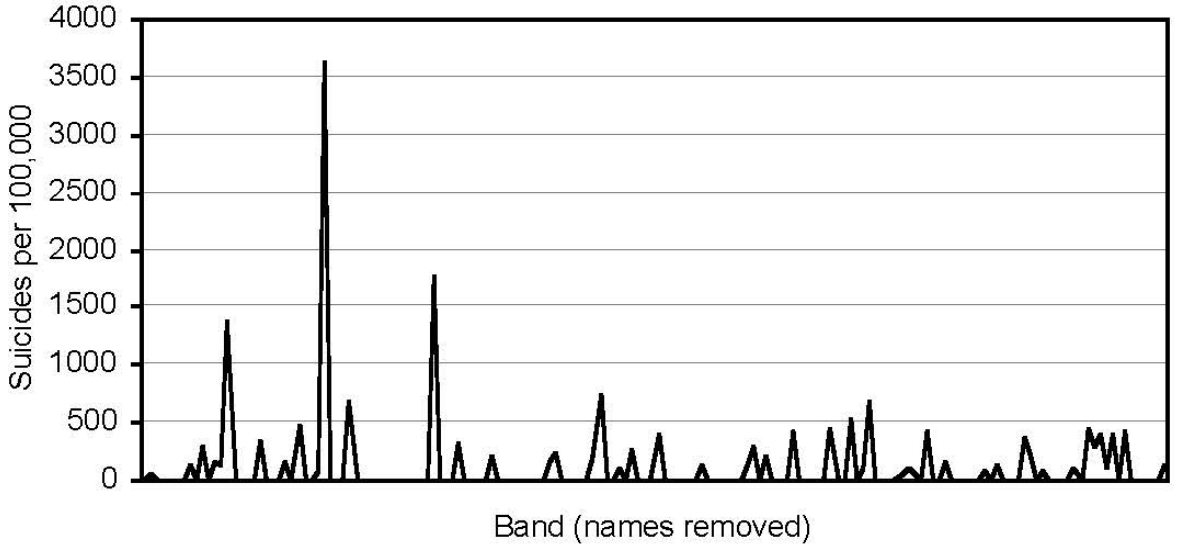
Some communities show rates 800x the national average.

In others, suicide is essentially unknown.

History of Residential Schools in Canada (as in Australia & New Zealand) were acts of cultural genocide - systematically orches-trated attempts to indoctrinate indigenous children into thinking of themselves as less than fully human

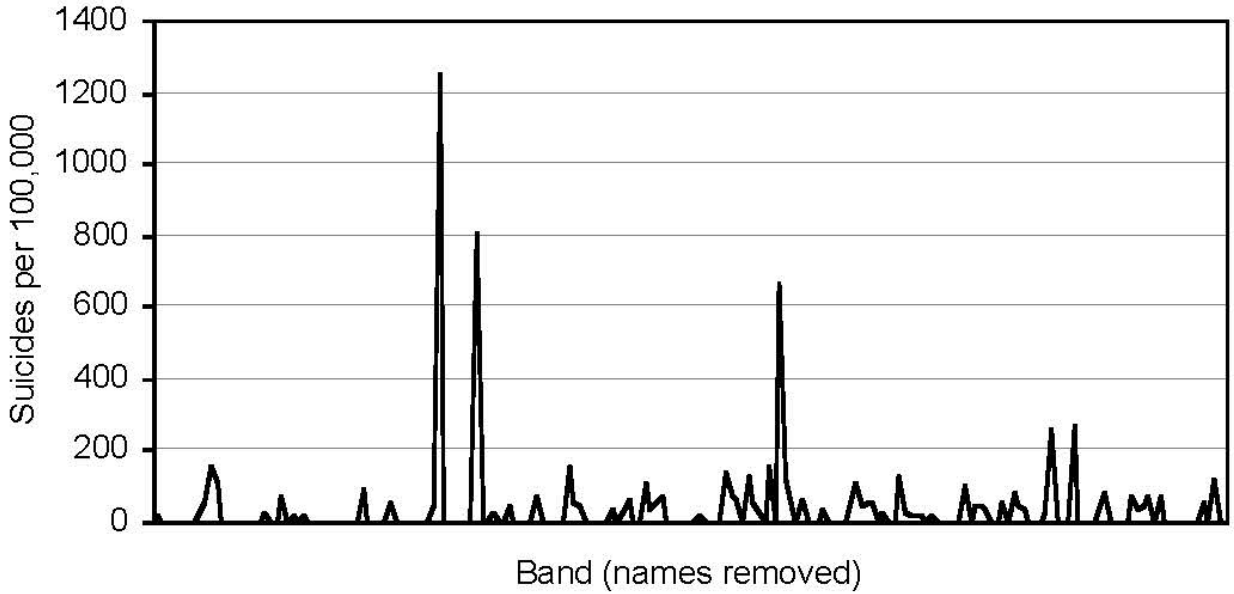
Chandler & Lalonde (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry, 35*, 191-219

Figure 3: Youth Suicide Rate by Band (1987-1992)



1987-1992

Figure 7: Youth Suicide Rate by Band (1993-2000)



1993-2000

Michael Chandler's research shows:

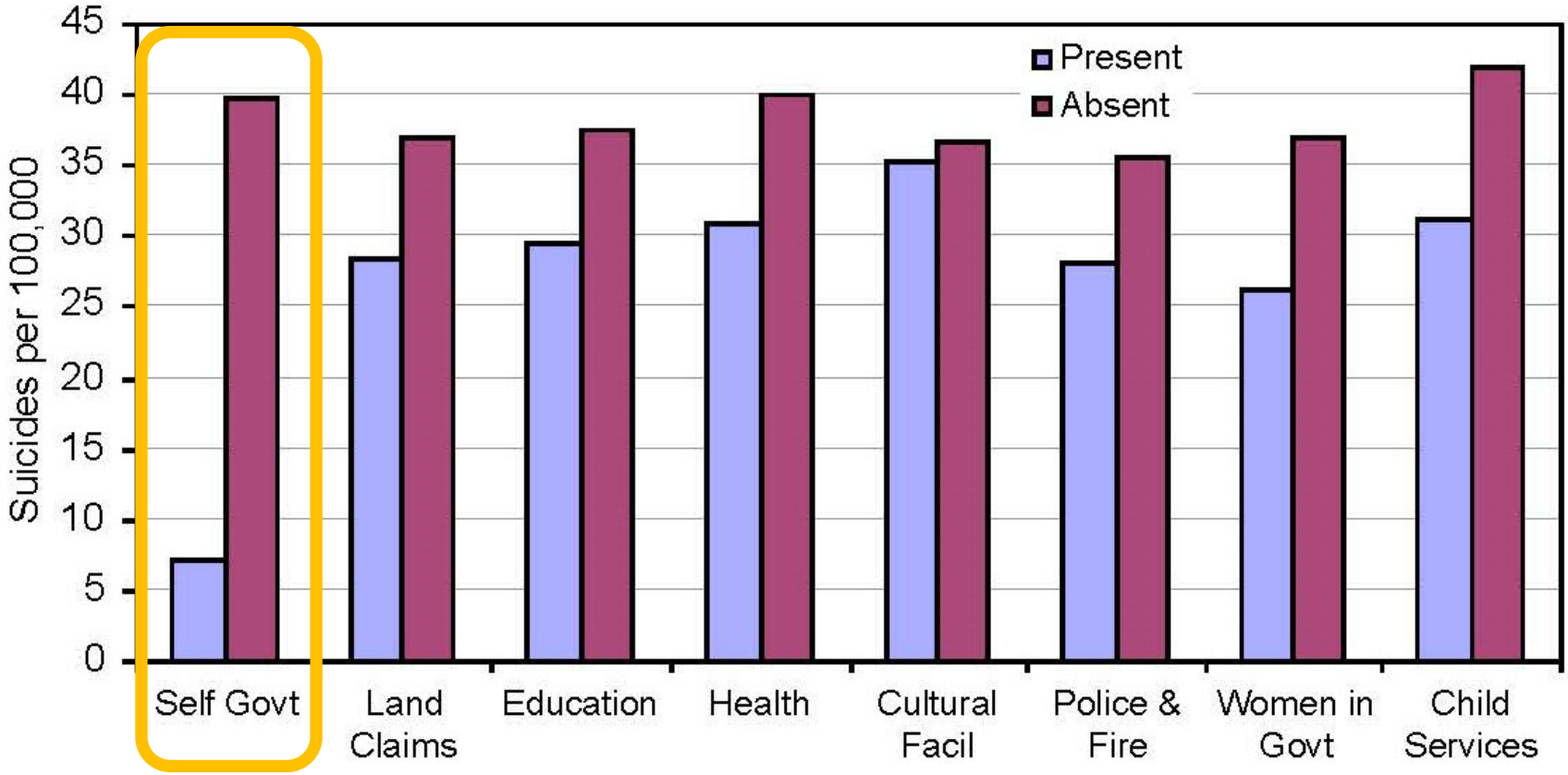
"Efforts by Aboriginal groups to preserve and promote their culture are associated with dramatic reductions in rates of youth suicide."

Chandler et al. (2003). Personal persistence, identity development, and suicide: A study of Native and non-Native North American adolescents. *Monographs of the Society for Research in Child Development, 68*, vii-130.

Communities that have taken active steps to re-discover and preserve their own cultural heritage are those in which youth suicide rates are markedly lower.

Chandler & Lalonde (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry, 35*, 191-219.

Figure 12: Suicide Rates by Cultural Continuity Factor (1993-2000)



Especially efforts to attain self-governance, but also a history of pursuing land claims, gaining control over education, health, police and fire services, having women in governance, or having marshaled the resources needed to construct cultural facilities within the community markedly reduce suicide rates.

Language use is also an extremely powerful predictive of low suicide rates.

Youth suicide rates drop to zero in the few communities where at least half the band members report a conversational knowledge of their own Native language.

Hallett, Chandler, & Lalonde (2007). Aboriginal language knowledge and youth suicide.
Cognitive Development, 22, 392-399

What else do children need?

They'll need abilities & skills important for succeeding in the 21st century

1) **Self-control:** resisting temptations, not acting impulsively, think before you act:

- wait your turn, raise your hand, don't grab another child's toy, don't pee in your pants
- resist hurting someone just because that person hurt you (cycle of 'tit for tat')
- WAIT: don't blurt out the 1st thing that comes to mind
- WAIT: resist acting in the heat of the moment
- WAIT: resist jumping to a conclusion

2) Discipline & Perseverance

resisting the many temptations to quit and not finish what you started

to stay on task despite

- boredom,
- initial failure, setbacks, difficulties
- more fun things calling

Evidence shows that discipline accounts for over twice as much variation in final grades as does IQ, even in college.

(Duckworth & Seligman, 2005)

3) Attentional Control

- Being able to concentrate,
- Pay attention, &
- Stay focused

despite distractions around you,
even when the material is boring

We tend to underestimate how capable young children really are.

Next you'll see 3-year-old displaying truly outstanding perseverance & focused attention (despite lots of distraction all around him)

See video at:

www.devcogneuro.com/videos/PinkTower1.wmv

4) Creativity in seeing connections between seemingly unconnected ideas or facts.

Playing with information and ideas in your mind, relating one to another, then dis-assembling those combinations and re-combining the elements in new ways.

Working memory involves holding information in mind and working with it.

5) Creativity in seeing familiar things in new ways / from different perspectives

If one way of solving a problem isn't working, can we conceive of the problem in a different way?

Can we think outside the box to come up with a different way of attacking the problem?

If you always do

what you always did,

you'll always get

what you always got.

- Einstein

6) Flexibility

- …to take advantage of unexpected opportunities / serendipity
- …to navigate around unforeseen obstacles, and
- …to admit you were wrong when you get more information

An example of poor cognitive flexibility:

When one door closes, another door opens;
but we often look so long and so regretfully upon the closed door, that we do not see the ones which open for us.

- Alexander Graham Bell

“Executive Functions”

is shorthand for

all of the abilities

I just mentioned.

‘Executive Functions’

refers to a family of

mental processes needed

whenever going ‘on automatic’

or relying on instinct or intuition

would NOT be a good idea

The 3 core Executive Functions are:

- **Inhibitory Control**
  (which includes self-control, discipline, and selective attention)
- **Working Memory** (holding info in mind & MANIPULATING it; essential for reasoning)
- **Cognitive Flexibility** (including creative problem-solving & flexibility)

Higher-order Executive Functions are:

- **Problem-solving**
- **Reasoning**
- **Planning**

Children with better inhibitory control (i.e., children who were more persistent, less impulsive, and had better attention regulation)

later as teenagers, are LESS likely to

- make risky choices,
- have unplanned pregnancies, or
- drop out of school

and

as adults 30 years later have…

- better health
- higher incomes and better jobs
- fewer run-ins with the law
- a better quality of life (happier)

than those with worse inhibitory control as young children,

controlling for IQ, gender, social class, & home lives & family circumstances growing up

across diverse measures of self control.

That's based on a study of 1,000 children born in the same city in the same year followed for 32 years with a 96% retention rate.

by Terrie Moffitt et al. (2011)

Proceedings of the Nat'l Academy of Sci.

There are many ways we can help children succeed despite having weak inhibitory control:

Kindergarten and 1st Grade teachers love to decorate the walls of their rooms with beautiful pictures and posters.

But, young children have very immature attentional control. They can easily get distracted by beautiful pictures and posters on the wall.

A recent study found 1st Graders are able to pay better attention & learn more when the walls are more bare. (Though each wall can be painted a beautiful color.)

Anna Fisher et al. (2014) in *Psych. Sci.*

Young children are often capable of responding correctly -- if some way can be found to cause them to delay responding for just a few moments.

In the PATHS program, children are taught that when they get upset they should stop and hold themselves tightly with arms crossed (like a Turtle gets into its shell) and take a deep breath.

This is brilliant. It imposes a short waiting period AND during that period it has children do things that reduce arousal & help them to calm down.

Inhibition is far more difficult for young children than we often appreciate.

It is not enough to know something and remember it;

you must get that knowledge into your behavior.

People have assumed that if children knew what they should do, they would do it. (If they did not, they were intentionally misbehaving.)

But, between knowing and implementing, another step, long ignored, is often needed. When there's a strong competing response, that response must be inhibited. Young children may not be able to do that.

A child may know

what he or she should do,

and want to do that, but still not

be able to act accordingly.

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Working memory is critical for

Reasoning

because that involves holding ideas and information in mind and seeing how they relate.

Working memory is critical for making sense of anything that unfolds over time, for that always requires holding in mind what happened earlier and relating that to what is happening now.

Working memory and inhibitory control each independently predict both math & reading competence from the earliest grades thru univ. often better than does IQ.

(Alloway & Alloway, 2010; Bull & Scerif, 2001; Dumontheil & Klingberg, 2012; Gathercole et al., 2004; McClelland & Cameron, 2011; Nicholson, 2007; Passolunghi et al., 2007; St Clair-Thompson & Gathercole, 2006; Savage et al., 2006; Swanson, 2014).

Challenge children's Working Memory so it improves (e.g., w/ Storytelling)

EFs need to be continually challenged to see improvements - not just used, but challenged.

I'm a huge fan of Storytelling

Storytelling requires and invites a child's rapt attention for extended periods (sustained, focused attention), and working memory to hold in mind all that's happened so far, different characters' identities, story details and to relate that to the new info being revealed – without visual aids (e.g., pictures on the page)!

A researcher (Gallets, 2005) randomly assigned children in Kindergarten & Grade 1 to storytelling or story-reading -- 2x a week for 12 weeks.

Vocabulary and recall improved more in the children assigned to STORYTELLING than in children assigned to story-reading.

The conversation that takes place in the context of reading seems to have even more benefit than the reading itself.

The more interaction between an adult reading or telling a story and the child, the more vocabulary improves.

REFERENCES for:

The conversation that takes place in the context of reading seems to have more benefit than the reading itself.

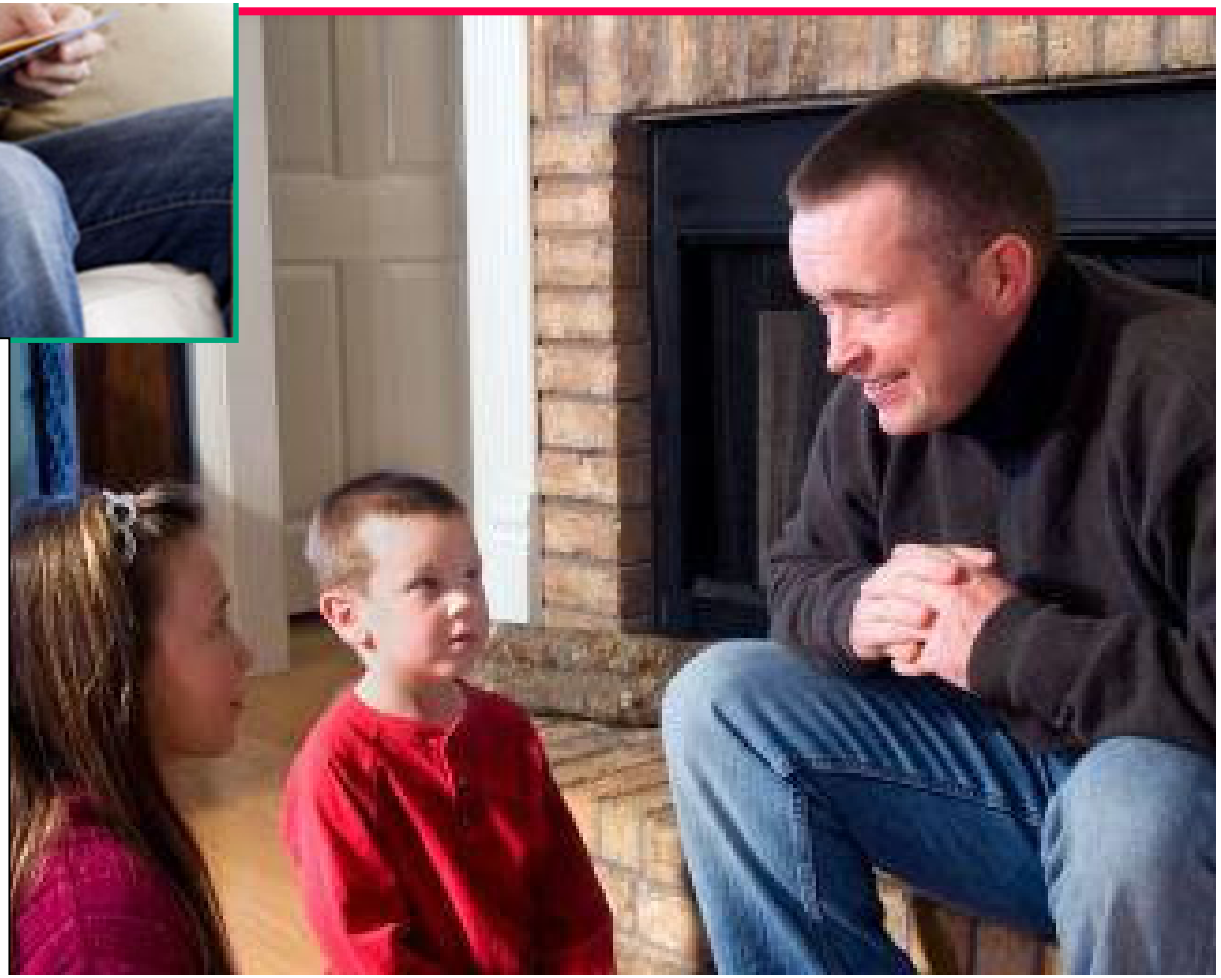
Walsh, B.A., & Blewitt, P. (2006). The effect of questioning style during storybook reading on novel vocabulary acquisition of preschoolers. *Early Childhood Education J., 33*, 273-278.

Sénéchal, M., Thomas, E., & Monker, J. (1995). Individual differences in 4-year-old children's acquisition of vocabulary during storybook reading. *J. of Ed. Psychology, 87*, 218-229.

Kertoy, M.K. (1994). Adult interactive strategies and the spontaneous comments of preschoolers during joint storybook readings. *Journal of Research in Childhood Education, 9*, 58-67.

Maybe one reason is that when you are reading to, or with, a child you are looking down at the page at least part of the time.

But when you are telling a story you are looking directly at the children & interacting more with them.



You probably think, “Oh what a wonderful scene!”

I would like to suggest that young children also need this: STORYTELLING - where only the teller sees the pages in the book.

Without the visual aids of pictures, puppets, or video, children need to work harder to sustain their attention and to remember details of the story like who's who in the story.

Note: You do not need to memorize the story. You can look at the book & then look up, but do not show the pictures in the book to the children (at least not until the story is over).

While **Story-reading**
is wonderful

I predict that
Storytelling
should improve
attention and working memory more
because it taxes them more

You may think that children need basic literacy skills to be ready for school.

They don't.

Children need basic

language skills

-- ORAL LANGUAGE --

to be ready for school.

Oral language is the foundation of early literacy (Paris & Paris, 2003; Kirkland and Patterson, 2005; Kendeou et al., 2009).

Young children need to be exposed to A LOT of RICH ORAL LANGUAGE.

The difference in the number of words that middle-income & low-income children HEAR in the US in the first 3 years of life is HUGE (25 million words).

By 3 years of age, children in the US whose parents are professional know more than twice (2x) as many words as children whose parents are on welfare.

Vocabulary assessed at age 3 strongly predicts reading comprehension at 9-10 years of age.

Hart and Risley (1995). *Meaningful Differences*

(see also Hoff, 2002, 2003, 2013; Rowe et al., 2013; Pancsofar & Vernon-Feagans, 2010)

Over the course of evolution our brains became adapted to acquire oral language. We are biologically predisposed to acquire oral language.

But reading is too new; we have no biological predisposition for that.

Some children can easily learn to read at an early age. But critically, for others it is beyond their ability at that young age.

We don't want children thinking they are failures

We want children to LOVE learning & enjoy school, not to feel that they can't learn & hate school.

AVOID children having failure experiences.

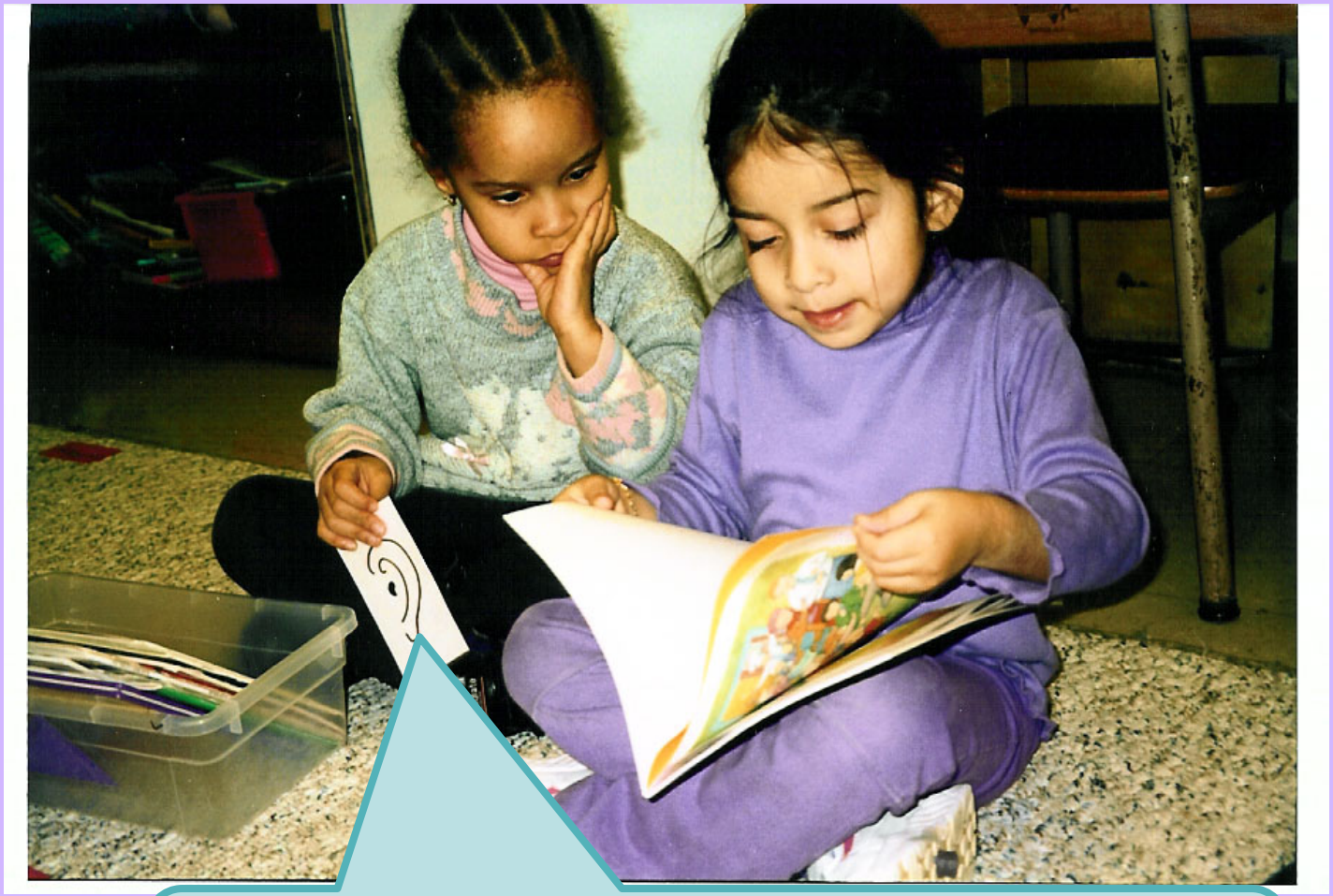
Hold off on requiring that 4, 5, or 6 year olds be able to read.

Children drilled in reading in K will test better on reading at the end of K than children steeped in oral language in K (who haven't received the same instruction in reading),

but I predict that by the end of 2nd grade, those steeped in oral language in K will be the better readers.

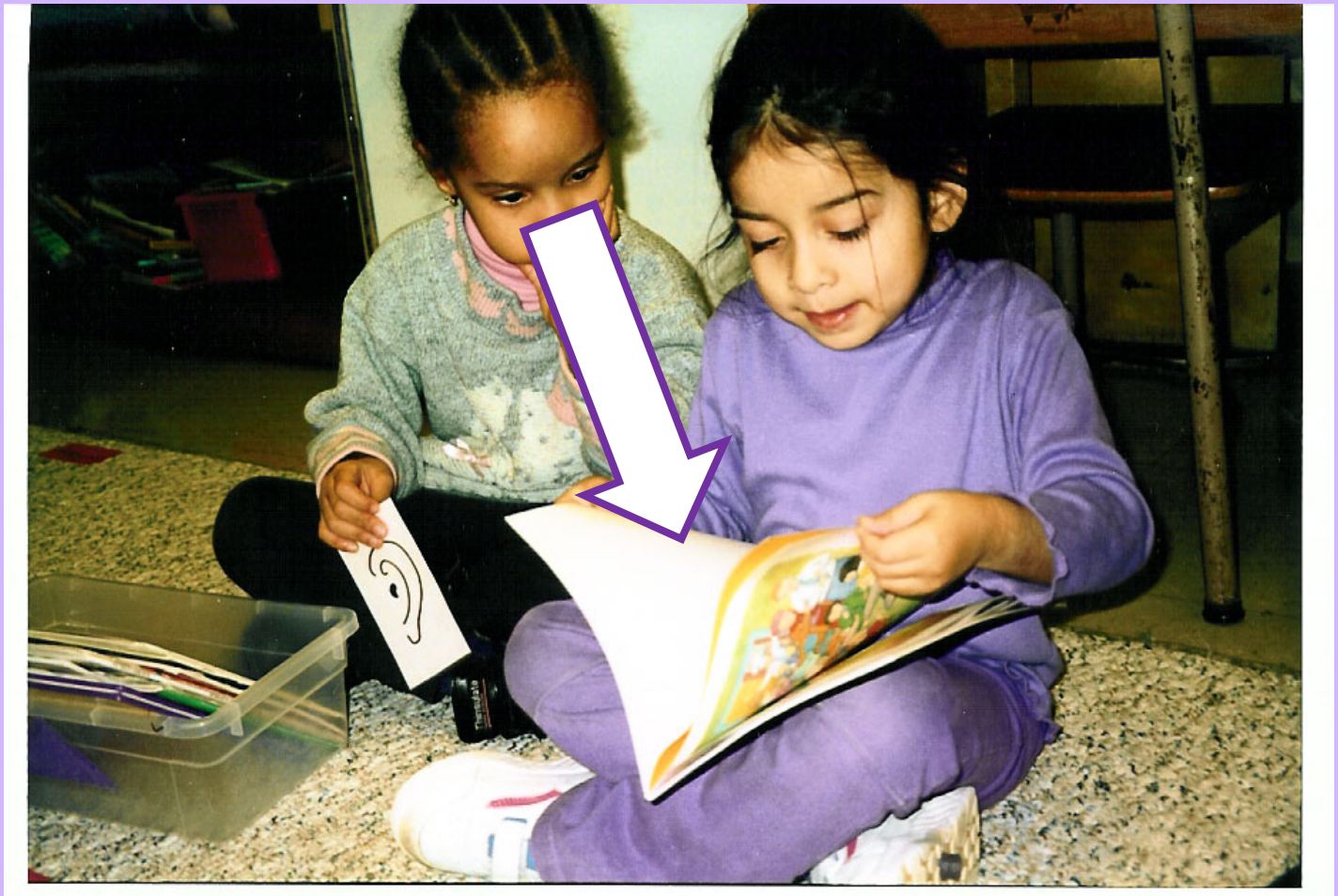
An example of how to to help children with fragile Working Memory:

Buddy Reading



Teacher explains, “Ears don’t talk; ears listen”

Buddy Reading



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How can we stop ourselves from get really upset when a child misbehaves? What we usually get upset about is the intent we think is behind an action.

Could use Cognitive Flexibility to re-frame:

A child might be acting in the most awful manner because he has been terribly hurt and is afraid of being hurt again, so he will push you away before you have a chance to reject him or he will test you to see if are *really* someone he can feel safe with.

If we see the misbehavior as coming from hurt, we can react completely differently.

One of the tests to assess cognitive flexibility asks people to try to come up with unusual uses for common objects.

For example, try to think of as many uses for a TABLE as you can.

What are all the things you might use a table for (besides for eating on it and writing on it)?

You could dance on top of a table.

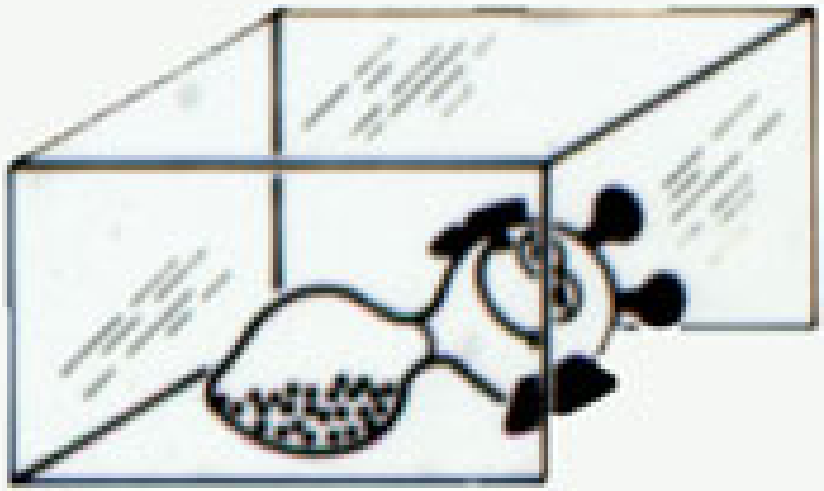
Might turned it on its side and use it to keep a door closed or as a shield against anything being thrown at you.

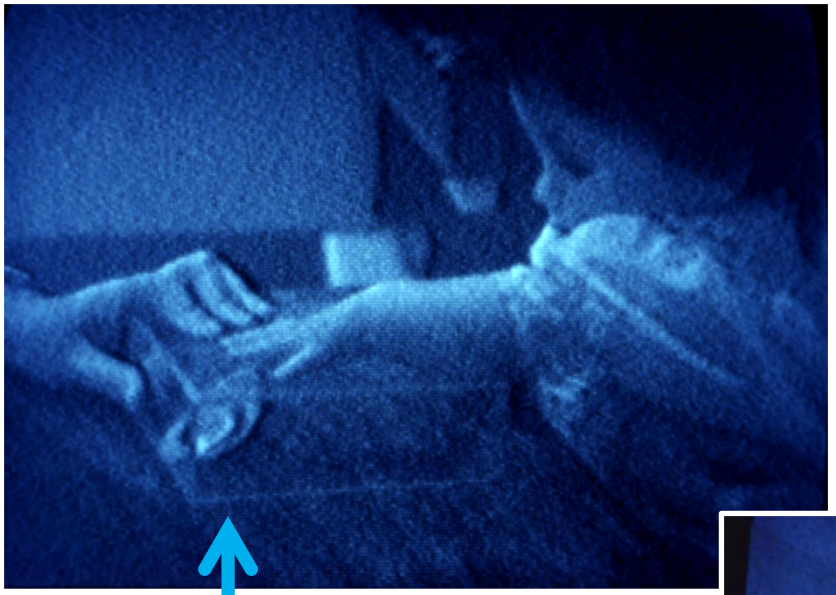
You could get under it to hide or to keep dry.

You could cut it up for firewood.

Infants are far smarter than many adults realize.

They are capable of exercising EFs, problem-solving, reasoning, and, creativity – even before their 1st birthday.



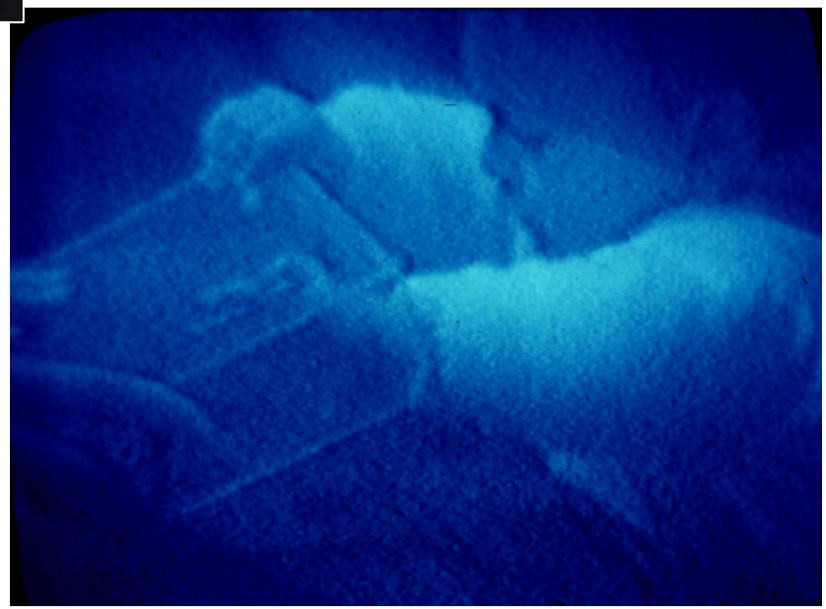


She wants her pacifier

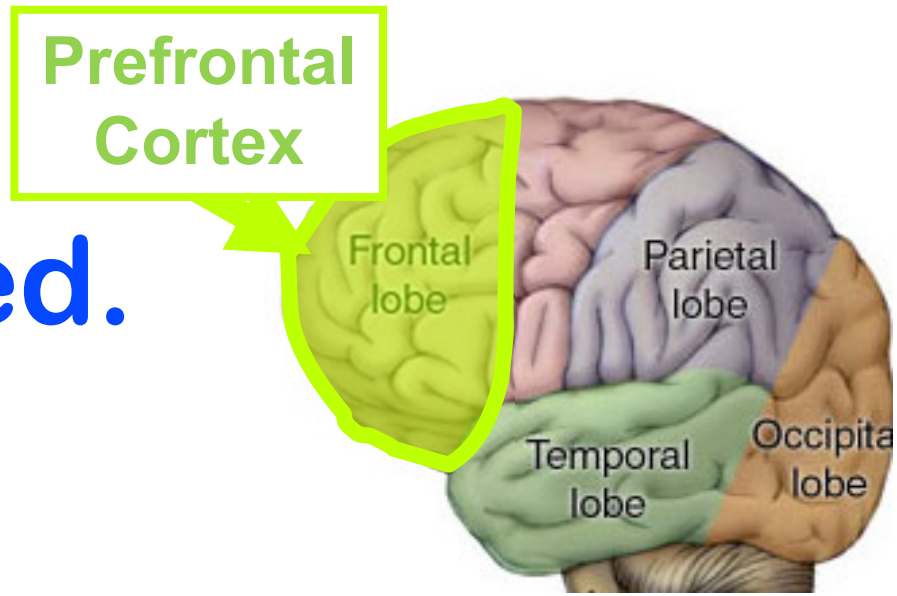
Great Thinking!

Good Problem-solving!

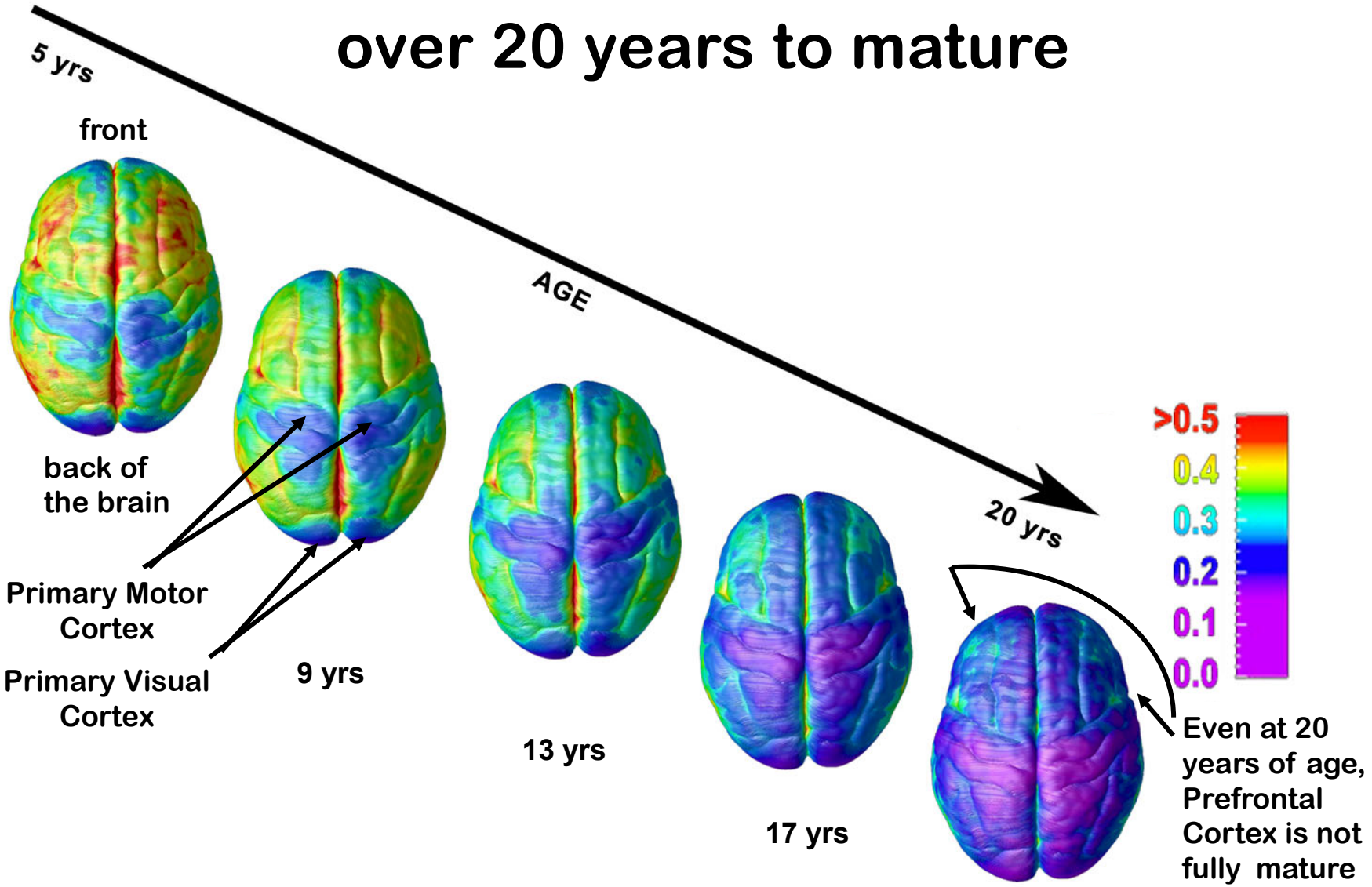
She raises the front of the box, so she can see thru the opening.



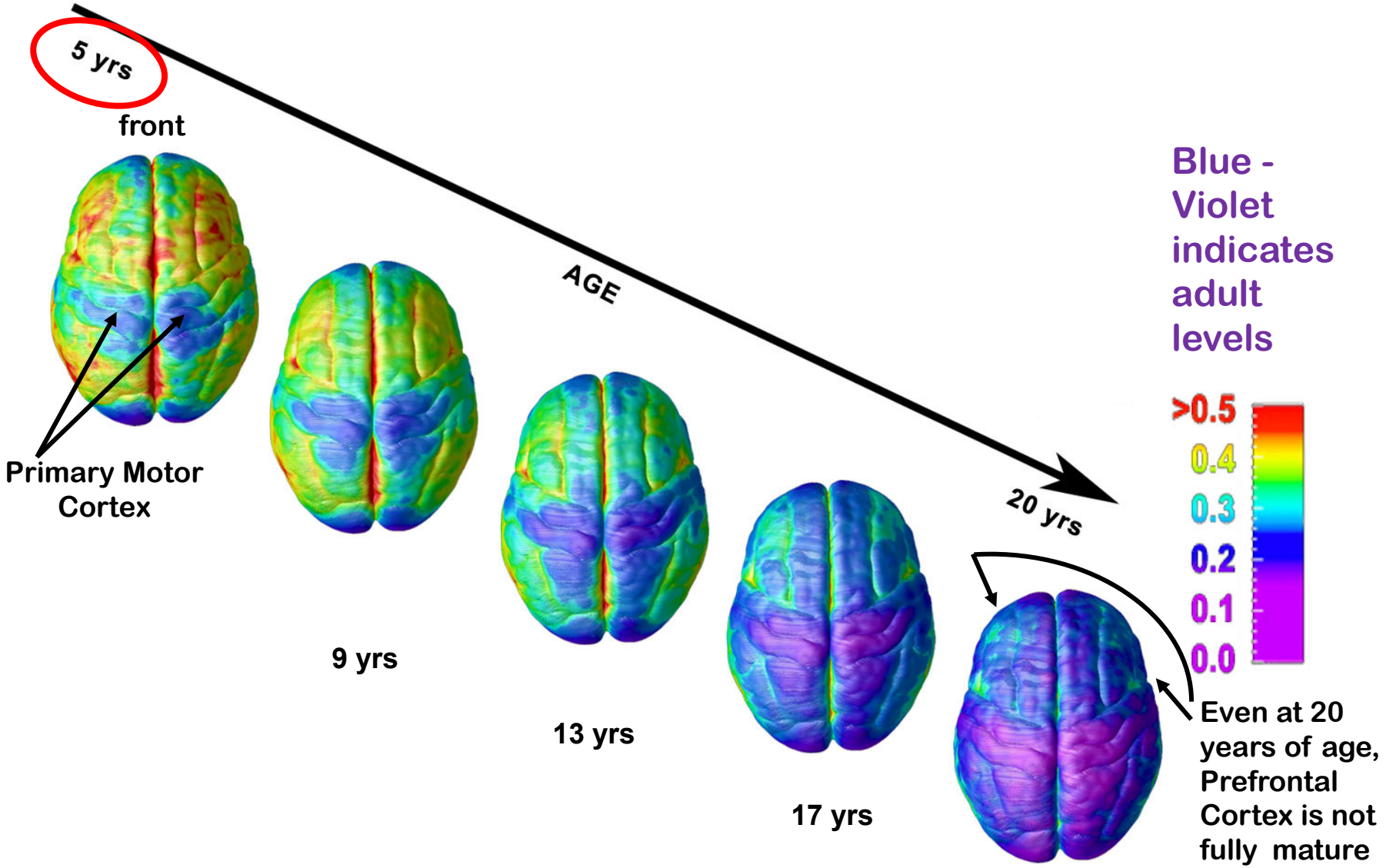
Executive Functions depend on Prefrontal Cortex and the other neural regions with which it is interconnected.



Prefrontal Cortex takes over 20 years to mature



Human Brain Development



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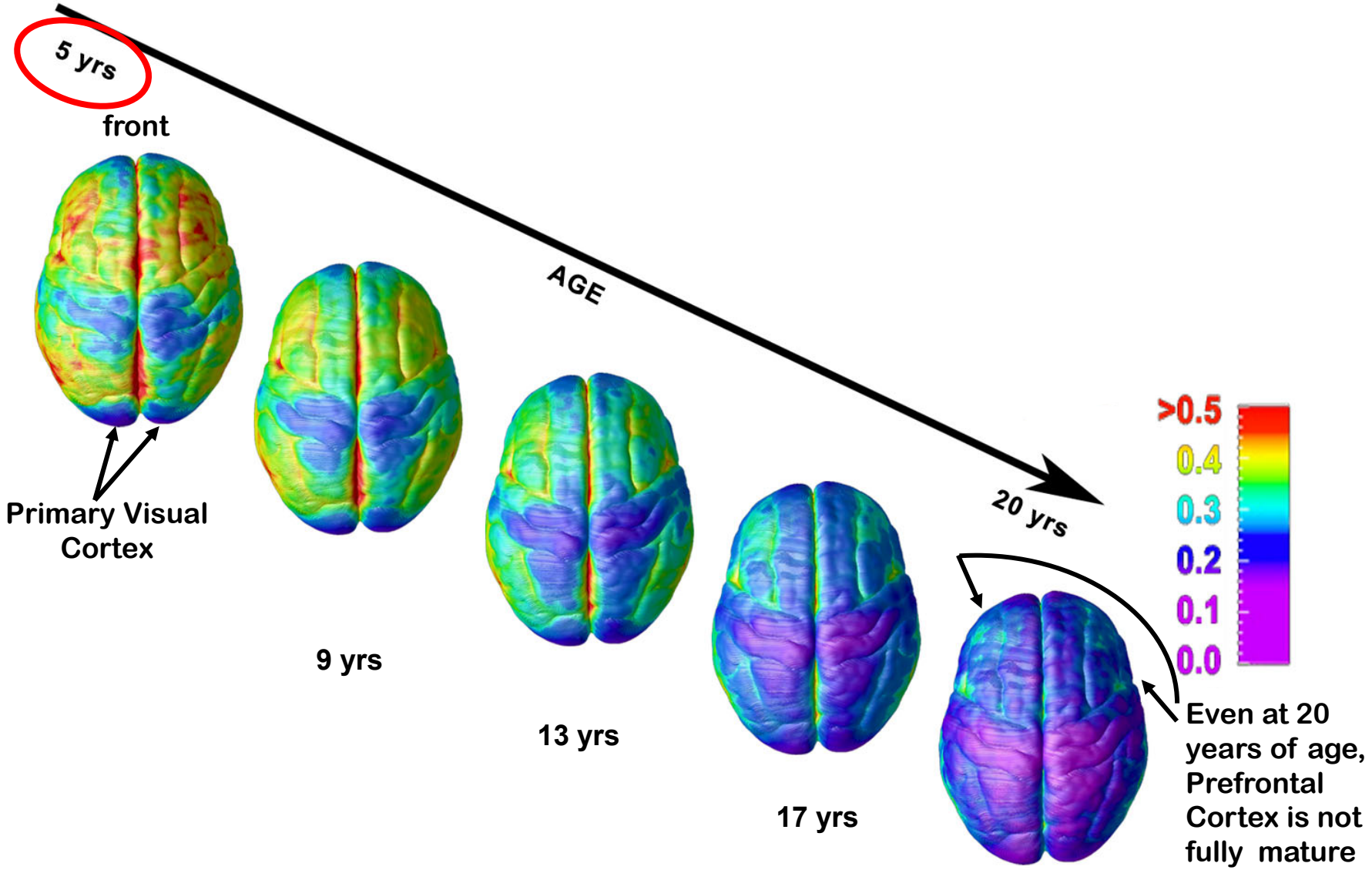

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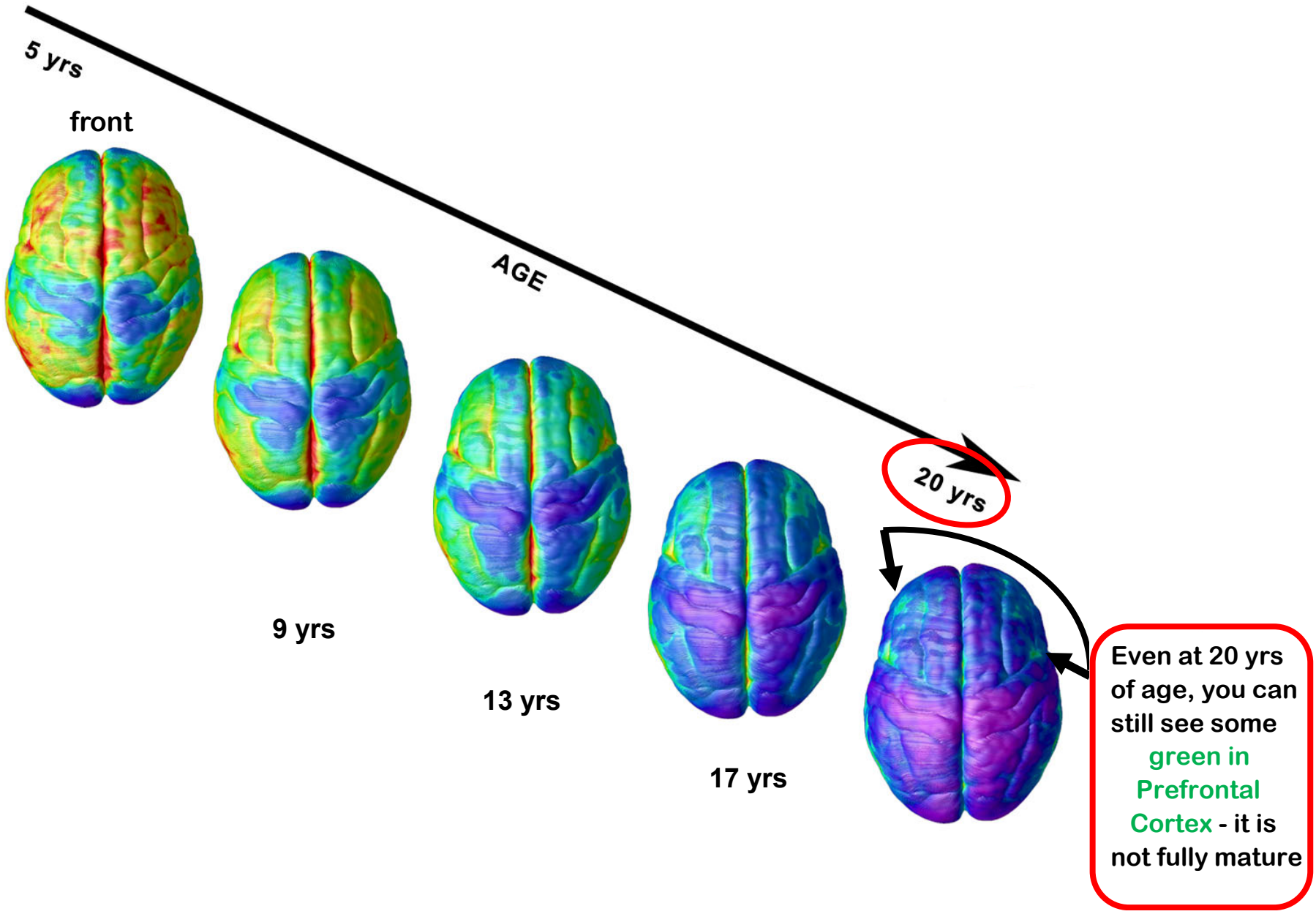


Just because PFC isn't fully functional when you are young, doesn't mean that it isn't functional at all.

Analogy with a 2-year-old's legs.

A 2-yr-old's legs are not at their full adult length. They won't be for another 15 years or so, but with those immature legs a 2-yr-old can walk, a 2-yr-old can even run.

That's to say that even tho' PFC is immature early in life, it can subserve EFs to some extent even in the youngest children (not at the full adult level, but to some extent) and with training and practice it can do it better.

We used to think that PFC was silent during infancy, but we've learned that babies can problem-solve and reason even before they can speak.

Kovács AM, Mehler J. (2009)

Cognitive gains in 7-month-old bilingual infants.

Proceedings of the National Academy of Sciences.

vol 106, p. 6556-6560

remember the video with the stacking boxes?

Give young ones time to figure things out on their own.

Don't rush to intervene to help out. Wait. Be patient.

Trust that there's an excellent chance they'll be able to solve the problem on their own.

If *you* solve the problem, you're the strong, heroic one and the child is the weak and needy one.

Have faith in the child's abilities and intellect.

Executive Functions

are important for every aspect of life –

success in school and in the workplace,

making & keeping friends,

marital harmony, and avoiding things like

unplanned pregnancy, substance abuse, or

driving fatalities.

In other words, self-control, creativity,

reasoning, mental flexibility, discipline and

perseverance are really important – they are

often more predictive than IQ.

If we want children to do well in school & in life, we need to help them develop healthy exec. functions.

The good news is that Executive Functions can be improved.

Vygotsky: Engaging in social pretend play is critical for developing executive function skills in very young children. It is emphasized in *Tools of the Mind*.

Children must plan who they want to be in a pretend scenario, and the teacher holds them accountable for

- During social pretend play, children must hold their own role and those of others in mind (working memory)

- inhibit acting out of character (employ inhibitory control), and

- flexibly adjust to twists and turns in the evolving plot (cognitive flexibility)

-- all three of the core executive functions thus get exercise.

Contrary to influential reviews of the benefits of aerobic exercise….

Nature Reviews Neuroscience (January 2008)

"Be Smart, Exercise Your Heart:
Exercise Effects on Brain and Cognition"
Charles Hillman, Kirk Erickson & Art Kramer

In particular, the frontal lobe and the executive functions that depend on it show the largest benefit from improved fitness.

The positive effects of aerobic physical activity on cognition and brain function are evident at the molecular, cellular, systems, and behavioral level.

Exercise without a cognitive component (e.g., riding a stationary bike) probably does not improve executive functions.

Exercise alone appears not to be as effective in improving EFs as exercise-plus-character-development (traditional martial arts) or exercise-plus-mindfulness (yoga).

Lakes & Hoyt (2004) randomly assigned children in grades K thru 5 (roughly 5-11 years-old) by homeroom class to Tae-Kwon-Do martial arts (N = 105) or standard physical education (N = 102).

Children assigned to Tae-Kwon-Do showed greater gains than children in standard phys. ed. on all dimensions of EFs studied (e.g., cognitive [focused vs. distractible] and affective [persevere vs. quit] and emotion regulation). This generalized to multiple contexts and was found on multiple measures.

Traditional martial arts emphasize self-control, discipline (inhibitory control), and character development.

In a study with adolescent juvenile delinquents (Trulson, 1986), one group was assigned to traditional Tae-Kwon-Do (emphasizing qualities such as respect, humility, persever-ance, honor as well as physical conditioning).

Another group was assigned to modern martial arts (martial arts as a only competitive sport).

Those in traditional Tae-Kwon-Do showed less aggression and anxiety and improved in social ability and self-esteem.

Those in modern martial arts showed *more* juvenile delinquency and aggressiveness, and decreased self-esteem and social ability.

Whether EF gains are seen depends on the way an activity is done.

EFs need to be continually challenged to see improvements - not just used, but challenged.

The Importance of Repeated Practice

Whether EF gains are seen depends on the amount of time spent practicing, working on these skills, pushing oneself to improve.

People improve on the skills they practice and that transfers to other contexts where those same skills are needed -- but people *only* improve on what they practice – improvement does not transfer to other skills.

If improvement in a particular EF skill is your goal, then you need to engage in activities that require & train that EF skill.

Physical Activities that require thought, planning, concentration, problem-solving, working memory, & inhibitory control will improve those abilities. Those that don't won't.

The Importance of

…Action for Learning

…Learn through Doing

at any age, but especially for young children

Hands-on Learning

We evolved to be able to learn to help us act, to help us do what we needed to do.

If information is not relevant for action, we don't pay attention in the same way (hence the difference in route memory for the driver, versus the passenger, of a car).

You learn something when you NEED it for something you want to DO.

(My son teaching me to program the VCR)

The same is true when we teach children in school. They need opportunities to concretely apply what they are taught.

It is very important not to require young children to sit for any length of time. It is not developmentally appropriate, and that is especially true for little boys.

Too often, schools are unfriendly or unhappy places for little boys.

And boys are dropping out of school at much higher rates than girls.

This is important because little kids are not built to sit still for any length of time listening to verbal instruction,
esp. little boys.
Trying to force young children to do that will cause many children to dread school
&
to form long-lasting perceptions of themselves as stupid & unable to learn.

Young children's learning needs to be active and hands on.

Many concepts can, and should, be introduced visually and tactilely before they are introduced using language.

It helps a great deal to give children experiences with concepts first before attaching verbal labels to them.

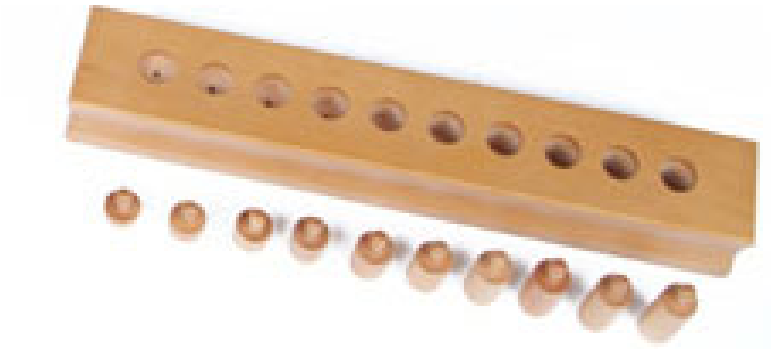
For example, by playing with the pegboards you see below, children learn about the concepts of height & diameter without those words ever being used.

By the time those words are introduced, children have a deep understanding of the concepts.

same height

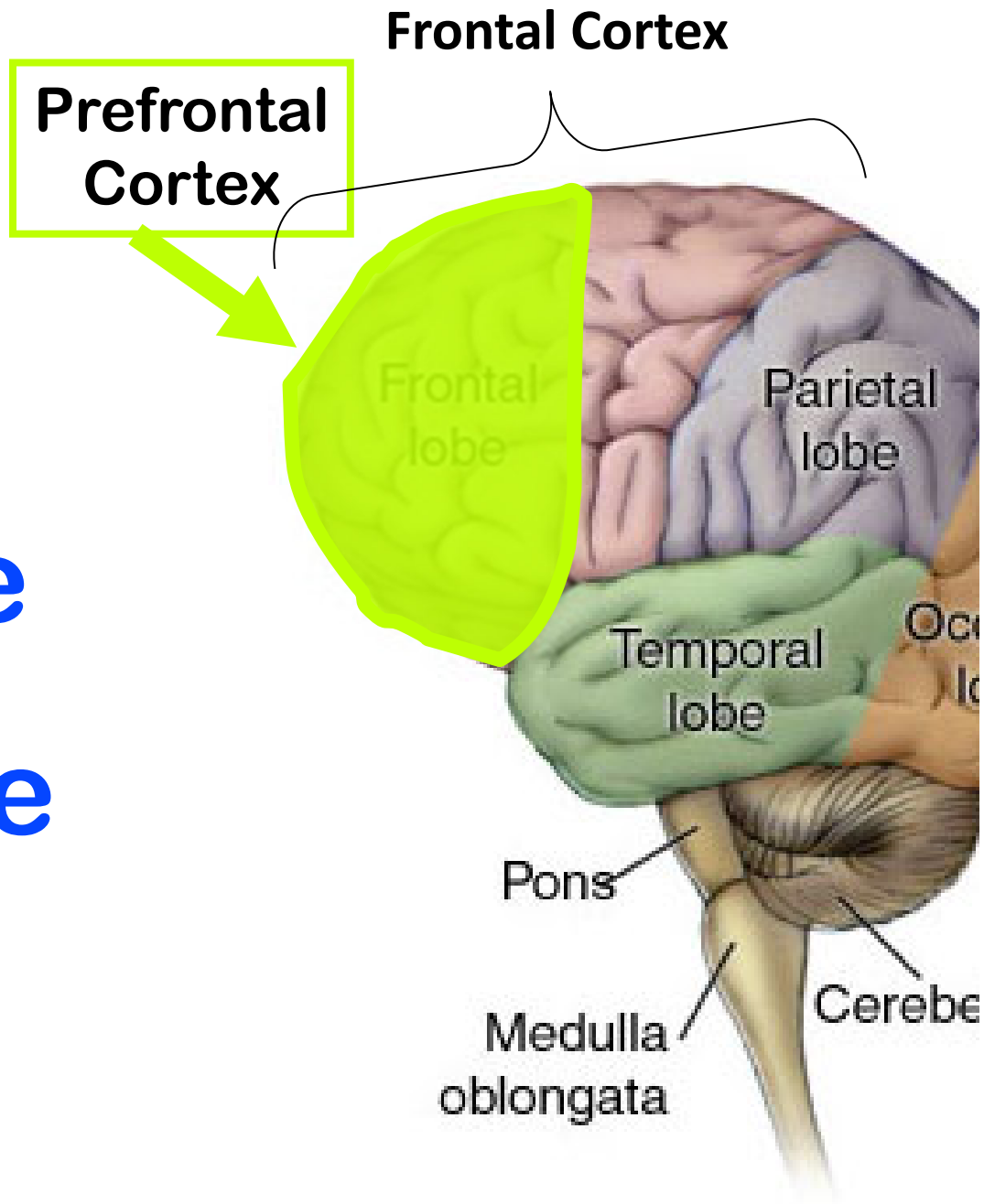
differ only in diameter

same diameter



differ only in height

PFC is the most vulnerable area of the brain.



PFC & EFs are the first to suffer, & suffer most, if we are

- **sad or stressed**
- **lonely**
- **or not physically fit**

Conversely, we show better EFs when we're happy, feel socially supported, & we're physically fit.

Similarly, stress, sadness, or lack of social or emotional support, often lie at the root of health problems.

Asthma is a particularly clear case of this (Chen et al., 2006; Cohen, 1996; Lind et al., 2014).

The different parts of the human being are fundamentally interrelated.

Each part (cognitive, spiritual, social, emotional, & physical) probably develops best when no part is neglected.

Diamond, 2007

Stress impairs Executive Functions and can cause anyone to look as if he or she has an EF impairment (like ADHD) when that's not the case.

(You may have noticed that when you are stressed you cannot think as clearly or exercise as good self-control.)

When we are sad we're worse at selective attention.

Desseilles et al., 2009
von Hecker & Meiser, 2005

When we're happy we are better at selective attention.

Gable & Harmon-Jones, 2008

People show more creativity when they're happy

THE most heavily researched predictor of creativity in social psychology is mood.

The most robust finding is that a happy mood leads to greater creativity

(Ashby et al. 1999; Hirt et al. 2008; Isen et al. 1985, 1987).

It's not that happier people are more creative than sadder people, but that an individual tends to be more creative when he or she is happier than when he or she is more miserable.

If you're stressed,
you can't be the
teacher or parent you
want to be.




If you're stressed,

your children will pick on it.

It will cause them to feel stressed.

And if they're stressed, their EFs will suffer & therefore their school performance will suffer.

And, I can guarantee 100% that worrying about whether you're a good enough parent will NOT improve your parenting – it will only make it worse.

Advice to Parents and Teachers:

RELAX

Remember:

Imperfect ≠ Worthless

Don't be so hard on yourself when you make a mistake

Even the people
you most respect
make mistakes and
have done things they regret.

EVERYONE makes mistakes.

Everyone is imperfect.

Yet each of us is wonderful in our own way – despite being imperfect.

And you can be a TERRIFIC parent even though you aren't the perfect parent.

Your humanity is more important than your knowledge or skill or doing the textbook-perfect thing.

Your caring -- your openness to truly listen; being there for your child when he or she needs you - is more important than your knowledge or skill.

Our brains work better when we are not feeling lonely or socially isolated.

Loneliness: Human Nature and the Need for Social Connection
2008
a book by John Cacioppo & William Patrick

This is *particularly* true for PFC & EFs.

We are fundamentally social.

We need to belong.

We need to fit in & be liked.

Children who are lonely or ostracized have more difficulty learning.

It's not just peers; a close relationship with a caring adult can be huge.

People who feel lonely, or are focusing on anticipating being alone, show worse EFs than people who feel, or anticipate feeling, more socially supported.

Baumeister et al., 2002
Tangney et al. , 2004
Twenge et al., 2002

We are not just intellects,

we have emotions

we have social needs

& we have bodies

You need your sleep.

Lack of sleep will produce deficits in EF skills, and cause someone to look as if he or she has an EF impairment, like ADHD.

The brain doesn't recognize the same sharp division between cognitive and motor function that we impose in our thinking.

The SAME or substantially overlapping brain systems subserve BOTH cognitive and motor function.

For example, an area of the brain called the pre-SMA is important for sequential tasks,

whether they are sequential motor tasks or

sequential cognitive tasks.

Hanakawa et al., 2002

Motor development and cognitive development appear to be closely intertwined.

Diamond, A. (2000)

Close interrelation of
motor development and cognitive development
and of the cerebellum and prefrontal cortex.

Child Development, 71, 44-56

We need to care about the whole child (cognitive, social, emotional, spiritual & physical) if we want to improve any aspect (such as academics). If we focus only on the intellect, we are less likely to succeed.

To achieve the academic outcomes we all want…

- we need to try to reduce stresses in children's lives & give them better tools to manage stress. Children need to do things that give them JOY.
- no child should feel alone; the classroom, the school community, and the wider community need to be supportive of our children
- we have to care about children's health -- they need good nutrition, sleep, exercise, & time outdoors.

I predict that those activities that will most successfully improve EFs will not only work on training and improving executive functions -- but also….

will indirectly support EFs by working to reduce things that impair them (like stress) and working to enhance things that support them (like joy).

What activities directly train and challenge executive functions and indirectly support them by also addressing our social, emotional, and physical needs?

Traditional Activities that have been around for millennia.

For 10's of 1,000's of years, across *all* cultures, storytelling, dance, art, music & play have been part of the human condition.

People in *all* cultures made music, sang, danced, did sports, and played games. There are good reasons why those activities have lasted so long and arose everywhere.

Music-making, dance, and playing sports address our

cognitive,

emotional,

social, &

physical needs.

Because they challenge EFs directly,

and indirectly support EFs by

increasing joy,

a sense of belonging, &

physical exercise,

I predict they should improve EFs.

(and we're hoping to get funding to test my prediction for El Sistema Orchestra & for social, communal dance)

But, almost any activity could be the way in, the means for disciplining the mind and enhancing resilience.

MANY activities not yet studied might well improve EFs.

Key is that the child <u>really</u> enjoy the activity and really want to do it, so s/he will spend a lot of time at it, pushing him- or herself to improve.

We might as well have kids do something they can put their heart and soul into.

could be caring for an animal….

Could be a SERVICE ACTIVITY such as

Free the Children

Children Changing the World

More than 1.7 million youth involved in innovative education and development programs in 45 countries.

Educates, engages, and empowers young people to be confident young change-makers and lifelong active citizens.

Educators whose students are engaged in Free the Children report:

97%	of their students now believe they can make a difference in the world.	89%	confirm that their students are more confident in their goal-setting and completion.
85%	find a greater atmosphere of caring and compassion in the school.	90%	of their students have demonstrated increased leadership among their peers.

What nourishes the human spirit may also be best for Executive Functions.

Perhaps we can learn something from the traditional practices of people across many cultures & 1,000's of years.

The arts, play, and physical activity may be critical for achieving the outcomes we all want for our children.

Gracias por su atención

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My thanks to the NIH (NIMH, NICHD, & NIDA), which has continuously funded our work since 1986, & to the Spencer Fdn, CFI, NSERC, & IES for recent support our work - and especially to all the members of my lab.

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