

Here's to the kids that are different,  
Kids who don't always get A's,  
Kids who have ears,  
Twice the size of their peers,  
And noses that go on for days,  
Here's to the kids who are different,  
Kids who bloom later than some,  
Kids who don't fit  
But who never quit,  
Who dance to a different drum,  
Here's to the kids who are different,  
Kids with the mischievous streak,  
For when they have grown,  
As history has shown,  
It's their difference that makes them unique,

-Digby Wolfe

# Supporting Executive Functioning in Children and Youth

## A Workshop for Parents

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Child and Family Therapist,

Vancouver, BC.

[www.santinconsulting.com](http://www.santinconsulting.com)

This presentation draws from the inspiring work and important publications of Dr. Russell Barkley, Dr. Rosemary Tannock and Dr. Peg Dawson. All three are leaders in the field of supporting people with ADHD.

- [ADHDLectures.com](http://ADHDLectures.com)
- [Teachadhd.ca](http://Teachadhd.ca)
- [curry.virginia.edu/about/curry-foundation/\*\*peg-dawson\*\*](http://curry.virginia.edu/about/curry-foundation/peg-dawson)

**How would you describe  
the your child?**

## Myth

- ADHD is not real
- It is a label given to kids who are naughty; kids who are not disciplined by their parents
- a label used by teachers for kids who are naughty, lazy, unmotivated

## FACT

- ADHD is a neurobiological, genetically-based condition characterized by differences in brain functioning that affect behaviour, thoughts and emotions.
- The differences in brain function cause inattention, hyperactivity and/or impulsivity, along with a number of related difficulties, that are *inappropriate for an individual's age and impairing*.

# ADHD impairs functioning from morning to night!



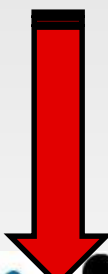
## ***Before school:***

Problems waking up  
Getting ready for school



## ***During school:***

Cannot focus, distracted  
Disorganized  
Poor performance  
Problems with peers



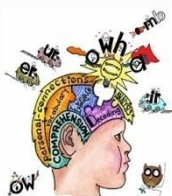
## ***After school:***

Problems with homework  
Problems with friends, siblings



## ***Bedtime:***

Problems settling down  
& falling asleep



# Early Intervention is Imperative.

- Caveat: ADHD is impairing. Impairment can be found in many domains. Those who have the condition often do not meet their potential.

## **Early intervention with a multi-modal approach can:**

- Reduce the degree of impairment
- Limit the development of co-occurring conditions such as anxiety disorder, depression, oppositional defiant disorder, substance use or other condition
- Protect self-esteem
- Benefit the family system

# Presentations of ADHD

These were previously called sub-types

2014: Described as presentations that may change during development:

- Inattentive
- Hyperactive-Impulsive
- Combined inattentive & hyperactive-impulsive

On a scale: Mild, Moderate or Severe, describing the degree of impact to the individual's daily functioning.



# Cognitive Processes Impacted by ADHD

- Regulating alertness
- Focusing & sustaining effort & attention
- Processing information at consistent & appropriate speeds
- Planning, organizing and prioritizing tasks
- Remembering details & accessing short-term memory
- Distinguishing essential from nonessential detail
- Delaying gratification
- Inhibiting behaviours
- Managing frustration & other emotions
- Evaluating information, self-monitoring own performance & regulating actions

Rethinking ADHD:  
in the classroom & at home  
Saaled Inclusion Congress 2011

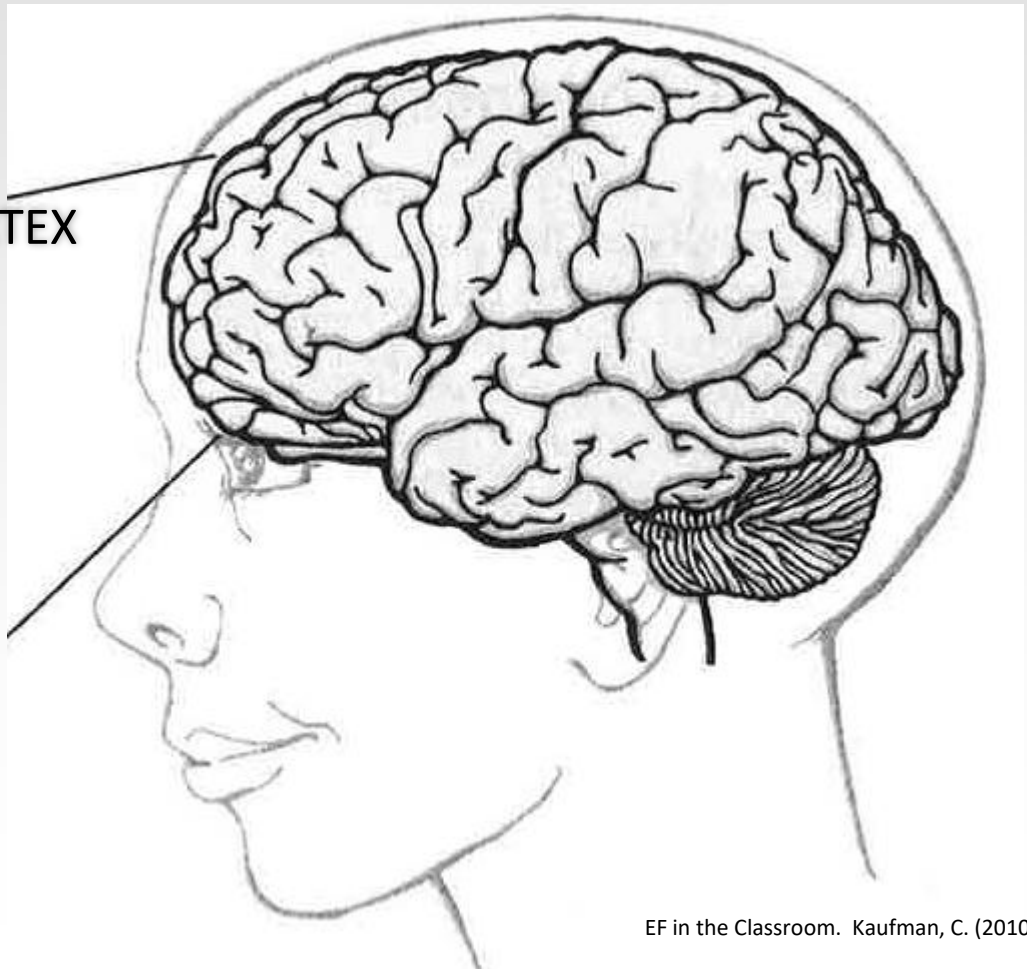
# Mechanics of the Frontal Lobe

## DORSOLATERAL PREFRONTAL CORTEX

- Planning
- Strategizing
- Flexibility
- Self Monitoring

## Orbital Prefrontal Cortex

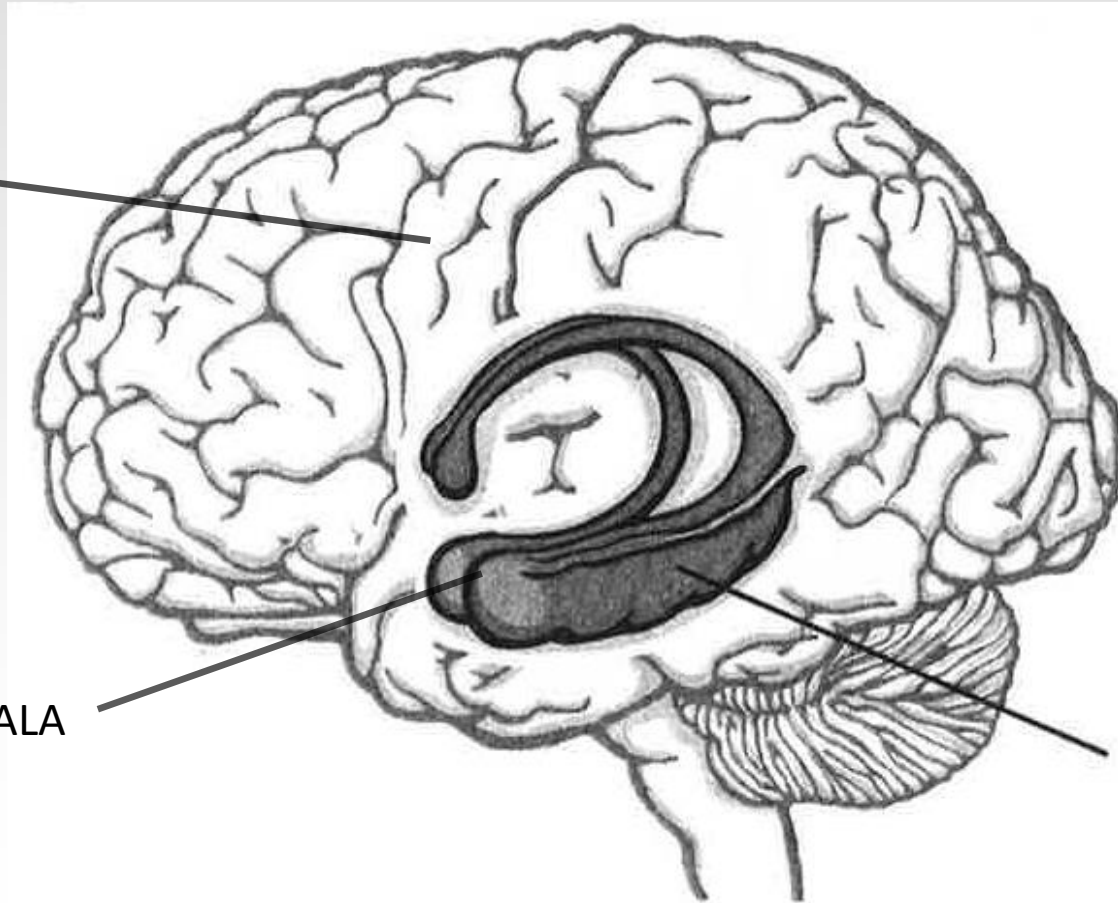
- Impulse Control (Behavioural Inhibition)
- Emotional Modulation



# Other Regions Associated with EF

ANTERIOR  
CINGULATE

AMYGDALA



HIPPOCAMPUS

# Summary

- **Dorsolateral Prefrontal Cortex-** Planning, Sustained attention, Flexibility, Self awareness (metacognition)
- **Orbital Prefrontal Cortex-** Impulse Control, Emotional Modulation.
- **Hippocampus-** Consolidates information from working memory to long-term memory.
- **Amygdala-** Processing of memory, decision making and emotional reactions
- **Anterior Cingulate** – Regulates autonomic functions but also mediates motivation, responding to novelty, self monitoring of performance and persistence.
- **Basal Ganglia-Supports motor initiation,**
- **Cerebellum**
- **Parietal Lobe**

## Key Messages

- Has a Biological cause
- Is often Genetic
- It's not an excuse but can explain
- Is no one's fault
- Can be disabling to an individual and families if not addressed



# What is Executive Function?

- A major type of action-to-the-self (a type of self-regulation)
- The 5 types of Executive Functions in Russell Barkley's Model:
  - Response Inhibition
  - Nonverbal Working memory
  - Verbal Working memory
  - Emotional self-regulation
  - Planning and problem-solving
- Each likely develops by behavior being turned on the self and then internalized (privatized, inhibited)
- They likely develop in a step-wise hierarchy - Each needs the earlier ones to function well

# Understanding Executive Functions



# Executive Function = Self Regulation

- The Joint action of perceiving time/timing
- Inhibiting distraction/emotions
- Remembering past experiences and future goals to help guide decisions
- Internalized speech to guide self and behaviour

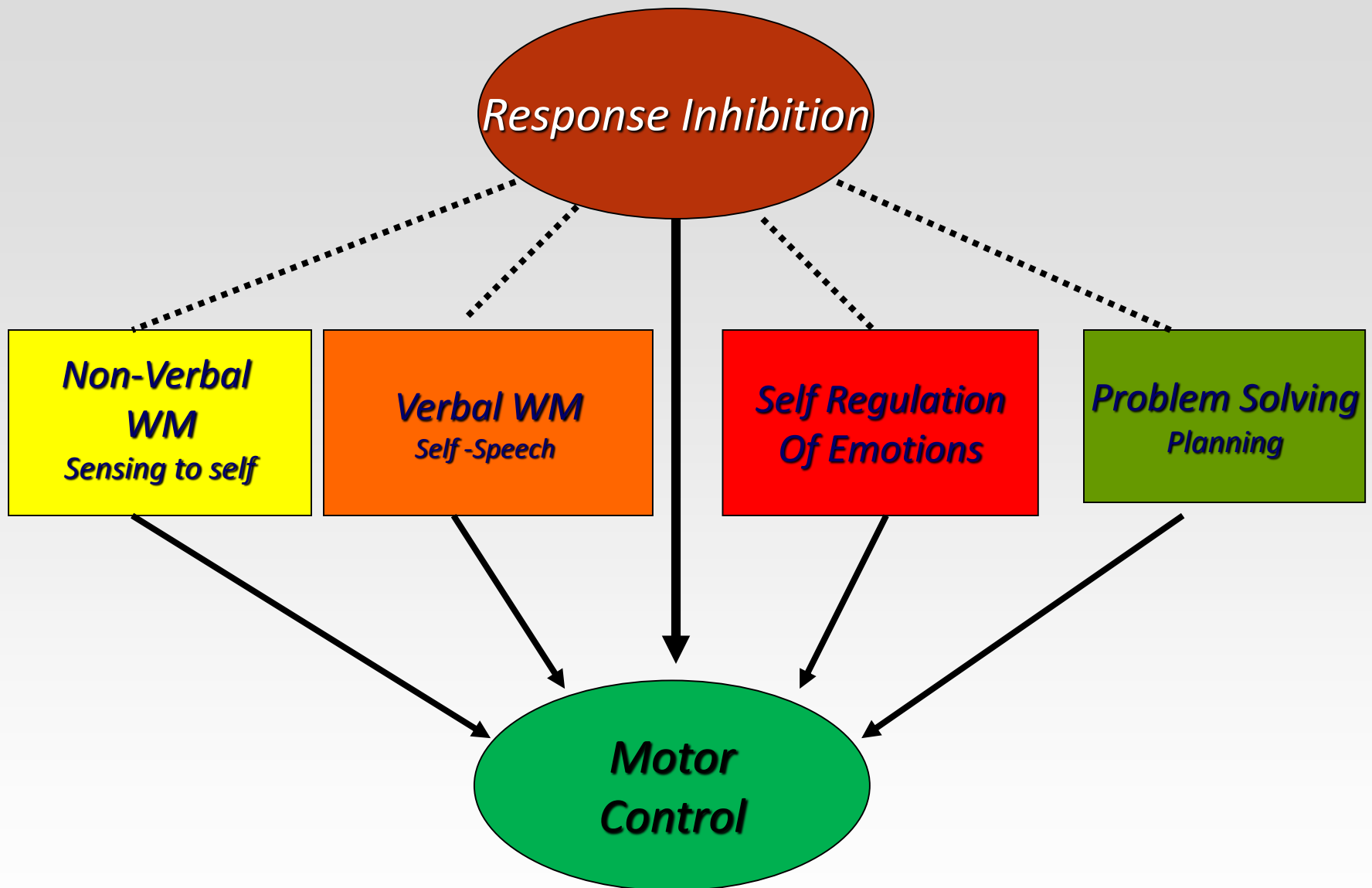


# Imagine...

**You've had a hard day and are heading back home dreaming of relaxing tonight. Once home your child asks you if you remembered to pick up the flowers, present and cake for Granny's birthday tonight... You forgot!**

**You have an hour until grandma's expects you to arrive, and the trip takes 50 minutes. You get back into the car and realize the fuel gauge is on empty.**

- 1) What do you do?**
- 2) How do you feel?**
- 3) What do to think?**



Adapted from

R. Barkley Phd (2011), ADHD, Executive Functioning and school Intervention

# Inhibiting Responses (Self Control)

- By inhibiting, interrupting initial responses or controlling incoming information, we have time to engage in four types of self-directed actions, or executive functions:
  - 1) Non Verbal Working Memory
  - 2) Verbal Working Memory
  - 3) Emotional Regulation
  - 4) Problem Solving / Planning



"It looks like the internal bleeding has- I'm sorry. It's taking everything in my power not to tickle you right now."

# 1) Non-Verbal Working Memory

- Allows us to “see” ourselves
- Hold events in our mind
- Anticipate the likely future
- Hindsight; foresight
- Allows us to use all of our senses to generate thoughts and emotions
- Sense of time
- Assists with Meta Cognition (Self-Awareness)

## 2) Verbal Working Memory

- Verbal working memory is the internalization of speech or the mind's voice.
- Allows us to label, describe, reflect
- Ask ourselves questions and give ourselves instructions.
- Allows us to formulate rules.
- Talk to our selves to regulate emotions
- Talk to ourselves to create plans and goals
- Puts words to our thoughts

# Activity: Working memory

- 1. Stand Up
- 2. Lift your right foot
- 3. Shake your head
- 4. Clap twice
- 5. Sit Down

# Mind's Voice

- Recall the instructions



# Activity: New Instruction and Rules

- q, p, b and d are interchangeable
- n and u are also interchangeable
- 1. Staup nq
- 2. Qick nd yonr hauqonts
- 3. Tonch yonr left shonlqer
- 4. Say auy 3 worps to yonr ueighqonr
- 5. Sit powu

# 3) Self-Regulation of Emotions

- Provides the capacity to internally motivate ourselves.
- Internally motivate ourselves with thoughts, images, internal dialogue.
- Visualize outcomes to regulate emotions.
- Regulate control over our immediate response.
- Enables us to initiate the motor system

# 4) Problem Solving/Planning

- Mentally pull apart, construct and test simulations of behaviour and put them back together.
- Test hypotheses in our mind
- Problem solving allows us to avoid consequences that may occur when we act on our impulses.
- Prepare for the future
- Attend to our long term welfare

# ADHD's Impact on Executive Functions

- Frontal lobe neurotransmission is disrupted.
- Executive functions are impaired along a spectrum (mildly, moderately, severely)
- Delays maturation of the Executive Functions (30%)

# Observable signs of EF Challenges

Difficulty with:

- Planning Projects
- Estimating how much time a project will take
- Telling Stories (verbally or written)
- Memorizing information
- Initiating activities or tasks
- Retaining information while doing something with it  
(ie. Remembering a phone number while dialing)
- Organization of belongings
- Emotional Regulation

# ADHD effects these Networks

- **“What” Network**  
(verbal working memory)
- **“When” Network**  
(non-verbal working memory, timing and sequencing)
- **“Why” Network**  
(Testing ideas, using emotions/feelings to drive motivation)
- **“How” Network**  
(Planning and problem solving)

Adapted from: R. Barkley Phd (2011),  
ADHD, Executive Functioning and school  
Intervention

# Understanding ADHD

- ADHD can be considered as “Time Blindness” or a (Myopia to the Future)
- It adversely affects the capacity to hierarchically organize behavior across time to anticipate the future and to pursue one’s long-term goals and self-interests (welfare and happiness)
- It’s not an Attention Deficit but an Intention Deficit (Inattention to mental events & the future)

# The Impact of ADHD on Goal Directed Behaviour

- ADHD is not a disorder of knowing what to do. It's a problem of doing what you know.
- Responding on impulse, those with ADHD act as if they do not have the knowledge or skill (they're actually behaving in the moment).
- ADHD is a deficit in response inhibition which in turn, affects access to executive functioning thus resulting in a renegade motor control system.



# Activity

BLUE RED YELLOW ORANGE  
BROWN BLACK PURPLE GREEN  
YELLOW PURPLE RED BLUE  
ORANGE BLACK GREEN PURPLE  
GREEN YELLOW BROWN RED  
PURPLE BLUE ORANGE GREEN

# It's a Disorder of:

- Performance, not skill
- The when and where, not the how or what
- Using your past at the “point of performance”

The point of performance is the place and time in your natural settings where you should use what you know (but may not)

Behaviour	Misinterpretation	Executive Functions needing Support
Refusing to complete homework independently	Doesn't care Stubborn Oppositional	Reciting instructions , sequencing , rules, talking to self to problem solve , to motivate.
Bothers his sibling	Attention seeking Clowning	Response inhibition (sensory, emotional stimuli) Self speech to regulate, recall of expectations.
Always ends up fighting when in groups of 4 or more	Bored/not interested Attention seeking	Response Inhibition- need to address hyperactive motor system/ over arousal.
Always slow during morning routines	Doesn't care Poor parenting Lazy	Planning and Problem Solving- Working memory, what comes next? Sense of time . Distracted , not able to keep expectations online.
Playing aggressively	He is mean, a bully Poor parenting Abused child Spoiled	Over arousal leading to lack of hindsight /forethought. Impulse control (response inhibition). Self-Awareness
Makes same mistakes repeatedly	Lazy Malicious	Holding events in mind, Hindsight Sequencing instructions Working memory – visual reminders needed
Poor social judgment	Selfish Lacks empathy	Response inhibition Recalling Rules Foresight , meta cognition (Self-Awareness)

# Implications for Treatment

- Teaching skills is inadequate
- The key is to design prosthetic environments around the individual to compensate for their EF deficits
- Therefore, effective treatments are always those at the “point-of-performance”
- The EF deficits are neuro-genetic in origin
- Therefore, medications may be essential for most (but not all) cases – meds are neuro-genetic therapies
- But some evidence suggests some EFs may also be partly responsive to direct training

# So What Should we Do?

**Design prosthetic environments that compensate for executive deficits while using medicines to temporarily improve or normalize the executive functions.**

# How Do we Compensate for EF Deficits?

- Externalize important information at key points of performance
- Externalize time and time periods related to tasks
- Break up future tasks into many small steps
- Externalize sources of motivation
- Externalize mental problem-solving

# Make Motivation External

- Identify tasks and settings in which consequences are too delayed or nonexistent
- Put artificial consequences into these large gaps in time
  - Tokens, points, prizes, praise, privileges
- Increase accountability to others – more frequent check-ins with others to see that work is being done, goals are being met

# First Things First: Relationship

- Children learn and develop in the context of responsive, consistent and nurturing relationships.
- Children with the most challenging behaviors especially need these relationships yet their behaviors often prevent them from benefiting from those relationships.
- Fill your “child’s bucket”.
- Give supportive attention when you see challenging behaviour; don’t make assumptions. Look for the “ANSWER”.



# Use the *ANSWER* Method

**A**KNOWLEDGE AND ACCEPT THE STUDENTS ADHD AND ASSOCIATED CHALLENGES

**N**ARROW YOUR FOCUS,  
Which executive function(s) need support?

**S**TRATEGIZE,  
Develop a plan to support. Choose the accommodations:  
whole family or Individual?

**W**ORK THE PLAN,  
Follow it for specific time

**E**VALUATE THE PLAN  
with your child at the “in the moment” and at date for review

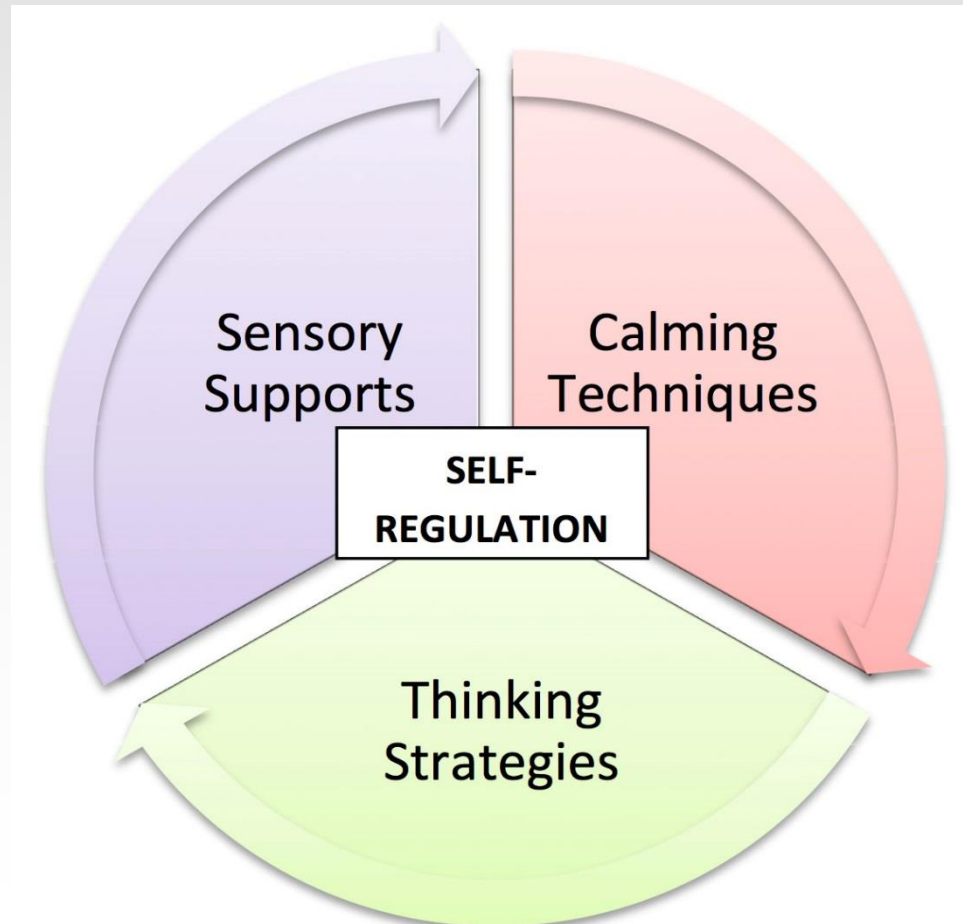
**R**EPEAT IT  
or Reconstruct it if it is not effective.

Ratey, N,(2008) The Disorganized Mind, Coaching your ADHD Brain to take control of your time , tasks& talents.

# **Specific Strategies for Supporting each Executive Function**

**Self-regulation tools.** Self-regulation tools include sensory supports, calming techniques, and thinking strategies. Adapted from "The Zones of Regulation – A Curriculum Designed to Foster Self-Regulation and Emotional Control," by L.M. Kuypers, 2011, San Jose, CA: Social Thinking Publishing.

**From:**[www.snow.idrc.ocad.ca](http://www.snow.idrc.ocad.ca)






# Supporting Response Inhibition

- Reduce over stimulation in the environment
- Increase supervision and accountability
- Front load, state the plan and expectations before.
- Create a Tool Box of strategies for sensory and calming tools (Zones of Regulation Program) redirect to this when needed.
- Provide scheduled physical breaks
- Use a Talking stick
- Make your requests in 10 words or less

**Technology:** Ear protectors to block out noise, white noise machine or App, music without words, weighted lap blankets, *Freedom* for internet blocking on a schedule.

# The **ZONES** of Regulation®

			
<b>BLUE ZONE</b> Sad Sick Tired Bored Moving Slowly	<b>GREEN ZONE</b> Happy Calm Feeling Okay Focused Ready to Learn	<b>YELLOW ZONE</b> Frustrated Worried Silly/Wiggly Excited Loss of Some Control	<b>RED ZONE</b> Mad/Angry Mean Terrified Yelling/Hitting Out of Control

# Supporting Non- Verbal Working Memory – The Mind's Eye

- Model it
- Imagine it
- Use pictures, visual check lists or schedules
- Have your child close their eyes and imagine what you are describing Use details .
- Have them describe it, write down what they said and give them the list.
- Mindfulness approaches

# Supporting Time

Make time physical, external, and obvious

- Timers, clocks, counters, sounds. Compare amounts of passing time to what they can relate to (length of commercial, length of favorite TV show, song)
- Bridge time - break down future projects and goals into small pieces and do a piece a day (or more frequently).

**Technology:** Time-Timer App, Kids Timer., Casio Vibe watch, Smart Pens, Evernote app (to connect visuals to notes)

# Supporting Verbal Working Memory

- **ATTRACT** the child's attention – “collect before you direct”.  
Maintain eye contact
- **SPEAK** clearly, paced  
Use short sentences ('chunked')  
Use visual cues & wait for compliance
- **PAUSE** between sentences
- **MONITOR** the student  
If child has 'blank look' stop & repeat instruction
- **REPEAT INSTRUCTION**  
Restate slowly and simply  
Do not expand



# Supporting Verbal Working memory

- Provide gentle reminders to cue the first step.
- Use direct statements to help with sequencing: First ,Then. (“First finish your , then write down your answers to the questions on the board”).
- Keep your head in the “clouds”

**Technology:** Voice dictation, Image to Text apps for notes, Smart Pen, Digital Recorder, Calculators. Use a Cloud system like OneNote to reduce lost work,

# Externalize Verbal Working Memory

- Use externally (outside the individual) represented forms of information to remind the individual what is to be done at the point of performance
- This can be done by using, cues, cards, lists, posters, signs, sounds, colour coding and other prompts of critical reminders at the point of performance
- For older students use agendas, assistive technology

**Technology - Apps:** *iRewards, Epic Win, One Note,*  
To-do Apps such as *Nudge, Clear.*

**Technology - Web Based:** *KidPointz.com* for Behaviour Programs



# Supporting Self Regulation of Emotions

- Ask questions to cue working memory: “I remember when you solved this problem last time, what did you do then?”
- Label the emotion they are experiencing.
- State a suggestion “ Breathing can help calm you”
- Now would be a time to use “ label the strategy” to help you. (to regulate).
- Have calming strategies at hand: balloons, stress ball, aquarium, visual toys such as Snow globe type, class pet, safe place pass.

**Technology:** *Zones of Regulation App*, Timers for breathing exercises, *Think, Breathe, Do App* ( Sesame Street), *Fish Pond App*.

# The Zones of Regulation App

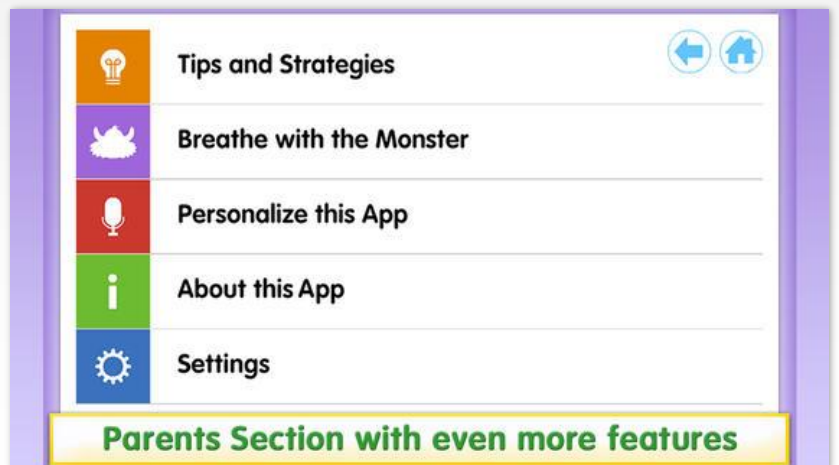
for Apple Products \$5.99





# Think, Breathe, Do (Sesame Street App)

Assistive Technology for Self Regulation- Free



# Supporting Planning/ Problem Solving

- Take the lead for younger children, scaffold for older.
- List all regular/planned activities
- List all the required steps for the project
- Work the amount of time needed for each step
- When tasks normally require mental problem-solving (manipulating mental information, generating multiple ideas, etc.) make the mental information external, physical, or manual

**Technology:** Shared Google Calendar,

# Bring the E's, R's, O's Close Together

**E** - Event

**R** - Response

**O** -Outcome (feedback)



# E's, R's, O's

- Positive verbal or written feedback at point of performance
- Reward systems and incentives
- Give tasks that can be successfully completed
- Private signals to refocus student
- Role play situations
- Weekly individual time



# Summary of the Core Principles

Russell Barkley, 2013

- Give Feedback Immediately
- Give Feedback more often
- Use Incentives before Punishment
- Use More Powerful Rewards; change these often
- Externalize the Important information (at point of performance)
- Externalize the Source of Motivation (at point of performance)
- Bridging Time
- Make Problem Solving Manual or Physical
- Strive for Consistency
- Act Don't Yak
- Anticipate Problems
- Keep A Disability Perspective (see a child with a problem, not a problem child)
- Don't Personalize the Child's Problems
- Practice Forgiveness

# Conclusion

- ADHD disrupts behavioral inhibition and the instrumental EFs producing a cascading of deficits in higher levels of executive functioning
- By disrupting executive functioning, ADHD affects child's ability to:
- Self-stop or inhibit behavior, thoughts, words, emotions
- Self-manage to time; anticipate and prepare for the future
- Self-organize and problem solve across time
- Self-motivate across time
- Self-activate and concentrate across time

# Rethinking ADHD

## Thinking Shifts from:

- Stopping Behaviours
- Classic Behaviour Modification
- Changing the students behaviour
- Using a teaching style

## To:

- Preventing Problems by identifying what students need.
- Modelling, cuing and supporting EF's
- Changing environments
- Teaching many ways many times

*Adapted from Diane Malbin (2002), Trying Differently Rather than Harder, p.42*

# Web Based Resources

- [ADHDlectures.org](http://ADHDlectures.org)
- [Caddac.ca](http://Caddac.ca)
- [Additudemag.com](http://Additudemag.com) – pod casts and webinars
- [Insideadhd.org](http://Insideadhd.org) – Printable Toolkits

[General](#) Accessibility



Adjust the audio volume balance between left and right channels.

MEDIA

Subtitles & Captioning >

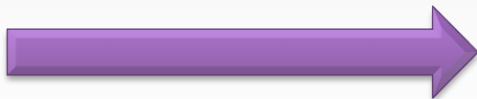
Audio Descriptions Off >

LEARNING

Guided Access Off >

Accessibility Shortcut Off >

Temporarily restrict your iOS device to a single app  
Disable areas of the screen that aren't relevant to a task, or areas where an accidental gesture might cause a distraction





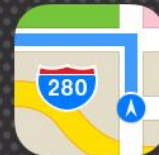
Contacts



Calendar



Camera



Maps



Weather



Notes



iTunes Store



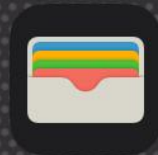
Settings



Safari



Photos



Wallet



FaceTime



Health



iBooks



Reminders



Phone



Mail

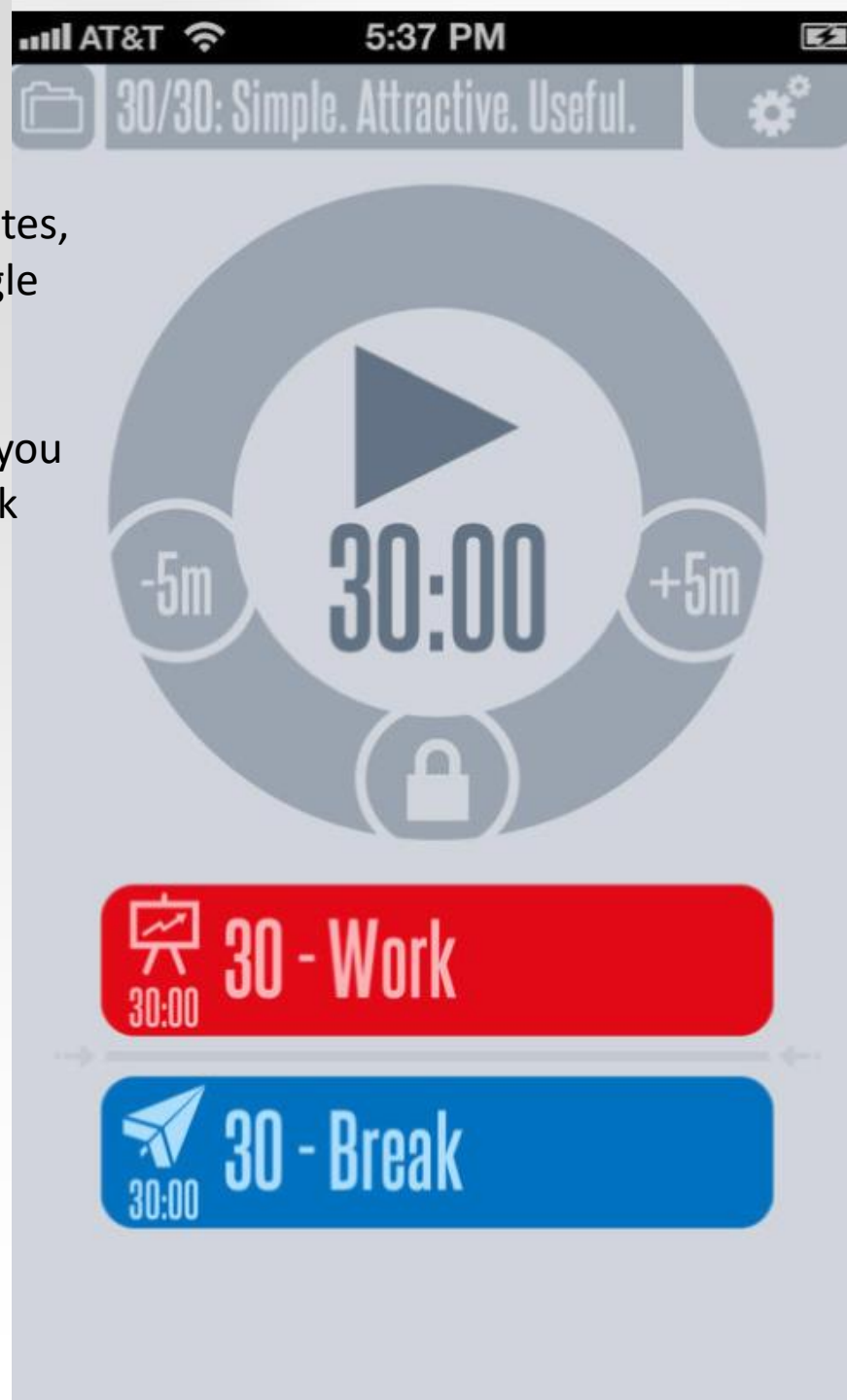


Messages



You work for 30 minutes,  
focused only on a single  
task.

When the time is up, you  
give your mind a break  
and do something  
completely unrelated,  
also for 30 minutes.

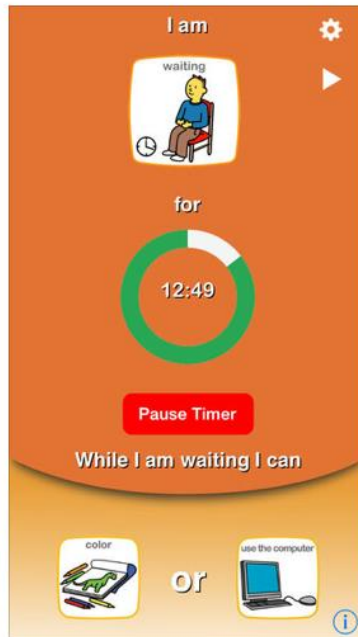
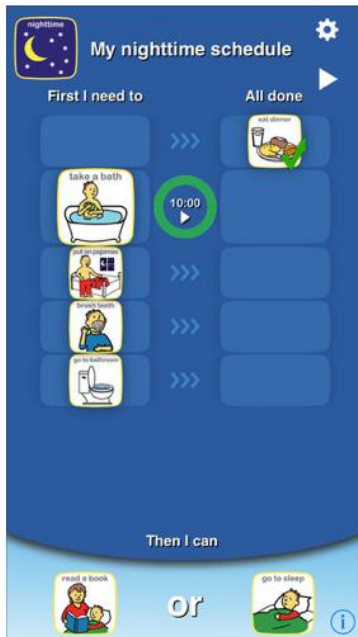


choiceworks



Choiceworks  
Bee Visual, LLC  
★★★★★ (6)

+\$9.99



# CHORE Monster



**Spin for a chance to win!**



**Spend to get what you want!**



70



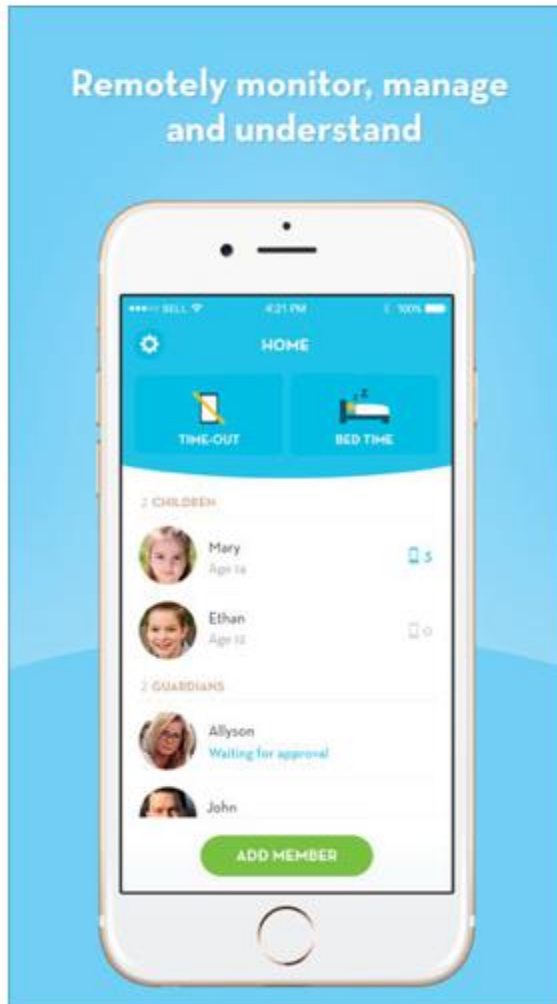
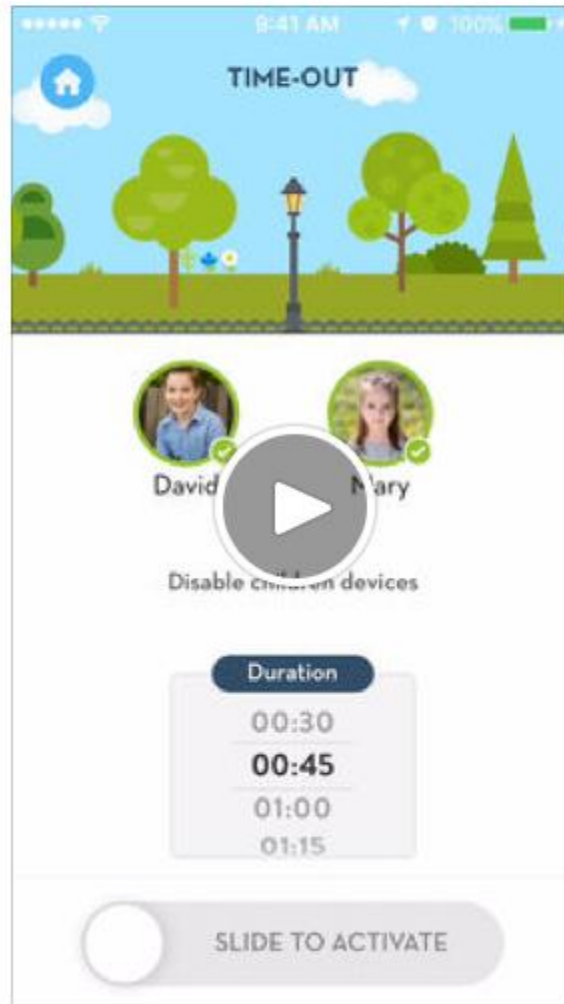
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# ScreenGuide | Parental Control,... Mosyle



In-App  
Purchases



# Recommended books

- Coaching Executive Skills, Peg Dawson
- Take Charge of ADHD, Russell Barley
- Executive Function in the classroom, Christopher Kaufman

Questions?