



COLORADO
Department of Education

Building Blocks of Brain Development

Brain Injury Educational Consulting CO., LLC

Karen McAvoy, PsyD

Objectives:

- Brain Injury 101: Laying the Framework
 - Definition
 - Statistics
 - Pathophysiology
- The Building Blocks of Brain Development
 - Neuroeducational Assessment
 - Interventions and Resources
 - Critical thinking and the Building Blocks of Brain Development

- Adjusting Interventions for mild, moderate and severe brain injury
- Building a continuum of supports for BI in Nebraska

Brain Injury 101

Laying the Framework



Brain Injury

Acquired Brain Injury

ABI An Acquired Brain Injury (ABI) covers ALL injuries to the brain – including **both non-traumatic** such as anoxic (lack of oxygen to the brain), or toxic (introduction of toxins or chemicals to the brain) **and traumatic** (external blows to the head from

an outside source).

Regardless of the cause of the brain injury, consequences of brain injury may be similar and the interventions may be the same.

Traumatic Brain Injury (TBI)

Traumatic Brain Injury, TBI” is a particular type of acquired brain injury; it is the result of an external blow to the head. A TBI can result in either an “open” head injury –

where the skin and bone of the skull are actually penetrated and the brain may be exposed, or a “closed” head injury – where there is no lesion to the skin or skull but there is still damage to the brain within the skull.

Brain Injury

Acquired Brain Injury

ABI An Acquired Brain

Injury (ABI) covers ALL injuries to the brain – including both non-traumatic such as anoxic (lack of oxygen to the brain), or toxic (introduction of toxins or chemicals to the brain) and traumatic (external blows to the head from an

Traumatic Brain Injury

TBI A Traumatic Brain Injury, TBI” is a particular type of acquired brain injury; it is the result of an



ABI

external blow to the head. A TBI can result in either an “open” head injury – where the skin outside source). Regardless of the exposed, or a “closed” head cause of the brain injury, injury – where there is no lesion consequences of brain injury may to the skin or skull but there is be similar and the interventions s/ll damage to the brain within may be the same. the skull.

Acquired (Post-Birth) Brain Injury

Trauma2c

–
External
Force

Trauma2c

Non- – Internal Event

- Falls • Illness (e.g., high fever)
- Motor Vehicle Accidents • encephalitis) Infections (e.g., meningitis,
- Bicycle/Pedestrian • Anoxic injuries (lack of
- Assaults/Abuse (e.g., Abusive oxygen; e.g., airway obstruction, near drowning)

Head

- Stroke events

Syndrome

It is estimated that 1,000–3,000 children in the US sustain Abusive Head Trauma each year.

Health.ny.gov

(lack of blood flow)

Trauma/Shaken Baby

or vascular

- Brain tumors, malformations
- Poisoning (e.g., ingestion, inhalation) – Substances? •

Metabolic disorders (e.g., insulin shock)

Centers for Disease Control and Prevention. Nonfatal Traumatic Brain Injuries Related to Sports and Recreation Activities Among Persons Aged ≤19 Years — United States, 2001–2009. MMWR 2011; 60(39):1337–1342.

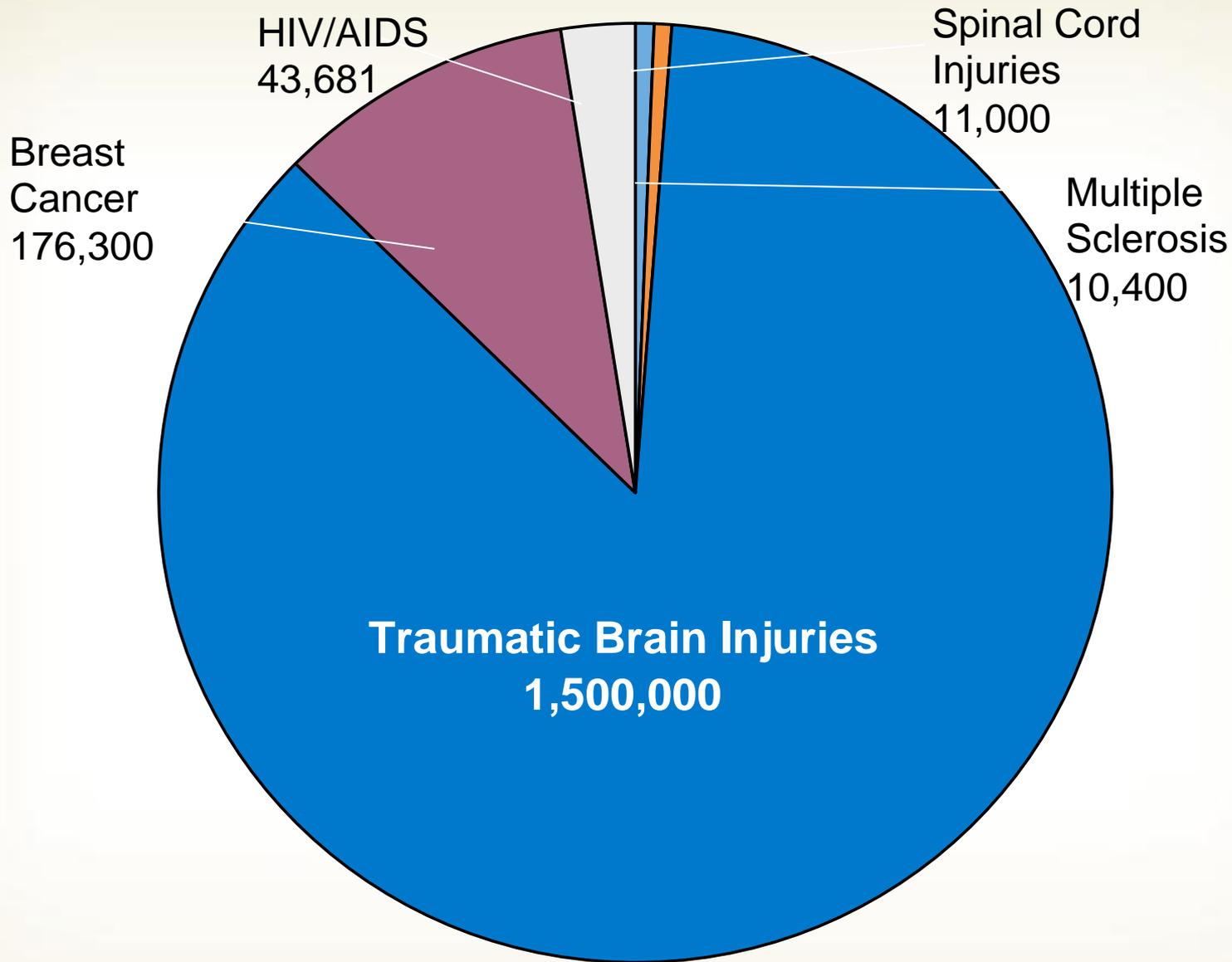
Congenital Brain Injury

- Influences to the brain that occur during pregnancy or birth or as a result of genetic disorders
- Prenatal substance exposure
- Infections during pregnancy
- Hydrocephalus
- Microcephaly
- Neural tube deficits
- Chromosomal abnormalities
- Injuries as part of the birth process

10/21/19

7





Comparison of Annual Incidence

Data compiled by the Brain Injury Association of America based on data from the Centers for Disease Control and Prevention, American Cancer Society and National Multiple Sclerosis Society



Common Causes of TBI

Infants: Abuse

Young Children: Passengers in vehicles

School-aged Children: Bicycle and pedestrian collisions with vehicles

Adolescents: Drivers and passengers in motor vehicle accidents

Note: Consider how the mechanism of injury will uniquely affect the grieving process.



Factors that Impact Outcome

- Pre-injury functioning
- Severity of Injury
- Pre-existing conditions
- Learning disabilities, ADHD, mental health, behavioral needs
- Family SES
- Family functioning

- Availability of pediatric trauma centers and other specialized TBI medical services and rehabilitation
- Child's age and developmental level

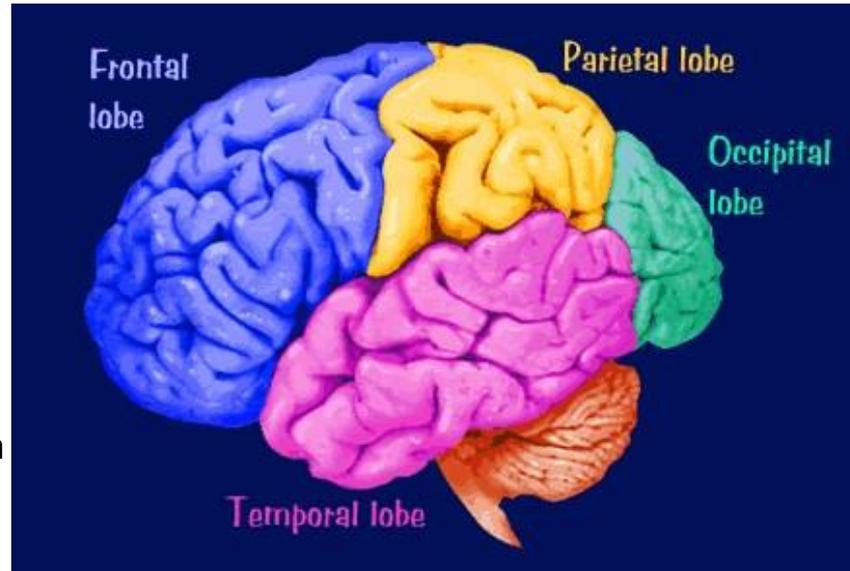
Brain Anatomy and Brain Development



Simplified Brain Behavior Relationships

Frontal Lobe

- Initiation
- Problem solving
- Judgment
- Inhibition of behavior
- Planning/anticipation
- Self-monitoring
- Motor planning
- Personality/emotions
- Awareness of abilities/limitations
- Organization
- Attention/concentration
- Mental flexibility
- Speaking (expressive language)



Parietal Lobe

- Sense of touch
- Differentiation: size, shape, color
- Spatial perception
- Visual perception

Occipital Lobe

- Vision

Cerebellum

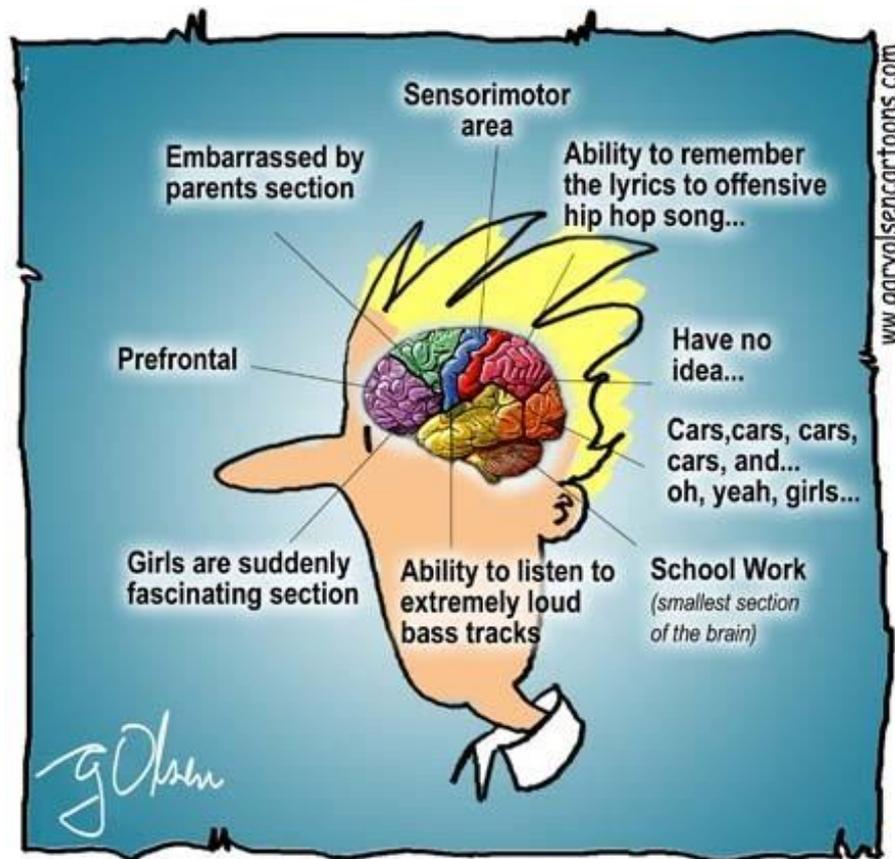
- Balance
- Coordination
- Skilled motor activity

Temporal Lobe

- Memory
- Hearing
- Understanding language (receptive language)
- Organization and sequencing

Brain Stem

- Breathing
- Heart rate
- Arousal/consciousness
- Sleep/wake functions
- Attention/concentration



Anatomy of a Teenager's Brain

Disruptions cause...

- Physical manifestations
- Cognitive Manifestations
- Thinking
- Processing
- Memory
- Learning
- Emotional Manifestations

- Executive Dysfunction
- Behavioral Challenges

Physical Symptoms of TBI

- Headache/Pressure
- Blurred Vision
- Dizziness
- Poor Balance
- Ringing in the ears
- Seeing “stars”
- Vacant stare/Glassy eyed
- Nausea
- Vomiting

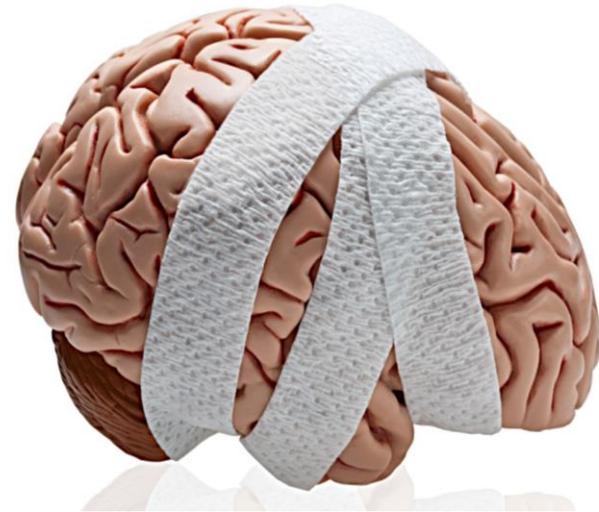
- Numbness/Tingling
- Sensitivity to light
- Sensitivity to noise
- Disorientation
- Neck pain
- Fatigue-physical and cognitive

[h\]ps://reapcon concussion.com](https://reapcon concussion.com)



Physical Symptoms Moderate to Severe Injury

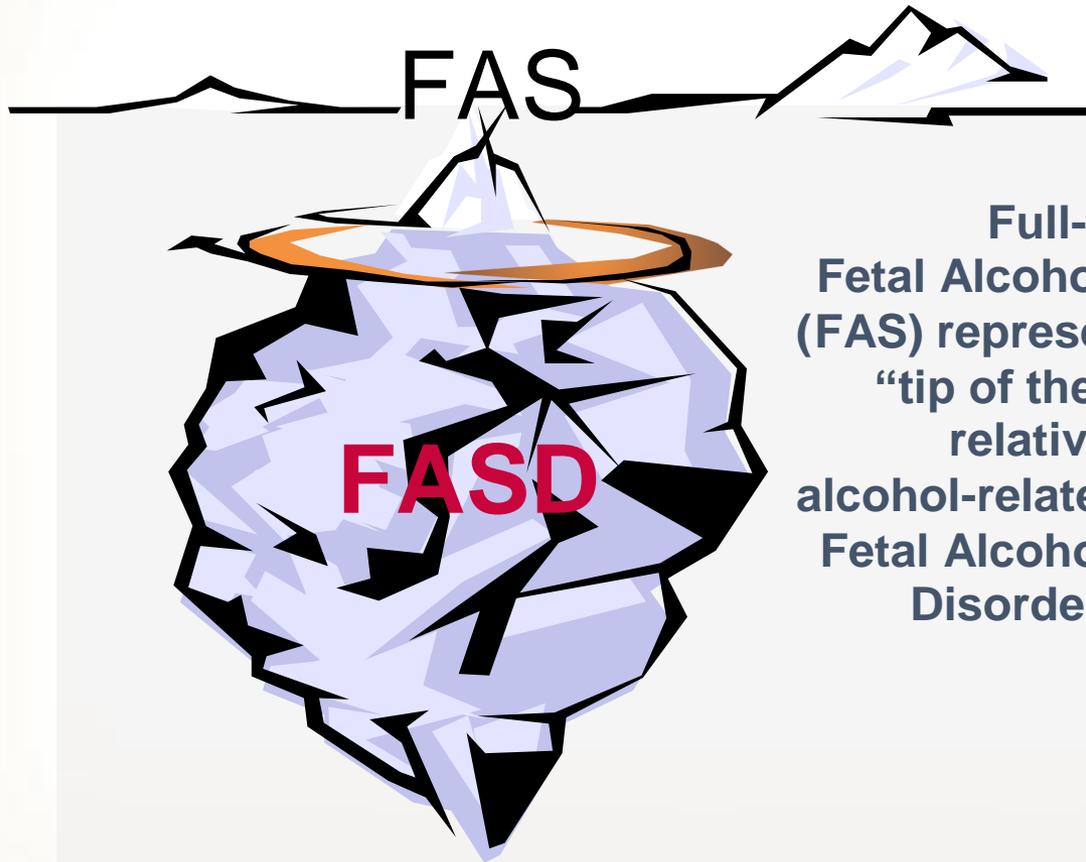
- Paralysis or spasticity
- Problems swallowing
- Seizures
- Vision deficits
- Sleep disorders
- Pain



- Regulating body temperature
- Medication side effects

- Prenatal exposure to drugs
 - Prescription drugs
 - Illicit drugs (heroin, cocaine, meth, etc.)
 - Marijuana
- Other substances
- Lead, poisons

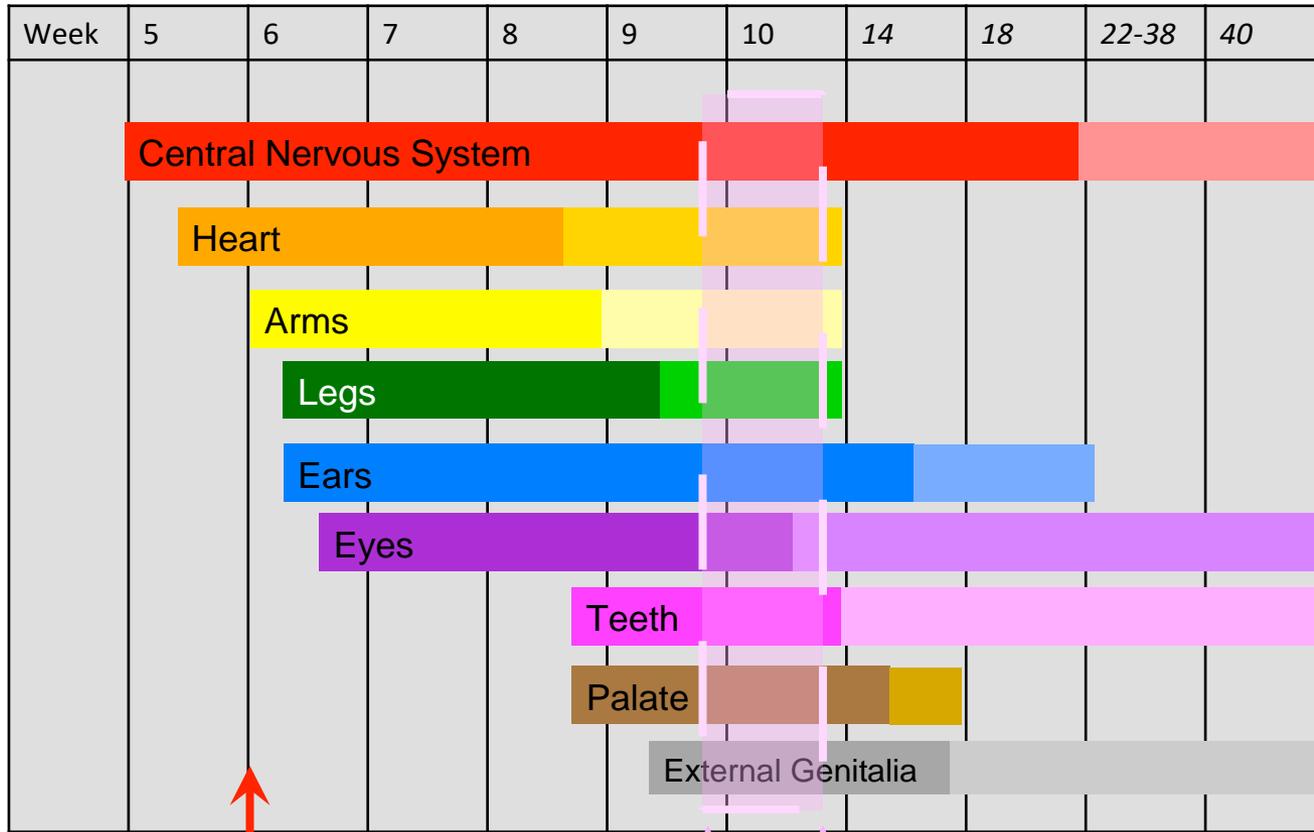
- Lack of oxygen (anoxia)
- Lack of blood flow
- Birth trauma
- Alcohol - FAS or FASD



**Full-blown
Fetal Alcohol Syndrome
(FAS) represents only the
“tip of the iceberg”
relative to all
alcohol-related effects or
Fetal Alcohol Spectrum
Disorder (FASD).**



TIMELINE OF FETAL DEVELOPMENT

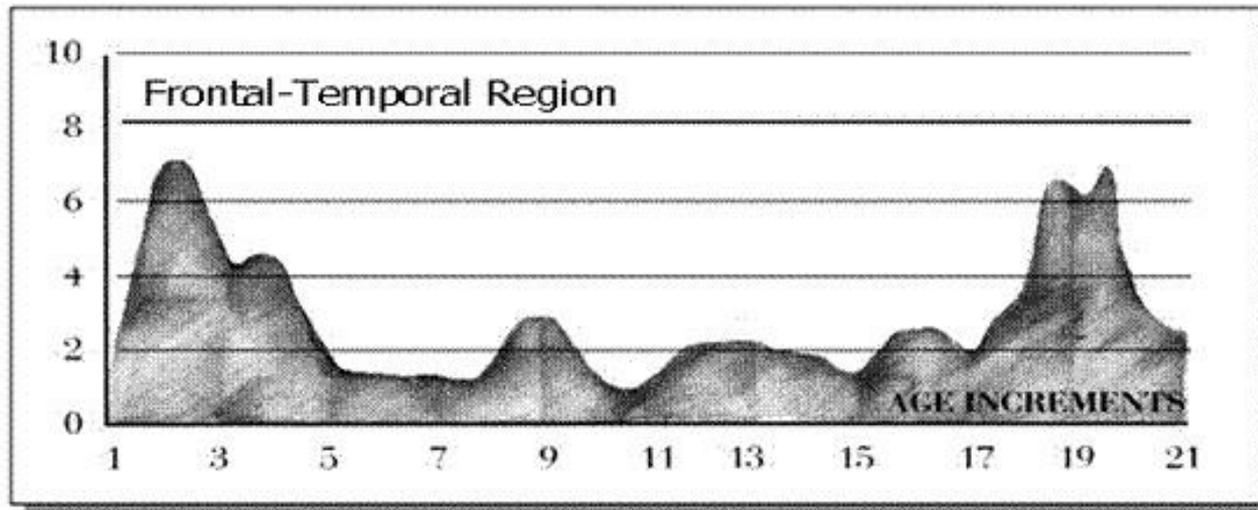


Missed Period Noted

Typical time of first prenatal visit

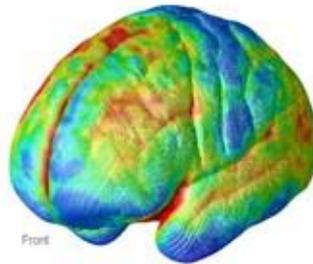
2.) Maturation

CHART 2:



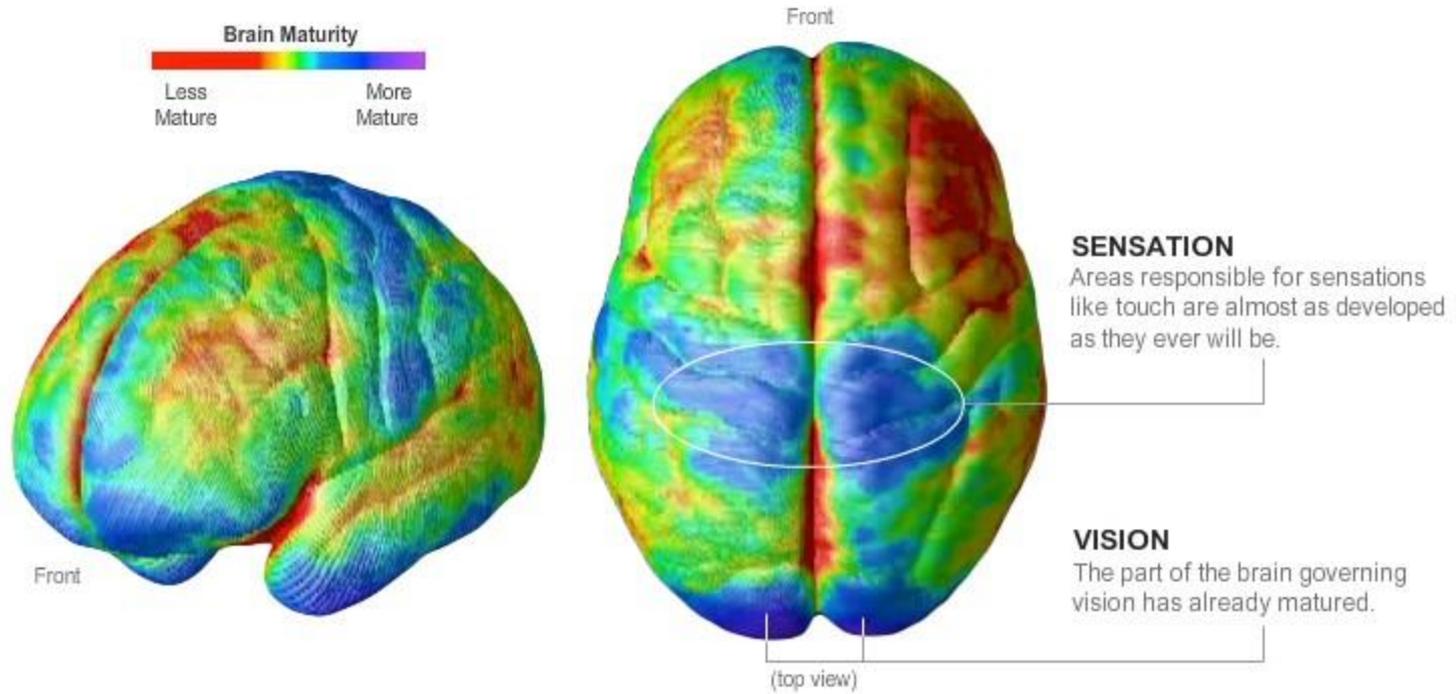
(Savage, 1999)

http://www.nytimes.com/interactive/2008/09/15/health/20080915-brain-development.html?_r=1&



EARLY DEVELOPMENT

In the first few years of life, areas of the brain devoted to basic function change at a rapid pace. By age 4, primary senses and basic motor skills are almost fully developed. The child can walk, hold a crayon and feed himself.

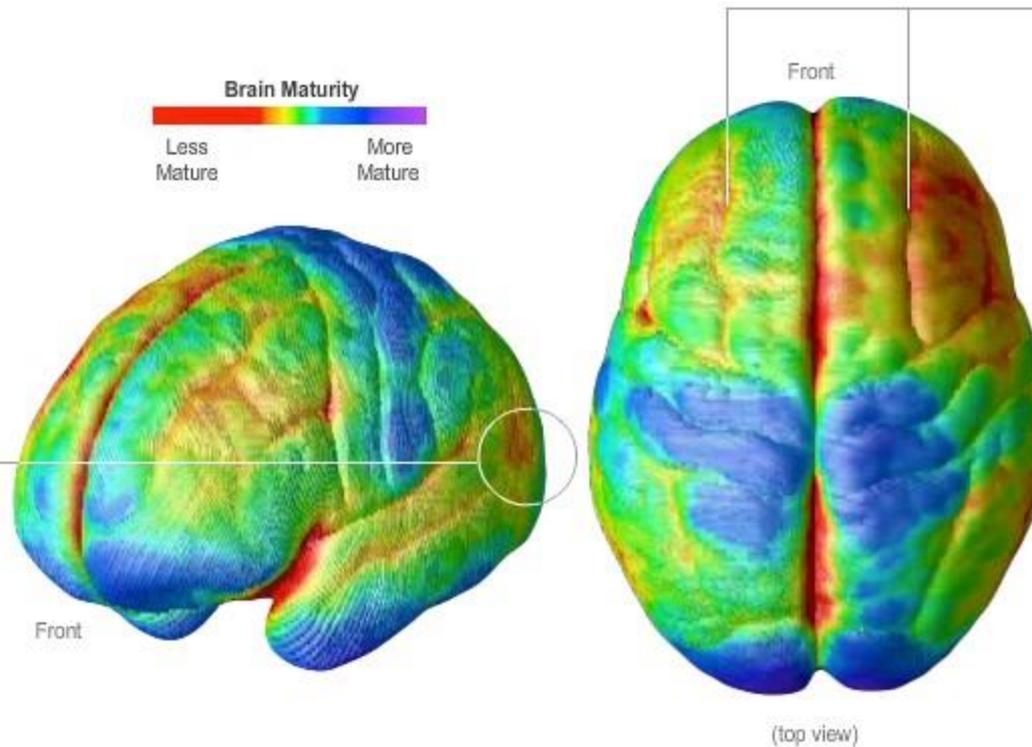


4 years old



LANGUAGE

The area of the brain governing language is immature, as indicated in orange, but continues to develop rapidly in children through age 10. The brain already has begun a "pruning" process, eliminating redundant neural links. This will accelerate in later years, one reason why learning a new language is easy for children and virtually impossible for many adults.



REASON

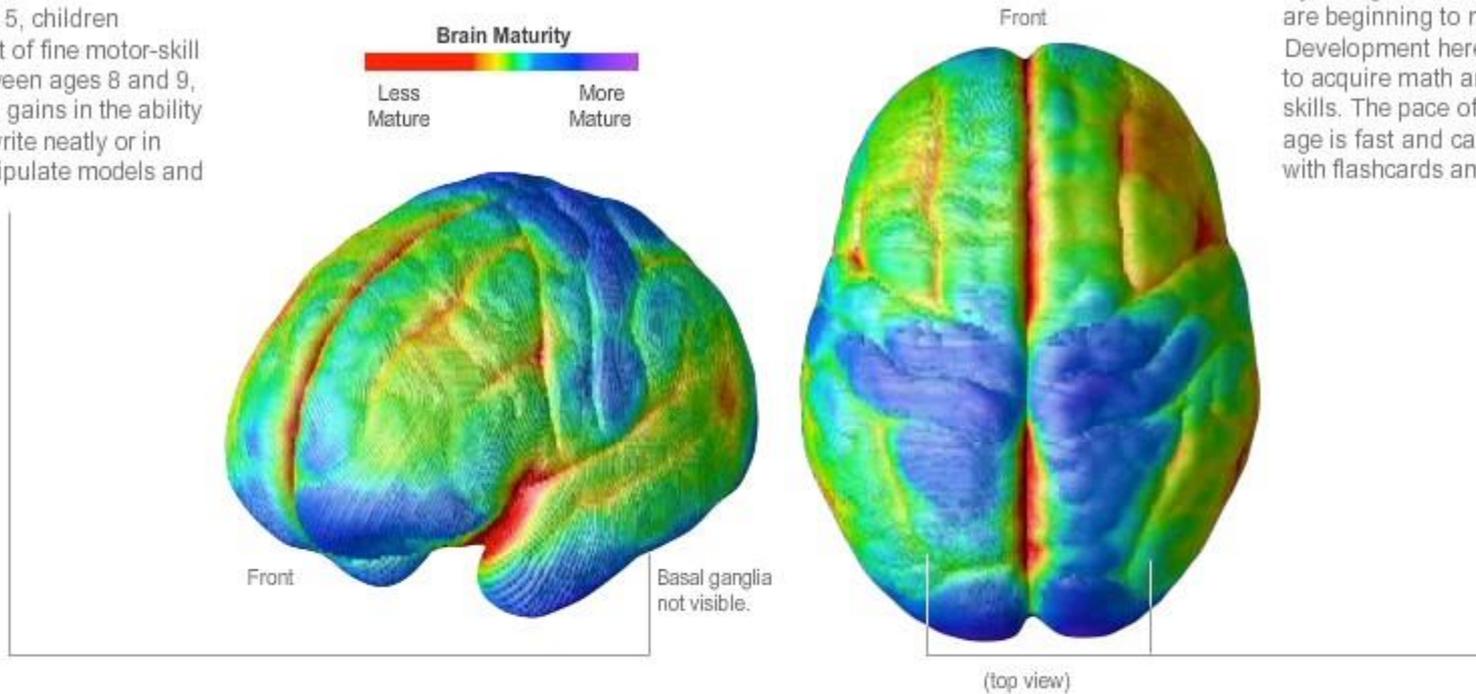
The dappled yellow and red areas of the prefrontal cortex indicate that this part of the brain, which affects abstract thinking, reasoning skills and emotional maturity, has yet to develop. This lack of maturity is one reason young children can't juggle a lot of information and throw tantrums when presented with too many choices.

6 years old



FINE MOTOR SKILLS

While basic motor skills are well developed by age 5, children experience a burst of fine motor-skill development between ages 8 and 9, helping to explain gains in the ability to use scissors, write neatly or in cursive, and manipulate models and craft projects.

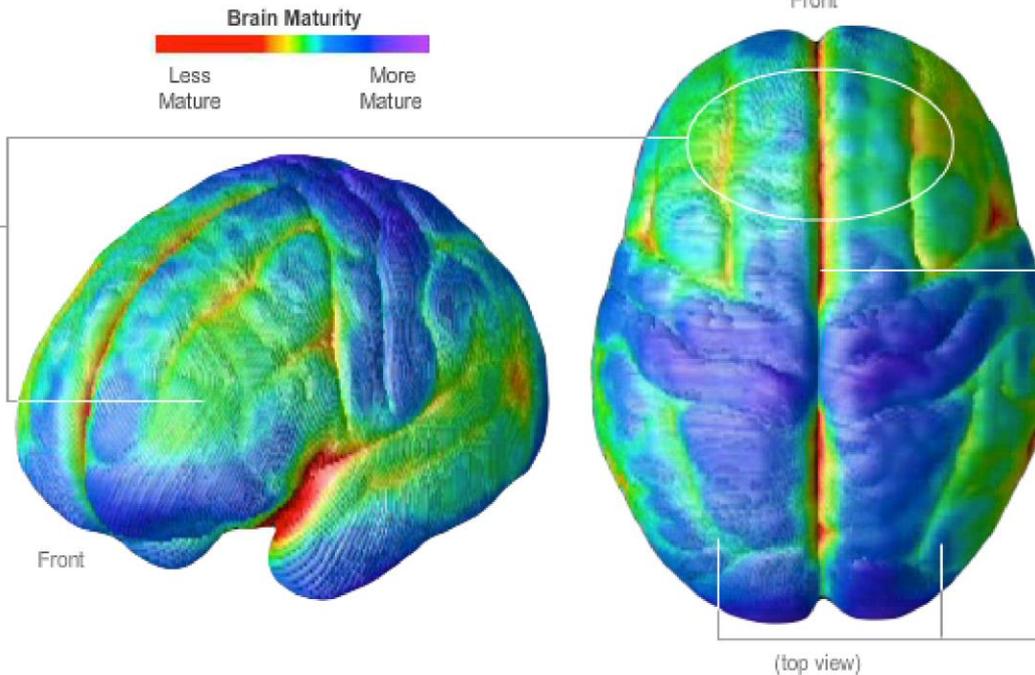


MATHEMATICS

By the age of 9, the parietal lobes are beginning to mature. Development here allows children to acquire math and geometry skills. The pace of learning at this age is fast and can be enhanced with flashcards and math drills.

JUDGMENT

The prefrontal cortex is among the last areas to mature. Until it does, children lack the ability to adequately judge risk or make long-term plans. Ask kids at this age what they want to be when they grow up, and the answer is likely to change often.



EMOTION

Deep in the limbic system, a capacity for creating emotion increases. As yet, this capacity is unrestrained by the prefrontal cortex, which lags behind. That's why some teens can seem emotionally out of control.

LOGIC

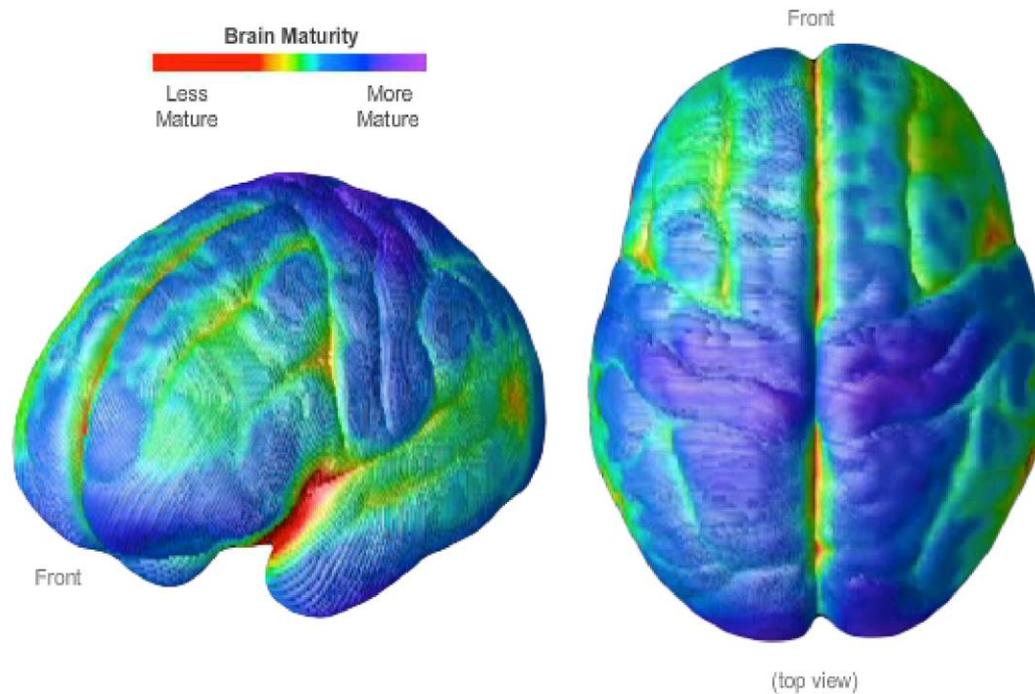
The parietal lobes are developing rapidly at this age, as shown here in blue. The child's intelligence and analytical abilities are expanding.

13 years old



SPECIALIZATION

In the teen years, an abundance of neural links continue to be discarded. Underused connections will die to help more active connections thrive. As a result, the child's brain will become more specialized and efficient.

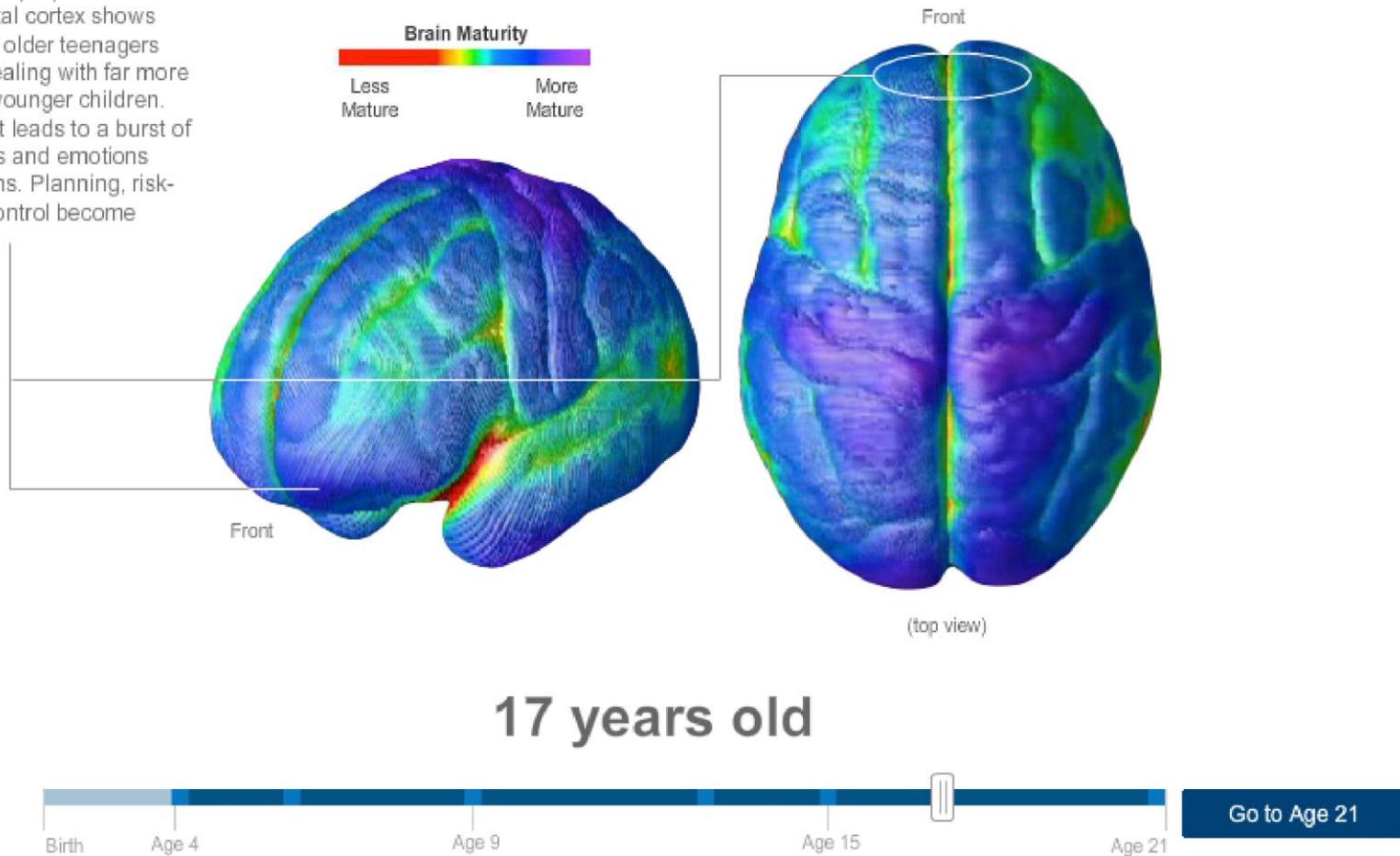


15 years old



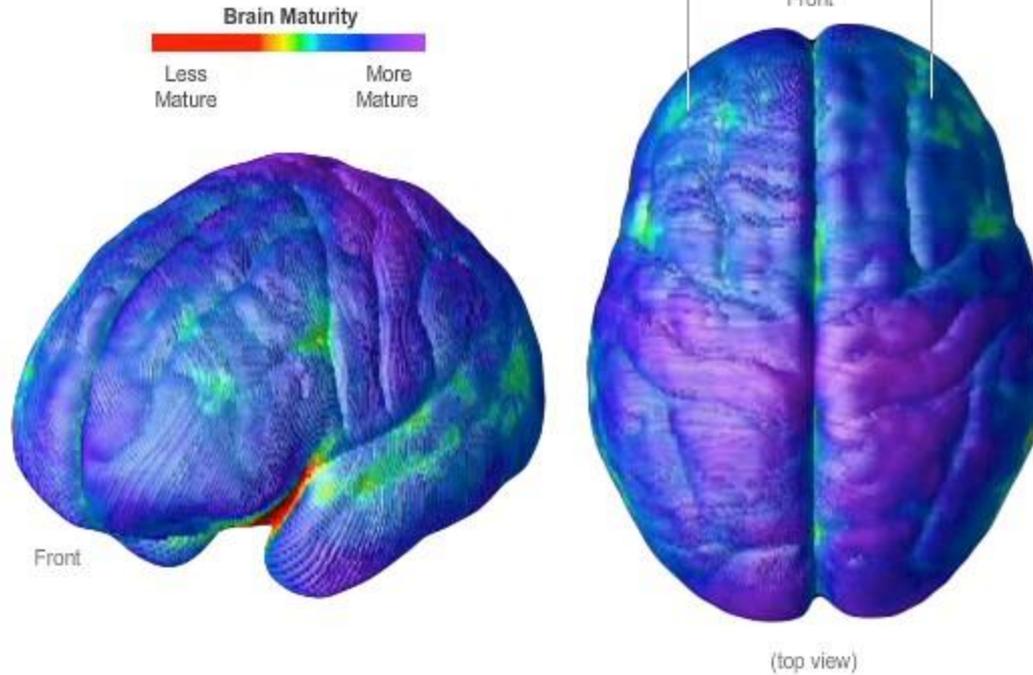
ABSTRACT THOUGHT

The deep blue and purple of the maturing prefrontal cortex shows why the brains of older teenagers are capable of dealing with far more complexity than younger children. This development leads to a burst of social interactions and emotions among older teens. Planning, risk-taking and self-control become possible.



EXECUTIVE FUNCTIONS

Although the brain appeared to be almost fully developed by the teen years, the deepening blue and purple areas here show that tremendous gains in emotional maturity, impulse control and decision-making continue to occur into early adulthood.



MATURATION

The 21-year-old brain is mostly mature, but the areas of green show that even at the threshold of legal adulthood, there is still room for increases in emotional maturity and decision-making skills, which will come in the next few years.

21 years old



- What is “typical” for their developmental level?



- What skills has the brain injury impacted?
- Was the child “typically” developing before the injury?

Infancy Stage: Birth to 3 yrs

Developing:



- Refinement of sensory and motor systems
- Language acquisition
- Basic understanding of cause and effect
- Regulation of sleep-wake cycle
- Beginning awareness of self and others
- Emotions and emotional regulation

Disruptions:

- Poor sleep and self-regulation
- Lack of understanding of cause-effect relationships
- Impulsivity & uninhibited behaviors (e.g. biting, hitting)
- High reliance on structure, supervision; difficulty with transitions
- Emotional reactions are unpredictable, "irrational," and extreme.

Preschool Stage: 3-6 yrs



Developing:

- Self-control
- Emotional regulation
- Inhibition – think before acting
- Friendship skills
- Ability to see another person's perspective
- Ability to accept change in plans

Disruptions:

- Delay or regression in toilet training
- Disruption in the connections among thinking, emotion, behavior systems
- Emotional dysregulation
- Difficulty with change, temper tantrums and rigid behavior
- Aggressive behaviors (e.g. kicking, hitting)
- Poor acquisition of preschool concepts (same/different, some/all)
- Play is disorganized

- Ability to judge right from wrong

Elementary School Stage: 6 to 12 yrs

Developing:

- Robust understanding of cause and effect relationships
- Academic skills
- Focus on effort as important
- Recognition of intention of acts as important



Disruptors:

- In reading, spelling, math skills
- Poor performance despite hard work
- School failure/avoidance
- Behavior problems during unstructured time
- Depression, social isolation or withdrawal from peers
- Sleep disturbance/ fatigue

Early Adolescence: 12 to 16 yrs

Developing:

- Abstract reasoning
- Autonomy and identity development
- Social competencies and understanding of the world
- Responsibility: self care, babysitting, pet care



Disruptions:

- Unevenness in cognitive profile
- Slower rate of mental processing
- Difficulty organizing complex tasks over time
- Judgment and reasoning difficulties
- Increased frustration response
- Depression
- Fatigue

Late Adolescence: 16 years to 19 yrs

Developing:

- Complex reasoning and judgment
- Ability to plan and execute complex projects over time
- Solid sense of own identity based on positive identifications
- Social sophistication
- Capacity for altruism



BrainSTARS, Dize-Lewis, J., 2002

Disruptions:

- New learning deficits (e.g., memory for numbers)
- Conflict between specific challenges and career goals
- Social awkwardness
- Inability to organize complex tasks
- Mental processing speed deficits
- Body image/social image
- Depression

Developmental Stages

- Abilities that are just developing, or have not yet emerged, are the most sensitive and most likely to be disrupted.
- These areas are likely to be the “Achilles heel” for a child with an acquired brain injury, even after he/she grows up.





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Dysfunction of the Frontal Lobe

- Little spontaneous facial expression (Kolb & Milner, 1981)
- “Behavioral spontaneity” (Kolb & Milner, 1981); dramatic change in social behavior (Blumer & Benson, 1975)
- Difficulty interpreting feedback from the environment ... perseverating on a response (Milner, 1964), risk taking and non-compliance with rules (Miller 1985)
- Impaired associated learning (difficulty using external cues to help guide behavior) (Drewe, 1975)

Executive Dysfunction in Students Behavior

- Acts without thinking
- Interrupts others
- Overreacts to small problems
- Low frustration tolerance
- Upset by changes in plans or routines
- Can't come up with more than one way to solve
- Easily overwhelmed and has trouble calming down
- Talks or plays too loudly
- Doesn't notice impact of behaviors on others

- Do not see their behavior as part of problem

problem

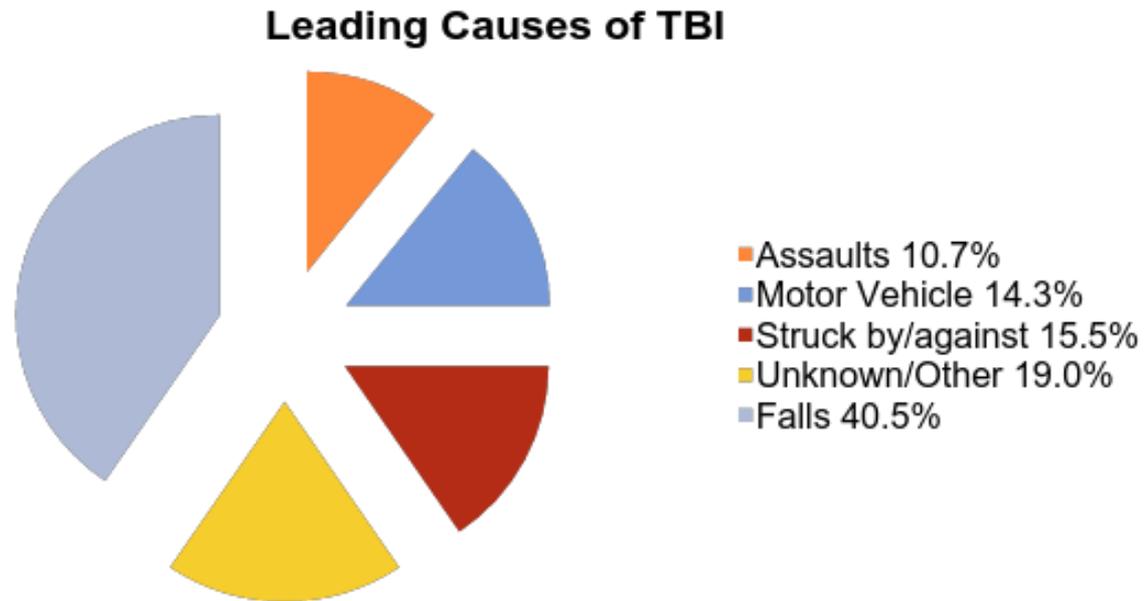
(Dawson 2011)

Executive Dysfunction in Students Academic

- Forgets directions
- Does not write down assignments
- Only follows first request/step
- Forgets homework or

- Can't break down long-term assignments to bring materials home
 - Puts off homework
 - Disorganized locker, desk/cubby, backpack things
 - Loses or misplaces things
 - Sloppy work
 - Leaves a trail wherever they go
 - Runs out of steam before completing work
- (Dawson 2011)

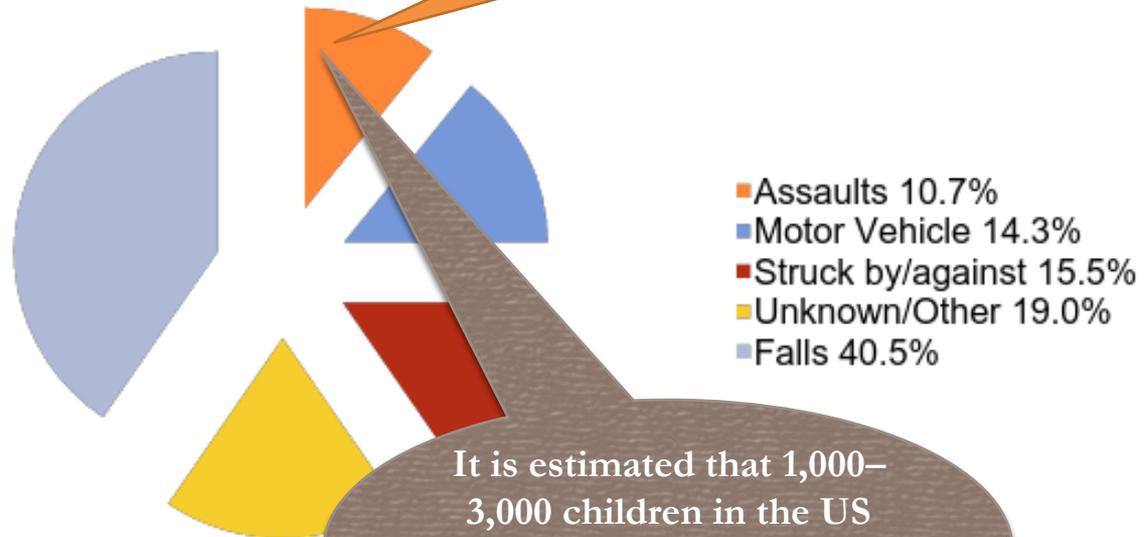
3a.) Post-Birth Traumatic Brain Injury



Centers for Disease Control and Prevention. Nonfatal Traumatic Brain Injuries Related to Sports and Recreation Activities Among Persons Aged ≤19 Years — United States, 2001–2009. MMWR 2011; 60(39):1337–1342.

3a.) Post-Birth Traumatic Brain Injury

Leading Causes of TBI



About 75% of all assaults associated with TBI occur in persons 15 to 44 yrs. of age.

It is estimated that 1,000–3,000 children in the US sustain Abusive Head Trauma each year.

Executive Dysfunction after TBI

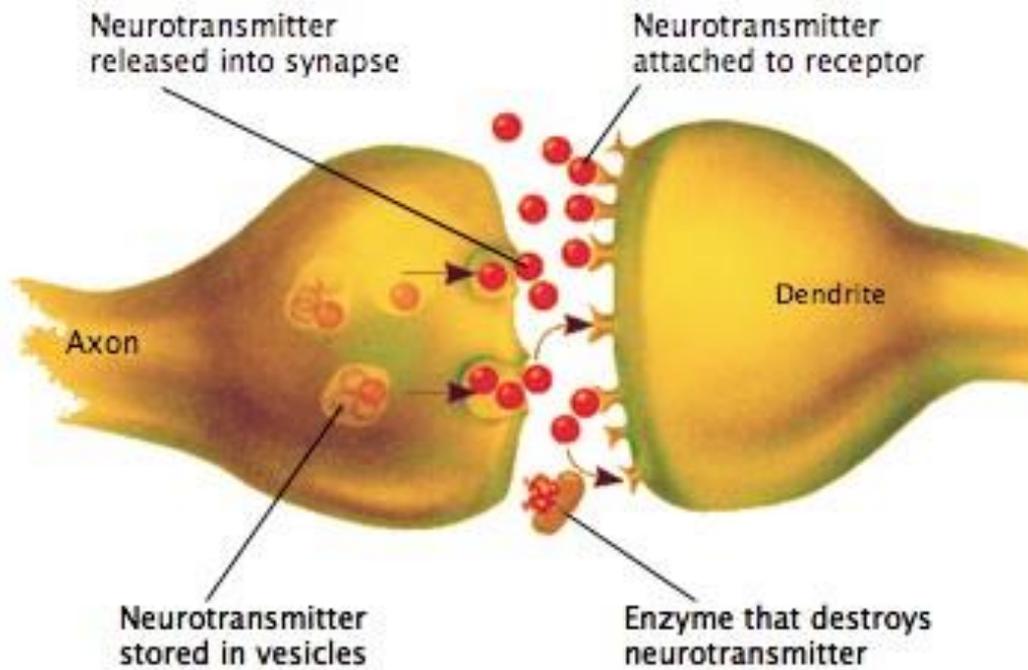
- MRI studies have shown that the frontal area is the most common region of traumatic brain injury (Levin et al., 1987)
- Frontal lobe damage has an insignificant effect on IQ.
- Injury to the frontal lobe often has an effect on flexibility of thinking and problem solving ability (executive functioning).
- There is also evidence showing interference with attention and memory even after good recovery from a TBI (Stuss et al., 1985).

- Illness (e.g., high fever)
- Infections (e.g., meningitis, encephalitis)
- Anoxic injuries (lack of oxygen; e.g., airway obstruction, near drowning)
- Stroke or vascular accident (lack of blood flow)
- Brain tumors
- Poisoning (e.g., ingestion, inhalation) - Substances?
- Metabolic disorders (e.g., insulin shock)

4.) Bio-Chemical



(Figure 1.2) de|



- Early experiences effect the “architecture” of the developing brain



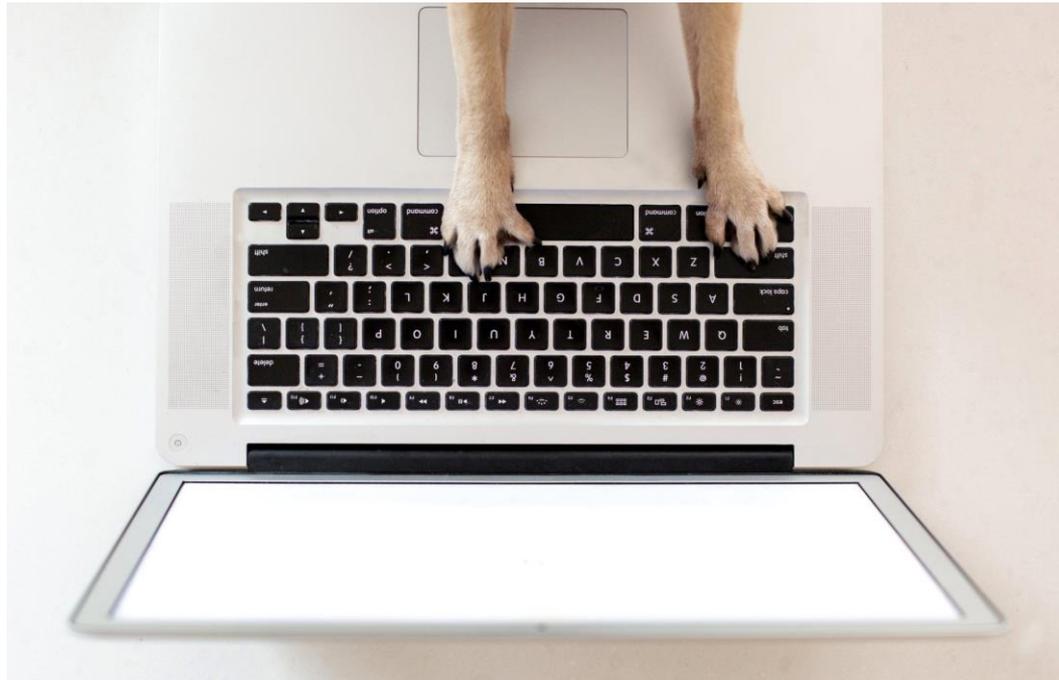
- Building a solid foundation in the earliest years provides a base for a lifetime of good mental function and overall health
- Eustress - good stress (e.g., communication, touch, signing, safety, support, meeting new people, studying for a test)
- Distress - toxic stress (e.g., neglect, abuse, parental addiction)
- Solid brain architecture has to be built - kids & families can't do it on their own

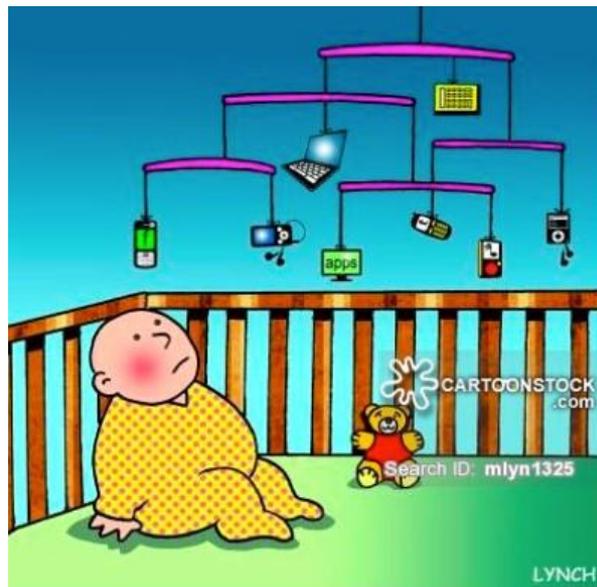
<https://www.youtube.com/watch?v=LmVWOe1ky8s>

- ADHD
- Trauma or PTSD
- Depression
- Anxiety,
- Toxic stress
- Substance abuse
- Change in bio-chemistry: research on 1 cell



- Habituation - to stimuli to result in less neurotransmitter release
- Sensitization - an extreme reflex resulting in a temporary increase in neurotransmitter release









https://www.youtube.com/watch?v=NoZvRGQ4-dI&feature=em-upload_owner



© © davidgoldmanphoto/Corbis

Brain Injury Statistics and Facts



- 5.3 million Americans live with brain injury
- 2.6 million are children
- Every 15 seconds someone will sustain a brain injury in the U.S.
- 1 million individuals in the U.S. are treated and released from hospital emergency departments for brain injury each year

(Brain Injury Association)

Brain Injury Statistics and Facts

- Traumatic Brain Injury (TBI) is a leading cause of death and disability among children ages 1 to 19 years in the United States (Faul, Xu, Wald, & Coronado, 2010).
- Each year, approximately 40 percent of TBIs in the United States occur in the

pediatric population (ages 0-19 years)
(Faul et al., 2010).

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Incidents of Brain Injury: National Data

CDC 2013 TBI Related Annual Report

Children Ages 0-14:

- 640,000 emergency department visits
- 18,000 hospital stays
- 1,500 deaths
- *These numbers do not include children who sustained a TBI and did not seek medical care, sought care through PCP or were treated and released from ED without mention of potential TBI*

- **Severity of TBI in Emergency Department Visits**

(Rivara, Koepseel, Wang 2011)

- Mild 70-90%
- Moderate 13%
- Severe 2%

Brain Injury Demographics

- The two age groups at highest risk for TBI are ages 0-4 and 15-19 (CDC 2013)

- African American, Hispanic and Native American children are more likely than white children to experience a more severe TBI and have higher mortality rates (Falcone, Marin, Brown, Garcia, 2008; Howard, Joseph, Natale, 2005)

Brain Injury Disability in Children

- 61% of children with a moderate to severe TBI experience a disability

- 14% of children with mild TBI experience a disability



Rivara, Koepseel, Wang, et al 2012

U.S. Department of Education Data

- During the 1991-92 school year there were a total of 4,499,824 students receiving special education services of that total only 245 were served under the TBI disability category
- During the 2015-2016 school year there were a total of 6,677,000 students receiving special education services of that total there were 27,000 served under the TBI disability category

https://nces.ed.gov/programs/digest/d17/tables/dt17_204.30.asp

U.S. Department of Education Data

- Interesting fact, Autism also became a disability category in 1991
- 1992= 15,302
- 2000= 79,085
- 2010= 369,774
- 2015= 617,000

TBI

1992=245

2015=27,000

https://nces.ed.gov/programs/digest/d17/tables/dt17_204.30.asp

COMPARISON ACROSS DISABILITIES 2015-16

<u>Disability</u>	<u>Total Number</u>
All	6,677,000
Autism	617,000
SLD	2,298,000

Emotional 347,000

OHI 909,000

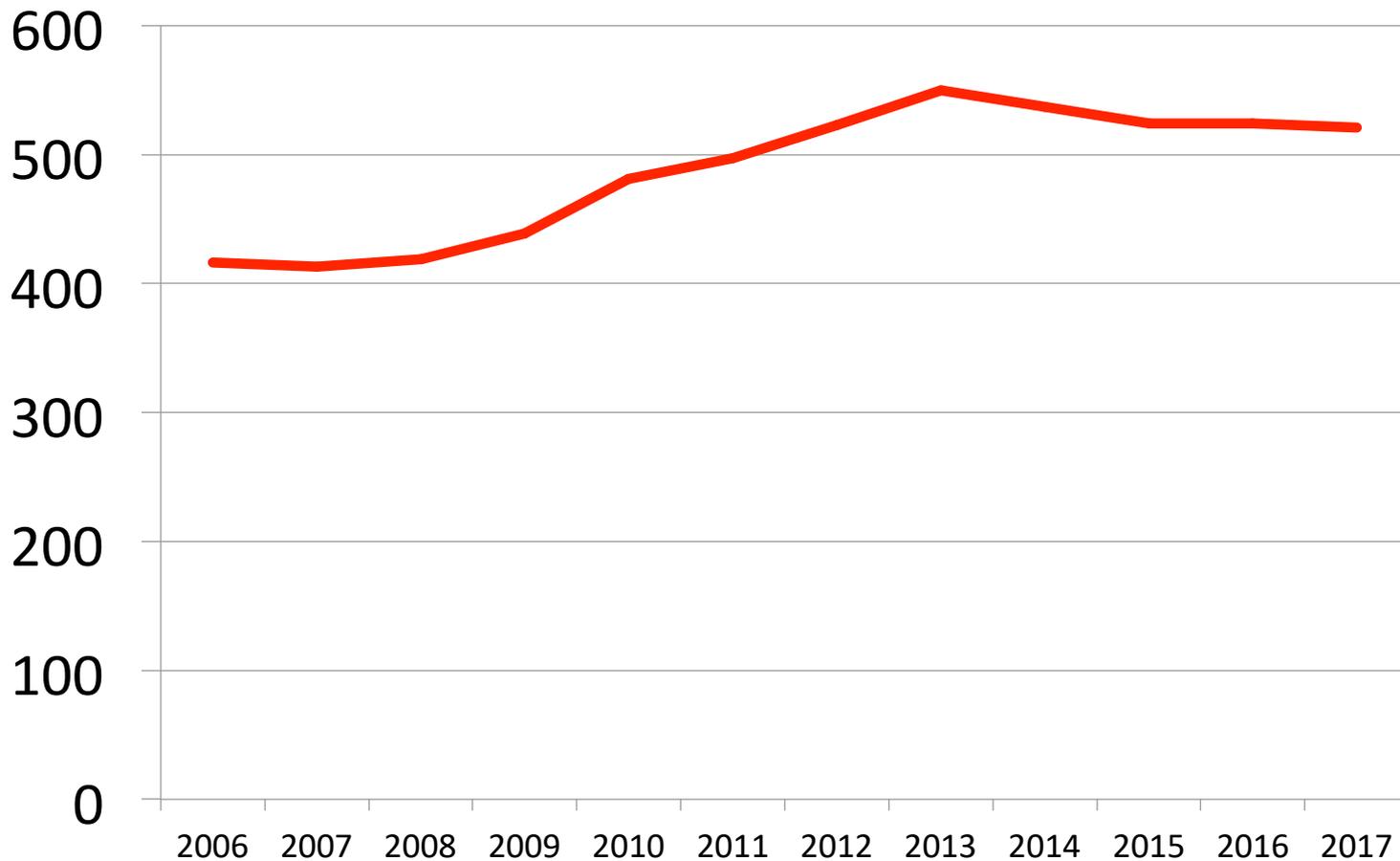
TBI 27,000

https://nces.ed.gov/programs/digest/d17/tables/dt17_204.30.asp

Colorado Special Education Eligibility

Numbers-TBI

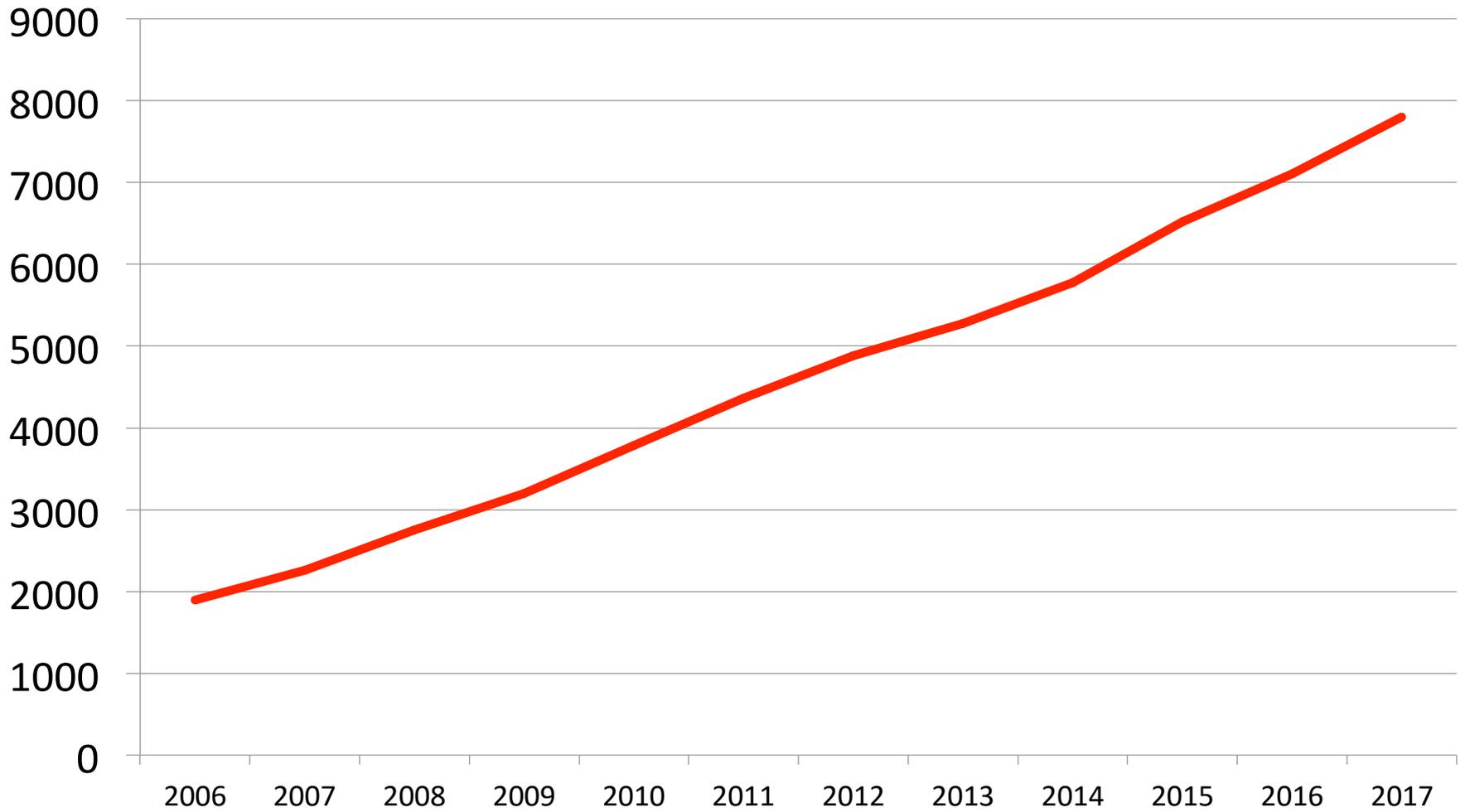
Trauma2c Brain Injury



Colorado Department of EducaFon

Colorado Special Education Eligibility Numbers-Autism

Au2sm



Hmmmm???

- 61% of children with a moderate to severe TBI experience a disability and 14% of children with mild TBI experience a disability
Rivara, Koepseel, Wang, et al 2012
- Then why...do only approximately 2% get referred for special education out of the hospital?

- And why ...do the USDOE special education numbers report a mere .4% of students in special education?

Why Are We Missing These Kids?

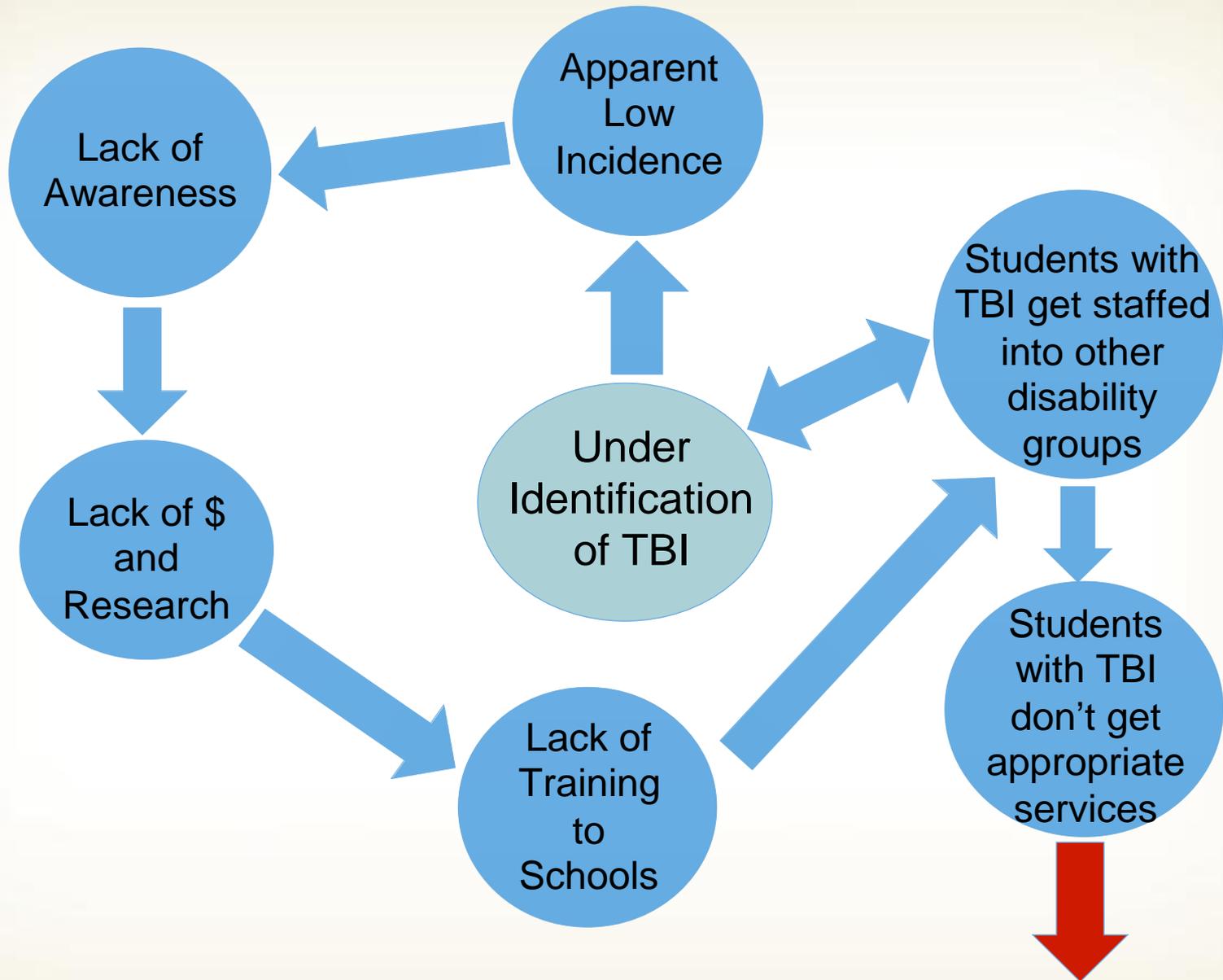
- Transition support from medical setting is rare or poorly coordinated
- Medical focus is on physical survival and obvious physical injuries

- From hospital fewer than 2% are recommended for special education (though 19% have cognitive limitations) (National Pediatric Registry)
- Treat and Release from the emergency department

Why Are We Missing These Kids?

- Brain injury often goes undiagnosed
- The effects of brain injury can be very subtle

- Might not see the impact for years until cognitive demands increase
- Families and school personnel have limited knowledge about brain injury
- Misidentified under learning disability, emotional disability, other health impaired (ADHD), etc.



60% mental health



25% - 87% in prisons/jail



30% homeless

60% substance
abuse



Children's Healthcare of Atlanta; Julie Haarbauer-Krupa, PhD &
CDC TBI in Prisons and Jails: An Unrecognized Problem

Mental Health Fallout

- Depression, anxiety disorders (e.g., Post Traumatic Stress Disorder, Obsessive Compulsive Disorder and Panic Disorder), and irritability or anger problems are most common diagnoses

- Premorbid psychopathology may predict substance abuse disorders post-trauma
- 1/3 of TBI survivors experience emotional problems between 6 months and a year post injury
- Patients who reported hopelessness=35%, suicidal ideation=23%, and suicide attempts=18%
- 85% of survivor families report that emotional or behavioral problems have an impact on their function

K. Gorgens, Ph.D., ABPP-RP

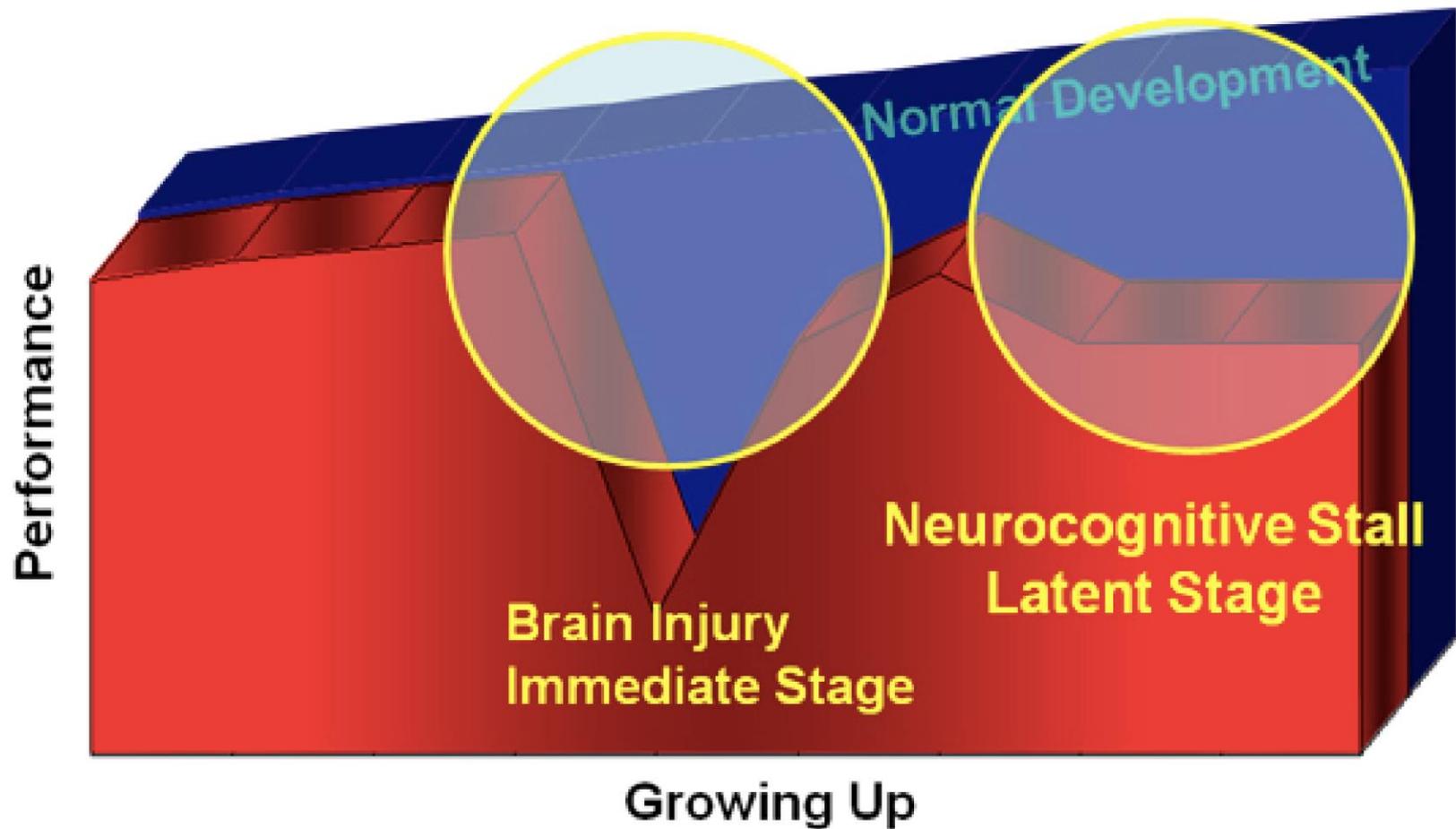


Early Injury as Predictor of Later Problems

- Compared to no TBI and outpatient only, by early adolescence (age 10-13), those hospitalized with a mild TBI before age 6 were:
 - More hyperactive and inattentive according to parents and teacher
 - More likely to be identified with ADHD, conduct disorder or oppositional defiant disorder
 - More likely to have substance abuse problems
 - More likely to demonstrate a mood disorder

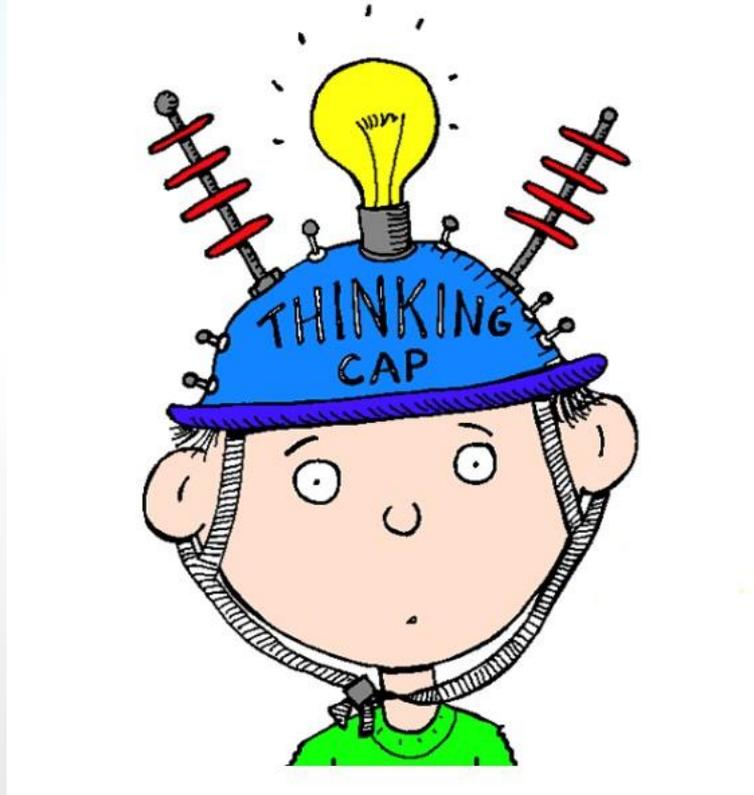
John Corrigan- OhioState University

Pediatric TBI: Two Stages of Recovery



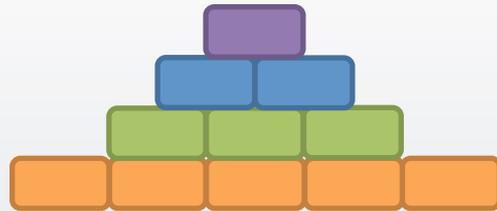
(Chapman, 2007)

What Questions Do You Have?



Eligibility

Possible, Plausible, Probable?



Types of Brain Injury or Impact

Brain Impact/Injury

Acquired

Brain
Injury

birth/
acquired

WHAT IS TBI?...

IDEA Definition:

Traumatic brain injury means an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects the child's educational performance. The term applies to open or closed head injuries resulting in impairment in one

or more areas, such as cognition; reasoning; abstract thinking; judgment; problem solving; sensory; perceptual, and motor abilities; psychosocial behavior; physical functions; information processing and speech. The term does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma. § Sec. 300.8(c)(12) of IDEA

TITLE 92 CHAPTER 51

006.04M TraumaFc Brain Injury

006.04M1 To qualify for special educaFon services in the category of TraumaFc Brain Injury, the child must have:

006.04M1a An acquired injury to the brain caused by **external physical force** resulFng in total or parFalfuncFonal disability or psychosocialimpairment, or adversely affects the child's educaFonal performance.

006.04M1b The category includes open or closed head injuries resulFng in impairments in one or more areas such as:

- 006.04M1b(1) CogniFon;
- 006.04M1b(2) Language;
- 006.04M1b(3) Memory;
- 006.04M1b(4) A]enFon;
- 006.04M1b(5) Reasoning;
- 006.04M1b(6) Abstract thinking;
- 006.04M1b(7) Judgment;
- 006.04M1b(8) Problem solving;
- 006.04M1b(9) Sensory, perceptual and motorabiliFes;
- 006.04M1b(10) Psychosocialbehavior;

006.04M1b(11) Physical funcFons;
006.04M1b(12) InformaFon processing;
and 006.04M1b(13) Speech.

006.04M2 The category does not include brain injuries that are congenital or
degeneraFve, or brain injuries induced by birth trauma.



Appendix A: Identification Flow Chart

- 1) Report of a Brain Injury:**
a. with medical documentation
OR
b. with credible history

- 2) Educational impacts most probably and plausibly related to the TBI and prevents the child from receiving reasonable educational benefit from general education**

If 1a or 1b is present but 2 is not present --- the school team may support the student outside of IDEA services (e.g., informal services, IHP, RTI, MTSS, PBIS, 504).

If 2 is present but 1a or 1b is not present --- the school team may consider IDEA services for the student under a special education category other than TBI.

1a OR 1b AND 2 MUST be present to pursue evaluation for TBI Educational Identification.

Documentation of Brain Injury

Medical documentation as evidenced by:

Developmental History Form

Brain Check Survey

Medical records (Parent/Guardian collects and shares with school) See Medical Documentation (pg.) Guidelines

School to Parent/Guardian structured interview: See Credible History Guidelines.

OR

Significant history of one or more TBI's reported by a reliable and credible source and corroborated by numerous reporters as evidenced by:

Developmental History Form

Brain Check Survey

All forms are downloadable on COKidswithbraininjury.com

- 2) Educational impacts most probably and plausibly related to the TBI and prevents the child from receiving reasonable educational benefit from general education**

As evidenced by:

- ▶ Limited ability to sustain attention
- ▶ Poor memory skills
- ▶ An inefficiency in processing
- ▶ Deficits in sensory-motor skills
- ▶ Delays in acquisition of new learning
- ▶ Delays in acquisition of visual-spatial processing
- ▶ Difficulty with language skills
- ▶ Deficits in behavior regulation including: impulsivity
- ▶ Poor judgment
- ▶ Ineffective reasoning
- ▶ Mental inflexibility
- ▶ Poor planning
- ▶ Poor organization
- ▶ Poor initiation
- ▶ Delays in ADL's
- ▶ Delays in academic skills



Misidentification

Studies have found:

- Approximately 20% of students identified with an emotional disability have sustained a TBI.
- Approximately 98% of students with brain injury are not appropriately identified for accommodations.

Shultz, L. E., Rivers, K. O., McNamara, E., Schultz, J. A., & Lobato, E. J. (2010).

Traumatic brain injury in K-12 students: Where have all the children gone?
International Journal of Special Education, 25(2), 55-71.

TBI compared to other disabilities:

Characteristics	TBI	Autism	LD	ED	ADHD
Sudden onset	X				
Previous successful functioning at a higher level	X				
Loss of "normal" self-image	X				
Medical complications and fatigue are common	X				
Previously learned information can assist in re-acquiring skills	X				
Problems generalizing new information	X	X	X		
Inconsistent patterns of performance	X	X	X	X	
Memory Difficulties	X	X	X	X	
Compromised self-awareness and difficulty recognizing difficulties	X	X		X	X
Extreme difficulties with self-regulation	X	X		X	X
Inappropriate behavior in normal circumstances	X	X		X	X
Poor judgment, loss of emotional control	X	X	X	X	X
Slower pace of skill acquisition	X	X	X	X	X
Family experience of grief	X	X	X	X	X
Unique to TBI	Shared by Some		Shared by All		



Types of Brain Injury or Impact & **Special Education Considerations**

Brain Impact/Injury

Acquired

Brain
Injury
birth/

TBI

OHI...

OHI

Similar impacts and interventions

Medical Documentation OR Credible History of one or more TBI

2.08 (10) (a) To be eligible as a child with a TraumaCc Brain Injury, there must be evidence of the following criteria:

2.08 (10) (a) (i) Either medical documentaCon of a traumaCc brain injury, or a significant history of one or more traumaCc brain injuries reported by a

reliable and credible source and/or corroborated by numerous reporters;

Medical Documentation

- If possible, establish traumatic brain injury through medical documentation via hospital records and/or from a doctor or clinician who has knowledge of the Center for Disease Control (CDC) requirements for TBI.

- The CDC classifications are based on a severity rating of mild, moderate and severe. Most often individuals who fit these classifications for moderate to severe TBI will have sought medical attention and therefore, the chances are greater that documentation will exist.

Credible History

- 2.08 (10) (a) (i) Either medical documentation of a traumatic brain injury, or a **significant history** of one or more traumatic brain injuries reported by a

reliable and credible source and/or corroborated by numerous reporters;

- In the case when medical documentation either cannot be obtained or when the individual did not seek medical attention, the following elements will help school personnel to establish a credible history of TBI.

Initial Health History

Student/child name:	DOB:
---------------------	------

IDENTIFYING INFORMATION				
Age:	Sex:	Grade:	School:	
ADDRESS:				
This form is completed by:			Relationship to Child:	
Reason for assessment:				
Mother's Phone: Home:		Work:	Cell:	e-mail:
Father's Phone: Home:		Work:	Cell:	e-mail:
Child lives with: Both Parents <input type="checkbox"/> Mother <input type="checkbox"/> Father <input type="checkbox"/> Other (explain)				
My child has the following health care coverage: Medicaid <input type="checkbox"/> CHP+ <input type="checkbox"/> Private <input type="checkbox"/> None <input type="checkbox"/>				
Child's Primary Health Care Provider:			Phone:	
Date of last physical:		Date of Last Visit:	Reason for visit:	
Child' Dentist:			Date of Last Dental exam:	

PREGNANCY AND BIRTH	
Month into pregnancy that medical care began:	Length of pregnancy:
Were there any medications taken while pregnant?	Explain:
Were there any complications with pregnancy? No <input type="checkbox"/> Yes <input type="checkbox"/> Explain:	
Were there any complications with labor and delivery? No <input type="checkbox"/> Yes <input type="checkbox"/> Explain:	
Length of labor:	Birth Weight: APGAR scores:
Explain any health issues at birth:	
Did baby require extra stay in hospital? No <input type="checkbox"/> Yes <input type="checkbox"/> Explain:	

DEVELOPMENTAL HISTORY	Yes	No	Comments
Did your child crawl by 9 months?			
Did your child walk by 18 months?			
Did your child say words by 15 months?			
Was your child toilet trained by 3½ years?			
Were there problems with balance coordination?			
Were there problems with fine motor skills? (buttons, handwriting, picking something up)			
Do you have other concerns about your child's development? (If yes, explain)			

Code: _____ Date Received: _____



Department of Occupational Therapy
College of Applied Human Sciences
Fort Collins, Colorado 80523-1573
(970) 491-6253
FAX: (970) 491-6290

Brain Check: Screening Tool Project

Parent/Guardian Survey

Student Information

Today's Date: ___/___/___

Child's Age: _____

Child's Date of Birth: ___/___/___

Child's Gender: Male Female

Child's race:
(circle one or more)

- 1: American Indian/Alaska Native
- 2: Asian
- 3: Native Hawaiian or Other Pacific Islander

- 4: Black or African American
- 5: White
- 6: More than one race
Please describe: _____

Child's ethnicity:
(circle one)

- 1: Hispanic or Latino
- 2: Not Hispanic or Latino

- 3: Unknown or Not Reported



Confirm Team Findings

- With a formal screen - recommend the Brain Check Survey -
<http://www.lobi.chhs.colostate.edu/index.aspx>
- History of Injuries (All ABI's)
- Functional Changes - Learning, Behavior, Cognitive, Physical Symptoms



Medical Documentation

NOTE: Medical documentation simply confirms the **presence** of the TBI. It does not and cannot automatically establish the “impact” of the TBI.

Confirming that an injury has occurred does not shed light upon the **effect** of the injury on subsequent physical, educational, behavioral, emotional, social outcome.

Once medical documentation has been established, CDE requires that school teams continue to collect a **body of evidence** to establish “educational impact.”

Medical Documentation

Cautions:

- TBI seems like a very serious medical condition, therefore the medical documentation of it makes many educators nervous and they will quickly say:
- TBI = IEP. TBI does not = IEP! TBI = the need for the school team to consider how the TBI is impacting learning, if even at all.
- If the school team goes with the determination of TBI for the IEP, the goals and services on the IEP still need to reflect the need.

Credible History

NOTE: As in the case of medical documentation, simply establishing credible history does not and cannot automatically establish the “impact” of the TBI.

Confirming that an injury has occurred does not shed light upon the effect of the injury on subsequent physical, educational, behavioral, emotional, social outcome.

Once credible history has been established, CDE requires that school teams continue to gather a **body of evidence** to establish “educational impact”.

Credible History

Cautions:

A vague or a sad story of abuse, injury, etc. leads to a “gut feeling” of ... “oh there must have been a hit to the head somewhere within that story.”

- Credible history is extremely difficult to establish and cannot be taken lightly.
- It is a HUGE undertaking to gather enough data to come to the conclusion of credible history – and it is a HUGE responsibility and potentially life-altering decision for the child/family.
- There can be NO shades of gray with credible history, only 100% confidence when a school team makes this determination.

Reasonable Education Benefit

- 2.08 (10) (b) Additionally, to be eligible as a child with a Traumatic Brain Injury, the traumatic brain injury prevents the child from receiving reasonable educational benefit from general education as evidenced by one or more of the following:

(TBI): The Child Cannot Receive Reasonable

Educational Benefit



As evidenced by one or more of the following:

- A limited ability to sustain attention and/or poor memory skills, including but not limited to difficulty retaining short-term memory, long-term memory, working memory and incidental memory; and/or
- An inefficiency in processing, including but not limited to a processing speed deficit and/or mental fatigue; and/or
- Deficits in sensory-motor skills that affect either one, or both, visual or auditory processing, and may include gross motor and/or fine motor deficits; and/or
- Delays in acquisition of information including new learning and visual-spatial processing; and/or

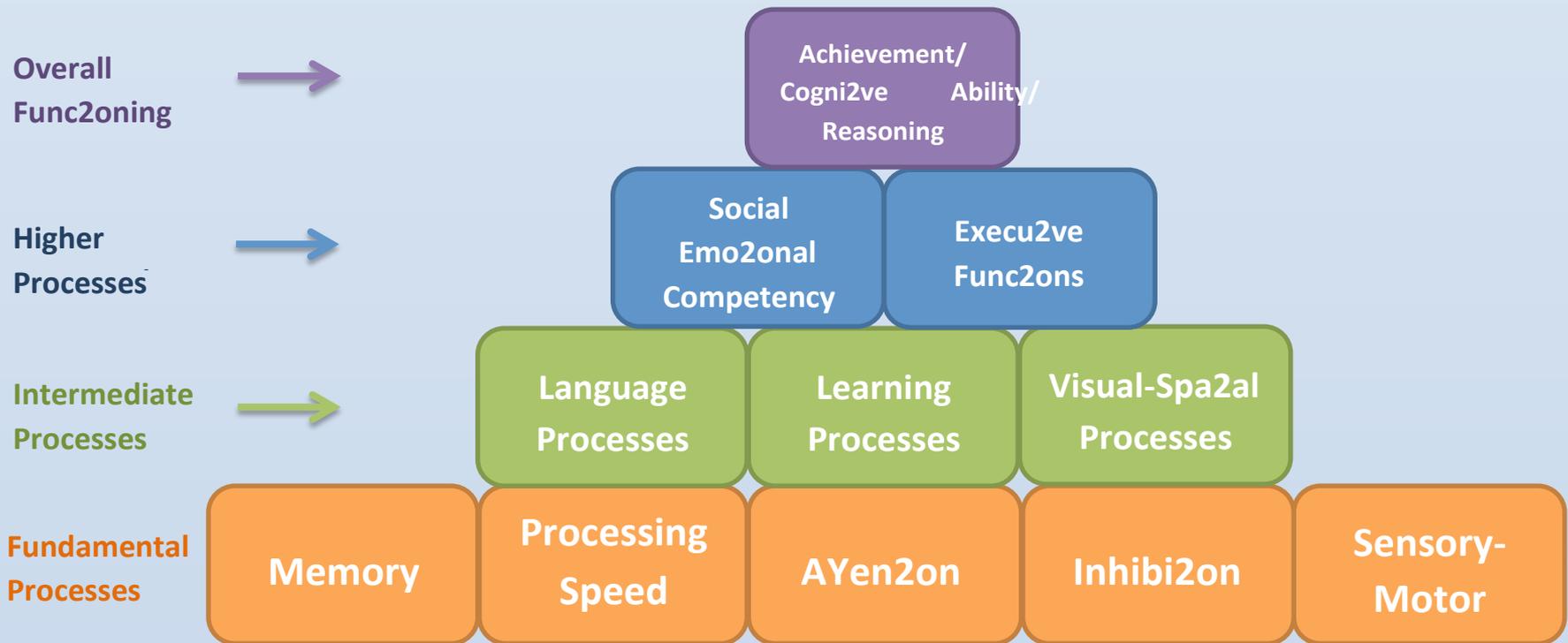
- Difficulty with language skills, including but not limited to receptive language, expressive language and social pragmatics; and/or

As evidenced by one or more of the following:

- Deficits in behavior regulation, including but not limited to impulsivity, poor judgment, ineffective reasoning and mental inflexibility; and/or
- Problems in cognitive executive functioning, including but not limited to difficulty with planning, organization and/or initiation of thinking and working skills; and/or
- Delays in adaptive living skills, including but not limited to difficulty with activities of daily living (ADL); and/or

- Delays in academic skills, including but not limited to reading, writing, and math delays that cannot be explained by any other disability. They may also demonstrate an extremely uneven pattern in cognitive and achievement testing, work production and academic growth.

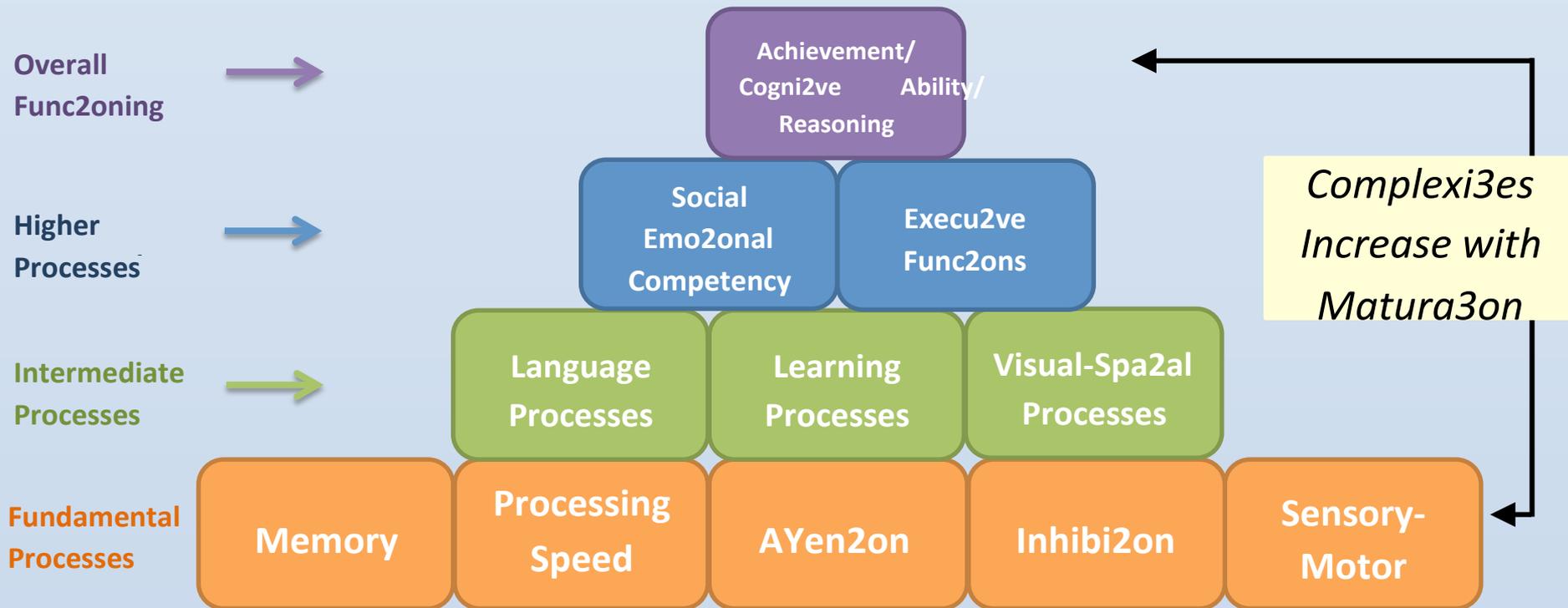
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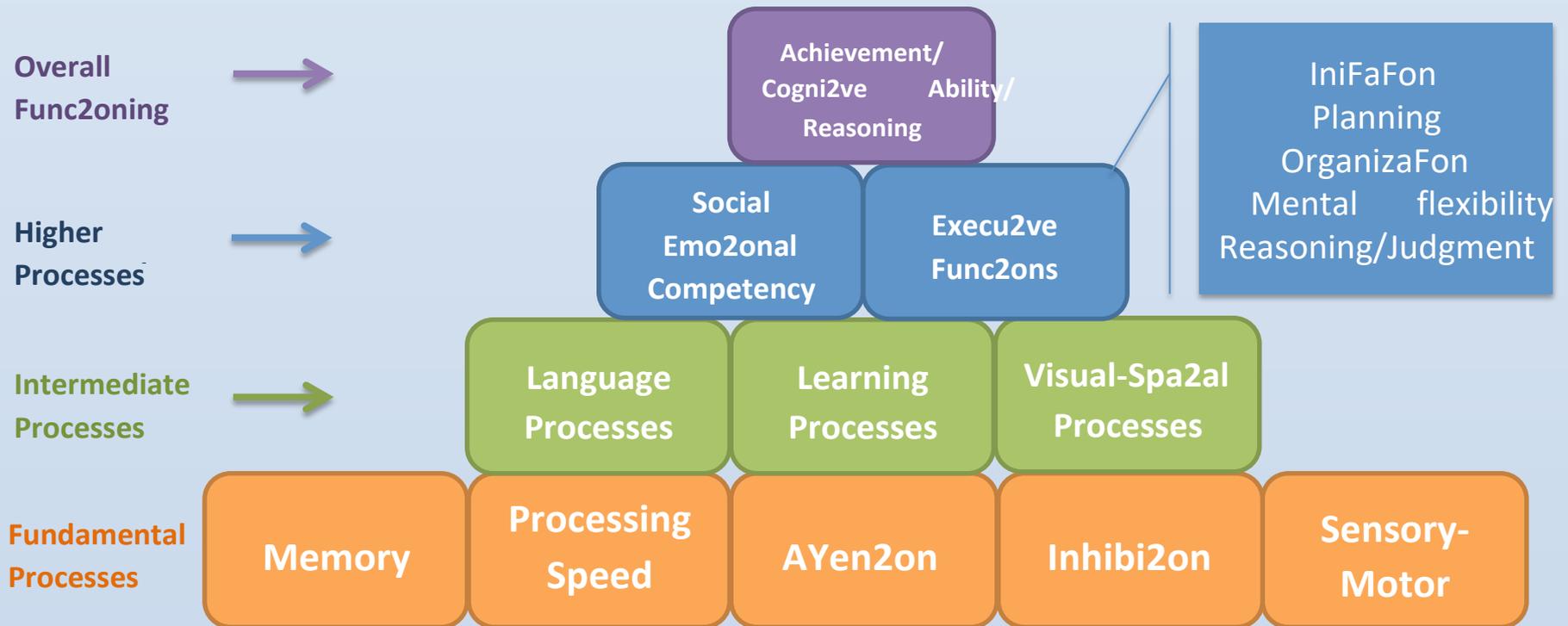
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TITLE 92 CHAPTER 51

006.04M TraumaFc Brain Injury

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- 006.04M1b(1)
- 006.04M1b(2)
- 006.04M1b(3)
- 006.04M1b(4)
- 006.04M1b(5)
- 006.04M1b(6)
- 006.04M1b(7)
- 006.04M1b(8)
- 006.04M1b(9)
- 006.04M1b(10)
- 006.04M1b(11)
- 006.04M1b(12)
- 006.04M1b(13)

Abstract

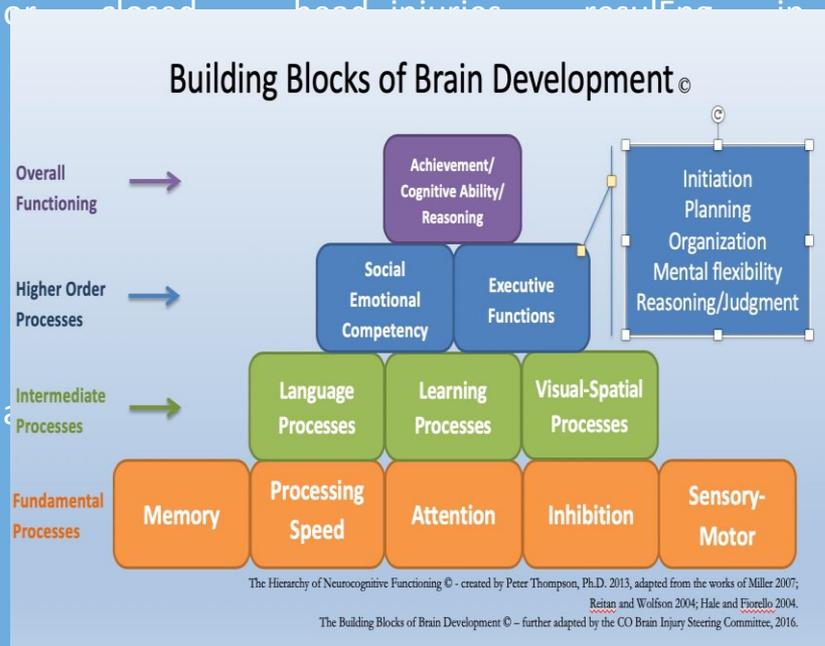
Problem

Sensory, perceptual &

Psychosocial

Physical

InformaFon processing;



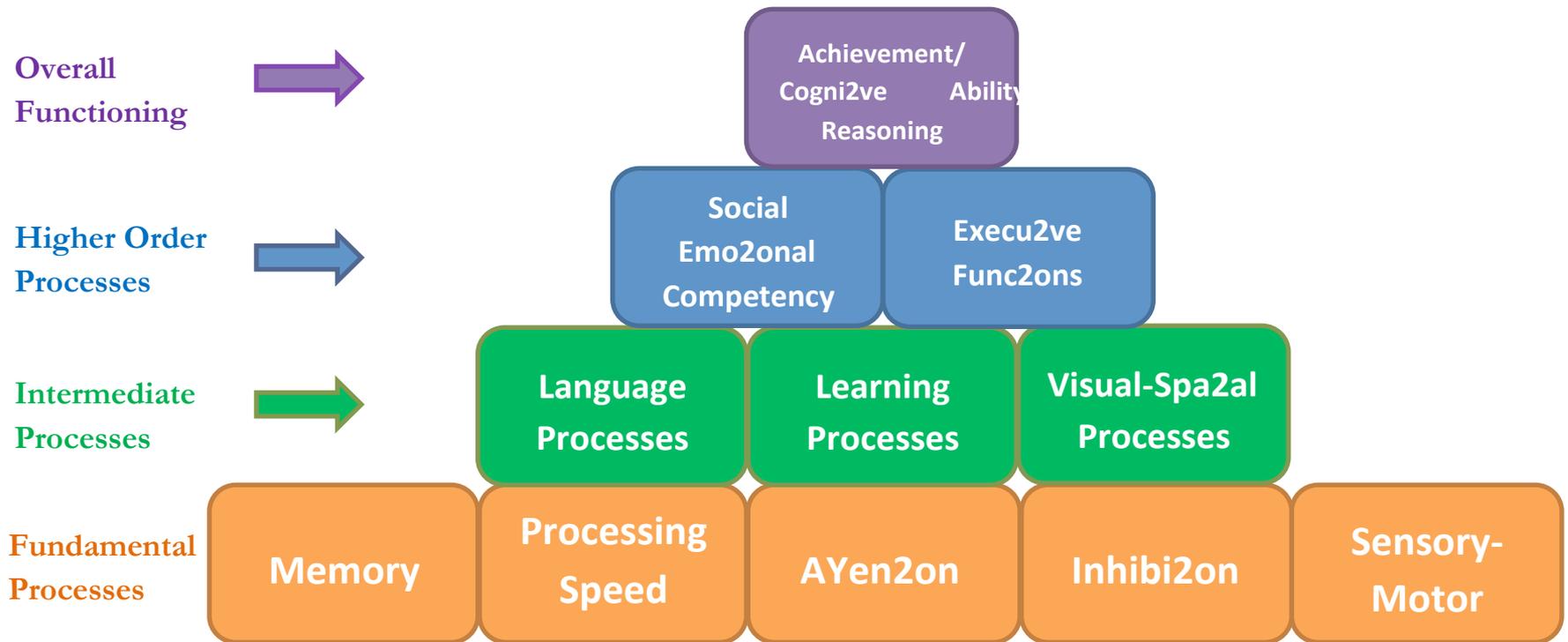
006.04M2 The category does not include brain injuries that are congenital or induced by birth trauma.



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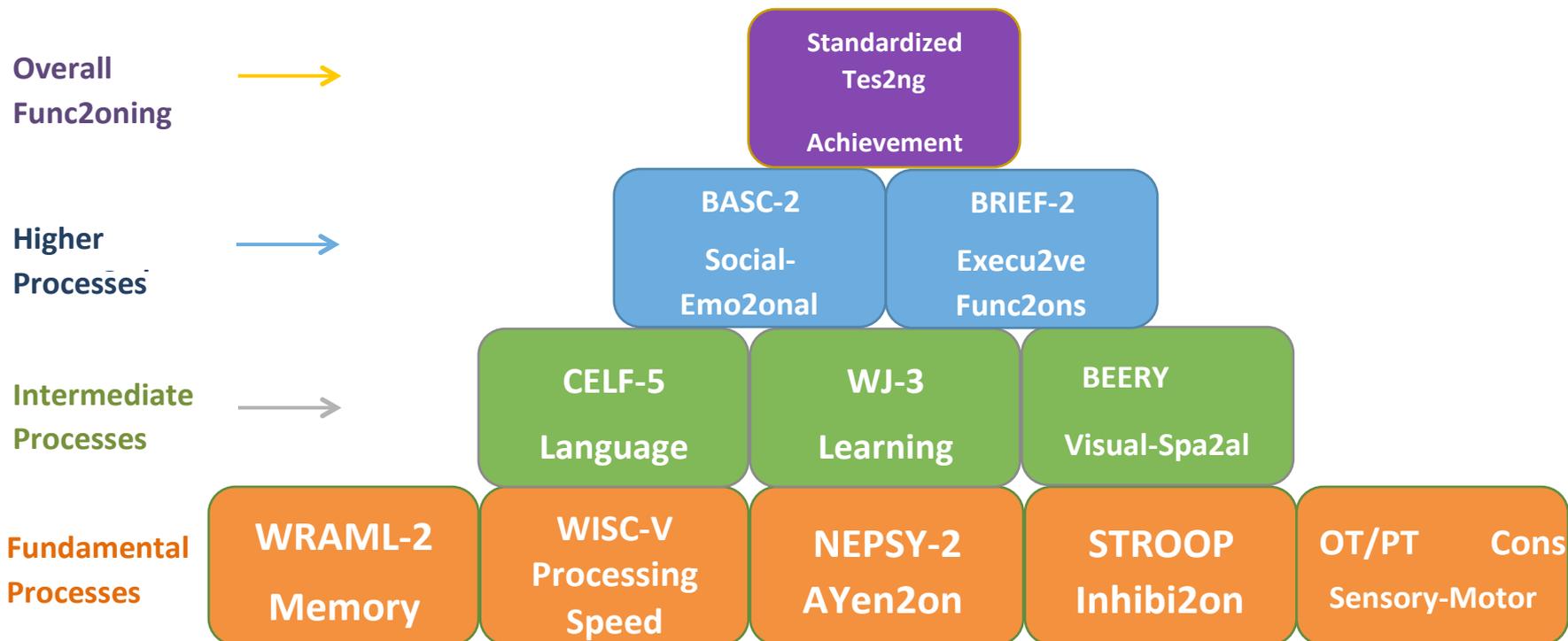
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Overall



Functioning

Higher

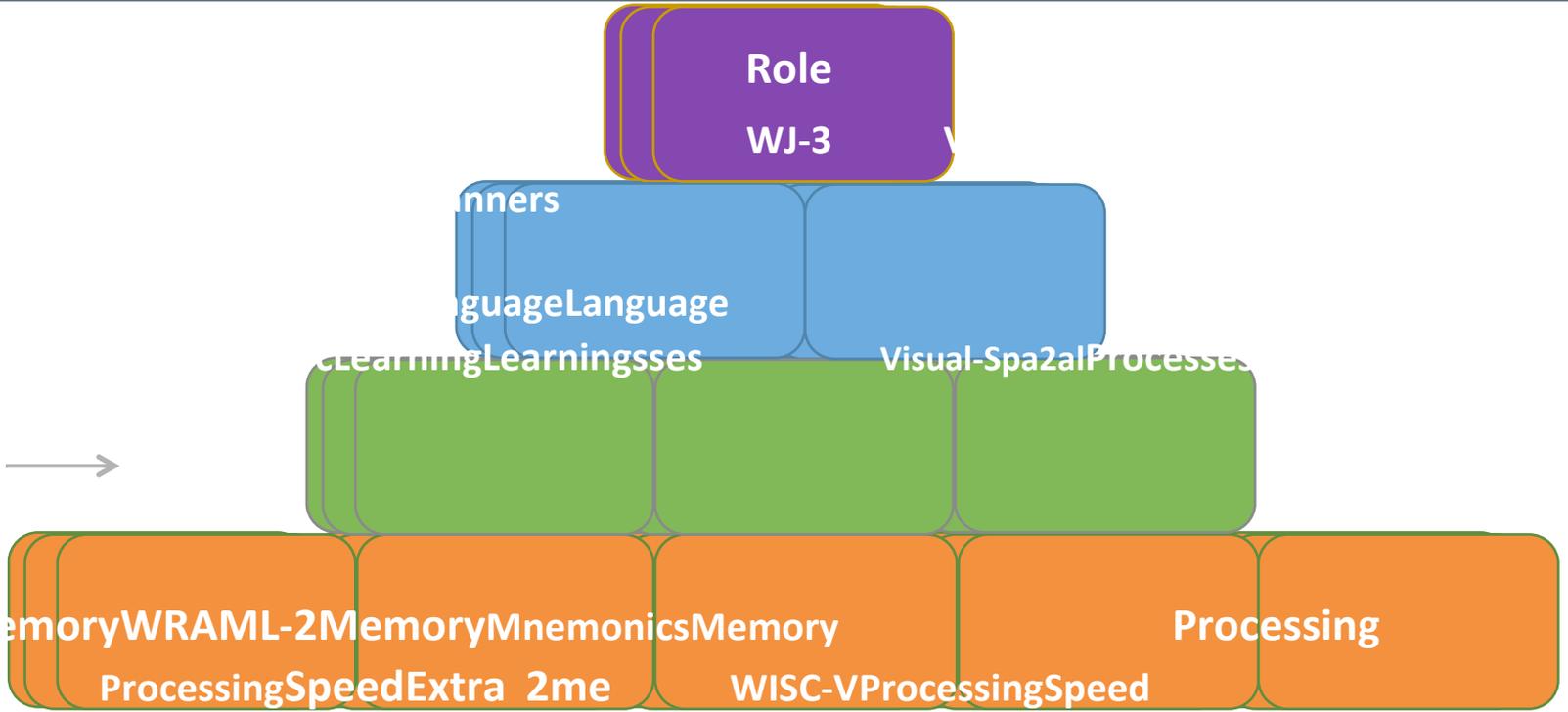
Order



Processes

Intermediate Processes

Fundamental



Processes

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ADention

Fundamental

Attention: *The ability to sustain focus on the information necessary for learning or completing tasks*

- There are numerous types of attention: selective, sustained, shifting and divided attention. Being able to attend to a task, to shift from task to task and to ignore competing distractions so that one can stay focused on the original task at hand, explains why

attention is a fundamental skill necessary for all levels of learning.

- Inhibition is associated with this process in the brain - the inability to inhibit an impulse is often the underlying issue with ADHD

103

Sly Sam



Inhibition

Fundamental

Inhibition: *The ability to inhibit, block or hold back an impulse.*

- Inhibition is associated with the attention process in the brain - it is the ability to inhibit an impulse, long enough to consider multiple thoughts and behavioral options so that a more adaptive behavioral choice can be made.

- Inhibition - the inability to inhibit an impulse is often the underlying issue with ADHD
- This process may be referred to as “mental brakes”, “a filter” or the ability to “think before you act”.

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Memory

Fundamental

Memory: *The mental ability to store and retrieve words, facts, procedures, skills, concepts and experiences.*

- The general memory process is complex and entails memory creation, storage of information and retrieval. Additionally, there are several types of memory. For example, some primary types of memory are shortterm, working, visual, auditory, procedural and declarative memory.
- Damage to any brain area that assists in the formation, storage or retrieval of information can degrade overall memory performance. Due to the number of areas associated with the memory system, it is important to

emphasize there are also numerous ways to impair or damage this process.

Processing Speed



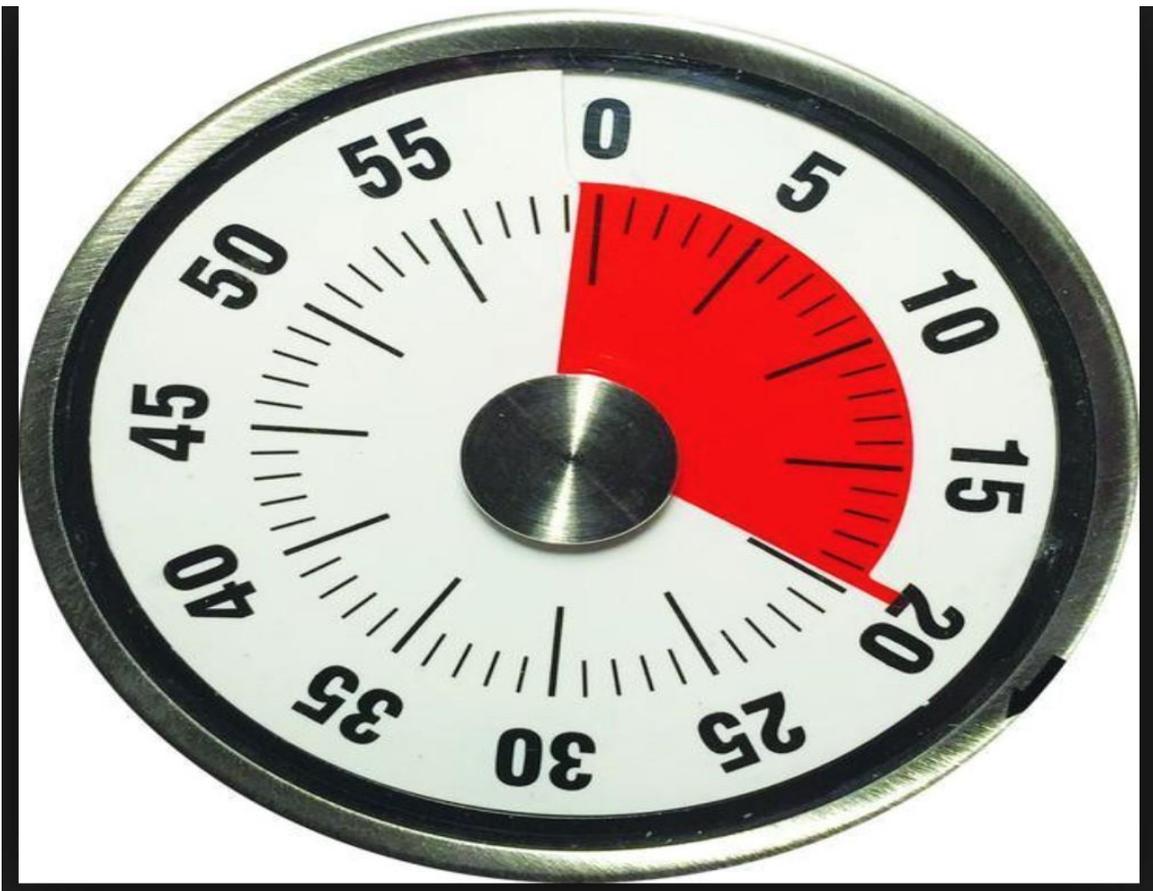
Processing Speed: *How quickly information is received, processed, and/or outputted.*

- A common consequence of a brain injury is the slowing of information processing. Slowed information processing impacts a person's ability to think efficiently and may

hinder the effectiveness of other abilities such as memory. Although there are different reasons for slowed processing after an injury, one major reason is that the “wires” of the brain (neurons) can no longer communicate with each other efficiently.

- Another reason for slowed processing speed is that the brain might have to re-route signals around the damaged area (takes longer).

22 Seconds



Sensory Motor

Fundamental

Sensory Processing: *Perceiving and responding to what is seen, heard, smelled, tasted, felt and touched, as well as our sense of balance (vestibular) and our “position sense” (proprioception).*

- Generally speaking, the parietal lobe of the brain (top brain area) processes most sensory information and integrates it to construct a picture of one’s environment. Damage to the parietal lobe may interfere with body awareness, cause

attention problems, and degrade the accurate processing of auditory, olfactory, taste, tactile, and visual information.

- Fine Motor: Involves the use of small muscles of the hands to make smooth, coordinated or fine motions.
- Gross Motor: Involves the coordinated use of the large muscles of the body.

Learning Processes



New Learning: *The ability to learn new concepts and information.*

- Receiving and processing new information to create *learning* is a remarkably complex neurological phenomenon. A novel academic task requires several brain areas working in concert to produce

understanding. Once new information is processed, the new information is sent to other areas of the brain so the information can be comprehended on a deeper level.

Visual-Spatial Processes



Visual-Spatial: *The ability to generate, retain, retrieve and transform wellstructured visual images.*

- Visual-spatial processes are largely associated with the occipital lobe of the brain, which is located at the back of the brain. When visual information is processed in the occipital lobe, it divides the information and sends it to the lower left part of the brain (temporal lobe) or to an upper part of the brain called the parietal lobe. Damage to the back and left side of the brain can degrade a person's ability to process images of known objects.

Injury to the back to upper regions of the brain may cause problems with spatial and location tasks.

Language Processes



Language-Receptive: *The ability to understand language.*

- Understanding spoken language is typically associated with the left hemisphere of the brain. Young children typically understand what is told to them (receptive language) before they can express

themselves, but damage to the left side of the brain hinders their ability to understand language.

Language-Expressive: *The ability to express one's thoughts and feelings into words and sentences.*

- The ability to speak logically and express oneself using language involves the left hemisphere of the brain.

Social Pragmatics: *Pragmatics are the verbal and nonverbal rules of social language and interactions.*

- The ability to follow social rules and using or altering communication for social purposes.

Social Emotional Competency

Higher

Social and Emotional: *The awareness of social issues and one's emotional status. Behavioral self-regulation, control and self-monitoring are also part of this domain.*

- The ability to interact successfully with other people and control one's emotions involves a higher order cognitive skill set. There are two primary areas associated behavioral and emotional regulation.
 - 1) The frontal cortex is implicated in pro-social behaviors. Specifically, the front part of the brain, near the eyes, assists with impulse control.
 - 2) The limbic system. The limbic system is made of several smaller parts that are associated with creating all emotions. When these deep brain structures are damaged, it is common that the person develops severe emotional difficulties.

Executive Functions:

Initiation

Higher

Initiation: *The ability to independently start an action or activity.*

- Since the frontal regions of the brain are largely responsible for action and movement, it is not surprising these same areas are responsible for initiation. It is also not surprising that emotions help start actions, so the deeper emotional centers of the brain are implicated in initiation. A child's inability

to get tasks completed may be related to problems with initiation within the brain.

Mental Flexibility

Higher
Order

Mental Flexibility: *The ability to easily shift from one idea, train of thought, activity or way of looking at things.*

- Controlling the thoughts and actions of the brain falls under the function of the frontal lobe. Although there are different brain areas that also

help with initiation, organization, planning and flexibility, these four “executive functions” are primarily regulated by the upper brain areas located behind the forehead. People with damage to the frontal lobe may become more rigid in their thinking and less adaptable to change.

Draw A Line

Switch Tasking is a Thief

Executive Functions:

Write all the numbers from 1 to 21 in
order

Planning

Higher
Order

Planning: *The ability to set a goal, identify a sequence of actions to reach the goal and carry out that sequence of steps.*

- Planning is a future oriented process requiring forethought, estimation and problem solving. Similar to the same neurological structures involved with regulation, organization, and problem solving, the upper frontal lobe is intimately tied to planning.

Organization

Higher
Order

Organization: *The ability to create and maintain orderliness in thoughts, activities, materials and the physical environment.*

- The upper frontal region of the brain, behind the forehead, controls planning and organization of thoughts and activities. The ability to sequence thoughts in a logical fashion and translate those

thoughts into action to organize a person's environment involves communication between the frontal cortex and left hemisphere of the brain. Damage to the front and/or the left hemisphere of the brain may cause disorganized thinking and ordering of materials.

Reasoning

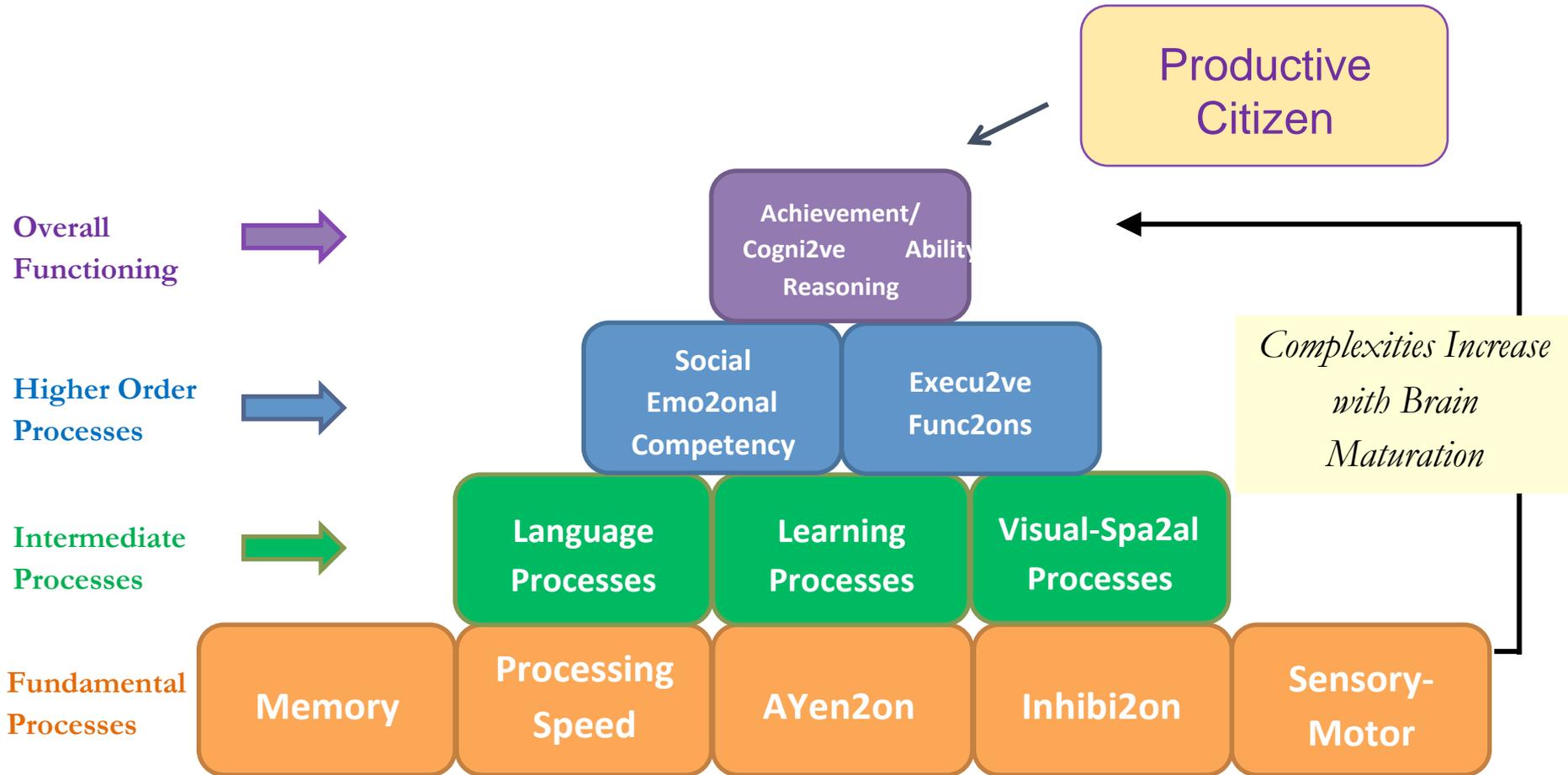
Higher

Reasoning: *The use of deliberate and controlled mental operations to solve novel and on the spot problems*

Executive Functions:

- Many aspects of reasoning are similar to the process of new learning. Reasoning is the foundation for problem solving and ultimately overall intelligence. Higher order reasoning involves the effective integration and processes of the entire cerebral (brain) structure. Since the frontal cortex is considered the “manager” of the brain, this region is typically needed in reasoning as it orchestrates how information is processed. However, many areas of the brain are needed for deep thinking.

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Executive Functions:

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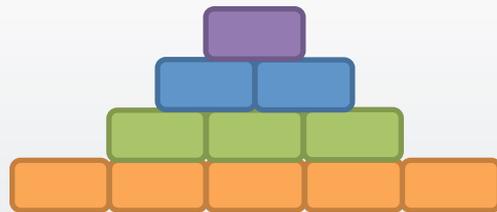


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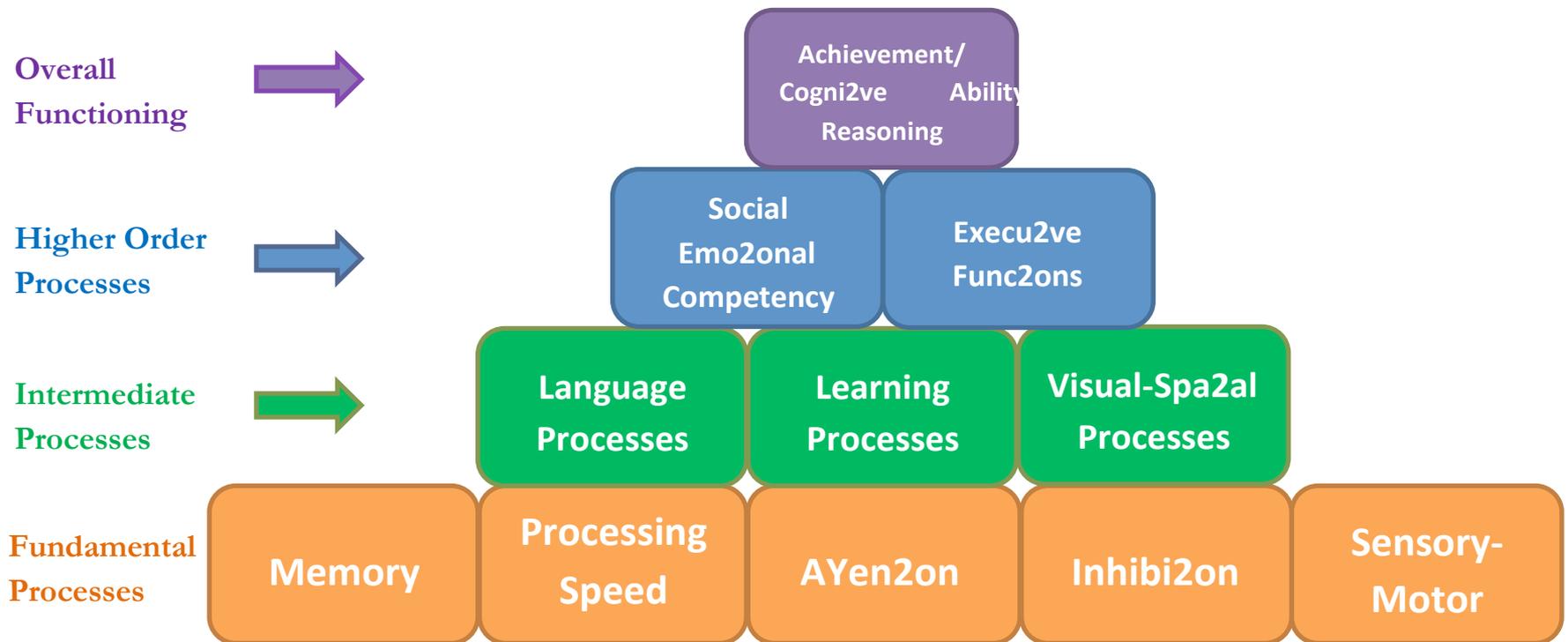
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REFRAME THE BEHAVIOUR

Neuroeducacional Assessment



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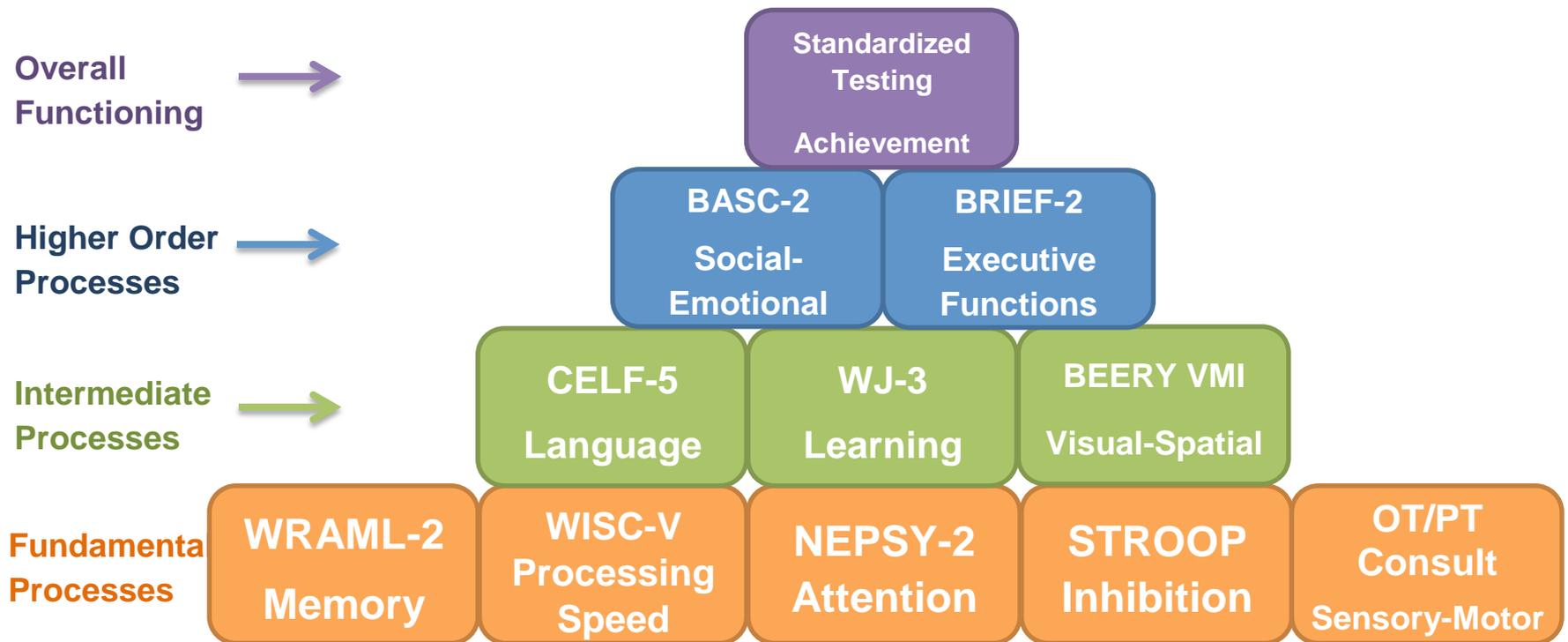


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ASSESSMENTS



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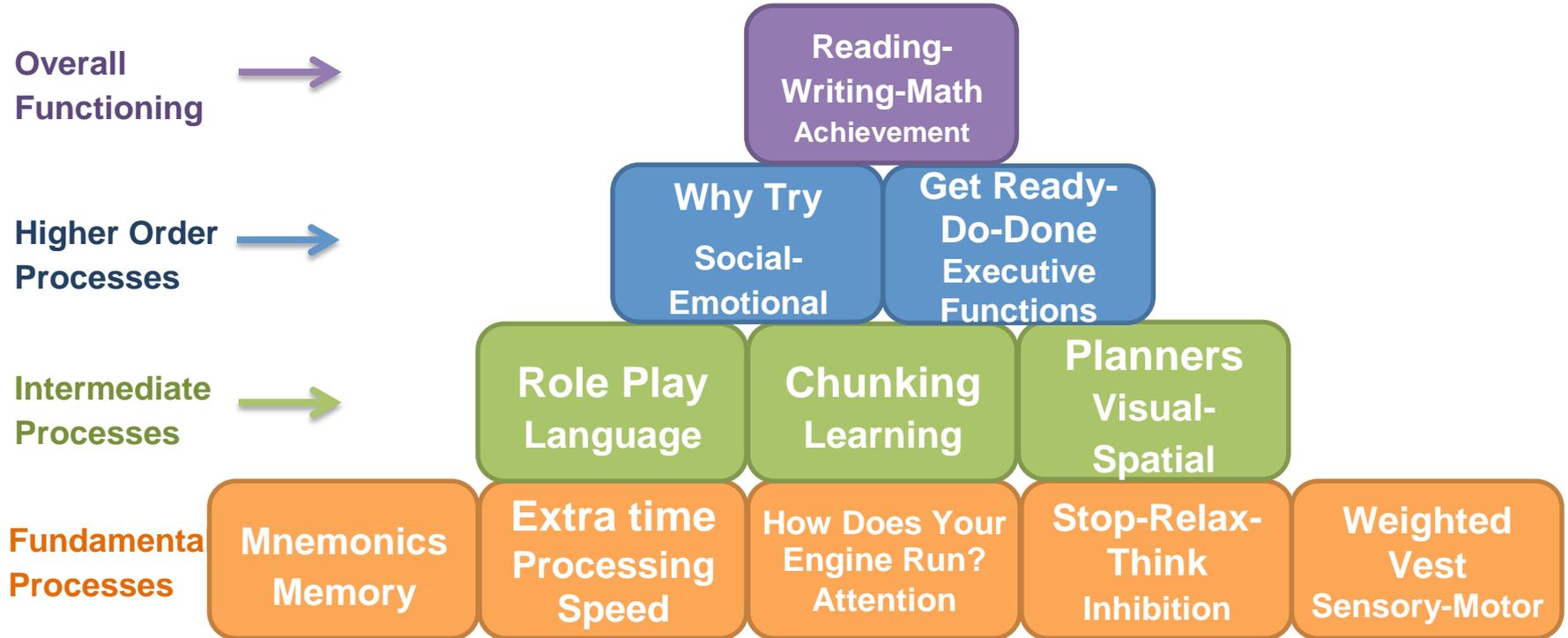
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Overall
Functioning



Higher



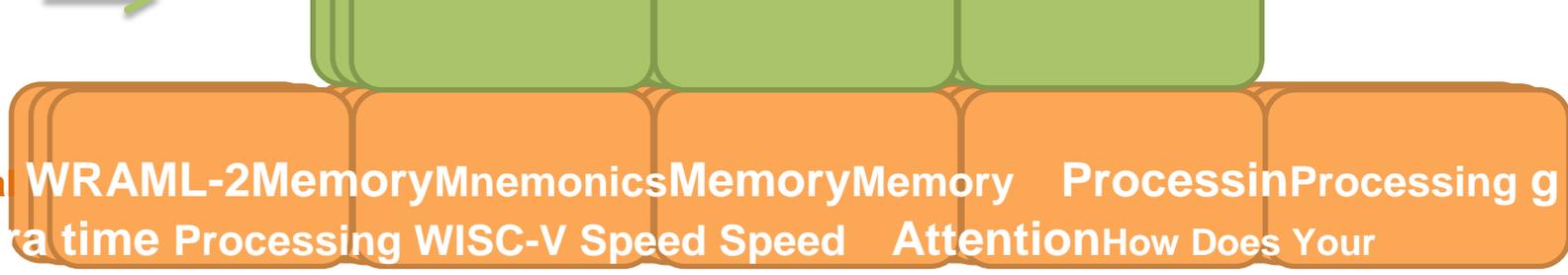
Order

Processes

Intermediate

Processes





Processes

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Neuroeducational Evaluations - The School-Based Answer to Pediatric Neuropsychological Assessments

- Nicole Crawford, PhD
- Heather Hotchkiss, MSW
- Karen McAvoy, PsyD





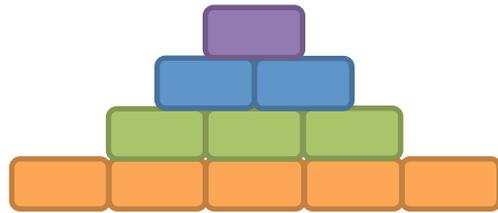
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- Neuroeducational Assessment:
 - School-based multidisciplinary teams CAN do this
 - When we have a good understanding of how a student is functioning across each of the building blocks – we have the data necessary to determine eligibility



–We can devise an appropriate and specific
IEP and

Behavior Intervention Plan





With the Building Blocks of Brain Development

<http://cokidswithbraininjury.com/educators-and-professionals/information-matrix>



MINDSOURCE
BRAIN INJURY NETWORK



COLORADO
Department of Education

COLORADO KIDS with Brain Injury



HOME

FOR EDUCATORS AND PROFESSIONALS

FOR PARENTS

UPCOMING EVENTS

KEY TERMS

CONTACT US



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WELCOME TO THE COLORADO KIDS WITH BRAIN INJURY WEBSITE

This website serves as a tool for educators, school administrators, school psychologists, related services professionals, community partners, and families to help support our kids in Colorado with brain injuries. The design of this website was funded through a community grant from MINDSOURCE Brain Injury Network within the Colorado Department of Human Services and is maintained by the Brain Injury Consultants at the Colorado Department of Education.

ANNOUNCEMENTS & UPDATES

Check out the revised **Building Blocks of Brain Development** – [click here](#)

Brain Injury in Children and Youth: A Manual for Educators. [Click here to view manual.](#)

Colorado Department of Education's Concussion Management Guidelines. [Click here to view](#)

Brain Injury Alliance of Colorado Resource Navigation. [Click here to view.](#)

Building Blocks Framework Exploration

- Go to: <http://cokidswithbraininjury.com>



- Click on:
- Click on “Building Blocks” (on top nav bar or on bulleted list)

<http://cokidswithbraininjury.com/educators-andprofessionals/brain-injury-matrix-guide/>

Standardized Assessments

- Broad assessments may not yield the level of data necessary to understand functioning levels
- Average scores not reflective of learning in academic settings
- Unevenness – skewed profile may lead to issues with interpretation
- Formal and Informal Tools



Neurocognitive Evaluation Form (NEF)

Instructions: The rater is asked to rank the student on several areas of functioning as compared to the student's same aged peers and/or classmates. A ranking of **Green** is considered an ability commonly observed in most (70%) students of similar age to the student and is not an area of primary concern for the student. A ranking of **Yellow** is an observed ability area that the student struggles, but the student can perform the task intermittently. A ranking of **Red** is a rarely observed or never observed ability area and signals a major area of concern. **Areas ranked Red or Yellow are domains that may be targeted for further assessment.**

Date: _____

Rater's Name/Title: _____

Student's Name: _____

Student's Age and Grade: _____

Class Observed: _____

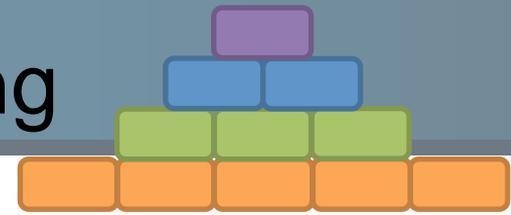
Time of Day and Day of Week: _____

Less positive

More Positive

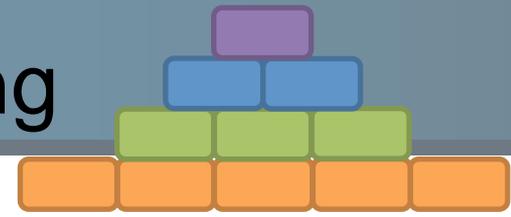
ATTENTION 3 SUBTYPES	Red	Yellow	Green	Grey	Blue
SELECTIVE/FOCUSED	Significantly Below Average	Slightly Below Average	Average	Slightly Above Average	Significantly Above Average
Focuses on teacher					
Attends to detail of task					
Orients to speaker/staff					
Focuses without					

What It Looks Like in Testing Setting



- Response InhibiFon
 - Answers without thinking
 - Pattern of picking first option or the first one that looks like could possibly be correct
 - Gives up quickly
 - Gives quick answer and then changes it
 - Starts task without being given all instructions
- Working Memory

What It Looks Like in Testing Setting

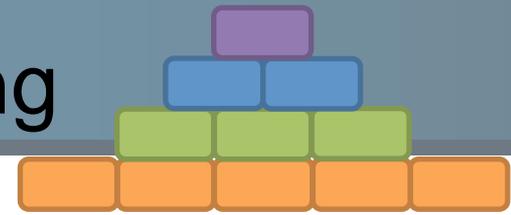


- Do not remember directions
- Asks for directions or info to be repeated
- Remembers beginning or end and loses other info

Dawson and Guare

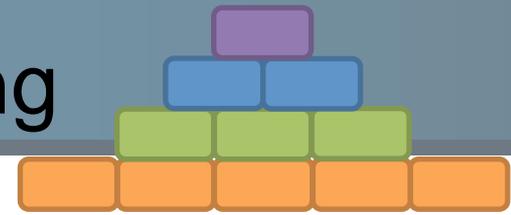
- Language Processing
 - Needs additional time to process verbal tasks

What It Looks Like in Testing Setting



- Asks for response of quesFons/direcFons
- Answer does not fit the quesFon
- EmoFonal RegulaFon
 - Upset or easily frustrated with challenging items
 - Displays range of emoFons during tesFng

What It Looks Like in Testing Setting

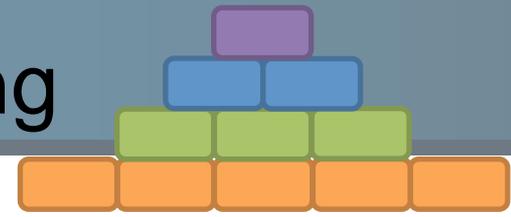


- Won't admit does not know answer and waits for examiner to move on without answering

Dawson and Guare

- Mental Flexibility
 - Unable to generate multiple answers to a question
- WISC-V Comprehension

What It Looks Like in Testing Setting

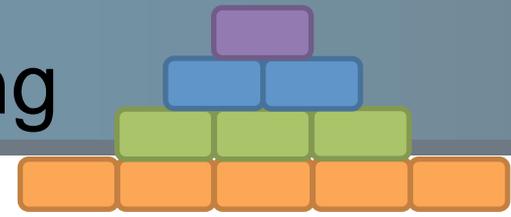


- Adjust slowly when task changes
- Can't figure out a new approach when the first one does not work
- Matrices Test the Limits
- Can't provide correct answer when given an opportunity

Dawson and Guare

- Planning

What It Looks Like in Testing Setting



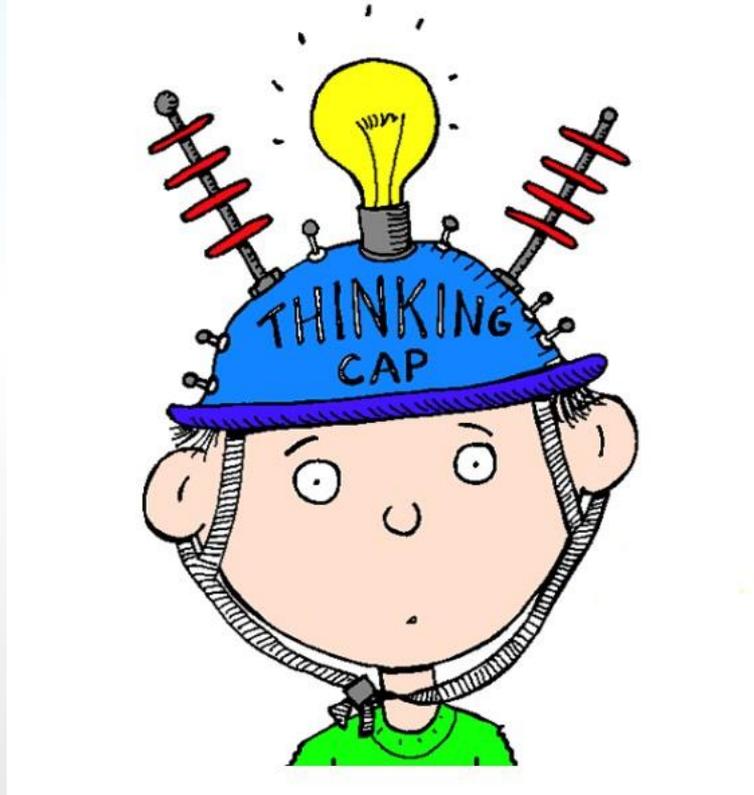
- How do they approach and complete tasks such as block design
- Reasoning/Problem Solving
 - Ask student how they completed the task
 - What are they verbalizing while completing tasks

Pre and Post Data

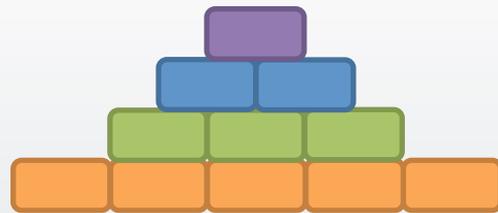
- Post TBI impact does not always show in traditional academic assessments
- especially for middle and high school- well established preinjury academic skills
- Traditional Cognitive Assessments do not always pick up the unevenness and scatter
- Other areas to consider for educational impact
- **THINK BUILDING BLOCKS!!!**
- Executive functioning skills?
- Sudden change in grades? Attendance?

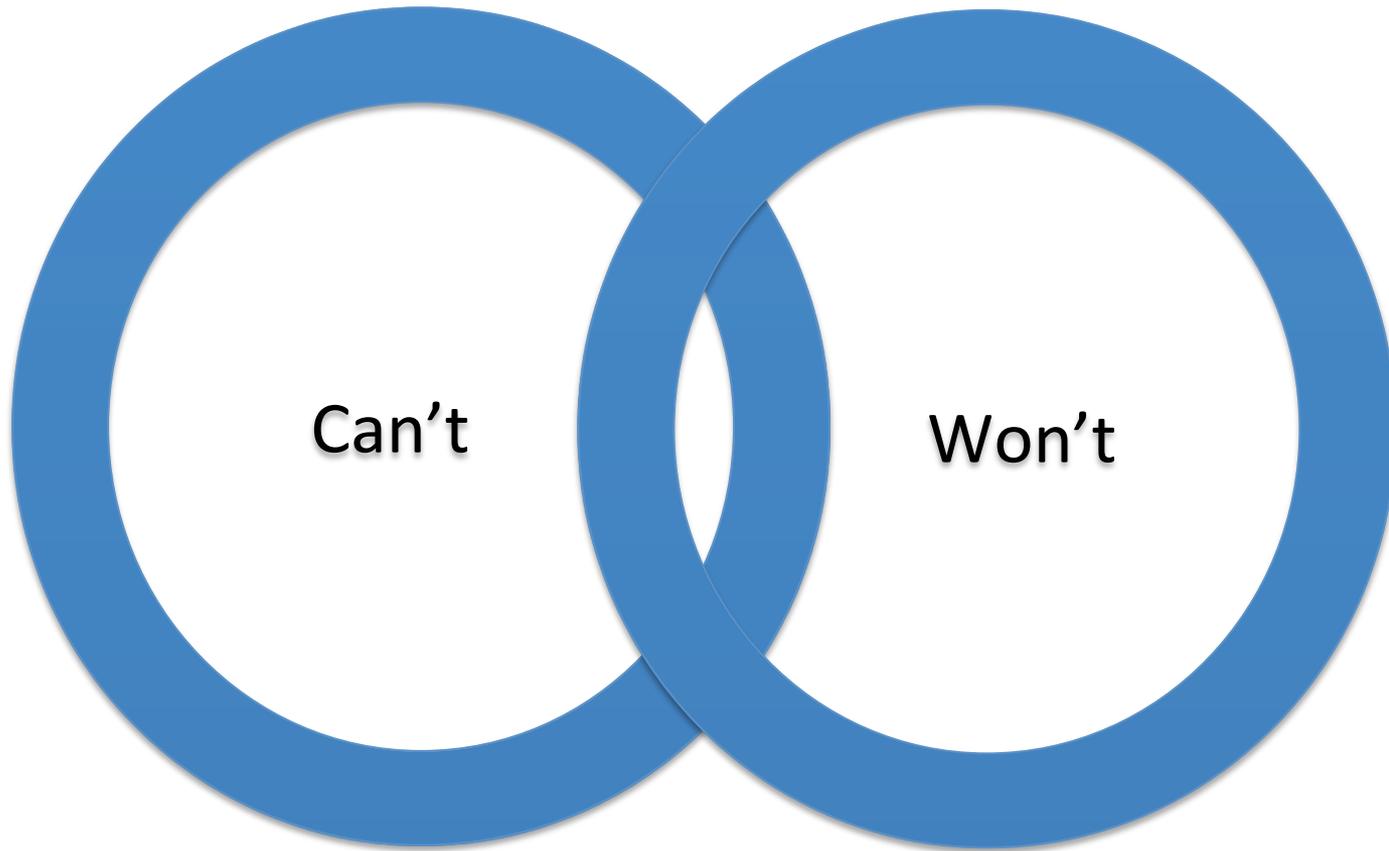
- What cognitive processing issues are teachers observing in the classroom? Memory, processing speed, word finding, etc.
- Changes in ability to pay attention?
- Changes in behavior?
- Changes in emotional expression? Sadness? Irritability?

What Questions Do You Have?



IntervenFons





Brain Injury Observation Form

Less positive More Positive

ATTENTION SUBTYPE	1	2	3	4	5
SELECTIVE/FOCUSED	Significantly Below Average	Slightly Below Average	Average	Slightly Above Average	Significantly Above Average
Focuses on teacher lecture					
Attends to detail					
Orients to speaker/staff					
Looks at board appropriately					
Responds to questions with on-topic answers					
Resists subtle classroom distractions-noise, lights					
SUSTAINED					
Focuses for long periods of time					
Completes in-class assignments					
Looses train of thought when talking or writing					
Looses place when working on task or when reading					
SHIFTING/DIVIDED					
Can multitask-note taking while listening					

Teacher Input/Functional



Observation(s)

Fundamental
Processes

Assessments

Processes

AYen2on

SuggesFons:

- A Developmental Neuropsychological Assessment, 2nd Ed. (NEPSY-II), Attention and Executive Functioning Subtests
- Behavior Assessment System for Children, 2nd Ed. (BASC-2)
- Behavior Rating Inventory of Executive Function (BRIEF)
- Behavioral Observations of Students in Schools (B.O.S.S.)
- Cognitive Assessment System, 2nd Ed. (CAS2), Attention Composite (Consider Planning Composite)

Fundamental
Processes

Interven2ons

Processes

AYen2on

SuggesFons:

- Schedule most important work during Fmes when the child has displayed their greatest concentraFon abiliFes.
- Seat nearest the locaFon of instrucFon and away from distracFons (e.g. doors, windows, high traffic areas, and other off-task children).

- Seat next to positive peers with age appropriate abilities.
- Clear desk and area of everything except what is needed for the task at hand.
- Connect new learning to prior knowledge or with areas of interest.

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Consequence-Based Strategies

Thus, behavior management techniques can be classified into two categories:

(1) antecedent strategies, which are used before a behavior occurs in an effort to prevent or elicit a behavior, and

(2) consequent strategies, which are used after a behavior occurs in an effort to prevent the continuation and recurrence of a behavior or to reinforce a behavior.

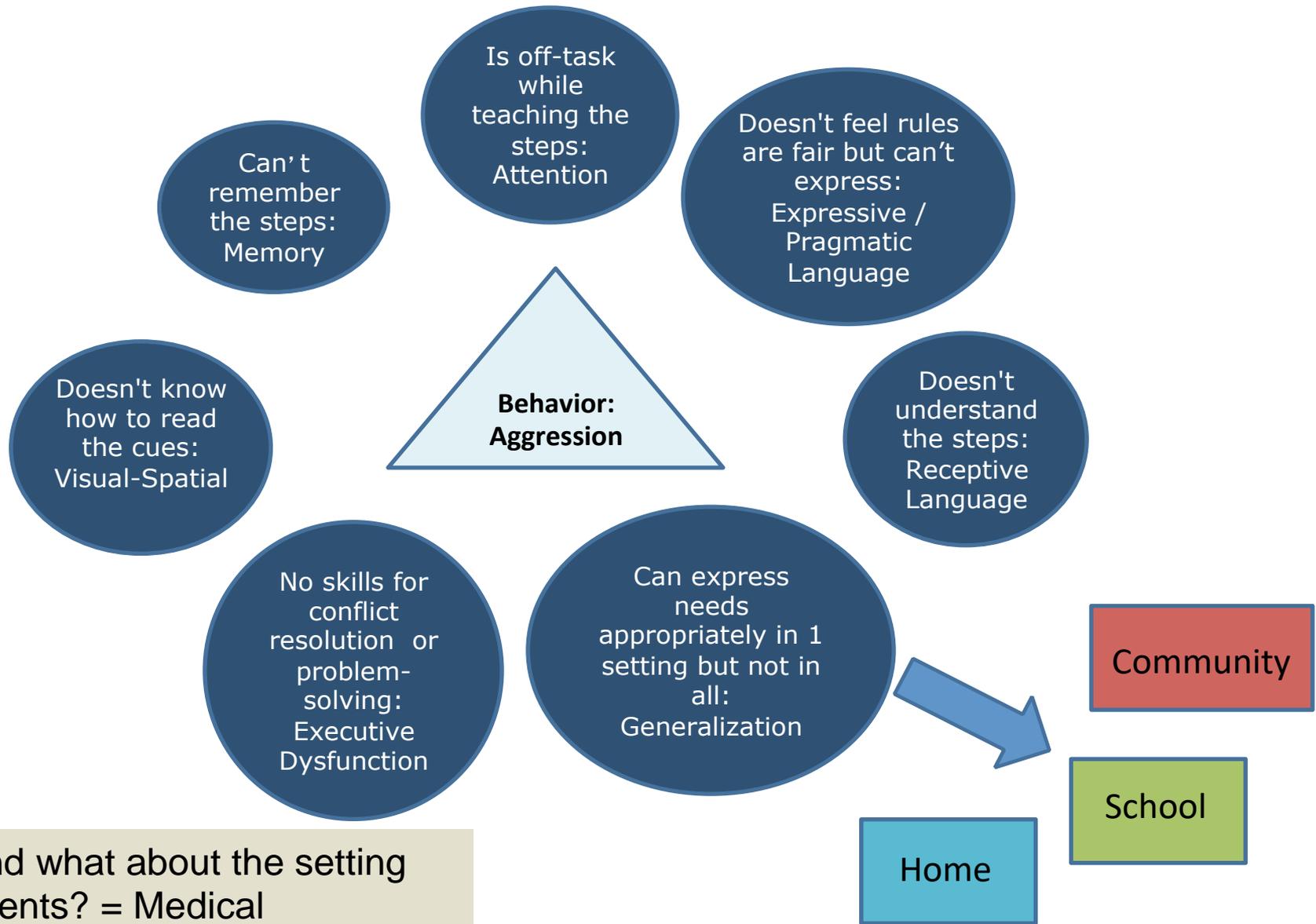
Crisis Prevention instead of Crisis Management

Antecedent Management

Thus, behavior management techniques can be classified into two categories:

- (1) antecedent strategies, which are used before a behavior occurs in an effort to prevent or elicit a behavior, and**
- (2) consequent strategies, which are used after a behavior occurs in an effort to prevent the continuation and recurrence of a behavior or to reinforce a behavior.**

Although both can be effective, antecedent techniques are used more often than consequent strategies with older adults, **persons with disabilities** and **students with executive functioning disabilities** because they are easier to apply, require less caregiver time, and are generally considered less manipulative, and therefore more acceptable, by caregivers and professionals.



Function of the Behavior

Make sure you have
before teaching Conflict Resolution skills

Write out/draw out
steps to compensate
for memory

And what about the setting events? = Medical

Teach appropriate
ways to express verbal
discontent

Teach
facial cues

non-verbal cues

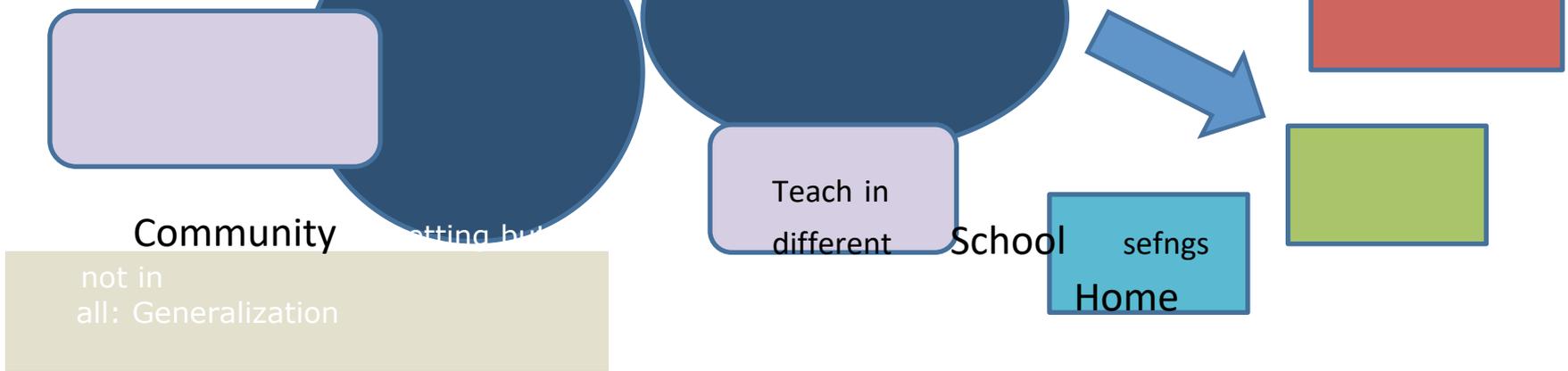
Teach the steps
in visual, multi-
modal
fashion

Behavior:

Aggression

T Teach or CB





Function of the Behavior

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Performance
Deficit

- Generalize the skill to other environments
- PracFce in various sefngs and under various circumstances
- IdenFfy the skill deficit – teach the skill

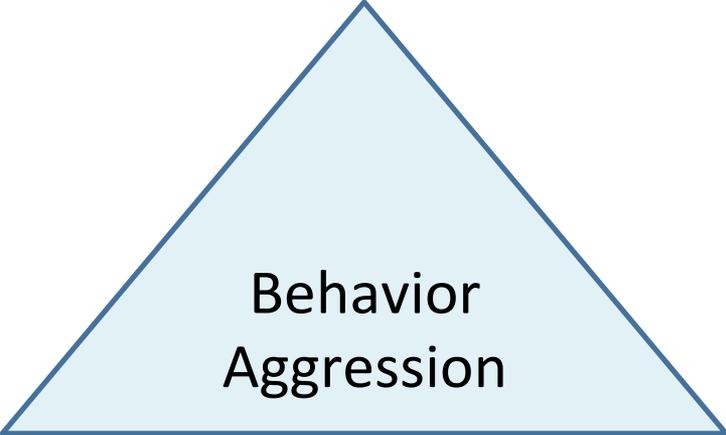


- Break the skill down to reasonable “chunks” for more impressive acquisition

- What are the environmental factors affecting the behavior? Can the environment be changed? • Antecedent Management

FBA – Function of the Behavior? Going Beyond FBA

Functional Behavioral Assessment(FBA)



Behavior
Aggression

- Behaviors serve a function and have a purpose, usually:
- To get something (e.g., attention, money, good grades, power, control)
- To avoid/escape something (e.g., punishment, embarrassment, out of work)

Presupposes “will”

- www.BehaviorAdvisor.com

Function of the Behavior

Behavior

“To Get Something”

Reach

Gain

Convey

Receive

Earn

Acquire

Collect

Arrange

Materialize

“To Avoid Something”

Circumvent

Go around

Duck

Sidestep

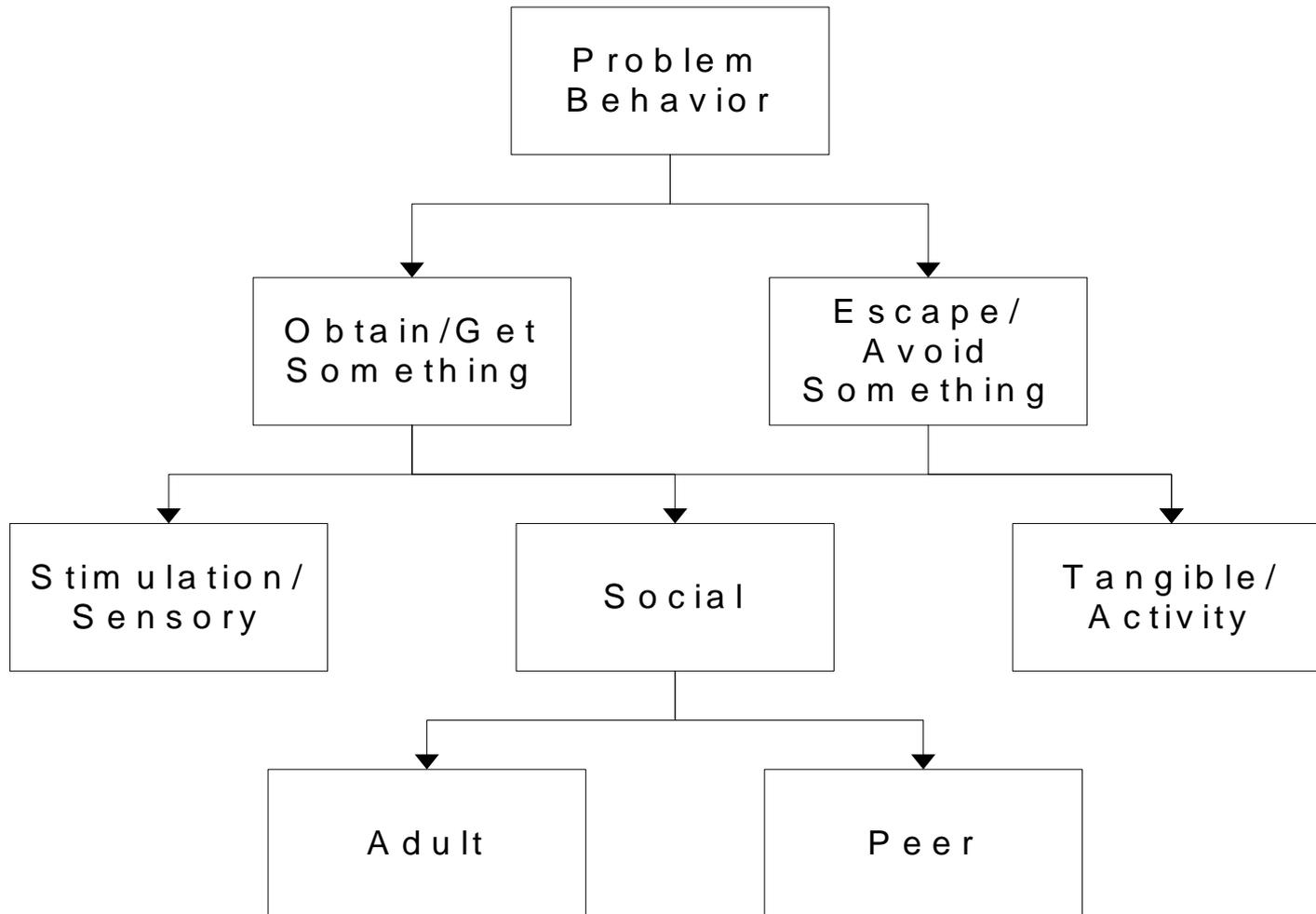
Bypass

Dodge

Short circuit

Shy away

Look Fors: The Function of the Behavior

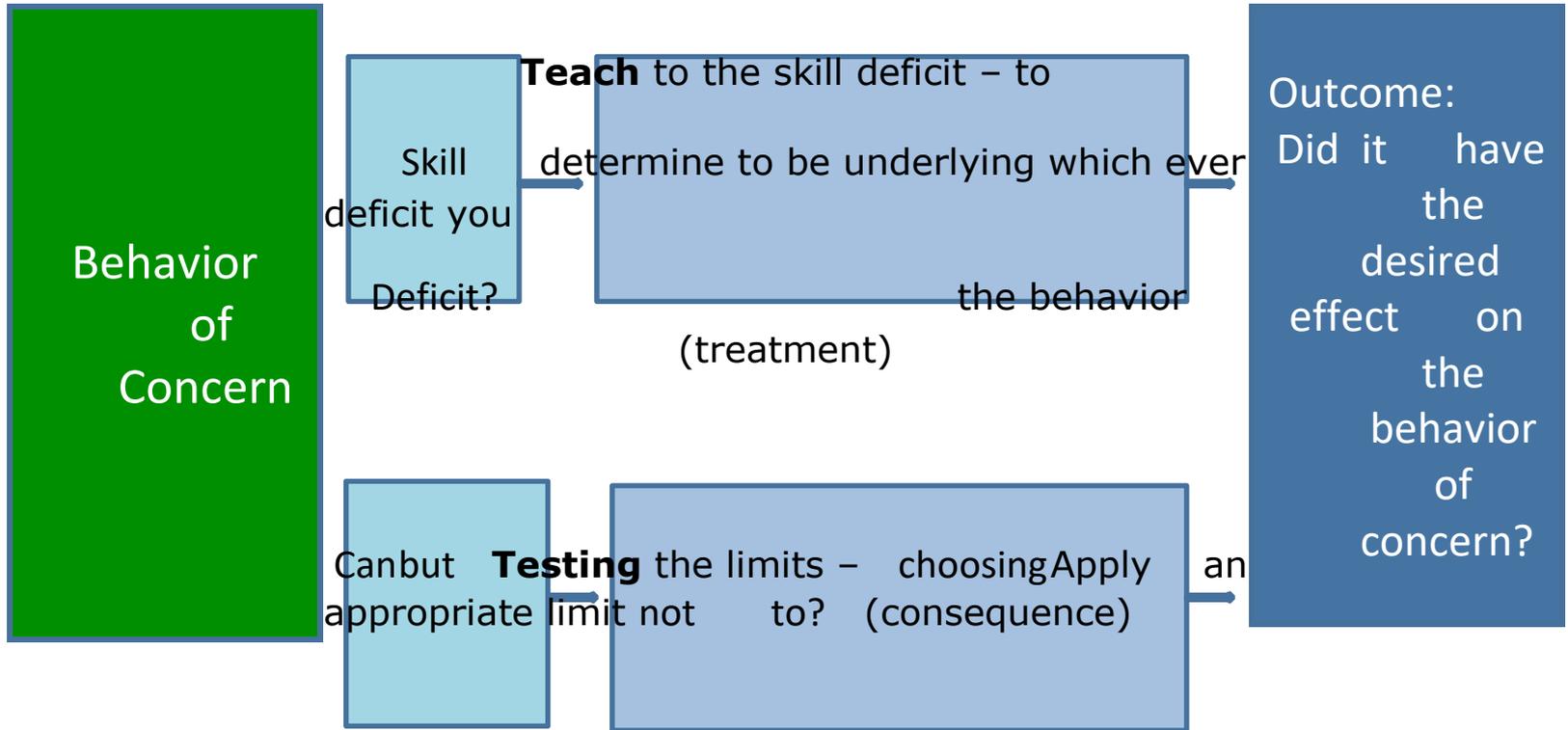


Collaborative Problem Solving

CPS

Kids Do Well If They Can This is the most important theme of Collaborative Problem Solving: **the belief that if kids *could do well they would do well***. In other words, if the kid had the skills to exhibit adaptive behavior, he wouldn't be exhibiting challenging behavior. That's because doing well is always preferable to not doing well.

What's Your Explanation? Your explanation for a kid's challenging behavior has major implications for how you'll try to help. If you believe a kid is challenging because of lagging skills and unsolved problems, then rewarding and punishing may not be the ideal approach. Solving those problems and teaching those skills would make perfect sense.



Caveat: If you do not get the desired change in behavior, continue to go back to the question of a skill acquisition problem or a skill generalization problem.

Skill versus Will

Name: _____

Date: _____



1. Acquisition Skill Deficit – students needs to be taught the skill or 2. Fluency Skill Deficit – student is practicing skill and needs

Hierarchy of Neurocognitive Development

➤ A]enFon

➤ InhibiFon

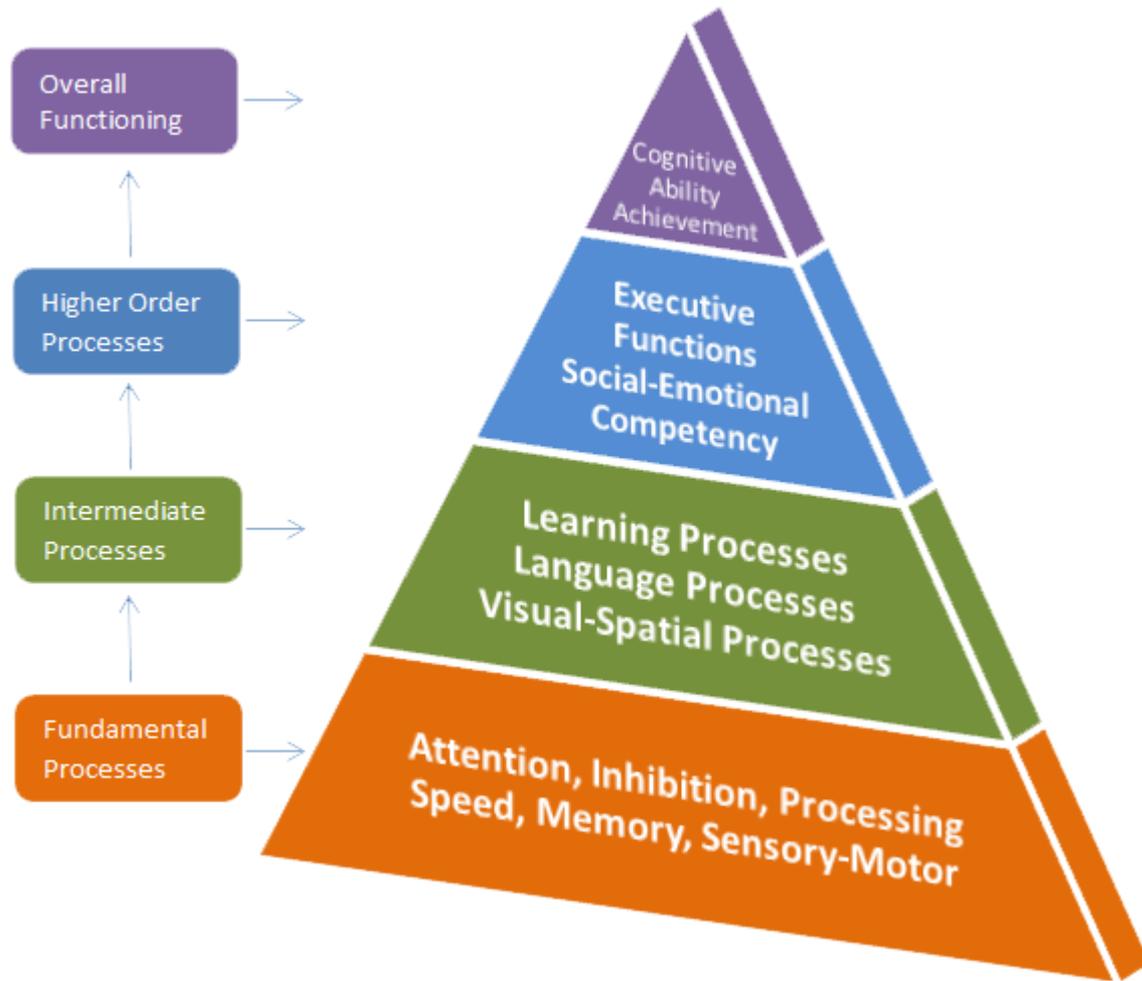
➤ Processing Speed

➤ Memory

➤ Sensory-Motor:

➤ Fine Motor

➤ Gross Motor Adapted from Miller, Halstead-Reitan



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Hierarchy of Neurocognitive

Development

➤ **New Learning**

➤ **Language:**

➤ Receptive Language

➤ Expressive Language

➤ Social Pragmatics

➤ **Visual-Spatial**

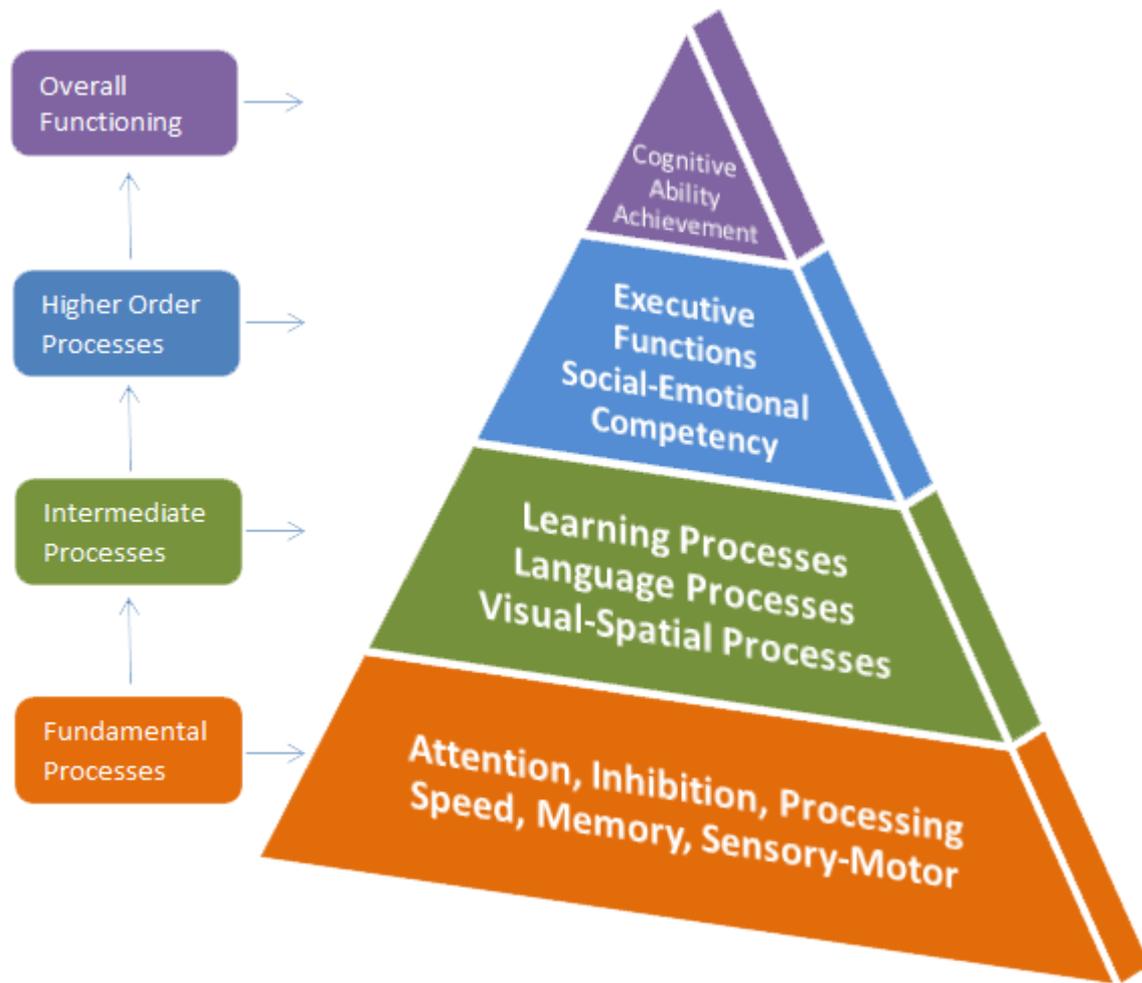
➤ **Social/Emotional/
Behavioral**

➤ **Executive Functioning**

➤ Inhibition

➤ Reasoning

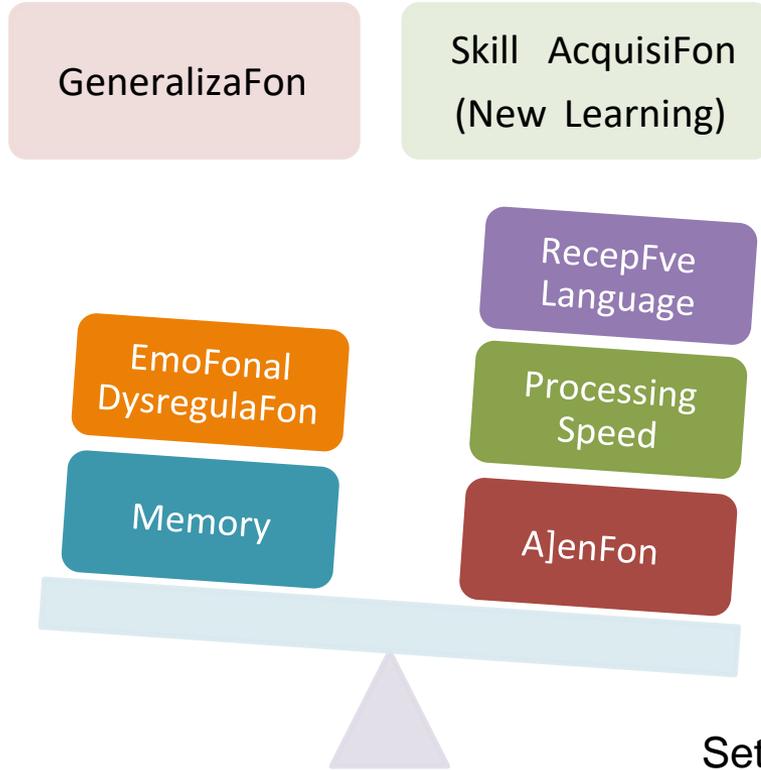
➤ Planning



➤ Mental Flexibility

Adapted from Miller, Halstead-Reitan

➤ OrganizaFon



The term Setting Event describes the events that momentarily change the value of reinforcers and punishers in a persons life. The occurrence of a setting event might explain why a request to complete a task results in problem behavior on one day but not on the next.

- fatigue
- seizures
- pain
- mental “fogginess”
- hunger
- sensory over-load
- sensory under-load
- toxic stress
- medications

Fluid FBA

Internal & external environment - Constantly asking ... what about the setting events? Sensory and physical/emotional dysregulation? What’s the underlying disability or skill deficit? **Is now the time to teach this skill?**

- **Teach**

- Understand language?
- Need visual cues?
- Have their attention?
- Ability to make new learning?
- Ability to remember?

Generalize – new places, new people, varied situations –
how does that affect the setting events?
Performance Deficit?



- Generalize the skill to other environments
- Practice in various settings and under circumstances



- Identify the skill deficit – teach
- Break the skill down to reasonable “chunks” for impressive acquisition

- What are the environmental factors affecting the behavior? Can the environment be changed?
- Antecedent Management



Are you sure you taught in place while the skill? more deficits?

Did you give consistent messages and give it enough PRN?

Did you adjust the teaching the skill?

Did you now have to keep that skill generalize working on 3 time?

FBA – Function of the Behavior?

After you are 100% sure the client has:

- acquired the skill
- generalized the skill

Then it is OK to **strengthen** the skill with reinforcement. However...

If you find you are using consequences too often to sustain the desired behavior...
If you find you are using reinforcers too often to extinguish the desired behavior...



Go back to the question of skill



3 Principles

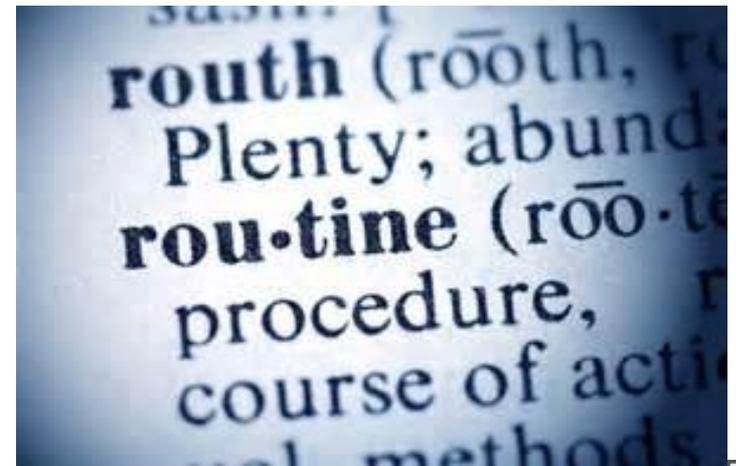
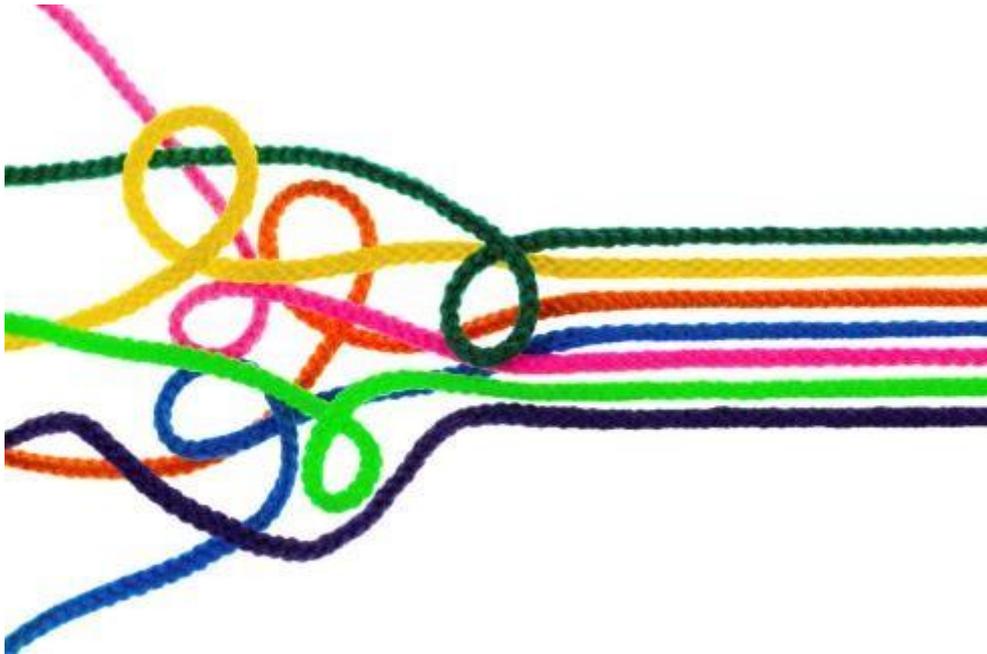
to

Optimize the Learning Environment

with Executive Function Strategies



Principle #1: Purposeful Structures and Routines



Purposeful Structures & Routines

- For individual students or whole classrooms (Dawson & Guare, 2010)
- Classroom Zones: Identify the name and the process for each zone (Sarah Ward, 2014)
 - Explicitly teach each zone – purpose, expectations, how they can use the setup to think in an organized way
- During the year involve students: keep the areas useful and dynamic

- Have the students take down already learned materials (or move to a strategy zone) and replace with new learning visuals
- Explain the purpose of the change
- Demonstrate how to use the new materials

Purposeful Structures & Routines

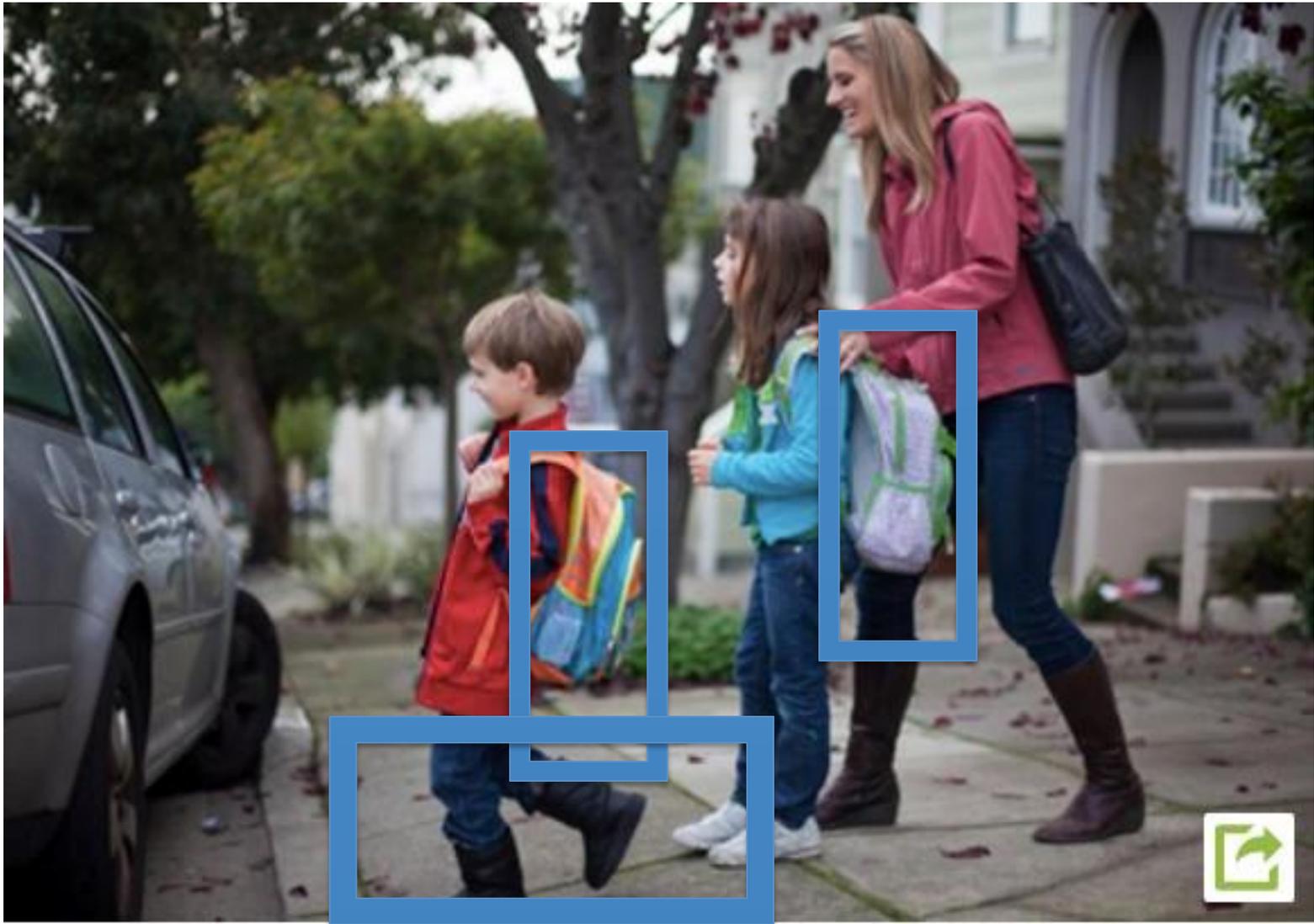
Zones:

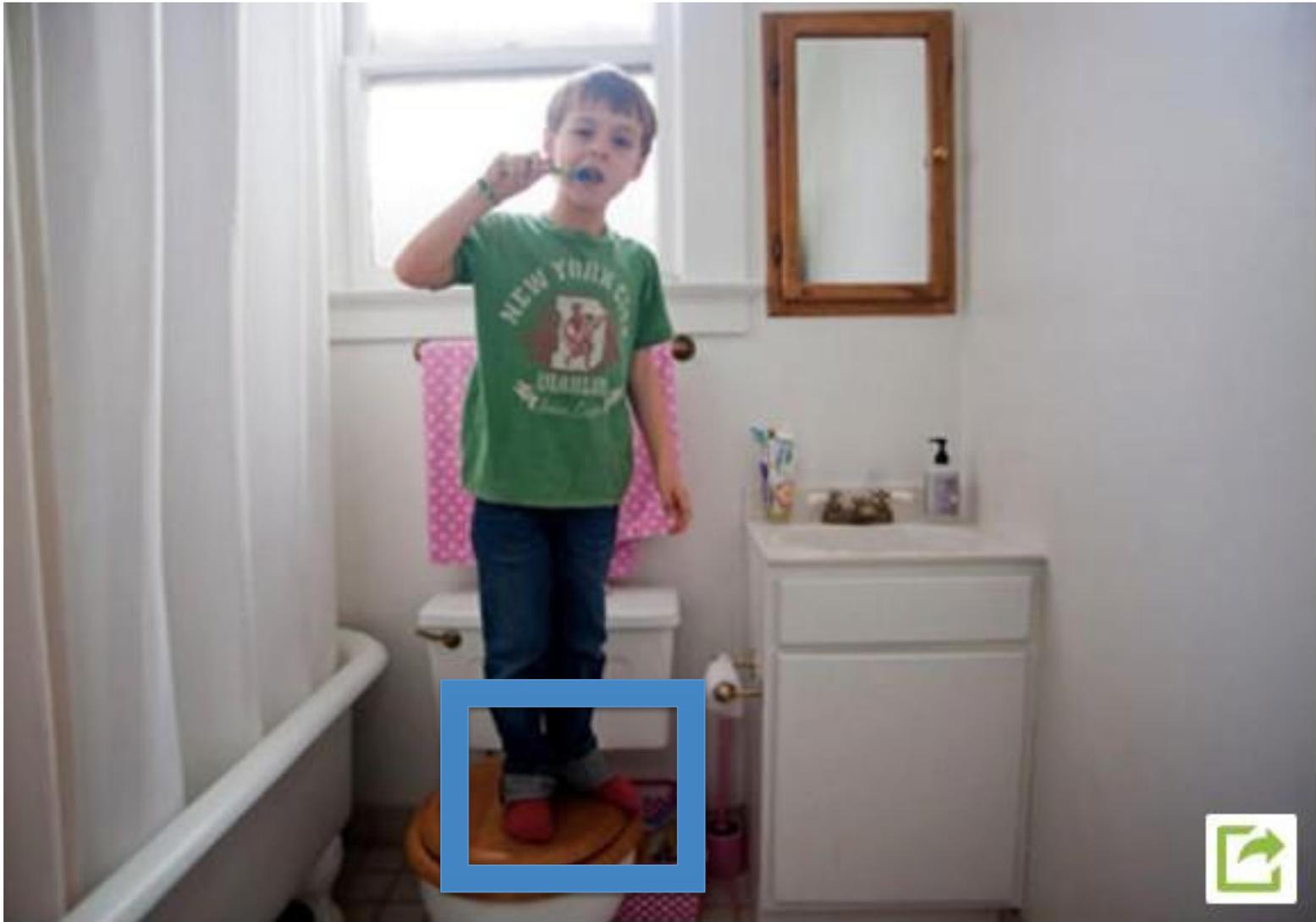
- Explicitly teach, practice and reinforce
- Purposeful
- Create a routine

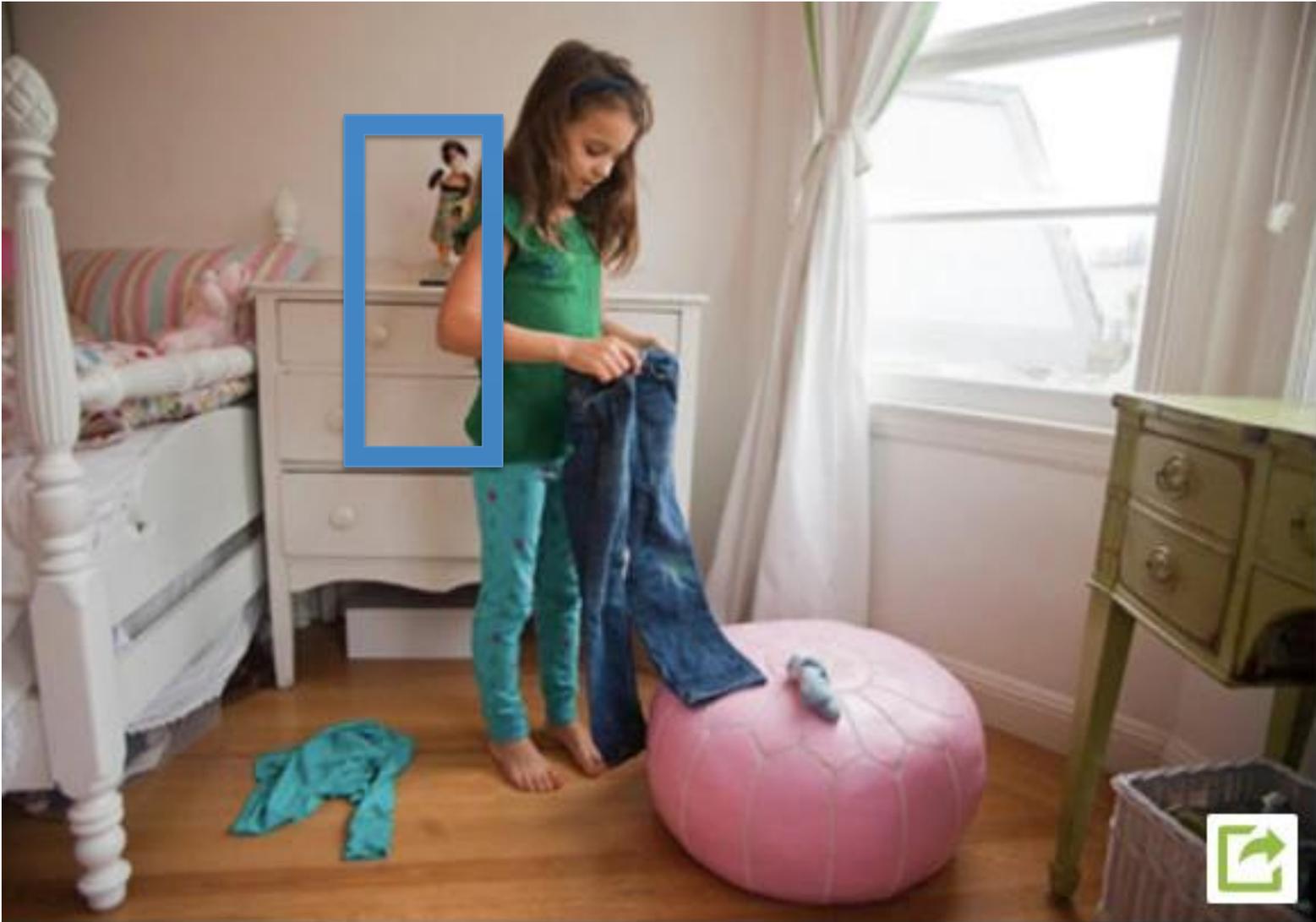
- Can increase usage if similar across classrooms
- Examples:
 - Homework Zone
 - AcFve Learning Zone
 - WriFng Zone
 - Strategy Zone

Camera











Ager





Ager Before



HOMework



ZONE



Before



Ager



WRITING ZONE

83 84 85





Purposeful Structures & Routines

- Walls: ensure they have educational or motivational value
 - Some areas are left undecorated in order to provide visual “rest” when students look up from their work to think or reflect
 - Students should be actively engaged in organizing their space

- Help students to know where they are in the curriculum
- Create a Strategy Wall:
 - Post specific strategies that are in use in the classroom
 - Helps students get “unstuck”
- Use Borders: to create mental organization and visual rest
 - Colored tape on whiteboards
 - Paper borders on walls

Before

After







Study Zone



The Gradual Release Of Responsibility Model

- The gradual release of responsibility model is one of the oldest ideas in learning, and sometimes, with all of the hubbub about the latest trends, tools, and world-beating “research-based strategies” swimming around your head, it can help to get back to the basics of teaching and learning in 6 simple words.

SHOW ME, HELP ME, LET ME.

"How A Good Teacher Becomes"

www.teachthought.com

The Gradual Release Of Responsibility Model

You are here

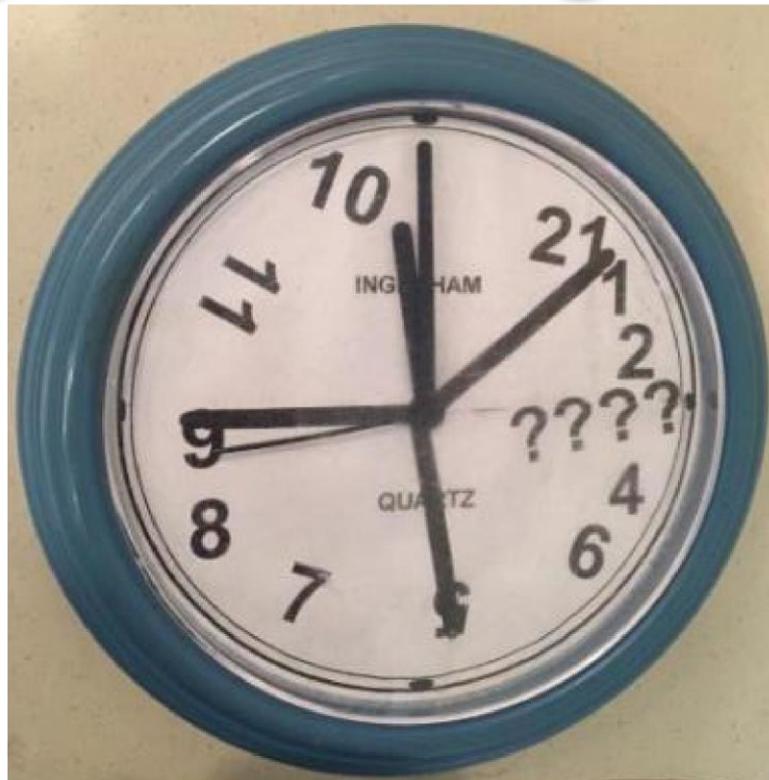
I DO IT / YOU WATCH ME

I DO IT / YOU HELP ME

**WE DO IT TOGETHER /
I HELP YOU**

YOU DO IT / I WATCH YOU

Principle #2: Building Time Management Skills



An essential component to all executive function areas

See and Sense the Passage of Time

The Working Clock

- Draw how much time the student has on a task (5 min. increments)
- Identify/sketch the “future picture image”
- Factor in time to ‘get ready’ and ‘close out’ (‘get done’) task



Create Time Markers:

- Start Time (Sarah Ward, 2014)
- Stop Time
- MidPoint

Time Management Steps

- Step 1: Get Ready
 - Place the GET READY magnet on the current Fme to mark the start of the planning Fme.
- Step 2: Create Time Markers
 - Place the START magnet to mark the beginning point of a task on the clock.

- The 1, 2, and 3 magnets can be placed when/if parts of a task or different tasks will be started within the hour.
- Step 3: Identify When to Stop
 - Place the END magnet next to the START magnet, then slide it around the clock to the identified END time on the clock.

(Sarah Ward, 2014)

Time Management Steps Continued

- Step 4: Create a Checkpoint

- Slide the yellow mark on the clock to mark the 1/2 way check-point of the first part of the task.
- Step 5: Self Monitor
 - Am I on track with my predicted Fme?
 - Am I half way done?
 - Am I sFll focused on the goal?
 - Has my priority changed?
 - Am I sFll answering the quesFon?
 - Do I have anyTime Robbers?
- IdenFfy, Remove, Re-Plan
- Do I need a faster or a slower pace? (Sarah Ward, 2014)

PracFce!



The Working Clock– plastic sheets with clock and dry erasemarkers(on your table) Project:

- 5 mins prep
- 20 mins for project, indicate half way check in
- 5 mins clean up to next activity



Divinópolis



Future Thinkers=Problem Solvers

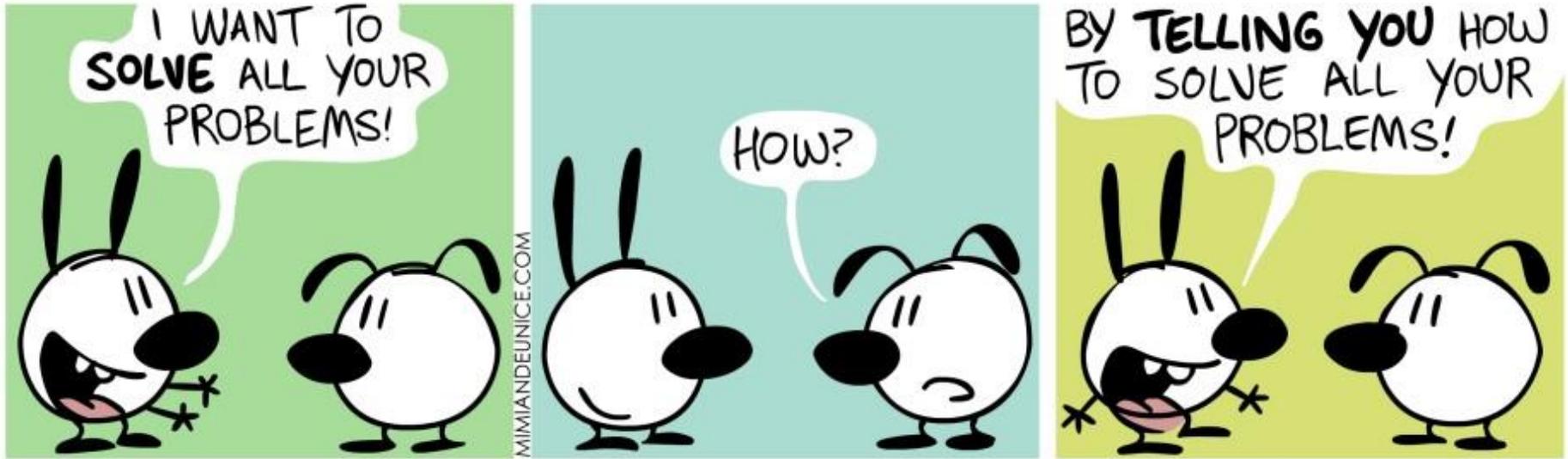
- Start a task with the end in mind
- Understand what the end goal looks like
- Break down the steps— of task planning and task execution
- Initiate and follow the plan
- Know how to address barriers
- Can identify a Plan B and make the shift if necessary

This has to be taught!



Some Models

- Goal, Plan, Do, Review – Ylvisaker, Feeney
- CollaboraFve Problem Solving Approach – Think:Kids



Get Ready Do Done (Cont.) 2014



Essay Example

- 4-5 page essay
 - Double spaced
 - Must have a minimum of 3 ideas
 - Must include citations
1. What will it look like when it's **done**?

Titl
¶ Intre
o

¶ 3
Main
Ideas
¶ Facts
Idea

¶ Facts
Idea
2

1

¶ Facts
Idea
3
¶ Conclusion

Conclu
sion
Citatio
ns

2. What do I need to do?

- Create outline
- Schedule time on calendar to do research
 - online, library, etc.

- Arrange for Fme on the computer
 - Family computer, lab, etc.
- Write, edit, revise essay
- Print essay

3. What materials do I need to **get ready**?

- Paper & pencil for outline
- Computer
- Paper and printer ink

Steps 1-3: Task Planning

4. Get Ready – gather materials

- Paper & pencil for outline
- Computer
- Paper and printer ink



5. Do – create Fmemarkers and check points

- Create outline
- Research
- Write
- Edit
- Revise
- Include citaFons



6. Done – stop and review

- Recheck instrucFons

- Double spaced, correct margins
- 3 ideas
- CitaFons correct
- Turn in on Fme – date _____



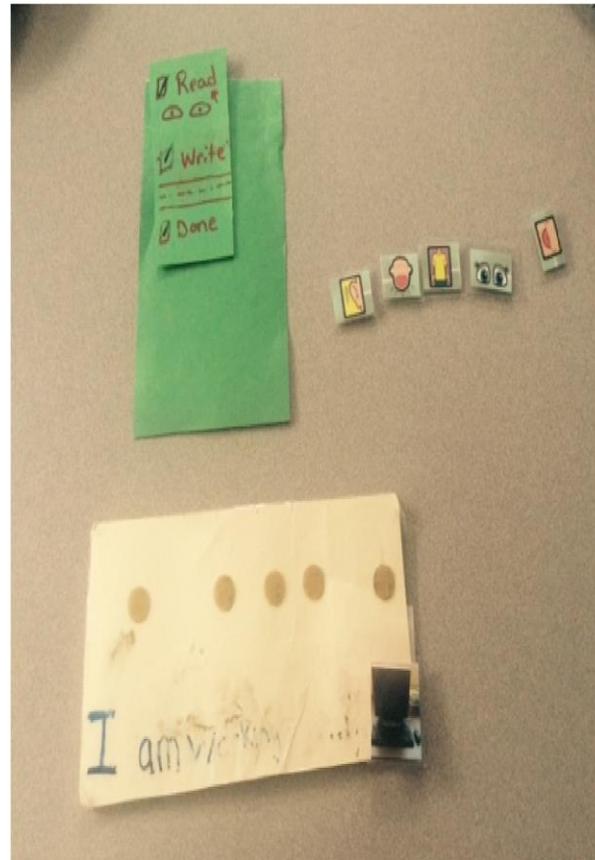
Steps 4-6: Task Execution

4-5 pages long

Get Ready



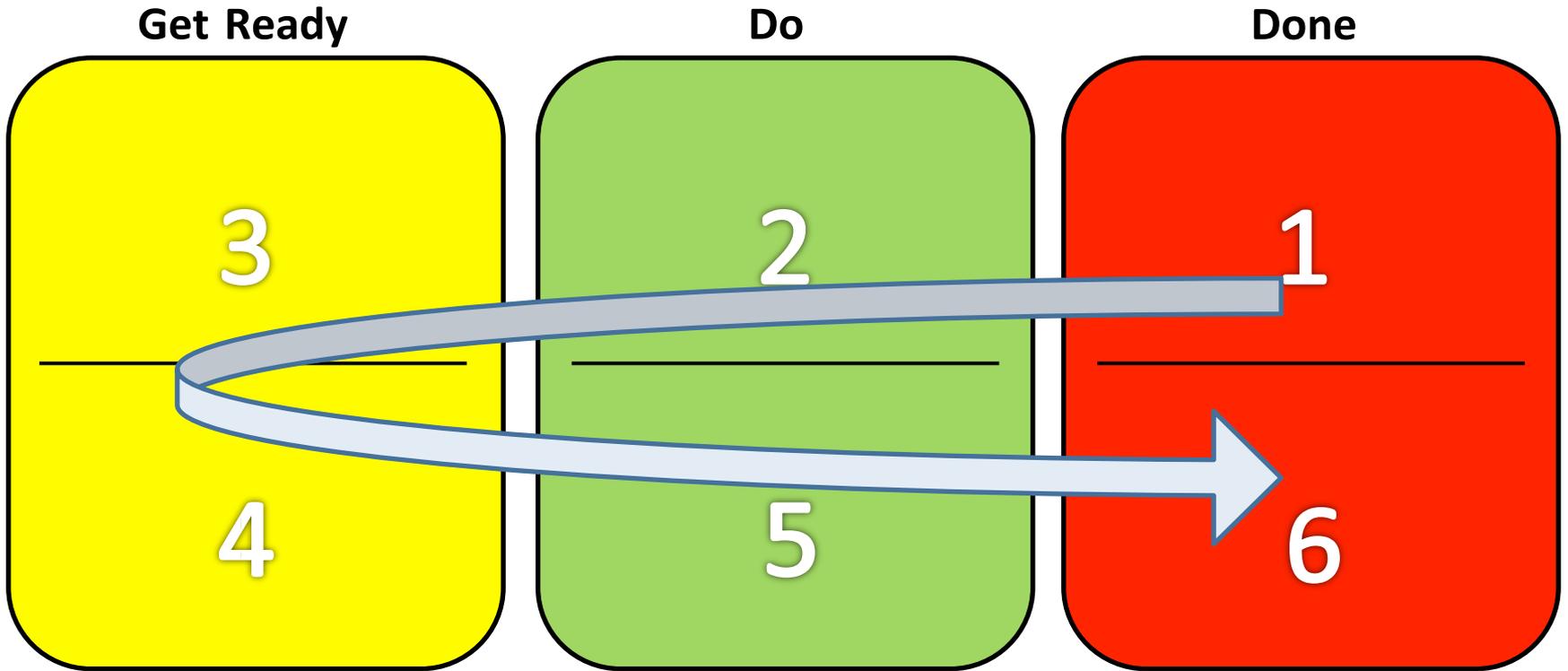
Done



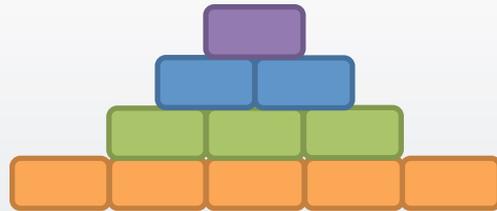
Do



PracFce!



Resources





MINDSOURCE
BRAIN INJURY NETWORK



COLORADO
Department of Education

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WELCOME TO THE COLORADO KIDS WITH BRAIN INJURY WEBSITE

This website serves as a tool for educators, school administrators, school psychologists, related services professionals, community partners, and families to help support our kids in Colorado with brain injuries. The design of this website was funded through a community grant from MINDSOURCE Brain Injury Network within the Colorado Department of Human Services and is maintained by the Brain Injury Consultants at the Colorado Department of Education.

ANNOUNCEMENTS & UPDATES

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Brain Injury in Children and Youth

A Manual for Educators



COLORADO
Department of Education

Revised 2018

<http://www.cde>

Building Executive Functioning in Everyday Life

**Center on the Developing Child
Harvard University**

<http://developingchild.harvard.edu/resources/academic-skills-guide-enhancing-and-practicing-executive-functioning-skills-with-children-from-infancy-to-adolescence/>

Website Resources

- CBIRT – Classroom TBI Tips
<https://cbirt.org/back-school/Fdbits>
- Brainline & Brainline Kids -
http://www.brainline.org/landing_pages/features/blkids.html
- LEARNet - A Problem Solving System for Teachers, Clinicians, Parents, and Students

(Brain Injury Association of New York State):
<http://www.projectlearn.net.org>

Executive Functions

- CDE Sarah Ward Webinars -
http://www.cde.state.co.us/cdesped/sd-auFsm_tod

- Sarah Ward 360 Thinking

<http://efpracfce.com/index.php/25-team/94-sarah-ward-msccc-slp>

References and Resources

- Brain Injury in Youth - Supports for School Success Community of Practice - <https://youthbraininjury.obaverse.net/welcome/>
- Brainline & Brainline Kids - http://www.brainline.org/landing_pages/features/blkids.html

- CDC Report to Congress: The management of Traumatic Brain Injury in Children. <https://www.cdc.gov/traumaticbraininjury/pubs/congress-childrentbi.html>
- CDE TBI: <http://www.cde.state.co.us/cdesped/sd-tbi> • CDE FASD: <http://www.cde.state.co.us/cdesped/fasd>
- Colorado Kids Brain Injury Resource Network (“CO Kids Website”): www.COKidswithbraininjury.com
- LEARNet - A Problem Solving System for Teachers, Clinicians, Parents, and Students (Brain Injury Association of New York State): www.projectlearn.net.org

Concussion Resources

- CDC Heads Up
- <https://www.cdc.gov/headsup/index.html>
- Colorado Department of Education: Concussion Management
- <https://www.cde.state.co.us/healthandwellness/braininjury>
- Concussion Management Teams
- www.brainsteps.net
- Get Schooled on Concussions
- www.getschooledonconcussions.com

- **REAP:** Remove/Reduce, Educate, Adjust/Accommodate, Pace •
www.REAPconcussion.com

What Questions Do You Have?

