Brain Injury Alliance of Colorado

Statewide non-profit dedicated to improving quality of life for individuals with brain injuries

Workshop #1

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Support

Education

Advocacy

Support

Challenge by Choice

October 11-12, 2012

Annual Conference

The Brain Injury Alliance of Colorado

www.biacolorado.org • 4200 West Conejos Place #524 Denver, CO 80204 • (303) 355-9969

September 8, 2012
Approximately **1.7 million** people sustain a traumatic brain injury annually

- 52,000 die
- 275,000 are hospitalized
- 1.4 million are treated and released

An estimated **6 million+** Americans currently live with disabilities resulting from a brain injury

Source: Centers for Disease Control and Prevention
Children 0 to 4 years, older adolescents aged 15 to 19 years, and adults 65 years+ are most at risk.

- Males are almost twice as likely to sustain a TBI as females.
- **Falls** are the leading cause of TBIs in the United States (globally, motor vehicle accidents are #1).

Source: Centers for Disease Control and Prevention
**Juveniles – High Risk**

- Ages 11-17 are the most commonly seen in Emergency Departments and Urgent Care Clinics diagnosed with a concussion.

- Children’s brains are more vulnerable and make take up **6-10 times longer** to recover than an adult brain.

- Studies show between **50% and 80%** of juvenile offenders may have a history of brain injury.

- Those with substance use disorders and the co-occurrence of mental illness are also likely to have a high rate of TBI.

Sources: CDC, Brainline.org, The Children’s Hospital, National Center for Mental Health and Juvenile Justice
Brain Structure

- Frontal
- Parietal
- Temporal
- Occipital
- Cerebellum

Neuron
Brain Injury 101

Acquired Brain Injuries (ABIs)

• “Non-traumatic” such as stroke, infection, tumor, hypoxia, damage from substance abuse, etc.

• “Traumatic” (TBIs) - caused by a bump, blow or jolt to the head (may or may not penetrate) that disrupts the normal function of the brain.
## Classification of Severity

<table>
<thead>
<tr>
<th></th>
<th>Glasgow Coma Scale</th>
<th>Post-Traumatic Amnesia</th>
<th>Loss of Consciousness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>13-15</td>
<td>&lt;1 day</td>
<td>0-30 minutes</td>
</tr>
<tr>
<td>Moderate</td>
<td>9-12</td>
<td>&gt;1 day to &lt;7 days</td>
<td>&gt;30 minutes to &lt;24 hours</td>
</tr>
<tr>
<td>Severe</td>
<td>3-8</td>
<td>&gt;7 days</td>
<td>&gt;24 hours</td>
</tr>
</tbody>
</table>

Source: Centers for Disease Control and Prevention
## Signs and Symptoms

<table>
<thead>
<tr>
<th>Thinking/Remembering</th>
<th>Difficulty thinking clearly</th>
<th>Feeling slowed down</th>
<th>Difficulty concentrating</th>
<th>Difficulty remember new information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>Headache</td>
<td>Nausea or vomiting (early on)</td>
<td>Sensitivity to noise or light Balance problems</td>
<td>Feeling tired, having no energy</td>
</tr>
<tr>
<td>Physical</td>
<td>Fuzzy or blurry vision</td>
<td>Dizziness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional/Mood</td>
<td>Irritability</td>
<td>Sadness</td>
<td>More emotional</td>
<td>Nervousness or anxiety</td>
</tr>
<tr>
<td>Sleep</td>
<td>Sleeping more than usual</td>
<td>Sleeping less than usual</td>
<td>Trouble falling asleep</td>
<td>Difficulty maintaining deep sleep</td>
</tr>
</tbody>
</table>
True or False?

• A concussion is diagnosed by neuroimaging tests (CT, MRI).
  
  **FALSE!**

• Loss of consciousness is necessary to diagnose a concussion.
  
  **FALSE!**

• A parent should awaken a child who falls asleep after a head injury.
  
  **FALSE!**

Source: Rocky Mountain Youth Sports Institute, REAP Manual
Executive Functions

- Frontal Lobe- Prefrontal Cortex
- Develops in spurts, not linear
- Peak of development is between ages 20-29
Executive Functions

Self Regulation

Behavior
- Inhibition
- Shifting
- Emotional Control
- Working Memory

Thinking (Metacognition)
- Initiation
- Planning
- Organization
- Self-Monitoring
Executive Functions

• **Inhibit**: The ability to resist impulses and the ability to stop one’s own behavior at the appropriate time

• The “brakes” of the brain
Executive Functions

• **Basic self-regulation begins to develop from birth – 3 years:** sleeping, energy, feelings; one of the first functions to develop

• A brain injury at this stage in development can lead to a need for others to provide structure and support much beyond what would be developmentally expected over the years

• What happens if a child has faulty brakes?
  – Is impulsive
  – Less in control of themselves
  – Interrupting others or “calling out”
  – Does not think before doing
  – Socially intrusive
  – At risk for unsafe behavior
Executive Functions

Self Regulation

Behavior
- Inhibition
- Shifting
- Emotional Control
- Working Memory

Thinking (Metacognition)
- Initiation
- Planning
- Organization
- Self-Monitoring
Executive Functions

• **Shift**: The ability to move from one situation, activity or problem to another as circumstances demand

• The “gymnast” of the brain- how flexible can you be?
Executive Functions

- **Flexible thinking begins to develop in the preschool years (ages 3-6)**: basic concept formation begins and greater opportunity to problem solve; development peaks between ages 8-10, matching adult ability
- A brain injury at this stage in development can have a significant impact on overall executive functions; thinking can become rigid and inflexible
- What happens if you can’t do the splits?
  - Difficulty transitioning from one activity to another
  - Resists changes in routine or schedule
  - Perseveration
  - Gets “stuck”
  - Has difficulty seeing other points of view
  - Can’t think quickly
Executive Functions

- Self Regulation
  - Behavior
    - Inhibition
    - Shifting
    - Emotional Control
  - Thinking (Metacognition)
    - Working Memory
    - Initiation
    - Planning
    - Organization
    - Self-Monitoring
Emotional Control: The ability to modulate or control your emotional responses.

The "deep breather" of the brain - think "om" not "ah!"
Executive Functions

- *Emotional Control begins to develop in the preschool years (ages 3-6)*: differentiating, thinking and responding to feelings—goodbye “terrible twos”
- A brain injury at this stage in development can have a significant impact on emotion regulation
- What happens if you can’t channel your “inner Buddha”?
  - Emotions are overwhelming
  - Behavior can quickly become aggressive, out-of-control and dangerous
  - Verbally abusive
  - Blows up easily
  - Gets easily upset by small things
  - Can’t see someone else’s point of view
Executive Functions

Self Regulation

Behavior
  - Inhibition
  - Shifting
  - Emotional Control
  - Working Memory

Thinking (Metacognition)
  - Initiation
  - Planning
  - Organization
  - Self-Monitoring
Executive Functions

- **Working Memory**: The ability to hold information in mind for the purpose of accomplishing a task and generating the sequential steps to achieve a particular goal

- Your brain “online”
Executive Functions

- **Working Memory begins to develop in infancy, with a development spurt in the preschool years**: following simple to more complex directions
- A brain injury in infancy can have a dramatic impact on working memory and subsequent executive functions
- What happens if you can’t keep things online?
  - Difficulty remembering and following directions
  - In later years, academics are greatly impacted (reading comprehension, math problems, etc)
  - Lose track of what they were doing while doing it; work completion
  - Can’t remember information
  - Difficulty sustaining attention
  - Do things out of order
Executive Functions

Self Regulation

Behavior
- Inhibition
- Shifting
- Emotional Control
- Working Memory

Thinking (Metacognition)
- Initiation
  - Planning
- Organization
- Self-Monitoring
Executive Functions

• **Initiation**: The ability to begin a task or activity and independently generate ideas, responses or problem-solving strategies

• The “ignition” of the brain
Executive Functions

- **Initiation begins to develop in infancy**: initiating coordinated physical activity as sensory development occurs; becomes more complex as child ages
- A brain injury at any stage in development can undermine initiation
- What happens if you can’t turn your engine on?
  - Can’t get started on an assignment or activity
  - Doesn’t take the lead in developing social plans
  - A “follower”
  - Needs reminders and pushing to complete things
  - Rarely expresses opinions or desires spontaneously
  - Can be viewed as unmotivated and/or non-compliant
Executive Functions

Self Regulation

Behavior
- Inhibition
- Shifting
- Emotional Control
- Working Memory

Thinking (Metacognition)
- Initiation
- Planning
- Organization
- Self-Monitoring
Executive Functions

• **Planning and Organization**: The ability to manage current and future-oriented task demands efficiently
  – Impacts both things (project) and thoughts (communication)
• The “secretary” of the brain
Executive Functions

- **Planning and Organization begins to mature in preadolescence and adolescence**: as task demands increase and become more complex
- A brain injury at preadolescence can limit a person’s planning and organizational ability, significantly impacting academics and behavior
- What happens if your internal secretary doesn’t show for work?
  - Lose things
  - Late for appointments and class; Can’t meet deadlines
  - Long-term assignments are very challenging
  - Written expression is greatly impacted
  - May have a lot to say but doesn’t ever get to the point
  - Can appear messy, both environment and self
Executive Functions

Self Regulation

Behavior
- Inhibition
- Shifting
- Emotional Control
- Working Memory

Thinking (Metacognition)
- Initiation
- Planning
- Organization
- Self-Monitoring
Executive Functions

- **Self-Monitoring**: The ability to assess your performance and/or behavior and its impact on others

- The “mirror” of the brain
Executive Functions

- **Self-Monitoring begins to mature in the elementary years (ages 6-12):** an awareness of strengths and weaknesses and how to strategize

- A brain injury in the elementary years can have a drastic effect on development, particularly if a student’s self-awareness and monitoring is disrupted; later adolescent development is then undermined as identity and sense of self begins to solidify

- What happens if your mirror is fractured?
  - Misses mistakes when checking work (if checking work!)
  - Poor social skills, weak friendships
  - Can continue doing something incorrectly
  - Rushes through work
  - Poor understanding of strengths and weaknesses
  - Does not realize certain actions may bother others
Executive Functions

• Key points:
  – Executive functioning is about self-regulation and getting things done well
  – Inhibition and working memory are the earliest of the functions to develop and lay much of the foundation for the other executive functions
  – When in a child’s development a brain injury occurs can later disrupt development and functioning
Importance of Screening and Identification of Brain Injury

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Why Screening Matters/Scope of the Problem

- There are few studies specific to Juvenile Justice.
- More than two million people currently reside in U.S. prisons and jails.
- According to jail and prison studies, 25-87% of inmates report having experienced a head injury or TBI as compared to 8.5% in a general population reporting a history of TBI.
- Prisoners who have had head injuries may also experience mental health problems such as severe depression and anxiety, substance use disorders, difficulty controlling anger, or suicidal thoughts and/or attempts.

Why Screening Matters/Scope of the Problem

- Studies of prisoners’ self-reported health indicate that those with one or more head injuries have significantly higher levels of alcohol and/or drug use during the year preceding their current incarceration.

- The U.S. Department of Justice has reported that 52% of female offenders and 41% of male offenders are under the influence of drugs, alcohol, or both at the time of their arrest.

- Among male prisoners, a history of TBI is strongly associated with perpetration of domestic and other kinds of violence.

Why Screening Matters/Scope of the Problem

A recent report from the Commission on Safety and Abuse in America’s Prisons recommends increased health screenings, evaluations, and treatment for inmates. In addition, TBI experts and some prison officials have suggested:

- Routine screening of jail and prison inmates to identify a history of TBI.
- Screening inmates with TBI for possible alcohol and/or substance abuse and appropriate treatment for these co-occurring conditions.
- Additional evaluations to identify specific TBI-related problems and determine how they should be managed. Special attention should be given to impulsive behavior, including violence, sexual behavior and suicide risk if the inmate is depressed.

Screening as Prevention

- Unidentified TBI can lead to secondary issues; substance abuse, behavioral issues and mental health concerns
- Not understanding the underlying impact of TBI can lead to a cycle of failure
- Earlier identification could lead to increased success
Screening and Identifying Brain Injury; essential components of a protocol

1. Education/awareness
2. Medical documentation
3. Establishing credible history
4. Assessing impact
5. Modifying interventions
Education and Awareness

- Training regarding the sequelae of brain injury
- Important to have a foundational knowledge of brain injury
- Training should be provided to anyone conducting intake/screening
Medical Documentation

- Best practice for identifying TBI is to obtain medical documentation
- Important to note that medical documentation only indicates an injury not impact
- Documentation should be from a clinician trained in diagnosing TBI
- Mild/Moderate/Severe
Credible History

A recent study found that 42% of persons who indicated they had incurred a TBI as defined by the CDC did not seek medical attention.

(Corrigan, Bogner, 2007).
Mild TBI (mTBI) aka Concussion

- 1.6 to 3.8 mTBI per year in the United States.
- How many mTBI are not seen by a medical professional?
- Estimated 42% are not seen by medical professional.

Very difficult to establish medical documentation on mTBI cases
Credible History

1. “The gold standard for determining prior TBI is self/parent-report as determined by a structured or in-depth interview” (Corrigan & Bogner, 2007) with more than 2 items related to TBI.

Comprehensive Health History Interview

(Health history should be a face to face interview)

Credible history of TBI requires a skilled interviewer to know how to ask certain questions, to ask pointed questions multiple times and in a variety of ways, to establish the details of the TBI(s).
Questions should include:

- Where
- When
- How
- Medical intervention(s) sought at the time, later, through the recovery
- Are answers medically plausible?
- Be aware of assumptions – for example, the report of a “scalp laceration” or “head injury” does not automatically define a “brain injury”
Credible History continued...

2. There needs to be a reported incident(s) as well as on-going symptoms/behaviors that persist beyond the incident (Corrigan & Bogner, 2007).

- During the health interview, details of the incident should be clear and consistent. The description of the injury should not vary widely from report to report, from reporter to reporter (if there are multiple reporters of the same incident).

- If there are multiple injuries, specifics about each injury should be well-detailed and consistent.
Interviewer must know acute and latent symptoms of TBI

**Acute symptoms:**

<table>
<thead>
<tr>
<th>Physical</th>
<th>Cognitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>Feeling in a “fog”</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>Feeling “slowed down”</td>
</tr>
<tr>
<td>Poor balance</td>
<td>Slowed speech</td>
</tr>
<tr>
<td>Seeing “stars”</td>
<td>Easily confused</td>
</tr>
<tr>
<td></td>
<td>Difficulty remembering/concentrating</td>
</tr>
<tr>
<td></td>
<td>Distracted</td>
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<table>
<thead>
<tr>
<th>Emotional</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personality change</td>
<td>Fatigue</td>
</tr>
<tr>
<td>Irritable</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Anxious</td>
<td>Excess sleep</td>
</tr>
<tr>
<td></td>
<td>Sleeping less than usual</td>
</tr>
<tr>
<td></td>
<td>Unable to initiate or maintain sleep</td>
</tr>
</tbody>
</table>

Latent symptoms that emerge or develop later, symptoms that “morph”. Assess pre versus post-injury learning, behaviors, social skills, personality.
Credible History continued…

3. A screen or in-depth interview is not enough to “diagnose” TBI. These tools are simply to “screen” for potential TBI. If a screen or in-depth interview suggest there has been a credible history of TBI, a thorough assessment/evaluation is suggested (Corrigan & Bogner, 2007).

Corroborate credible history with a screening tool
Screening Tools

- OSU TBI-ID Screening
- Brain Check Survey, CSU
- BISQ
- HELPS Brain Injury Screening Tool
Formal “Focused” Assessment

- Cognitive
- Neuropsychological
- Achievement
- Speech Language
- Occupational Therapy/Physical Therapy
- Adaptive
- Emotional/Behavioral/Executive Functions
Resource

- www.cokidswithbraininjury.com
Now We Know They Have a TBI, So What????????

Dr. McAvoy
Interventions for Students with TBI

Karen McAvoy, PsyD,
Principal Consultant on Brain Injury
CO. Dept. of Education
303-866-6739
The purpose of this review is to determine whether or not the child’s behavior that led to the disciplinary infraction is linked to his or her disability.

• (i) If the conduct in question was caused by, or had a direct and substantial relationship to, the child’s disability; or
• (ii) If the conduct in question was the direct result of the LEA’s failure to implement the IEP [§300.530(e)(1)-(2)]
we can then investigate the relationship amongst various TBI deficits alongside the individual's age and developmental stage at the time of the injury and project what this means functionally as the individual gets older. It further allows us to analyze the relationship amongst various brain regions (i.e., frontal, temporal, occipital, parietal, limbic, brain stem) that sustained specific damage and the resulting deficits (e.g., the relationship between frontal-temporal damage and executive functioning deficits) and, thus, prescribe services and supports for the individual in the future (e.g., job training, independent living supports, behavioral treatment).

Current neuroscience research has identified that children, adolescents and young adults pass through five neuro-developmental stages between birth and 21+ years (Hudspeth et al, 1992; Somsen et al, 1997; Gogtay et al, 2005; Evan, 2006; Waber et al, 2007). Chart 1 is a composite graph of research on brain development in young people and summarizes the percentage of brain maturation (i.e. brain growth, increased neuro-connections, pruning and refinement) for typically developing children, adolescents and young adults.

**CHART 1:**

![Chart of % of Maturation Increments - All Brain Regions](image)

(Savage, 1999)
In addition, neuroscience research has further identified that different regions of the brain (i.e., frontal-temporal region, temporal-central region, occipital-parietal region) have different periods of developmental maturation. While the brains of young people are developing in overall unison and harmony, certain brain regions have their own particular stages of growth and maturation. For example, the frontal-temporal brain regions have two peak maturation periods, from birth to age 6 years (e.g., think about the so-called "terrible two's") and also from 17-18 years into early adulthood. Chart 2 below summarizes frontal-temporal brain region development in young people.

**CHART 2:**

![Frontal-Temporal Region Chart](image)
• Sustained Attention – This attention type enables a student to stay on a task for a long period of time. The attention of the student in this case does not move away from the task.

• Selective Attention – This attention type enables a student to stay on task even when a distraction is present.

• Divided Attention – This attention type allows a student to handle two or more tasks at one time. It lets the student pay attention to different tasks even as he or her multi-tasks.
How quickly information is received, processed, and/or outputted.

Slowed information processing impacts a person’s ability to think efficiently and may hinder the effectiveness of other abilities such as memory.

1. The breakdown in communication is largely caused by damage to the neuron’s insulation. Like the plastic insulation of an electrical wire that helps in transmitting a signal, if that insulation is damaged, the signal loses energy.

2. Another reason for slowed processing speed is that the brain might have to re-route signals around the damaged area, which takes a longer time to send a message from one point to another.
Perceiving and responding to what is seen, heard, smelled, tasted, felt and touched.

eg. Hypersensitivity to sounds, lights, smells, touch
Involves the use of small muscles of the hands to make smooth, coordinated or fine motions.
Involves the coordinated use of the large muscles of the body.
The ability to generate, retain, retrieve and transform well-structured visual images.

eg. Difficulty assessing facial expressions, mis-reading facial expressions
There are two major categories of memory: long-term memory and short-term memory.

**Long-Term Memory**
- Long-term memory is our brain's system for storing, managing, and retrieving information. There are many different forms of long-term memory.

**Short-Term Memory**
- Closely related to "working" memory, short-term memory is the very short time that you keep something in mind before either dismissing it or transferring it to long-term memory.
Types of Long-Term Memory

Explicit Memory
- Explicit memory, or declarative memory, is a type of long-term memory, which requires conscious thought. What most people have in mind when they think of a “memory.

Implicit Memory
- Implicit memory is the other major form of long-term memory that does not require conscious thought. It allows you to do things by rote.

Autobiographical Memory
- Is memory system for recalling life experiences, which involves both the episodic memory and the semantic memory.

Incidental Memory
- Memory for events that are fleeting or “incidental”
The ability to understand language.

Understanding spoken language is typically associated with the left hemisphere of the brain. A small specific area of the left temporal lobe, called Wernicke’s area, is vital to processing incoming language-based information. Young children typically understand what is told to them before they can express themselves, but damage to the left side of the brain hinders their ability to understand language.

eg. Misunderstanding of jokes, sarcasm, subtle nuances of language.
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. A specific area within the left temporal lobe, called Broca’s areas, activates and communicates with other areas of the brain to produce speech. Damage to Broca’s areas, located at the middle to front side of the left hemisphere, hinders expressive language.

eg. Frustration and behavioral outbursts as a result of not being able to get point across.
The ability to learn new concepts and information.

Receiving and processing new information to create *learning* is a remarkably complex neurological phenomenon.

Many times, children with right hemisphere brain damage have difficulty understanding new concepts if taught by traditional techniques.

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

Requires attention, first, memory and then consolidation!

**New Learning = School**
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. Damage to the frontal areas and deeper brain structures may cause initiation and emotional problems.
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.
The use of deliberate and controlled mental operations to solve novel and on the spot problems.

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

People with damage to the frontal lobe may become more rigid in their thinking and less adaptable to change.
Concussion = Traumatic Brain Injury

Impossible to assess:

**mild – moderate – severe**

with ANY TBI, even a single concussion.

80-90% of concussions will “clear” in 1 to 3 weeks, longer for younger kids. Multiple concussions increase the risk of deficit/disability.
The manifestation of deficits into social skill problems, emotional outbursts or behavioral problems.
Behavior

Wants to get his own way

Aggressive Behavior
Non-Compliant Behavior
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 (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.
But what if...

- Didn’t attend?
- Attended to too many things at once?
- Couldn’t filter out the distractions?
- Couldn’t keep it in “working memory” long enough to understand it?
- Didn’t get it into long term memory?
- Got into LTM but could not get it out when asked?
- Heard but did not comprehend?
- Comprehended but couldn’t express concerns?
- Didn’t learn what they needed to learn well enough to generalize it to another situation?
- Learned it but had slow processing speed and everyone thought they didn’t learn it?
The events that students experience as reinforcing and punishing are always changing based on both the presence and absence of many different environmental and social situations. The term Setting Event is used to describe the events that momentarily change the value of reinforcers and punishers in a student’s life. The occurrence of a setting event can explain why a request to complete a task results in problem behavior on one day but not on the next.

Setting Events:
- fatigue
- seizures
- pain
- mental “fogginess”
- hunger
- sensory over-load
- sensory under-load
Thus, behavior management techniques can be classified into two categories:

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Collaborative Problem Solving (CPS) is a framework that suggests 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.

**Check Your Lenses** Challenging behavior occurs when the demands of the environment exceed a kid's capacity to respond adaptively. In other words, it takes two to tango. But many popular explanations for challenging behavior place blame on the kid or his parents. Not Collaborative Problem Solving. [www.livesinthebalance.org](http://www.livesinthebalance.org)
Function of the Behavior

Can't remember the steps
Memory

Doesn't know how to read the cues
Visual-Spatial

Teach facial cues non-verbal cues

Write out/draw out steps to compensate for memory

Is off-task while teaching the steps
Attention

Make sure you have attention before teaching

Aggressive Behavior
Non-Compliant Behavior

Has no skill deficit – is just being mean

Teach the steps in visual, multi-modal fashion

Doesn't understand the steps
Receptive Language

X
Steps in teaching a skill

Environment
- What are the environmental factors affecting the behavior? Can the environment be changed?
- Or is it in the child’s best interest to learn this skill sooner rather than later?
- Antecedent Management

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

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

Performance Deficit
- Assumes the child has the skill but is making a choice not to perform the skill as requested
Performance Deficit?

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

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

**Environment**
- What are the environmental factors affecting the behavior? Can the environment be changed?
- Or is it in the child’s best interest to learn this skill sooner rather than later?
- Antecedent Management

Are you sure you taught the skill?

Did you teach 1 skill at a time and give it enough time?

Did you adjust the teaching PRN?

Did you generalize the skill?

Were you consistent or were there mixed messages?

**FBA – Function of the Behavior?**
<table>
<thead>
<tr>
<th>Problem #1:</th>
<th>Can’t</th>
<th>Decide motivation (FBA), apply intervention (BIP) Teach replacement behavior:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Won’t</td>
<td>Decide/apply consequence (+ or -):</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem #2:</td>
<td>Can’t</td>
<td>Decide motivation (FBA), apply intervention (BIP) Teach replacement behavior:</td>
</tr>
<tr>
<td></td>
<td>Won’t</td>
<td>Decide/apply consequence (+ or -):</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem #3:</td>
<td>Can’t</td>
<td>Decide motivation (FBA), apply intervention (BIP) Teach replacement behavior:</td>
</tr>
<tr>
<td></td>
<td>Won’t</td>
<td>Decide/apply consequence (+ or -):</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

Can’t versus Won’t
Can’t or Won’t

Behavior of Concern

- Skill Deficit?
- Can but choosing not to?

Teach to the skill deficit – to which ever deficit you determine to be underlying the behavior

Testing the limits – (#1: Celebrate)
   #2: Apply an appropriate limit

Outcome: Did it have the desired effect on the behavior of concern?

Caveat: You can only assume it is “testing the limits” once or maybe twice. After that, if you do not get the desired change in behavior, you HAVE to go back to the question of a skill acquisition problem, a skill generalization problem or a question of inconsistent teaching.
Internal & external environment -
Constantly asking ... what about the setting events? Sensory and physical/emotional dysregulation?

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?

Fluid FBA
After you are 100% sure the child has:
• acquired the skill
• generalized the skill

Then you want to **strengthen** the skill:

Increase the demonstration of the skill or the generalization of the skill with reinforcements
Easier to teach TO the replacement skill

Decrease the use of inappropriate conflicting behaviors by the use of punishment
Harder to teach to the absence of a behavior

If you find you are using reinforcers too much…

If you find you are using consequences too much…more than once or twice

---

Go back to the question of skill
Go back to the question of the:
- The environment
- The function of the behavior
- The teaching of the skill
- The generalization of the skill

Behavior charts – rewards “do this and you will get this” and consequences “do this or else” presupposes “skill is in place and will is at play”

What is your purpose for punishment?
Kids with any type of Executive Dysfunction Disorder learn BEST when taught first and then rewarded or consequenced appropriately intrinsically rewarded and infrequently consequenced.
Intervention Action Plan

- Intervention
- Skill Deficit
- Intervention
- Diagnosis
- Intervention
- Intervention
- Intervention
- Intervention

McAvey, 2011
How Does Your Engine Run?

ADHD Diagnosis

Self Regulation

Behavior

Sticker Chart

Teacher initiated

Preferential Seating

Off-Task

Poor initiation

McAvey, 2011
Autism Diagnosis

Sensory Overload

Avoid Touch?
Visual cues?
Social Story?

Got Lost Orientation?

Sensory Overload

Avoid Gym?

Environmental Modifications

Earphones/plugs

McAvey, 2011
Remediation Skills

- Positive Behavior Support
- Cognitive Behavioral Therapy (CBT)
- Aggression Replacement Treatment (ART)
- Why Try
- Collaborative Problem Solving (CPS)
- Second Step
- PATHS
- Skill Streaming
- Tools for Teaching
- Executive Skills in Children and Adolescents
- Smart but Scattered
- BrainSTARS
- ProjectLEARNet: [www.projectlearnnet.org/](http://www.projectlearnnet.org/)
What is reasonable to change in the environment to assure success?

- Cues for memory – labels, calendars, iphones
- Cues for attention
- Equipment to cut down sensory overload
- Life Skill Management – no alcohol, plenty of rest

**Compensatory Strategies**

**Environmental Accommodations**
Chapman (2007) is a halting or slowing in later stages of cognition, social, and motor development beyond a year after brain injury. Thus, despite sometimes remarkable recovery during the first year after a TBI, young people appear to "hit a wall" or plateau and not meet later developmental milestones. In addition, this neuro-cognitive stall may emerge despite the individual seeming to have recovered cognitive abilities commensurate to one’s pre-injury level (Chapman, 2007).

Chapman (2007) has graphically represented neuro-cognitive stall in Chart 3 by comparing normal brain development with latent stage brain development after TBI.

**CHART 3:**

Pediatric TBI: Two Stages of Recovery
How can you tell “can’t” vs “won’t”?

- Does the student possess the requisite skills to engage in an appropriate alternative behavior?
- Is the student able to analyze the problem, generate solutions, evaluate their effectiveness, and select one?
- Does the student interpret the situation factually or distort it to fit some existing bias?
- Can the student monitor his behavior?
1. **Optimism.** An optimist expects positive outcomes. He/She doesn’t take failure personally but keeps on trying until he succeeds; learns from mistakes and seeks out skills that are deficit but must be learned.

2. **Creativity.** The challenging tasks on “The Apprentice” all require “out of the box” thinking – Problem Solving, Flexible Thinking and Judgment.

3. **Resilience –** Pliability, flexibility, elasticity (opposite of Rigidity). Stick-to-it-ness is necessary ie. the ability to attend and focus.

**What is the quality of their EF?**
• 4. **Self-Control** – Self Discipline, Willpower, Restraint – forgo the present for the future benefit.

• 5. **Emotional Awareness** – Perceptive and Empathetic. Aware of self and aware of others.

• 6. **Sociability.** Part of the profile of a candidate for “The Apprentice” is being extroverted and friendly. - someone who can create an environment of trust.

David –

Is this a manifestation of his disability? Speech/Language or TBI?

Would he learn from punishment? Would it decrease the problem behavior?

Quality of their EF?
Wade –

Is this a manifestation of his disability?

ADHD

Would he learn from punishment?
Would it decrease the problem behavior?
Tyler –

Is this a manifestation of his disability?

TBI

Would he learn from punishment?
Would it decrease the problem behavior?
Jake –

Is this a manifestation of his disability?

TBI

Would he learn from punishment?
Would it decrease the problem behavior?

**Kids with disabilities have “won’ts”**
and kids with willful disobedience have “can’ts”
Questions?
Discussion?

Karen McAvoy, PsyD
mcavoy_k@cde.state.co.us

Thank You!
Colorado Traumatic Brain Injury Trust Fund Program for Children

A SAFETY NET FOR CHILDREN/YOUTH WITH BRAIN INJURY
Program Overview

- Passed into Law in 2002
- Title 26, Article 1, Part 3, Colorado Revised Statutes
  - Created TBI Trust fund
  - Added surcharges to traffic offenses
  - Created TBI Board
  - Designated allocation of funds
  - Placed in Department of Human Services
Surcharges

- $20 for each conviction of driving under the influence (DUI), or driving while ability impaired (DWAI)
- $15 for each conviction of speeding
- Helmet Law (2007)
  - 18 and younger have to wear a helmet
  - $15.00 surcharge
Allocation of Funds

- Minimum of 55% to provide services to individuals with TBI
- Minimum of 25% to support research related to the treatment and understanding of TBI
- Minimum of 5% to provide TBI education for survivors, family members, professionals, educators, and others in the community
SAFETY NET:

□ Goals of the Program are to:

1. Increase knowledge and skills of the people that serve children with brain injury.

2. Promote seamless transition and support from the time of diagnosis/identification to the point of transition to adulthood.
Partnership with Colorado Department of Human Services and Colorado Department of Education

- Blending of two funding sources to create a system of care for children and youth with a brain injury.

U.S. Department of Health and Human Services
Health Resources and Services Administration (HRSA Grant)

Colorado Traumatic Brain Injury Trust Fund Program
Colorado Department of Education

Brain Injury Education Consultant
Karen McAvoy
.5 FTE
(HRSA).

Brain Injury Health Consultant
Kristy Werther
1.0 FTE
(Trust Fund)

Regional Brain Injury Liaisons
(regional TA and Training)

Local Brain Injury Teams, school dist.
direct support for students with TBI)

Local Care Coordinators, HCP
direct support for students with TBI)

Funding for Annual Trainings
(Trust Fund)

SAFETY NET PROGRAM FOR CHILDREN
Brain Injury Consultants, CDE

Role of the Brain Injury Consultants:

- Develop a network of support in Colorado School Districts
- Develop a method for identification, assessment and intervention for children with brain injury
- Implement a hospital to school transition protocol
- Provide coordination, training and technical assistance for the Regional Liaisons
SAFETY NET PROGRAM FOR CHILDREN

Colorado Department of Education

Brain Injury Education Consultant
Karen McAvoy
.5 FTE
(HRSA)

Brain Injury Health Consultant
Kristy Werther
1.0 FTE
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Regional Brain Injury Liaisons
(regional TA and Training)

Local Brain Injury Teams, school dist.
(direct support for students with TBI)

Local Care Coordinators, HCP
(direct support for students with TBI)

Funding for Annual Trainings
(Trust Fund)

EDUCATION

HEALTH
Regional Brain Injury Liaisons

Role of the Regional Brain Injury Liaisons:

- Identify training needs in their regions
- Build capacity of the region through training and consultation
- Facilitate transition from hospital and emergency departments to school and community
- Develop a safety net
Colorado Department of Education

Brain Injury Education Consultant
Karen McAvoy
.5 FTE (HRSA).

Brain Injury Health Consultant
Kristy Werther
1.0 FTE (Trust Fund)

Regional Brain Injury Liaisons
(regional TA and Training)

Local Brain Injury Teams, school dist.
(direct support for students with TBI)

Local Care Coordinators, HCP
(direct support for students with TBI)

Funding for Annual Trainings
(Trust Fund)
Child and Family Support

- Care Coordination: Partnership with Health Care Program for Children with Special Needs (HCP)
  
  **Goals of Care Coordination are to**
  1. Assess child/family needs and strengths
  2. Identify resources to address medical, social, education and community needs
  3. Coordinate multiple resources

- Education Consultation: Partnership with school districts Brain Injury Resource Teams and Education Navigators
Intake and Referral Process

Brain Injury Alliance of Colorado is the single point of entry for services

- On-line referral process
- Assist families with identifying needs
- Refer individuals for care coordination and education supports

www.biacolorado.org
1-888-331-3311
BIAC Referral Process Breakdown

http://biacolorado.org/support/childrens-trust-fund-program

BIAC Receives Call About Program

Community Provider/Educator Informs Family About Program

ONLINE
REFERRAL FROM
FILLED OUT

BIAC Receives Digital Copy of Referral
Has BIAC Already Spoken with the Family?

Follow-up Survey
Sent to email address listed on initial referral

Referral sent to Appropriate HCP Team Leader by County (if not already working with HCP) & Kristy @ CDE

BIAC Calls family to confirm referral and to get more information, if necessary. Referral then sent to HCP Team Leader by County (if not already working with HCP) & Kristy @ CDE

Quarterly

Quarterly
Resources and Training Requests

www.cokidswithbraininjury.com
Contact Information

Karen McAvoy, PsyD  
Principal Consultant on Brain Injury  
Mcavoy_k@cde.state.co.us  
303-866-6739

Kristy Werther, LCSW  
Brain Injury Health Consultant  
Werther_k@cde.state.co.us  
303-866-2879

Max Winkler  
TBI Trust Fund Program Intake  
Brain Injury Alliance of Colorado  
max@biacolorado.org  
1-888-331-3311 (direct)
Creating a Community Support Network

- Care and Benefits Coordination
- Behavioral Health
- Medical Services
- Supported Living Services
- Productive Activity
- Social or Recreational Services
- Education and Family Support
- Technology
TBI Care Coordination Services

Care Coordinators offer:

- Connection to Community Resources
- Invitation and Scholarships to Social and Educational Events
- Coordinate of Care through Outside Agencies and Organizations
- Clarification and Support for Life Goals
- Assistance with Benefits and Outside Funding Sources
- Ongoing Brain Injury Education
- Direction for Multi-step Processes
- Encouragement and Support for Self Advocacy
Medical Services

Medical Team:

- Primary Care Physician
- Neurologist
- Cognitive Therapist
- Vision Therapist
- Pain Management Specialist
Behavioral Health Services

Behavioral Health Team:

- Neuropsychologist
- Neuropsychiatrist
- Psychotherapist
- Behavioral Specialist
- Substance Abuse Services
- Group Therapy Options
Supported Living Services

In Home Supports:
- Independent Living Skills Trainer (ILST)
- Personal Care
- Nursing Care
- Home Care
- Respite

Residential Services:
- Brain Injury Supported Living Programs
Education and Family Support

- Brain Injury Specific Educational Events
- Family Support Groups
- Family Specific Educational Events
Productive Activity

- Vocational Services (Department of Vocational Rehabilitation)
- Educational/Training Services and Supports
- Day Programming
- Volunteer/Community Service Opportunities
Social or Recreational Services

- Social Skills Training
- Brain Injury Specific Social Groups and Support Groups
- Adaptative Recreation Programming
Technology

Assistive Technology:
- Communication Devices
- Adapted Readers

Mainstream Technology Supports:
- SmartPhones (for use as organizers, memory tools, time management tools)
- Computers and tablets
Funding Mechanisms:

- Medicaid/Medicare
- Medicaid Waiver–based Services:
  - Brain Injury Waiver
  - Elderly, Blind, and Disabled Waiver
  - Mental Health Waiver
  - Developmental Disabilities Waiver
- TBI Trust Fund
- Division of Vocational Rehabilitation
Limitations

- Lack of Funding and Mile Long Wait lists
- Lack of Services:
  - Comprehensive Neurobehavioral Services
REDNECK INGENUITY
At last... we found a use for one of those appliances in the front yard
The Art of Jerry-Rigging