

The following slides provide guidance on the eligibility category, definition, and criteria for “child with a traumatic brain injury” in Colorado public schools.

These slides may also be found within the Comprehensive Overview Training PowerPoint, which provides guidance on every eligibility category.

If these slides are used as a self-standing training tool, it is recommended that they be supplemented with the posted slides specific to the HB11-1277 Overview, which can be found at: [http://www.cde.state.co.us/cdesped/Training\\_ECEAEligibility.asp](http://www.cde.state.co.us/cdesped/Training_ECEAEligibility.asp)

The HB11-1277 Overview slides will detail the history and timelines of implementation of the new eligibility categories, definitions, and criteria.

# Together We Can

## Vision

**All students in Colorado will become educated and productive citizens capable of succeeding in a globally competitive workforce.**

## Mission

**The mission of CDE is to shape, support, and safeguard a statewide education system that prepares all students for success in a globally competitive world.**

## Traumatic Brain Injury

- The following slides have been vetted internally within the Colorado Department of Education for training purposes of the definition and eligibility criteria for Traumatic Brain Injury.
- If you make any changes to these slides, please acknowledge that they are different from this vetted product and may no longer represent the viewpoint of the CDE.

## Eligibility Checklist for Traumatic Brain Injury

- It is recommended that the following training slides be used in conjunction with the post-HB11-1277 Eligibility Checklist for a Child with Traumatic Brain Injury, which can be found at:

[http://www.cde.state.co.us/cdesped/IEP\\_Forms.asp](http://www.cde.state.co.us/cdesped/IEP_Forms.asp)

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If there are any questions about the definition and eligibility criteria for Traumatic Brain Injury, please be in contact with Heather Hotchkiss at hotchkiss\_h@cde.state.co.us or (303) 866-6739.

If there are any questions about whether a specific child meets the established criteria for Traumatic Brain Injury, please be in contact with the administrative unit's Special Education Director.

**2.08 (10)** A child with a Traumatic Brain Injury (TBI) is a child with an acquired injury to the brain caused by an external physical force resulting in total or partial functional disability or psychosocial impairment, or both, which impairment adversely affects the child's ability to receive reasonable educational benefit from general education. A qualifying Traumatic Brain Injury is an open or closed head injury resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term "traumatic brain injury" under this rule does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma.

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The next four slides include the exact wording of a Child with a Traumatic Brain Injury eligibility criteria that are in the current *Rules for the Administration of the Exceptional Children's Educational Act 1 CCR 301-8*

### **What is Traumatic Brain Injury?**

In the past in Colorado, TBI used to listed under Physical disability. Now (as of Oct. 2012) TBI is a stand alone eligibility area with it's own definition and criteria. When looking at the definition, Colorado began with the Individuals with Disabilities Education Act (IDEA) definition (created in the early 1990's) and added a bit more detail to create our definition for the Exceptional Children's Education Act (ECEA).

Note: TBI does not apply to congenital or degenerative, or to brain injuries induced by birth trauma

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

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; and

2.08 (10) (a) (ii) The child displays educational impact most probably and plausibly related to the traumatic brain injury.

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:

2.08 (10) (b) (i) 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;

2.08 (10) (b) (ii) An inefficiency in processing, including but not limited to a processing speed deficit and/or mental fatigue;

2.08 (10) (b) (iii) Deficits in sensory-motor skills that effect either one, or both, visual or auditory processing, and may include gross motor and/or fine motor deficits;

2.08 (10) (b) (iv) Delays in acquisition of information including new learning and visual-spatial processing;

2.08 (10) (b) (v) Difficulty with language skills, including but not limited to receptive language, expressive language and social pragmatics;

2.08 (10) (b) (vi) Deficits in behavior regulation, including but not limited to impulsivity, poor judgment, ineffective reasoning and mental inflexibility;

2.08 (10) (b) (vii) Problems in cognitive executive functioning, including but not limited to difficulty with planning, organization and/or initiation of thinking and working skills;

2.08 (10) (b) (viii) Delays in adaptive living skills, including but not limited to difficulty with activities of daily living (ADL); and/or

2.08 (10) (b) (ix) 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.



## Setting the Stage on 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

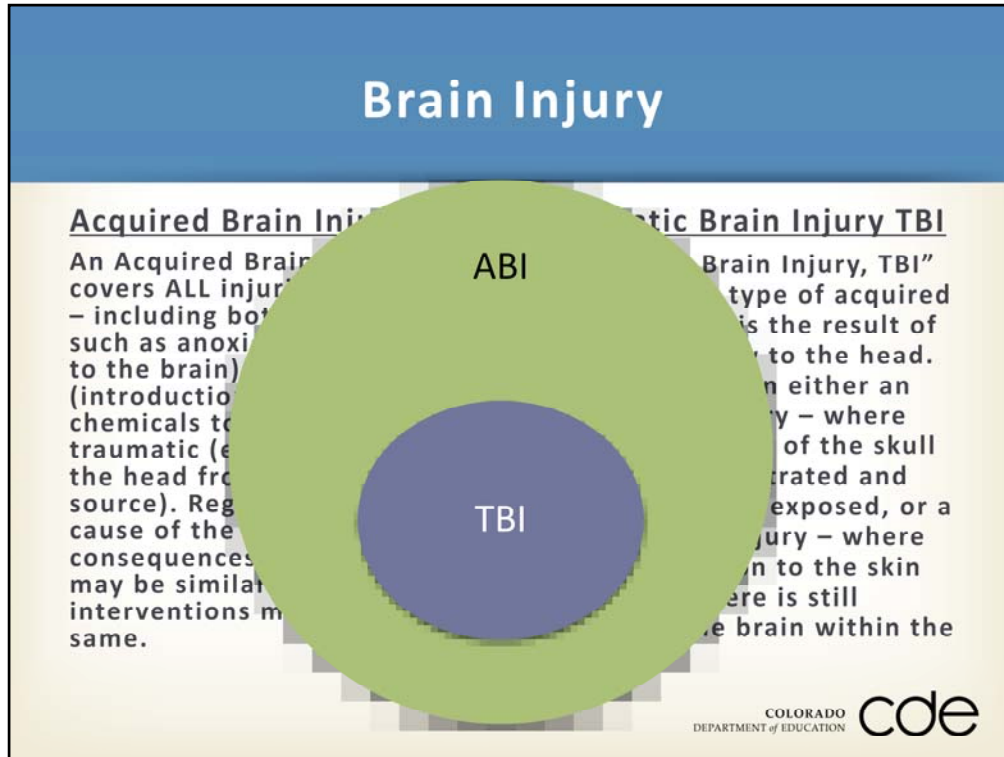
A Traumatic Brain Injury, TBI” is a particular type of acquired brain injury; it is the result of an external blow to the head. A TBI can result in either an “open” head injury – where the skin and bone of the skull are actually penetrated and the brain may be exposed, or a “closed” head injury – where there is no lesion to the skin or skull but there is still damage to the brain within the skull.

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### What is Traumatic Brain Injury?

TBI is an Acquired Brain Injury (ABI) – but ABI covers ALL injuries to the brain Post Birth; Non-Traumatic (Anoxia, Toxins, near drowning, etc.) and Traumatic

Traumatic Brain Injury (TBI) is an external blow. Injury may result in an open or closed head injury. Injury may result in “structural” damage and/or “electrical” damage in the brain (electrical damage is not seen on a CT Scan or MRI).



TBI is a small percentage of Acquired Brain Injury (ABI).

ABI would need to be staffed under another disability category (i.e. other health impaired); however the information offered here is applicable to all brain injuries (Acquired and Traumatic); this will assist school teams in identifying the specific impacts and address the needs appropriately. One area that is significant with all types of brain injuries is unevenness in skills and learning. It is important to address this unevenness through the “lens” of brain injury (for appropriate interventions).

We are going to review eligibility criteria in TBI only, however the same information, assessments, areas would apply to ABI.

Note: the mechanism of the injury will uniquely affect the grieving process and information coming forward...”traumatic” events = traumatic brain injury (physical abuse, falling down the stairs when the parent turned their back for a moment, parent was driving the car when the motor vehicle accident happened, etc.)

## To Be Eligible as a Child with a Traumatic Brain Injury

- 2.08 (10) (a) To be eligible as a child with a Traumatic Brain Injury, there must be evidence of the following criteria:
- 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; *and*
- 2.08 (10) (a) (ii) The child displays educational impact most probably and plausibly related to the traumatic brain injury.

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### What is the criteria/How to establish?

When TBI was under the Physical Disability eligibility category, we did not have guidance on the criteria.

Determination of Eligibility for TBI has been expanded to include guidance in the area of **Credible History**. The criteria includes: Medical Documentation of TBI *or* **Credible History of TBI** *and* Educational Impact

For TBI: since the federal definition (1991), the numbers of identified students have not increased much even though it's the leading cause of death and disability in the US for children ages 1-19 yrs. Unlike some other disability areas – i.e. Autism Spectrum Disorder (ASD) where numbers has increased drastically.

It is a tracking issue. Statistics: CO estimates approximately 700 kids are hospitalized each year for TBI, and they don't get hospitalized (stay over night) unless it's been determined as moderate to severe. Think about the kids with more mild Brain Injuries who are either not going to the hospital or are treated and released...over half a million (nation-wide) each year. We aren't tracking these children at all – and yes, many will resolve and not have long term impacts. But about 10-20% will have some lasting impact.

## 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.

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If we are given medical documentation we may see the following terms: Mild, Moderate and Severe

These are medical classifications – based on the Glasgow Coma Scale. These are based on a doctor's classification at the time of injury (typically within 24-48hrs of the injury/incident).

These classifications **do not equate** to educational impact! Teams - be careful about the correlating the medical classification and functional impact.

Severe medical does not automatically equate to long term impact. Just as mild does not equate to no long term impact.

## 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.”

Moderate to Severe Brain Injury: Parents may have medical documentation – this confirms the presence of a TBI only.

If given medical documentation, you can say “Thank you very much, now we have to establish educational impact.” Because we must continue to collect the body of evidence to establish educational impact.

## 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.

What if there is no medical documentation (incident happened in a different country/state, the family moved around a lot, they didn't go to a doctor – “just a ding”). Up to 90% of children/families may not seek medical attention.

Credible history is much more difficult to establish – this is a Multidisciplinary Team responsibility.

## Credible History

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

- A comprehensive health history via structured **interview**
- Requires a skilled interviewer
- There needs to be a **reported incident(s)** as well as on-going symptoms/behaviors that persist beyond the incident (Corrigan & Bogner, 2007)
- Details of the incident should be clear and consistent
- The interviewer should be familiar with the acute symptoms related to TBI (at the time of injury and later)
- The interviewer should drill down into a comparison between the child pre-injury versus post-injury

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(see additional handout on Credible History)

Credible History is determined by the team becoming detectives:

- An in depth developmental/health history
- A structured face to face interview
- By 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), changes in behavior, sleep patterns, etc.
- Must have a reported incident-if the parent does not give you an incident you CANNOT go down the path of TBI...think about abuse...it may never come out specifically – and you may know something in your gut – however you cannot establish this without a reported incident.

This may involve a school nurse talking with the child’s grandma, the social worker talking with the mother, etc. to look for corroboration.

- There could be a long history of BI – with high risk taking behaviors (get details of each BI-if more than one)
- You may need to ask the question 3 or 4 different ways: Has your child...ever had a brain injury...ever been knocked out...ever had his “bell rung” or “dazed?” ...“Oh, you mean that time he fell out of the grocery cart?” [Remember: most may never lose consciousness]
- It must be plausible – “he seized for 3 days in the hospital”– talk to the nurse – would they let a child seize for 3 days?
- And “drill down” with the details and gathering of information; compare pre-injury functioning vs. post injury



## Credible History

- If the comprehensive health history interview yields a very strong case of credible history, confirming this assessment with the Brain Checklist Screen is recommended.
- This checklist, developed and validated through Colorado State University, provides a more specific screen of the TBI.
- If the Brain Checklist also confirms the presence of TBI, then earlier assumption of credible history is confirmed

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If your teams “detective work” indicates a presence of a TBI, it is recommended to confirm this by doing the Brain Checklist – created by Colorado State University; and shown to be a valid measure for confirming TBI.

This tool is located in the manual for your use (Brain Injury in Children and Youth: A Manual for Educators). And at [www.cokidswithbraininjury.com](http://www.cokidswithbraininjury.com)

CAUTION: we are not “diagnosing” TBI, we are still gathering data and confirming our information from the interview and confirming the presence of a TBI.



## 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”.

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If the team establishes the presence of a TBI, we still must identify the effects of the TBI (educational impact).

Especially when an injury is “mild” – must gather a body of evidence (basically following the principles of RTI), please don’t put off the gathering of this information and evaluation when a disability is suspected.

## Credible History

### Reminder:

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.

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Even though our gut may tell us there is something there – or we have stories such as: a parent is in jail for domestic violence, former family member or partner was abusive, etc., this is not enough information to confirm a traumatic brain injury.

Err on the side of being conservative.

Do your detective work but if it is not there it is not there. Then we must look at other ways to support this child.

Credible History - It isn't easy to establish but it is a good thing that we have it now – we obviously are not picking up all of the need that exists in school districts. (current count = 497 kids on an IEP for TBI in CO)

CAUTION



- **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, we must still establish educational impact and align the goals and services on the IEP.**

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TBI is a serious medical condition – it's sometimes scary for educators...But confirming a TBI does not = IEP automatically.

We must follow the process

Identification Protocol – (see the Brain Injury in Children and Youth Manual or [www.COkidswithbraininjury.com](http://www.COkidswithbraininjury.com))

1.       Reported Incident
2.       Medical Documentation or
3.       Credible History
4.       TBI Screen
5.       Establish Educational Impact

The entire multidisciplinary team must be on board and have the data to back up this criteria.

## Specially Designed Instruction


- “Specially Designed Instruction” *means adapting, as appropriate to the needs of an eligible child, the content, methodology or delivery of instruction* to address the *child's unique needs resulting from the disability and ensuring the child's access to the general curriculum* so that he or she can meet the educational standards that apply to all children within jurisdiction of the public agency. 34 CFR 300.39 (b)(3).
- It involves providing instruction that is different from that provided to children without disabilities, based upon the eligible child's unique needs.

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To qualify as a child with Traumatic Brain Injury, there must be evidence that the child cannot receive reasonable educational benefit from general education without specially designed instruction.

**(TBI): The Child Cannot Receive REB  
from General Education**



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**Reasonable Educational Benefit = REB**

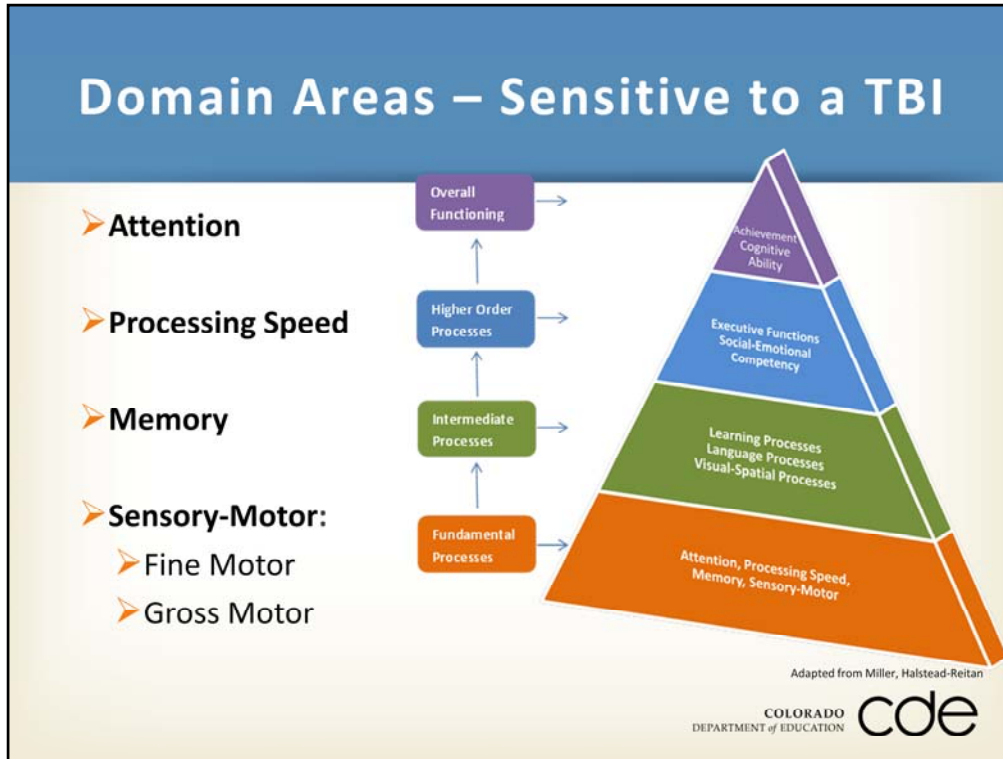
To qualify as a child with Traumatic Brain Injury, there must be evidence that the child cannot receive reasonable educational benefit from general education without specially designed instruction. The specially designed instruction may involve training on the use of specialized equipment.

**What are the typical areas of impact (domains)?**

School Teams will need to establish the educational impact of the traumatic brain injury and determine whether the child can/cannot receive reasonable educational benefit in general education.

Teams gather the body of evidence:

- Using Classroom Teacher Input – [\*Brain Injury Observation Form\*](#) (located in the manual), developed by some of our local experts.
- Doing Functional Observations
- Formal and informal assessments
- So what areas does Brain Injury effect?

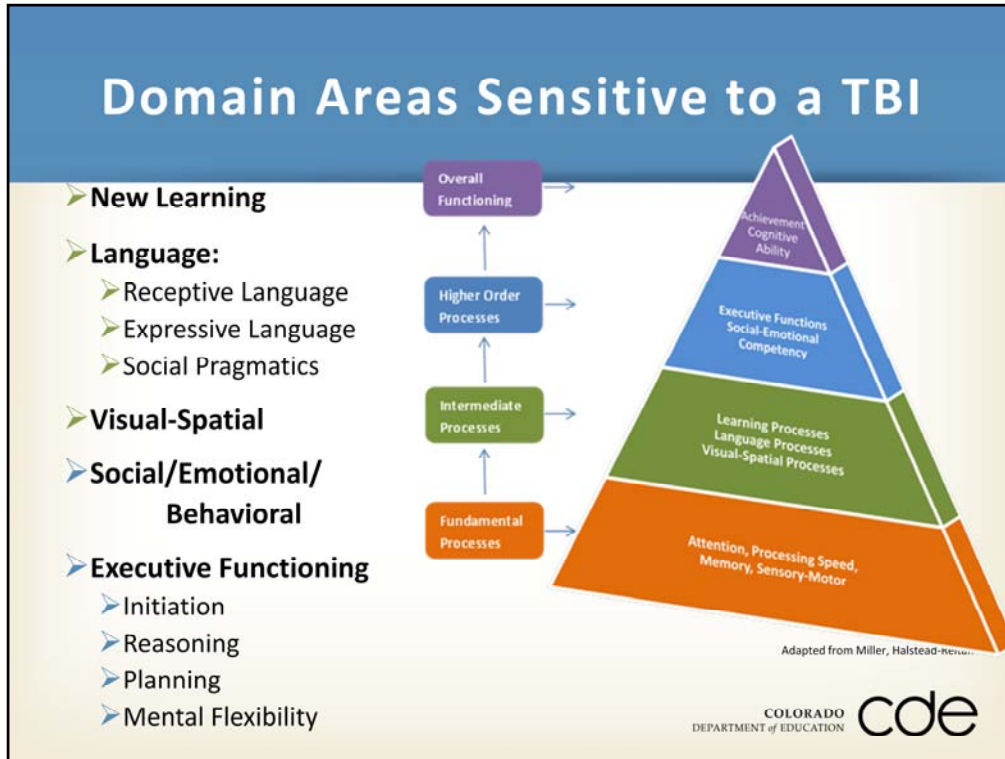


The domain areas included in the eligibility criteria (and here in this presentation) are very sensitive to TBI and the typical areas that are impacted...it is not an exhaustive list.

Refer to eligibility checklist - The order that the domain areas are listed in the TBI Eligibility Checklist match the Hierarchy of Neurocognitive Development (shown here in the pyramid).

Foundational Processes are the base of the pyramid – crucial building blocks for all other processes. Foundational processes effect all areas of learning and behavior. The stronger the foundation, the stronger and better the rest of the processes build.

Color coded (and noted for black and white notes) throughout the rest of the presentation. Orange – these skills are what our babies are working on in early developmental stages=foundational processes.



Additional building blocks – intermediate and higher order

An injury at a young age creates this “wobbly” pyramid.

As educators we are all striving for Achievement and ability to integrate all of these skills (purple: top level of overall functioning)– we must look at the foundation or building blocks to get there.



Fundamental  
Processes

Attention

Fundamental  
Processes

**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.
- In addition, the inability to inhibit an impulse is a problem with attention and is often the underlying issue with Attention Deficit Hyperactivity Disorder (“hyperactivity” is often more about the inability to stop acting upon every impulse that comes to mind).

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Attention and concentration is impacted much of the time in brain injury.

Attention and concentration involve holding information such as events, words and visuals in ones’ awareness. Following injury, the brain is generally not as alert and is less able to sustain focus or filter sensory information.

May look like ADHD – a word of caution: do not rush to an ADHD label...children with TBI may respond VERY differently to typical treatment of ADHD (i.e., stimulants).



**Fundamental Processes** **Memory** **Fundamental Processes**

**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 short-term, 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.

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Memory and learning involve the storage and organization of information for later use.

A crucial building block for learning.

Fundamental Processes

## Processing Speed

Fundamental Processes

**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).

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Processing speed is a mental function that is highly sensitive to brain injury. Teens are rarely aware of a decrease in their processing speed; rather, their experience is that they are confused or having a hard time understanding everything as well as before.

Fundamental Processes

## Sensory Motor

Fundamental Processes

**Sensory Processing:** *Perceiving and responding to what is seen, heard, smelled, tasted, felt and touched.*

- **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.***

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Children who have trouble perceiving and/or responding to sensory input obviously will be at a disadvantage when they have to integrate information coming from different sources.

Sensory issues may be viewed as other disability categories (i.e. Autism Spectrum Disorder, Sensory Integration Disorder, etc.)

Intermediate Processes

# Learning Processes

Intermediate 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.

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A single hallmark of a brain injury on a child's performance is an "unevenness" in abilities across different settings, over time, and across different content areas. Example, a student knows material on Tuesday but cannot retrieve the same material later that same week. This is often viewed as opposition.

Intermediate Processes

## Visual Spatial Processes

Intermediate Processes

**Visual-Spatial:** *The ability to generate, retain, retrieve and transform well-structured 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.

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After a brain injury, the visual-spatial abilities are frequently more impacted than verbal and tend to remain at lower levels after recovery.

Intermediate Processes

## Language Processes

Intermediate 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*

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Children's language abilities are still developing and an injury to this area can have a significant impact on their receptive, expressive abilities and/or social pragmatic language as well as their academic performance.



Higher Order Processes	<h2>Social Emotional Competency</h2>	Higher Order Processes
<p><b>Social and Emotional:</b> <i>The awareness of social issues and one's emotional status. Behavioral self-regulation, control and self-monitoring are also part of this domain.</i></p> <ul style="list-style-type: none"> <li>■ 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</li> </ul> <p><small>31</small> emotional difficulties.</p> <div style="text-align: right; font-size: small;">           COLORADO DEPARTMENT of EDUCATION <b>cde</b> </div>		

Social emotional competency impacts many aspects of a students life – impulse control, regulation of behaviors and feelings, making and keeping friends, etc.

The negative impacts of this domain may have life altering effects, i.e., juvenile justice system involvement, substance abuse, high risk behaviors, etc.

There is an entire chapter dedicated to this domain in the manual (Brain Injury in Children and Youth: A Manual for Educators at: <http://www.cde.state.co.us/cdesped/SD-TBI.asp>)

Higher Order Processes

## Executive Functions: Reasoning

Higher Order Processes

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

- 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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Reasoning involves the consideration of evidence and drawing of conclusions based on the exploration of all possibilities, consideration of positive and negative outcomes and combining knowledge from past experiences (Savage & Wolcott, 1994).



Higher Order Processes

## Executive Functions: Mental Flexibility

Higher Order Processes

**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.

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Mental flexibility also involves being able to change the approach to problem solving as the task changes or being able to successfully transition from one task to another.

Higher Order Processes

## Executive Functions: Planning

Higher Order Processes

**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.

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Students with planning issues may approach tasks impulsively which leads to difficulties in completing each step of the process.

Higher Order Processes

## Executive Functions: Organization

Higher Order Processes

**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.

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Students who have difficulty paying attention to the most important features of their environment, logically organizing and planning their behavior, and following through often have grave difficulty behaving reasonably in situations which do not provide intense external support and structure.

Higher Order Processes

## Executive Functions: Initiation

Higher Order Processes

**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.

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Initiation issues may appear that the student is uninterested, unmotivated or oppositional when in reality the issue is difficulty knowing how to get started.

Overall Functioning

## Cognitive Ability Adaptive Living Skills

Overall Functioning


**The child exhibits delays in adaptive living skills, including but not limited to with Activities of Daily Living (ADL).**

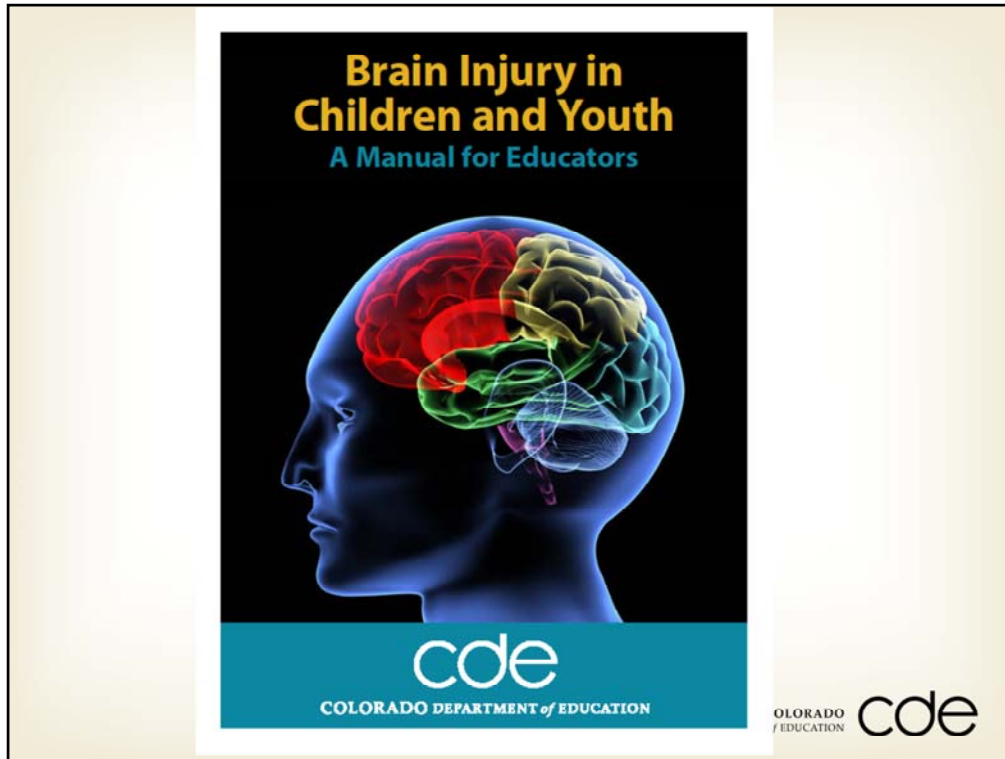
Some Examples:

- Personal hygiene and grooming
- Housework
- Managing money
- Use of telephone or other form of communication
- Community mobility
- Care of pets
- Meal preparation and cleanup
- Safety procedures and emergency responses

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Overall Functioning	<h2>Cognitive Ability</h2>	Overall Functioning
<h3>Achievement – Academic Skills</h3>		
<ul style="list-style-type: none"><li>■ The child exhibits 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.</li></ul>		
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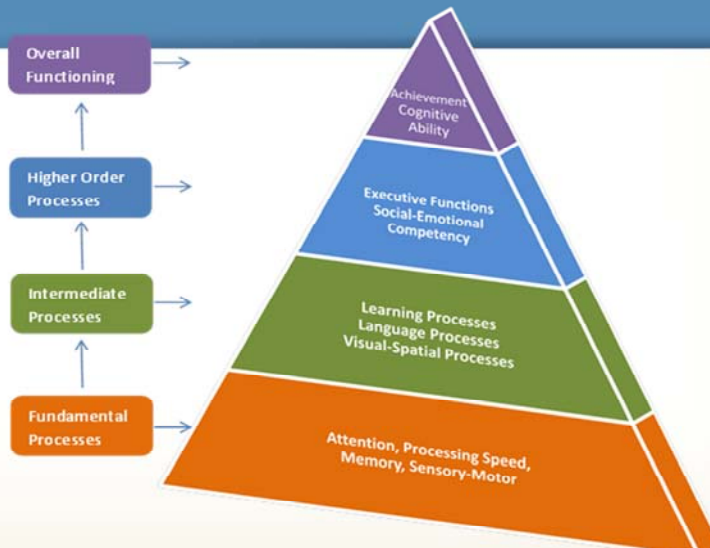


Resource: Brain Injury in Children and Youth: A Manual for Educators

- Downloadable from the CDE website at: <http://www.cde.state.co.us/cdesped/SD-TBI.asp>

- And at [www.cokidswithbraininjury.com](http://www.cokidswithbraininjury.com)

# Assessment



Adapted from Miller, Halstead-Reitan  
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# Assessment

- **There are many assessments that may be used in evaluating these domain areas.**
  - Please note: **Districts determine** the types of assessments used in evaluation. The suggested assessments indicated here are examples of assessments that have proven specificity in evaluating each domain area.

Districts decide what assessments are used in your district

- These have been proven for specificity in evaluation of the domain area.
- All examples here are able to be given by school personnel.

Fundamental Processes

# Attention


Fundamental Processes

**Assessment Suggestions**

- **WJ-III Cognitive- Numbers Reversed, Auditory Working Memory, Auditory Attention,**
- **NEPSY II Attention and Executive Functioning Subtests**
- **D-KEFS Delis-Kaplan Executive Function System**
- **Conners 3<sup>rd</sup> Edition**
- **Cognitive Assessment System (CAS)- Attention Composite (Consider Planning Composite)**

- **BASC II**
- **BRIEF**
- **Vanderbilt**
- **Behavior Observations during testing**
- **Classroom Observations-On Task/Off Task**

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Fundamental Processes


# Memory

Fundamental Processes

**Assessment Suggestions:**

- WISC-IV Working Memory
- NEPSY-II Memory and Learning
- DAS-II Memory & Working Memory
- DAS-II Recall of Designs
- DAS-II Recall of Objects Delayed
- WJ-III Memory Subtests (Thinking Ability)
- Test of Memory and Learning-2 (TOMAL)
- Children’s Memory Scale (CMS)
- Wide Range Assessment of Memory and Learning 2-WRAML

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Fundamental  
Processes

## Processing Speed

Fundamental  
Processes

### Assessment Suggestions

- WISC-IV- Processing Speed
- DAS-II- Processing Speed
- WJ-III Cog- Cognitive Efficiency Subtests
- WJ-III Achievement- Fluency Subtests

Fundamental Processes

# Sensory-Motor

Fundamental Processes

**Assessment Suggestions – Sensory**

- Behavioral Classroom Observations
- Functional Behavioral Assessments
- OT Consult
- PT Consult
- Vision and hearing screening: conversion/tracking/depth perception
- Functional vision
- Effective informal vision – ocular motor control

**Assessment Suggestions – Motor**

- OT Consult
- PT Consult
- NEPSY-II Sensorimotor
- DAS-II Recall of Designs
- Visual-Motor Integration (VMI)

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Intermediate  
Processes

## Learning Processes

Intermediate  
Processes

### Assessment Suggestions:

- Wide Range Assessment Memory and Learning 2- WRAML
- NEPSY-II Memory and Learning- Immediate Trials
- DAS-II Recall of Objects-Immediate Trials
- Woodcock Johnson-III Cognitive- Visual-Auditory Learning
- Test of Memory and Learning-2 New Learning Index
- Wechsler (WMS-III) and Children's Memory Scales Immediate Trials
- CELF-4, Paragraph Recall Subtest
- SCATBI for Adolescents (Scales of Cognitive Ability for TBI)

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Intermediate Processes

# Visual-Spatial Processes

Intermediate Processes

**Assessment Suggestions:**

- DAS-II -Spatial Subtests
- WISC-IV Perceptual Reasoning Subtests
- WJ-III Cognitive- Spatial Relations, Picture Recognition
- NEPSY-II-Visuospacial Processing
- K-ABC 2 NonVerbal Scale
- Leiter-R
- Visual Motor Integration (VMI)

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Intermediate  
Processes

## Language Processes

Intermediate  
Processes**Assessment Suggestions:**

- Clinical Evaluation of Language Fundamentals (CELF)- 4
  - CELF Pre-School
  - Pre-School Language Scale
  - Comprehensive Assessment of Spoken Language (CASL)
  - Peabody Picture Vocabulary Test (PPVT-4)
  - Listening Test
  - WORD-2
  - Test of Language Competence
  - WISC-IV Verbal
  - 48 **Comprehension**
- NEPSY-II Language
  - DAS-II- Verbal
  - WJ-III- Verbal Comprehension
  - CELF-4
  - CELF-P
  - PLS-4
  - Pre-School Language Scale
  - CASL
  - Expressive One-Word Picture Vocabulary Test
  - WIAT-2 – Wechsler Individual Achievement Test , Oral Expression

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Higher Order Processes


## Social-Emotional Competency

Higher Order Processes

**Assessment Suggestions:**

- FBA
- BASC-II
- BRIEF
- Revised Children Manifest Anxiety Scale-2 (RCMAS-2)
- Children’s Depression Inventory
- Reynolds Adolescent Depression Scale (RADS)-2
- Test of Pragmatic Language-2 (TOPL)
- NEPSY-2
- Social Perception
- Social Skills Rating System (SSRS)
- Vineland Adaptive Behavior Scales-2
- Adaptive Behavior Assessment System-2 (ABAS-2)
- Scales of Independent Behavior-Revised (SIB-R)
- SFA- School Functional Assessment
- Interviews
- Classroom Observations

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There are formal tests but this area is also assessed through teacher observation or functional observations

Higher Order  
Processes

## Executive Functions: Reasoning

Higher Order  
Processes

### Assessment Suggestions:

- DAS-II
- Non-Verbal
- WISC-IV Perceptual Reasoning Subtests
- K-ABC 2 Nonverbal Scale
- CAS Simultaneous Processing Composite
- Test of Adolescent Problem-Solving (TOPS)
- WJ-III, Verbal Analogies and Analyses-Synthesis

Higher Order  
Processes

## •Executive Function: Mental Flexibility

Higher Order  
Processes

### Assessment Suggestions:

- BRIEF
- NEPSY II- Attention and Executive Function
- WJ-III Cognitive- Concept Formation
- D-KEFS
- Assessment Observations
- Parent/teacher interview

Higher Order  
Processes

## Executive Function: Planning

Higher Order  
Processes

### Assessment Suggestions:

- NEPSY II-Attention and Executive Function
- D-KEFS
- WJ-III Cog- planning subtest
- CAS- Planning Composite
- BRIEF
- Assessment Observations
- Parent/teacher interviews

Higher Order  
Processes

## Executive Function: Organization

Higher Order  
Processes

### Assessment Suggestions:

- BRIEF
- Parent/teacher interview
- Observations

Higher Order  
Processes

# Executive Function: Initiation

Higher Order  
Processes

## Assessment Suggestions:

- BRIEF
- Classroom Observations
- Assessment Observations



Overall  
Functioning

## Cognitive Ability: ADLs

Overall  
Functioning

### Assessment Suggestions:

- SIB-R
- Vineland Adaptive Behavior Scales
- ABAS II
- Functional Observation

Overall  
Functioning

## Cognitive Ability: Achievement

Overall  
Functioning

### Assessment Suggestions:

- All Achievement Tests
- Classroom Function
- Teacher report, Report cards
- Progress Monitoring
- Formal Achievement Tests i.e. ACT, PSAT, SAT, TCAP

## To Be Eligible as TBI, the Child Must Meet All Three Conditions

- 1. Must have the presence of a traumatic brain injury, as documented by a medical report or credible history.**
- 2. Educational performance must be affected adversely by the traumatic brain injury.**
- 3. The traumatic brain injury must create a need for specially designed instruction.**

## TBI Resources

Traumatic Brain Injury Networking Team-Resource Network  
("CO Kids Website")

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

CDE-Brain Injury in Children and Youth: A Manual for Educators

[www.cde.state.co.us/cdesped/SD-TBI.asp](http://www.cde.state.co.us/cdesped/SD-TBI.asp)

Thank You!

