


**QUALIFYING STUDENTS WITH TBI FOR SERVICES:
LOOKING BEYOND NUMBERS**


Megan Remenap, MS, CCC-SLP, CBIS



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DISCLOSURES

- No relevant financial or nonfinancial relationships to disclose.



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LEARNING OUTCOMES

- Name at least three common deficits associated with TBI
- Provide an explanation as to why only evaluating language is not sufficient to qualify students with a TBI for services
- Name three assessment tools to use with students with a TBI.

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MATCH IT!

TESTS ADMINISTERED

Woodcock-Johnson IV Tests of Cognitive Abilities (Norms based on age 9-6)
 Woodcock-Johnson IV Tests of Achievement Form B and Extended (Norms based on age 9-6)

TABLE OF SCORES

Woodcock-Johnson IV Tests of Cognitive Abilities (Norms based on age 9-6)

CLUSTER/TEST	W	AE	RPI	SS (68% Band)
Oral Vocabulary	497	9-7	91/90	101 (95-107)
Number Series	494	9-11	93/90	103 (95-109)
Verbal Attention	509	13-0	98/90	116 (109-122)

Woodcock-Johnson IV Tests of Achievement Form B and Extended (Norms based on age 9-6)

CLUSTER/TEST	W	AE	RPI	SS (68% Band)
READING	484	8-6	75/90	93 (90-95)
MATHEMATICS	495	9-10	93/90	104 (100-107)

Letter-Word Identification	482	8-6	73/90	94 (91-97)
Applied Problems	494	9-8	91/90	101 (96-106)
Passage Comprehension	486	8-4	77/90	93 (89-97)
Calculation	496	10-1	95/90	105 (100-110)

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MATCH IT!
Sample A:

Hey do you like sports, I do. I play all kinds of sport like... Soccer, baseball and basket ball. I think all kids should play some kind of sports. So I want to tell you about the time when I hit my grandpa like soft ball a few last year was my first year playing Soft cause I didn't want the boys to do to stick on me so I tried not to make a fool of myself. I wasn't until my last game when I finally thought I was doing good. In my last game was when I hit my grandpa. There was a slow pitcher so it was easy to hit the ball. There were 4 runs and 2 out. The bases were loaded and I was up to bat, I got out the game is over. When the ball came SMACK! The ball was out of the ball park. Every body got into home plate, but I almost got out I slid right under the. When the score keeper were done talking about my good hit they said "that it counted as 8 point when we were only glad to have 6. My team was so proud of me and so am I."

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MATCH IT!
Sample B:

Rainbows have pretty colors. Rainbows are very hard to see and find. When the sun is lower the rainbows will be higher in the sky. You see more rainbow next to each other. A rainbow is very high up in the sky. If you are in a airplane you can see a full circle. I like to see rainbows. They are pretty. I all see rainbows of going to the end of the rainbow. Rainbows are one of the favorite things to see. I wonder if a unicorn see the end of the rainbow. Thank you for reading. It can't hope you like it.

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MATCH IT!
Sample C:

Fun Things to Do as A Fourth Grader
I love being a fourth grader. There is so many fun things you can do. If you're lucky you get a nice teacher you can do even more fun stuff. There's alot of things to do like field trips. You can go to places like parks, movie theaters, live centers, and more fun places. When you get back from field trips you can do more stuff. I like to read because it makes your imagination go wild and that's fun! Usually on Fridays we go to theaters and play. I like playing games like Around the World. I usually play with friends or classmates. After school we do a little bit of work and go to P.E. We play games like Dodge Ball, Kick Ball, Kick Out, and lots more! Oh recess I love to do that. You get to go outside and play on the playground and it also gives your brain a little rest break. When you go back in you can get on your computer and play games. There is all kinds of websites you can get on like Yepi, Game Witch, Edheads, kizi, and lots of more fun games! I really enjoy being a fourth grader, but you only get to be one for some months. I enjoy being one and I hope you do to. Have a great time being a fourth grader!

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GLASGOW COMA SCALE

Glasgow Coma Scale		
Response	Score	Points
Eye Opening Response	Eyes open spontaneously	4 Points
	Eyes open to verbal command, speech, or shout	3 Points
	Eyes open to pain (not applied to face)	2 Points
Verbal Response	No eye opening	1 Point
	Oriented	5 Points
	Confused conversation, but able to answer questions	4 Points
Motor Response	Inappropriate responses, words describe	3 Points
	Incomprehensible sounds or speech	2 Points
	No verbal response	1 Point
	Obeys commands for movement	6 Points
	Purposeful movement to painful stimulus	5 Points
Motor Response	Withdraws from pain	4 Points
	Abnormal (spastic) flexion, decorticate posture	3 Points
	Extensor (rigid) response, decerebrate posture	2 Points
	No motor response	1 Point

Worst Brain Injury = 3-10 points. Moderate Brain Injury = 9-12 points. Severe Brain Injury = 3-8 points.

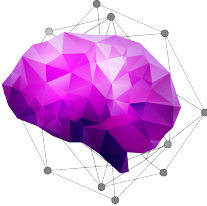
Source: <http://www.knowyourbrains.com/brain-injury/brain-injury-test/>

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BRAIN INJURY STATS

- over 812,000 kids aged 17 and under were treated in the ED for TBI
- over 23,000 TBI-related hospitalizations for children
- 2,529 deaths TBI-related deaths for children
- 283,000 kids were treated in the ED for sports and recreation-related TBI (SRR-TBI)
- 45% of all SRR-TBI visits were due to contact sports
- Activities with the highest number of visits = football, bicycling, basketball, playground activities, soccer

CDC 2016 stats



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BRAIN INJURY STATS

- Approximately 2.5 million students with TBI in the US educational system annually (Lundine, 2017)
- 27,000 kids with TBI served under IDEA (National Center for Education Statistics, 2017-2018)

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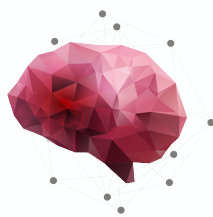
WHY UNDERIDENTIFICATION?

- Lack of hospital-school communication
- Lack of awareness among educators
- Parent-educator relationships
- More obvious when the deficits are severe
- Lack of physical deficits
- Inefficient/inappropriate testing
- Documentation
- Inconsistent care
- Department of Education – TBI is a "low incidence" educational disability

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COMMON ISSUES AFTER BRAIN INJURY

- Sensory and Motor
- Attention and Concentration
- Processing Speed
- Memory
- Visual-Spatial
- Language
- Social Skills
- Behavioral
- Executive Functions
- Emotional (sadness, irritability)



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COMMON ISSUES AFTER BRAIN INJURY

- Most reported TBI sequelae re: school performance:
 - Progressive lag in academic achievement
 - Executive dysfunction
 - Social/behavioral problems

(Glang, Ettel, Tyler, & Tadis, 2012)

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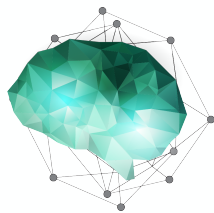
COMMON ISSUES AFTER BRAIN INJURY

- No two injuries are the same!
- Some effects are immediate, others aren't obvious until demands increase
- Earlier injuries usually associated with poorer outcomes
- Academic performance may be inconsistent across domains
- Rapidly changing needs and recovery
- Mild TBI (Concussion):
 - 1 MILD TBI – TYPICAL FULL RECOVERY WITHIN 4 MONTHS
 - APPROXIMATELY 14%-21% MAY DEMONSTRATE PERSISTENT SYMPTOMS FOR MONTHS AFTER THE INJURY (Lundine, Ciccia, & Brown, 2019)

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EXECUTIVE FUNCTIONS

- Task initiation
- Self-awareness
- Attentional control
- Time management
- Organization
- Planning
- Working memory
- Goal setting
- Mental flexibility



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EXECUTIVE FUNCTIONS

- Impairments are a result of damage to the frontal lobe
- Students may be seen as defiant, lazy, not caring about their work
- Students with executive dysfunction may:
 - Be impulsive
 - Be disorganized
 - Take a long time to respond to questions
 - Not be able to initiate tasks on their own
 - Have poor social judgment
 - Require constant cueing and reminders, even on the most routine of tasks
 - Have limited attention to tasks
 - Struggle with switching gears
 - Be late and unprepared for class
 - Not get the big picture

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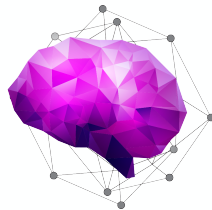
SOCIAL SKILLS

- Affect daily living and quality of life
- Impaired social function is the most disabling result of a TBI (Simple, Carchota, & Noble-Haweskin, 2012)
- Students with social skills deficits after a TBI may:
 - Have difficulty interpreting nonliteral/figurative language
 - Not understand sarcasm
 - Have difficulty navigating the dating world
 - Have difficulty interpreting nonverbal communication
 - Be disinhibited
- Social skills deficits can have a negative effect on reading comprehension and written language

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QUALIFYING STUDENTS

- Typical:
 - School psychologist evaluation (WISC-V, etc.)
 - SLP evaluation (language tests)
 - Teacher report
 - Classroom observation
- IQ score



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IDEA

"Traumatic brain injury" means an acquired injury to the brain which is caused by an external physical force and which results in total or partial functional disability or psychosocial impairment, or both, that adversely affects a student's educational performance. The term applies to open or closed head injuries resulting in impairment in 1 or more of the following areas:

- (a) Cognition
- (b) Language
- (c) Memory
- (d) Attention
- (e) Reasoning
- (f) Behavior
- (g) Physical functions
- (h) Information processing
- (i) Speech

(2) The term does not apply to brain injuries that are congenital or degenerative or to brain injuries induced by birth trauma.

(3) A determination of disability shall be based upon a full and individual evaluation by a multidisciplinary evaluation team, which shall include an assessment from a family physician or any other approved physician as defined in 1978 PA 268, MCL 333.1101 et seq.

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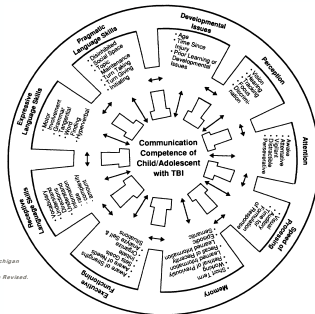
MSHA GUIDELINES

- Knowing that a student is eligible for speech and language service secondary to TBI, SLPs do not need standardized assessment scores for eligibility as the student qualifies under the area of related service, although standardized testing may be helpful for treatment planning

Michigan Speech-Language Hearing Association. (2006). Michigan Speech-Language Guidelines: Suggestions for Eligibility, Service Delivery, and Exit Criteria Revised. Lansing, MI: Author.

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MSHA



Michigan Speech-Language Hearing Association. (2006). Michigan Speech-Language Guidelines: Suggestions for Eligibility, Service Delivery, and Exit Criteria Revised. Lansing, MI: Author.

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QUALIFYING STUDENTS - PROBLEMS

- IQ scores are not related to executive functions (Ardila, Pineda, & Rosselli, 2000)
- Language tests – typically look at the form of language (usually preserved)
- Quiet environment
- Learning new skills is more difficult than regaining “lost” skills
- Rate of recovery
- Current assessments focus on discrete cognitive functions – students with TBI will most likely show deficits in situations requiring generalization of previously learned information, retention of information over time, and focusing and monitoring attention (Tvisaker, 1998)

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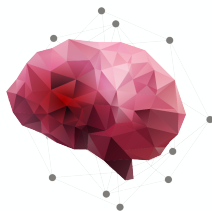
QUALIFYING STUDENTS

- Interdisciplinary teams: physicians, athletic trainers, nurses, PT, OT, neuropsychologists, teachers, support staff, SLP, counselors, etc.
- Curriculum based assessments
- Teacher and parent reports/surveys
- Standardized tests:
 - Pediatric Test of Brain Injury; ages 6-16
 - S-FAVRES (Functional Assessment of Verbal Reasoning and Executive Strategies – Student Version); ages 12-19
 - CASL-2 (Comprehensive Assessment of Spoken Language, Second Edition); ages 3-21
 - Behavioral Assessment of the Dysexecutive Syndrome for Children (BADS-C); ages 8-16
- On-going, dynamic assessment and frequent monitoring
- Self-reporting measures
- Neuropsychological Report
- Education

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COGNITIVE-COMMUNICATION DISORDER

▪ ASHA defines cognitive-communication disorders as difficulty with any aspect of **communication** that is affected by disruption of **cognition**. Some examples of **cognitive** processes include: attention, memory, organization, problem solving/reasoning, and executive functions.



▪ Affects activities of daily living, academic performance, and work performance

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NEUROPSYCHOLOGISTS

- Psychologists who specialize in understanding how injuries of the brain affect cognitive functions and behaviors.
- Help clarify an individual's strengths and weaknesses in the context of a learning or developmental disability, medical event, or psychiatric condition.
- Use standardized tests, information about premorbid functioning, and well-developed norms to compare individuals to a peer group to determine if a weakness is an actual deficit.
- Look at different domains of cognitive functioning, psychosocial history, medical history, and personality/mood factors that might be contributing to the current issues.
- Use findings to make recommendations to keep clients safe and moving towards individual goals.

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MILD TBI

- Reliance on 1 assessment may not detect subtle changes following a mild TBI (Brown et al, 2019).
- Collaboration with an interdisciplinary team
- Curriculum-based assessment
- CDC Recommendations:
 - Battery of assessments
 - Neurocognitive assessment
 - Self-report measures
 - Post-Concussion Symptom Inventory-2
 - Behavior Rating Inventory of Executive Functions-2
- Best predictor of academic problems = self-reported symptom severity and executive dysfunction measures (Ransom et al, 2016)
- Education

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MODERATE TBI

- Collaboration with an interdisciplinary team
- Curriculum-based assessment
- Self-report measures
- Battery of cognitive assessments/ neuropsychologist evaluation
- Assistive technology
 - Wisconsin Assistive Technology Initiative (WATI)
- Education



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SEVERE TBI

- Collaboration with an interdisciplinary team
- Functional communication assessment
 - Functional Communication Profile-Revised
- AAC assessment
- Assistive technology
- Curriculum-based assessment
- Neuropsychological evaluation/cognitive assessments
- Education

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RESOURCES

- Colorado Department of Education
 - The Brain Check Survey www.cokidswithbraininjury.com
- Michigan Speech-Language Guidelines: Suggestions for Eligibility, Service Delivery, and Exit Criteria Revised; 2006
- Neuro-QOL (<http://www.healthmeasures.net/explore-measurement-systems/neuro-qa>)
- CDC HEADS UP Program
- Michigan TBI online learning (<http://www.mitbtraining.org>)



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