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Using Nonstandardized Assessment to Evaluate Cognitive-Communication Abilities in Students with Traumatic Brain Injury

Jennifer Lundine, PhD, CCC-SLP, BC-ANCDS

Moderated by:
Amy Natho, MS, CCC-SLP, CEU Administrator, SpeechPathology.com

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The Use of Nonstandardized Assessment to Evaluate Cognitive-Communication Abilities in Students with Traumatic Brain Injury

Jennifer P. Lundine, PhD, CCC-SLP, BC-ANCDS

Learning Outcomes

After this course, participants will be able to:

- List possible reasons for under-identification of students with TBI in the schools.
- Describe advantages and disadvantages of standardized testing as a means to assess youth with TBI.
- Describe appropriate nonstandardized assessment strategies that should be considered when assessing cognition and communication in this population of children and adolescents.

Brain Injuries

- TBI = Traumatic brain injuries
  - Concussion/"Mild" brain injuries
- ABI = Acquired brain injuries
  - Includes TBI & non-traumatic injuries

"Other" Brain Injuries → Non-Traumatic

- Anoxia
- Infection
- Tumor
- Stroke
- Metabolic/chemical

Pediatric TBI: Facts & Statistics

- The 4 age groups at highest risk for TBI:
  1. 15-24 year olds
  2. >75 year olds
  3. 5-14 year olds
  4. 0-4 year olds

- Approximately **661,349** are children ages 0-14 years
  - If including 15-24 year olds = **1.1 million**

(Faul et al. , 2010; https://www.cdc.gov/traumaticbraininjury/get_the_facts.html)

What happens to these students?

- Less than 4% of children with TBI are admitted to inpatient rehabilitation
- Estimates of 2.5 million students with TBI in the US educational system annually
- Studies estimate that 98-99% of children with TBI are not appropriately identified within the US education system and, therefore, not receiving the appropriate support services

(Dettmer, Daunhauer et al., 2007; Green et al., 2014; Schutz et al., 2010)

Why is there such a huge discrepancy?

- Standardized language and cognitive testing often fails to show deficits
- Even after severe injury, impairments associated with the ABI often become "invisible"
- Deficits grow in subsequent years

(Cook, DePompei et al., 2011; Coelho, 2007)

What about children injured before entering school?

- Skills not yet developed or developing at the time of injury may be more compromised than fully established skills
- Neurocognitive Stall
  - Lag in development of later emerging cognitive skills
  - Regain the old skills but can't "keep up" with developmental changes of peers

(Chapman, 2006)

Cognitive-Communication Challenges Post-TBI

- Main hallmark of pTBI
- Deficits manifest as problems with communication, but arise from impairments in cognitive domains

(Cermak et al., 2019; Turkstra, Politis, & Forsyth, 2015)

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Cognitive-Communication Challenges Post-TBI

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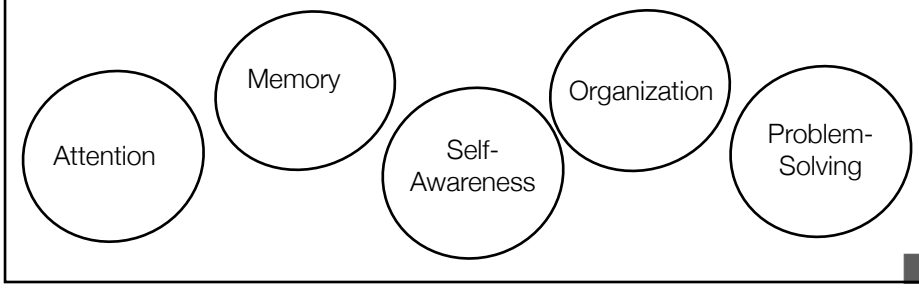

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Cognitive-Communication Challenges Post-TBI

- Picture a child who needs to **write an essay** comparing the habitat of a forest to that of a desert
  - Poor attention → unable to complete the task, easily distracted, loses focus within and between paragraphs
  - Poor memory → forgets that he must incorporate key vocabulary, doesn't remember the key vocabulary, can't keep track of what he's already said (repeats)
  - Poor organization → essay lacks coherence and cohesion (ideas don't link together appropriately)

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Cognitive-Communication Challenges Post-TBI

- Often the most devastating to social participation
  - Topic maintenance, turn-taking, repairing communication breakdown
  - Disinhibition, emotional lability

(Rosema, Crowe, & Anderson, 2012; Ylvisaker, 1993)

CONTINUED

Cognitive-Communication Challenges Post-TBI

- May have greatest impact on long-term psychosocial & vocational outcomes
  - Fewer close friendships
  - Less likely to enroll in secondary education, live independently, & obtain a paying job
  - Increased risk for offending behavior & incarceration

(Cameto, Levine & Wagner, 2004; Chitsabesan et al., 2015; Prigatano & Gupta, 2006; Todis et al., 2011)

Outcomes in Pediatric Brain Injury: Delayed Developmental Consequences

- Brain injury jeopardizes the ability to master new skills
- Slow maturation of specific areas of the brain
- Increasing emotional & behavioral problems and social isolation
- Poorly conceived systems of care, rehabilitative management, & education

School = Rehab

- Schools are the "major agent of ongoing rehab"
- One of the main predictors of good outcomes is recognition of possible difficulties in school system that may impede progress

(Semrud-Clikeman, 2010; Shaw, 2014)

Progressive Difficulties Increasing Risks of Long-Term Failure

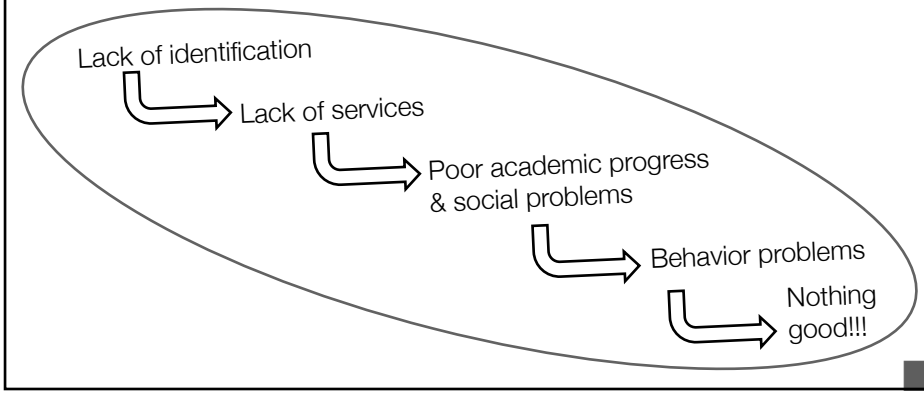
- Typical difficulties for students with ABI:
  - Understanding & following complex verbal & written language
  - Incorporation of new vocabulary into previously learned knowledge
  - Short-term & working memory
  - Complex attention
  - Organization, initiation, inhibition
- Lack of success may lead to disengagement, poor academic progress, behavior problems

Let's Say That Again…

- Studies estimate that 98-99% of children with TBI are not appropriately identified within the US education system …

Let's Say That Again…

- Studies estimate that 98-99% of children with **TBI** are not appropriately identified within the US education system …



So… How do we begin to change this situation?

Our challenge:

Improve our ability to identify the cognitive-communication difficulties experienced by students with TBI through appropriate assessment.

Standardized Assessment

Advantages of Standardized Assessment for Students with TBI

- Allow comparison to a sample of same-aged children/adolescents
- Allow a reference to "score" performance
  - Magic 1.5 - 2 SD from the mean to qualify for services
- Methods are structured & prescriptive

Disadvantages of Standardized Assessment for Students with TBI

- Lack of ecological validity
  - Skills & abilities needed in real-life activities
  - Common areas of deficit

- Limited availability of standardized or criterion-referenced tests of cognitive-communication skills designed for students with TBI

Poor Assessment of Skills & Abilities Needed in Real-Life Activities

- Testing environment
- Cognitive demands
- Test what you should do, rather than what you would do

Limited Assessment of Common Deficit Areas

- Prior knowledge generally retained after TBI
- Developmental language tests focus predominantly on **FORM** and **CONTENT** →

  but primary communication deficit after TBI is in language **USE** (pragmatics)

Standardized Testing with pTBI: Limited availability of tests

- Very few standardized or criterion-referenced cog-comm assessments designed for kids with TBI (PTBI, S-FAVRES)
- Developmental language tests usually don't include kids with TBI in norming samples

Nonstandardized Assessment

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Not Just a Free-For-All

- More flexible, no less rigorous
- Systematic clinical procedures allowing the SLP to observe performance in a functional context
- ASHA Practice Portal designates nonstandardized assessment as a necessary component of a comprehensive evaluation of pTBI

(www.asha.org/Practice-Portal/Clinical-Topics/Pediatric-Traumatic-Brain-Injury/)

CONTINUED

Advantages of Nonstandardized Assessment for Students with TBI

- Allow performance to be evaluated in a realistic setting and/or activity

Taking notes during a classroom lecture

Working during "group time" in the classroom

Socializing with peers in the lunchroom

Responding to a prompt for a written essay

Preparing to go home from school

CONTINUED

Advantages of Nonstandardized Assessment for Students with TBI

- Allow performance to be evaluated in a realistic setting and/or activity
- Informs the development of intervention plans
  - Focus on functional & relevant activities for the individual student
  - Consistent with WHO-ICF focus on activities & participation

(World Health Organization, 2007)

CONTINUED

Advantages of Nonstandardized Assessment for Students with TBI

- Allow performance to be evaluated in a realistic setting and/or activity
- Informs the development of intervention plans
  - Focus on functional & relevant activities for the individual student
  - Consistent with WHO-ICF focus on activities & participation
- Found to be more predictive of vocational success than standardized tests

(LeBlanc, Hayden, & Paulman, 2000)

Disadvantages of Nonstandardized Assessment for Students with TBI

- Potential for higher clinical burden on SLP
  - Observation can be time consuming
  - Detailed documentation is required
  - Results should be reliable and valid
  - Observation must target the specific cognitive-communication domain of concern
- No manual or test form on which you can rely

Examples of Nonstandardized Assessment Methods

- Task analysis
- Dynamic assessment
- Functional behavior assessment
- Criterion-referenced assessment
- Curriculum-based assessment
- Discourse analysis

Curriculum-Based Assessment (CBA)

- Classroom as one of the most ecologically valid contexts available for school-age children
- Uses curricular content & context to measure a student's intervention needs & progress within that setting

Curriculum-Based Assessment (CBA)

- Not informally observing behavior
- Rather, CBA involves
  - Careful, systematic, & data-driven evaluation
  - Staging within situations & contexts relevant to the student's academic & social performance

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Curriculum-Based Assessment (CBA)

- Identify when and where breakdown is happening during a particular activity
- Offers the opportunity to trial strategies and/or skills that might improve performance
- Success = Observable change to a student's behavior or performance in the classroom (or other relevant environment)

(Nelson, 1989)

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Questions relevant to CBA

- What skills are needed to complete the curricular task successfully?
- What cognitive-communication skills and strategies does the student currently demonstrate?
- What modifications to the curriculum, classroom, or expectations might make this task more accessible for the student?

(Nelson, 1989)

What modifications…?

- Task Analysis
  - Breaking down an activity into its component parts
  - What skills or abilities are needed to complete each step?
- Dynamic Assessment
  - Introducing a strategy or modification & observing its effect on a student's performance

(Coelho, Ylvisaker, & Turkstra, 2005)

CBA Example 1: Juan

- 7th grade, moderate TBI 1 year ago
- Average language, mild delays in memory & executive functions on neuropsych testing
- Problems in school: Off-task, disruptive behaviors during lectures, low grades on assignments and tests related to lecture material
- Possible TBI-related symptoms: decreased attention, organization, working memory, disinhibition

CBA Example 1: Juan

- Task Analysis: Taking notes
  - Listen, comprehend the material
  - Identify main ideas/primary details & write them down
  - Inhibit less relevant details
  - Shifting attention required (paying attention while writing things down)
- Dynamic Assessment:
  - Provide skeleton outline to allow Juan to fill-in key facts during lecture
  - Move his seat to the front of the class

CBA Example 1: Juan

- Skeleton outlines and a new seating chart improve Juan's ability to record appropriate details during lectures →
  - Improves his access to *good* notes from which he can study for tests
  - Reduces distracting/off-topic behaviors because now he is appropriately "busy" during lectures
  - Front of classroom seat puts him closer to the teacher, decreasing distractions – and increasing the teacher's ability to "keep" his attention focused on her

CBA Example 2: Malik

- Kindergarten, severe TBI 4 years ago; school unaware of TBI history
- Upon discharge from inpatient rehabilitation, Malik's language and cognitive skills were within age appropriate limits, no services received since
- Problems in school: Inability to rotate through "centers," disruptive behaviors, difficulty with pre-literacy skills → "failing" kindergarten
- Possible TBI-related symptoms: decreased cognitive flexibility, memory, low frustration tolerance

CBA Example 2: Malik

- Dynamic Assessment
  - Tracking behaviors, their context, & consequences (along with school psychologist)
  - Lack of structure and increased noise during stations might be over-stimulating & distracting
  - Unplanned schedule changes appear to increase negative behaviors
  - Generally poor attention to teacher, especially during group activities (carpet time, stations, etc.)

CBA Example 2: Malik

- Headphones: screen out additional noise and improve attention during stations
- FM system: improves attention to teacher during structured learning activities
- Picture schedule for the classroom

Discourse Analysis

- Essential part of evaluating students with TBI
  - Due to complex & subtle nature of cognitive-communication challenges primarily affecting language *use*
  - Not assessed on most developmental tests of language
- Allows an examination of how a student interprets and/or expresses complex ideas in speech or writing

(Coelho et al., 2005; Lundine, in press)

Discourse Analysis

- All **modalities**
  - Reading
  - Writing
  - Speaking
  - Listening

Compared against grade-level curricular expectations

- All **genres**
  - Conversation
  - Narrative
  - Expository
  - Persuasive

Discourse Analysis: Relevant Variables

- **Lexical diversity**: variation of vocabulary used in a passage
- **Syntactic complexity**: number & types of different clauses produced, & how they are combined within & between sentences
- **Content/Structure**: Is the content sufficient, relevant, and well-organized to meet the purpose of the passage?
- **Audience**: Is the passage appropriate for the intended audience?

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Summarizing as a Means to Assess Discourse Comprehension

- Specifically related to expository passages (but can also be used in narrative, persuasive contexts)
- Summarizing requires:
  1. Comprehension of the central/main idea of the passage
  2. Integration of new information with prior knowledge
  3. Identification of key details (suppression of irrelevant details)
  4. Implementation of appropriate organizational structure

(Lundine et al., 2018)

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Summarizing as a Means to Assess Discourse Comprehension

- Helpful in assessing a student's ability to **comprehend** the form, content, and use of discourse
  - Sentence-level vocabulary
  - Theme, argument of the passage (i.e., gist comprehension)
  - Identification of relevant details

Discourse Analysis: Methods

- Verbal or written summary of relevant topic discussed in the classroom
- Verbal or written summary of material read from textbook
- Answering questions about a written/verbal passage (to assess comprehension of ideas, vocab)
- Spontaneous generation of a written/verbal narrative

Discourse Analysis Example: Maria

- 9th grade, moderate-severe TBI 3 months ago
- Average language, average to low average memory & executive functions on neuropsych testing
- Problems in school: Excessive time required to complete homework, incomplete assignments, poor grades
- Possible TBI-related symptoms: decreased planning, organization, working memory

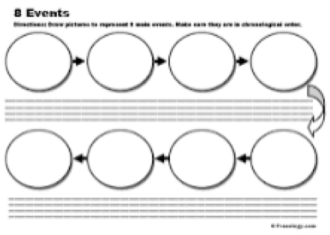
Discourse Analysis Example: Maria

- CBA: over multiple days & in various classes
- Discourse analysis: Examination of a report submitted in history class
  - Generally disorganized, lack of coherent structure
  - No central argument/theme
  - Did not meet length requirements for the project

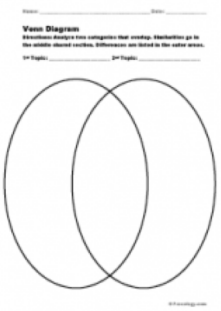
Discourse Analysis Example: Maria

- Assistance with overall planning/organization:
  - Establishing a consistent method of planning & recording the steps needed to finish a project
  - Appropriate recording of due dates (and method to indicate when they are complete + turned in)
- Discourse Assistance:
  - Scaffolding use of graphic organizers & outlining
  - “Check-ins” to monitor & evaluate progress

Sequence



Compare/Contrast



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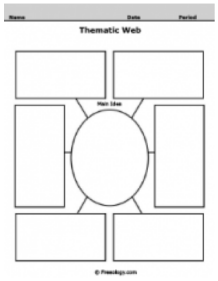
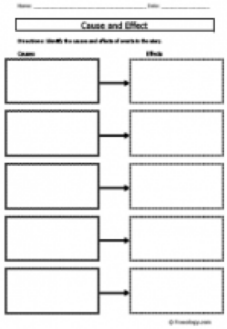


Cause/Effect



http://freeology.com/graphicorgs/

Discourse Analysis Example: Maria

- Given structured planning & organizational strategies – time required for homework decreased
- Given supportive scaffolding – writing assignments improved
- Given increased academic success, Maria was motivated to continue to use these strategies to help herself (which also improved her mood/affect)

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Implications for Success

- Making students with TBI more successful in the classroom (& beyond) has ripple effects
  - Reduces behavioral challenges associated with TBI
  - Enhances self-worth
  - Increases likelihood for success inside and outside the classroom (& beyond)
  - Improves long-term outcomes for education & employment

(Ylvisaker, 1998)

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In Summary…

- Students with TBI often exhibit subtle, high level cognitive-communication challenges that significantly (& negatively) affect their lives – but that do not show up on standardized tests
- Nonstandardized assessment offers SLPs a means to evaluate these skills in the contexts/settings where these skills are needed

CONTINUED

In Summary…

- The SLP is the right person to initiate & facilitate nonstandardized assessment of cognition & communication for students with TBI
- Curriculum-based assessment & discourse analysis (along with task analysis & dynamic assessment) can help the SLP to plan relevant interventions and monitor progress

References

- American Speech-Language-Hearing Association. Pediatric Traumatic Brain Injury (Practice Portal). n.d. www.asha.org/Practice-Portal/Clinical-Topics/Pediatric-Traumatic-Brain-Injury/. Accessed September 20, 2019.
- Cameto, R., Levine, P., & Wagner, M. (2004). *Transition planning for students with disabilities: A special topic report of findings from the National Longitudinal Transition Study-2 (NLTS2)*. Retrieved from http://files.eric.ed.gov/fulltext/ED496547.pd
- Chapman, S.B. (2006). Neurocognitive Stall: A Paradox in Long Term Recovery from Pediatric Brain Injury. *Brain Injury*, 3(4): 10–13.
- Chitsabesan, P., Lennox, C., Williams, H., Tariq, O., & Shaw, J. (2015). Traumatic brain injury in juvenile offenders: Findings from the comprehensive health assessment tool study and the development of a specialist linkworker service. *Journal of Head Trauma Rehabilitation*, *30*(2), 106–115.
- Coelho, C.A. (2007). Management of Discourse Deficits Following Traumatic Brain Injury: Progress, Caveats, and Needs. *Seminars in Speech and Language,* 28(2): 122–135.
- Coelho, C., Yivisaker, M., & Turkstra, L. S. (2005). Nonstandardized assessment approaches for individuals with traumatic brain injuries. Seminars in Speech and Language, 26(04), 223–241.
- Cook, L. G., DePompei, R. & Chapman, S.B. (2011). Cognitive Communicative Challenges in TBI: Assessment and Intervention in the Long Term. *Perspectives on Neurophysiology and Neurogenic Speech and Language Disorders,* 21(1): 33–42.
- Cirrin, F.M., Schooling, T.L., Nelson, N.W., Diehl, S.F., Flynn, P.F., Staskowski, M., Torrey, T.Z. & Adamczyk, D.F. (2010). Evidence-Based Systematic Review: Effects of Different Service Delivery Models on Communication Outcomes for Elementary School–age Children. *Language Speech and Hearing Services in Schools* , 41(3): 233-264.
- Dettmer, J.L., Daunhauer, L., Detmar-Hanna, D. & Sample, P.L. (2007). Putting Brain Injury on the Radar: Exploratory Reliability and Validity Analyses of the Screening Tool for Identification of Acquired Brain Injury in School-Aged Children. *The Journal of Head Trauma Rehabilitation* 22(6): 339–349.
- Faul, M., Xu, L., Ward, M.M. & Coronado, V.G. (2010). *Traumatic Brain Injury in the United States: Emergency Department Visits, Hospitalizations and Deaths 2002-2006*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.

CONTINUED

References

- Gillam, R.B., Pena, E.D. & Miller, L. (1999). Dynamic assessment of narrative and expository discourse." *Topics in Language Disorders,* 20(1): 33–47.
- LeBlanc, J. M., Hayden, M. E., & Paulman, R. G. (2000). A comparison of neuropsychological and situational assessment for predicting employability after closed head injury. The Journal of Head Trauma Rehabilitation, 15(4), 1022–1040.
- Lundine, J. P. (in press). Assessing expository discourse abilities across the academic spectrum. Topics in Language Disorders.
- Lundine, J. P., Harnish, S. M., McCauley, R. J., Zezinka, A. B., Blackett, D. S., & Fox, R. A. (2018). Exploring summarization differences for two types of expository discourse in adolescents with traumatic brain injury. American Journal of Speech-Language Pathology, 27(1), 247–257.
- McGinty, A.S. & Justice, L.M. (2006). Classroom-Based versus Pull-out Speech-Language Intervention: A Review of the Experimental Evidence. *EBP Briefs,* 1(1): 1–25.
- Nelson, N.W. (1989). Curriculum-based language assessment and intervention. *Language Speech and Hearing Services in Schools* 20(2): 170-184.
- Nelson, N.W. (April, 2011). Curriculum-based language Assessment and Intervention for School-Age Children and Adolescents. Mississippi Speech-Language-Hearing Association State Conference, Jackson, MS.
- Nelson, N.W., & Van Meter, A.M. (2002). Assessing curriculum-based reading and writing samples." *Topics in Language Disorders,* 22(2): 35–59.
- Prigatano, G. P., & Gupta, S. (2006). Friends after traumatic brain injury in children. *Journal of Head Trauma Rehabilitation*, *21*(6), 505–513.
- Schutz, L., Rivers, K.O., McNamara, E., Schutz, J. & Lobato, E.J. (2010). Traumatic Brain Injury in K-12 Students: Where Have All the Children Gone? *International Journal of Special Education,* 25(2)0: 55–71.
- Semrud-Clikeman, M. (2010). Pediatric traumatic brain injury: Rehabilitation and transition to home and school. *Applied Neuropsychology* , 17(2): 116–122.

CONTINUED

References

- Starling, J., Munro, N., Togher, L., & Arciuli, J. (2012). Training secondary school teachers in instructional language modification techniques to support adolescents with language impairment: A randomized controlled trial. *Language Speech and Hearing Services in Schools,* 43(4): 474-495.
- Todis, B., Glang, A., Bullis, M., Ettel, D., & Hood, D. (2011). Longitudinal investigation of the post-high school transition experiences of adolescents with traumatic brain injury. *Journal of Head Trauma Rehabilitation*, *26*(2), 138–149.
- Westby, C.S. (2014). A language perspective on executive functioning, metacognition, and self-regulation in reading." In Stone, C.A., Silliman, E.R.,Ehren, B.J. & Wallach, G.P. (eds.) Handbook of Language and Literacy: Development and Disorders, (2nd ed., 339–358). New York: Guilford Press.
- World Health Organization. (2007). International Classification of Functioning, Disability and Health Children and Youth Version (ICF-CY). Geneva: WHO.
- Ylvisaker, M. (Ed.). (1998). Traumatic brain injury rehabilitation: Children and adolescents (2nd ed.). Boston: Butterworth-Heinemann.

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Thank you!
Please contact me with questions or comments.

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