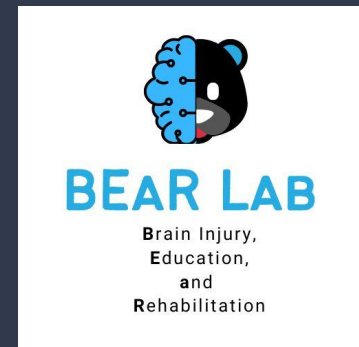


Assessing and Treating Children with Brain Injury

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MSLHA Conference 2023



Disclosures

I receive salary from the University of Maine and am receiving a presentation fee and conference registration waiver for this presentation from the Maine Speech Language Hearing Association.

I have no non-financial conflicts to disclose.

Learner Outcomes

After this presentation, participants will:

describe how to identify the history of a likely brain injury in children

identify evidence-based assessment practices in speech-language pathology for childhood brain injury based on clinical setting

identify evidence-based treatment and management practices in speech-language pathology for childhood brain injury based on clinical setting

Agenda

- 30 minutes: Background
- 15 minutes: Screening for Likely Brain Injury
- 30 minutes: SLP Assessment
- Break (15 min)
- 30 minutes: SLP Treatment
- 45 minutes: Case Study & Debrief
- 15 minutes: Q&A

About ME



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About YOU



- medical, school-based, private practice, other, combination
- primarily adults, primarily pediatrics, combination
- area of Maine
- years of practice
- familiarity with childhood brain injury

Background

Background: Childhood Brain Injury



An acquired brain injury (ABI) is an injury to the brain that:

- occurred *after* birth
- results in a change to the brain's neuronal activity
- is not hereditary, congenital, degenerative, or induced by birth trauma
- can be traumatic (TBI) or non traumatic

Background: Childhood Brain Injury in Maine



-

over 2000 children receive medical care for a brain injury each year

35 children experience stroke annually

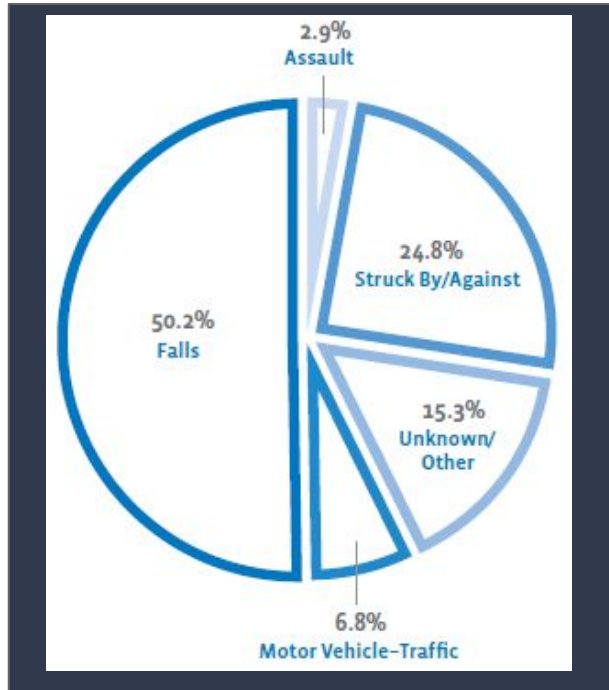
25,000 children living with ADHD

41,000 children living with a mental health disorder

Background: Childhood Brain Injury



Traumatic (TBI)



Non Traumatic

- Meningitis
- Vascular incidents (e.g., stroke)
 - Anoxia
- Toxic substances
- Brain tumors
- Encephalitis

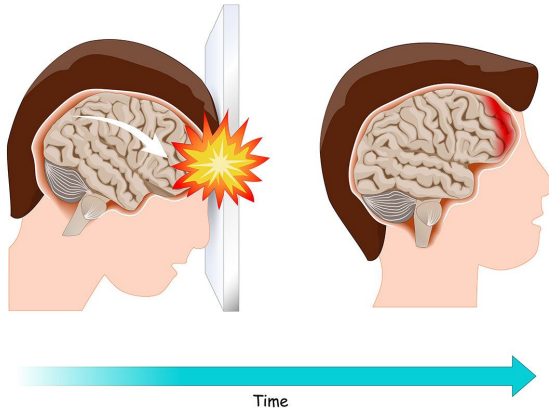
(Fault et al., 2010; Chan et al., 2016)

Background: Childhood Brain Injury



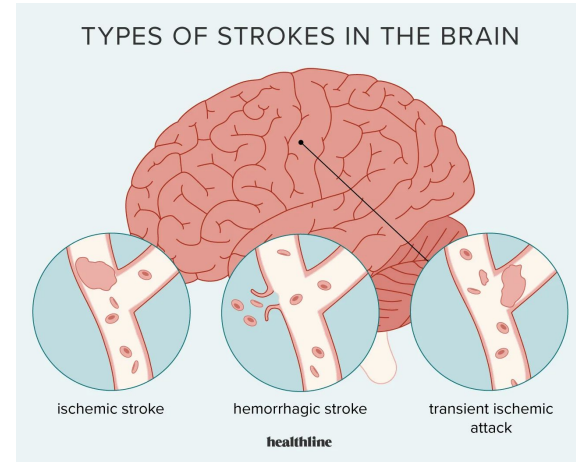
Traumatic (TBI)

diffuse

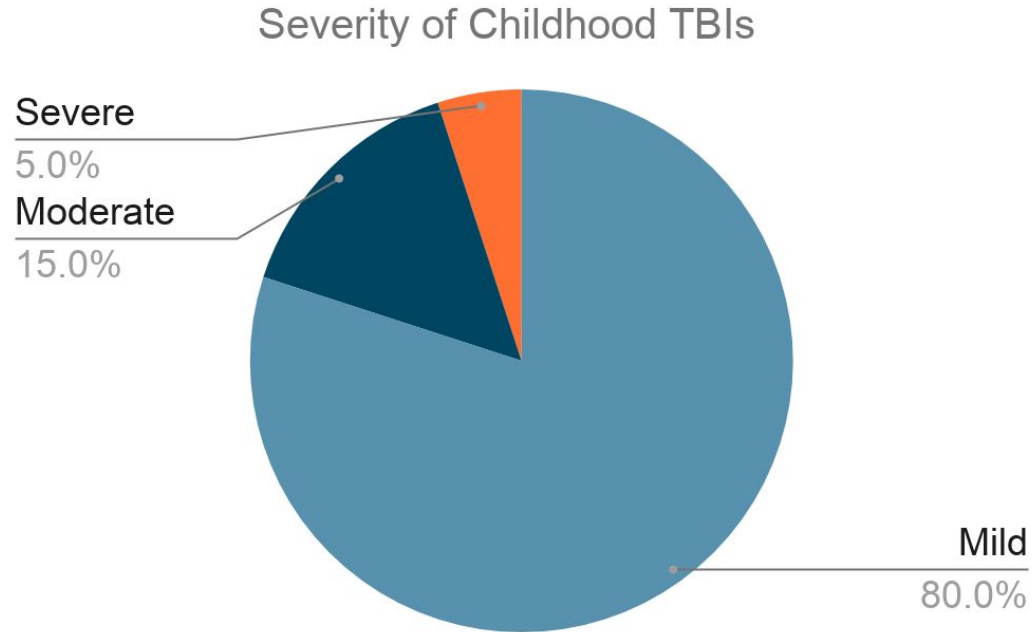


Non Traumatic

focal or diffuse



Background: Childhood Brain Injury



(Haarbauer-Krupa et al., 2018)

Background: Childhood Brain Injury



Childhood: 0- 17 y 11 mos

- Recover & develop differently than adult

- Most knowledge on childhood ABI is based on school-aged children

 - Recover differently based on age

0-3 year olds

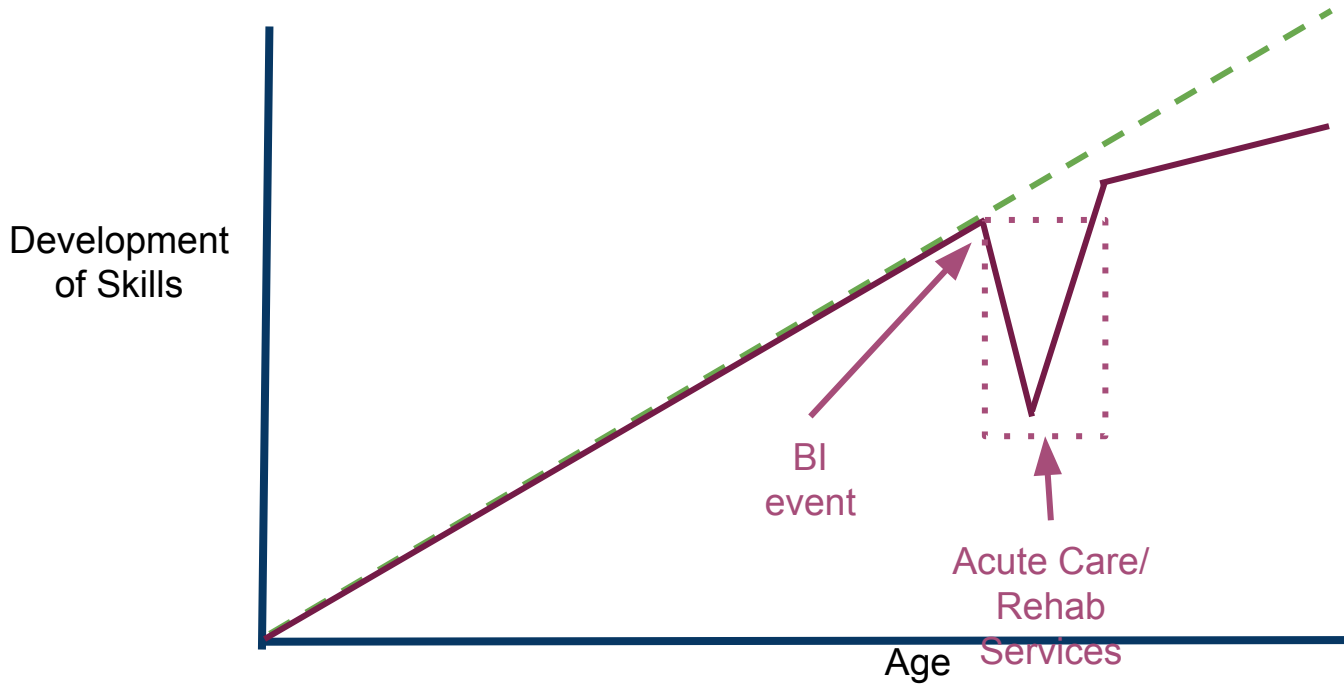
- Highest risk age group for TBI

Background: Childhood Brain Injury



Latent Presentation of Deficits (Neurocognitive Stall)

Typical Development



Development of a
Child who
Experiences a BI

Adapted from Chapman
(2006)

Effects of Childhood TBI: Acute

Table 3. Health effects associated with TBI

Category	Description
Cognitive	Deficits in: <i>attention; learning and memory; executive functions like planning and decision-making; language and communication; reaction time; reasoning and judgment</i>
Behavioral/ Emotional	<i>Delusions; hallucinations; severe mood disturbance; sustained irrational behavior; agitation; aggression; confusion; impulsivity; social inappropriateness</i>
Motor	<i>Changes in muscle tone; paralysis; impaired coordination; changes in balance, or trouble walking</i>
Sensory	<i>Changes in vision and hearing; sensitivity to light</i>
Somatic signs and symptoms	<i>Headache; fatigue; sleep disturbance; dizziness; chronic pain</i>

Sources: Anstey et al., 2004; Asikainen, Kaste, and Sarna, 1999; Clinchot, Bogner, Mysiw, Fugate, and Corrigan, 1998; Dikmen, Machamer, Fann, and Temkin, 2010; Granacher, 2005; Katz, White, Alexander, and Klein, 2004; Meares et al., 2011; Orff, Ayalon, and Drummond, 2009; Riemann and Guskiewicz, 2000; Riggio and Wong, 2009; Rogers and Read, 2007; Schmidt, Register-Mihalik, Mihalik, Kerr, and Guskiewicz, 2012; Silver et al., 2011; Williams, Morris, Schache, and McCrory, 2009; Ziino and Ponsford, 2006; Nampiarampi, 2008.

(ASHA, 2020; CDC, 2015)

Effects of Childhood TBI: Acute- Moderate-Severe

Greater severity of injury= greater severity of acute symptoms

More easily recognized/identified

Likely persist longer in the acute phase

- Changes in/loss of consciousness
- Impaired movement, balance, and/or coordination
- Seizures
- Visual deficits
- Speech/language deficits
- Swallowing deficits

Effects of Childhood TBI: Acute- Older Children

→	Headaches.....	0	1	2	3	4
	Feelings of Dizziness	0	1	2	3	4
	Nausea and/or Vomiting	0	1	2	3	4
	Noise Sensitivity, easily upset by loud noise	0	1	2	3	4
	Sleep Disturbance.....	0	1	2	3	4
→	Fatigue, tiring more easily	0	1	2	3	4
→	Being Irritable, easily angered	0	1	2	3	4
	Feeling Depressed or Tearful	0	1	2	3	4
	Feeling Frustrated or Impatient	0	1	2	3	4
	Forgetfulness, poor memory	0	1	2	3	4
	Poor Concentration	0	1	2	3	4
	Taking Longer to Think	0	1	2	3	4
	Blurred Vision	0	1	2	3	4
	Light Sensitivity, Easily upset by bright light.....	0	1	2	3	4
	Double Vision	0	1	2	3	4
	Restlessness	0	1	2	3	4

(e.g., Rivermead Post-Concussion Symptoms Questionnaire, Post Concussion Symptom Inventory; Barlow et al., 2010)

Effects of Childhood TBI: Acute- Young Children

Other reported symptom

Appetite changes

Behavioral dysregulation

Decreased engagement

Disrupted sleep

Enuresis

Increased dependence

Stomachaches

Vomiting

Fatigue

Irritability



What is observable in young children?

Results- Acute, Inpatient Experiences

50-75% of mild TBIs do not seek/receive acute medical services

*If receiving acute medical services
for a moderate-severe TBI:*

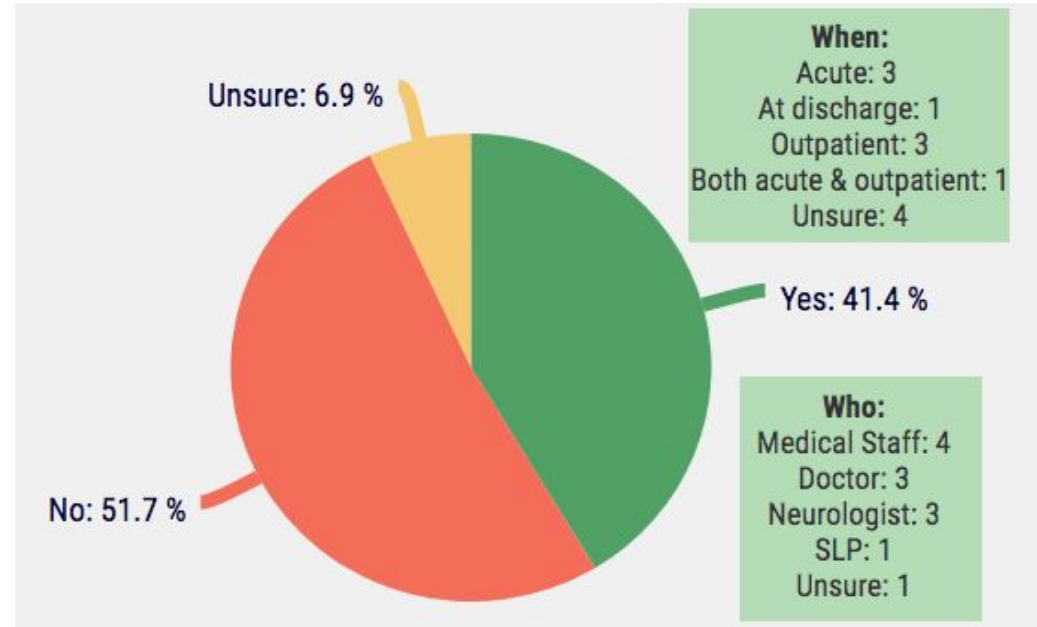
Service	% Children (#)	Mean Length of Service in days
Social Work	55.2% (16)	21.19
Physical Therapy	41.4% (12)	25.92
Speech-Language Therapy	37.9% (11)	31.09
Occupational Therapy	37.9% (11)	30.64

Results- Referral & Education

**Staff-Reported:
Referred to Ed/Rehab at
Discharge:
10-35%**

*referral associated with longer length of stay but parent-reported receipt of ABI education was not associated

**Parent-Reported:
Received ABI Education:**



Effects of Childhood TBI: Long-Term

Table 6. Outcome domains and descriptions for TBI common data elements unique to pediatrics

Domain	Description
Academics	Children with TBI have been found to have significant academic difficulties characterized by school failure and deficits in academic achievement, such as reading, math, and written language.
Adaptive and daily living skills	Adaptive and daily life functioning consists of multiple domains and involves the ability to adapt to and manage one's surroundings to effectively function in home, school, and community life. This domain also includes children's functional activity and activity limitations.
Family and environment	This domain includes moderators of outcome related to family and environment, as well as the consequences to family.
Infant and toddler measures	Childhood and adolescence represent a wide range of developmental levels, and most pediatric measures are inappropriate for infants and toddlers. Therefore, limited special measures are included for this age range.
Language and communication	Deficits in language comprehension and expression and in speech articulation are common after TBI. Measures of language use in context (pragmatics) are particularly sensitive to TBI effects.
Social cognition	Social cognition refers to the cognitive processes necessary for successful social interaction. A growing body of literature has documented impairments in this domain after TBI, in some cases independent of other cognitive impairments.

Source: McCauley et al., 2012

(ASHA, 2020; CDC, 2015)

Effects of Childhood TBI: Long-Term Concerns

Gap widens: can't keep up with peers → **latent presentation of deficits**

Evident in complex tasks/settings

Difficulty learning and generalizing new skills

Under-served:

Most families **do not receive referrals** to early-intervention or special-education services when being discharged from the acute hospital setting

Estimated that between **40 to 80%** present with **unmet needs**

We know very little about before school-aged brain injuries

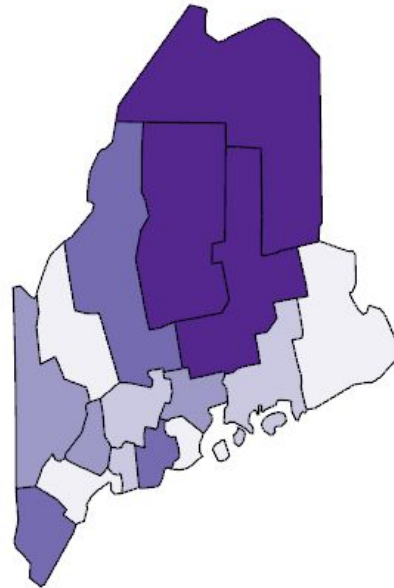
(CDC, 2018; Cronin, 2001; Haarbauer-Krupa et al., 2017; Kingery et al., 2017; van Heugten et al., 2017)

Unique Considerations for Childhood TBI in Maine

Preventable Hospital Stays per 100,000 people for Maine by County

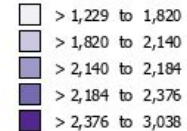
All Races (includes Hispanic/Latino), Both Sexes, Ages 65+, 2020

text



Preventable Hospital
Stays per 100,000
people
(Rate per 100,000)

[Quantile Interval](#)



Maine
Rate (95% C.I.)
2,223

SLP Role in TBI

assessment, treatment, and family/patient education of areas within scope of practice as part of a collaborative rehabilitation and/or educational team

Prevention

Screening for or comprehensive assessment (diagnosis) of speech, language, cognitive-communication, and swallowing disorders associated with TBI (AAC, hearing)

Referral for other services

Developing and implementing treatment plans involving direct and indirect intervention methods for functioning at the highest level of independence

Counseling persons with TBI and their families

Providing training to and advocating for persons with TBI and their families and caregivers

(CDC, 2018; Cronin, 2001; Haarbauer-Krupa et al., 2017; Kingery et al., 2017; van Heugten et al., 2017)

Screening for Likely Brain Injury

Name: _____ Current Age: _____ Interviewer Initials: _____ Date: _____

Ohio State University TBI Identification Method — Interview Form

Step 1

Ask questions 1-5 below. Record the cause of each reported injury and any details provided spontaneously in the chart at the bottom of this page. You do not need to ask further about loss of consciousness or other injury details during this step.

I am going to ask you about injuries to your head or neck that you may have had anytime in your life.

1. In your lifetime, have you ever been hospitalized or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about.

No Yes—Record cause in chart

2. In your lifetime, have you ever injured your head or neck in a car accident or from crashing some other moving vehicle like a bicycle, motorcycle or ATV?

No Yes—Record cause in chart

3. In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock)? Have you ever injured your head or neck playing sports or on the playground?

No Yes—Record cause in chart

4. In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, or from being shaken violently? Have you ever been shot in the head?

No Yes—Record cause in chart

5. In your lifetime, have you ever been nearby when an explosion or a blast occurred? If you served in the military, think about any combat- or training-related incidents.

No Yes—Record cause in chart

Interviewer instruction:

If the answers to any of the above questions are "yes," go to Step 2. If the answers to all of the above questions are "no," then proceed to Step 3.

Step 2

Interviewer instruction: If the answer is "yes" to any of the questions in Step 1 ask the following additional questions about each reported injury and add details to the chart below.

Were you knocked out or did you lose consciousness (LOC)?

If yes, how long?

If no, were you dazed or did you have a gap in your memory from the injury?

How old were you?

Step 3

Interviewer instruction: Ask the following questions to help identify a history that may include multiple mild TBIs and complete the chart below.

Have you ever had a period of time in which you experienced multiple, repeated impacts to your head (e.g. history of abuse, contact sports, military duty)?

If yes, what was the typical or usual effect—were you knocked out (Loss of Consciousness - LOC)?

If no, were you dazed or did you have a gap in your memory from the injury?

What was the most severe effect from one of the times you had an impact to the head?

How old were you when these repeated injuries began? Ended?

Step 1 Cause	Step 2 Loss of consciousness (LOC)/knocked out				Dazed/Mem Gap		Age
	No LOC	< 30 min	30 min-24 hrs	> 24 hrs	Yes	No	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

If more injuries with LOC: How many? _____ Longest knocked out? _____ How many ≥ 30 mins.? _____ Youngest age? _____

Step 3 Cause of repeated injury	Typical Effect		Most Severe Effect				Age	
	Dazed/ memory gap, no LOC	LOC	Dazed/ memory gap, no LOC	LOC < 30 min	LOC 30 min - 24 hrs.	LOC > 24 hrs.	Began	Ended
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

SYMPTOMS QUESTIONNAIRE

Name: _____ Date: _____

In recent weeks, how much have you been bothered by the following problems? Please mark only one circle per item.

SECTION 1	I do not experience this problem at all	I experience this problem but it does not bother me	I am mildly bothered by this problem	I am moderately bothered by this problem	I am extremely bothered by this problem
Losing or misplacing important items (e.g., keys, wallet, papers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forgetting what people tell me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forgetting what I've read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Losing track of time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forgetting what I did yesterday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forgetting things I've just learned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forgetting meetings/appointments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forgetting to turn off appliances (e.g., iron, stove)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 2	I do not experience this problem at all	I experience this problem but it does not bother me	I am mildly bothered by this problem	I am moderately bothered by this problem	I am extremely bothered by this problem
Trouble following conversations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Assessment

SLP Assessment

Little to no evidence for efficacy or ecological validity of SLP assessments



Comprehensive: speech, language, swallowing, hearing, social comm., executive functioning/cognitive communication

- Parent interviews/scales + standardized + functional (high demand tasks)
- Pediatric Test of Brain Injury (Brookes)

Regular monitoring: attention to skills during critical periods of development

Screen new referrals for TBI

Recommendations & Referral

(ASHA, 2020; Ciccia et al., 2021; Salley et al., 2020; Riccardi et al., 2022)

Assessment



- Neurodevelopmental Assessment
 - Comprehensive: cognition + communication
 - Supports identification of delays
- Caregiver Report
 - Behavioral, physical, cognitive (EF), emotional, quality of life
 - Capture changes not assessed in standardized evals (pre-> post injury)
 - Critical when child can't self-report
- Activity-Based Assessment
 - standardized tasks and questionnaires about behavior in daily living, individualized tasks such as completing assignments needed at school, at home, or in social life
 - Mild vs moderate-severe

(ASHA, 2020; Ciccia et al., 2021; Salley et al., 2020)

SLP Assessment for acute, medically-based SLPs

*cognitive communication
and more*

referral & education



Assessment Strategy	Age and Stage of Recovery	Description
<p><u>Cognitive and Linguistic Scale</u> (CALs; Slomine et al., 2008)</p>	<p>2 years to adult inpatient rehabilitation</p>	<p>The CALs can be used as an assessment and progress monitoring tool. The CALs uses behavioral observation, task performance, and interviews to generate a total score that reflects level of cognitive and linguistic functioning. Although similar to the WeeFIM (see below), it might be more sensitive to change.</p>

WeeFIM (Serghiou et al., 2008)

6 months to 8 years
(potentially older)

acute (admission through discharge, typically within 6 months post-TBI)

The WeeFIM is a rating scale that evaluates a child's independence in functional activities. While the Comprehension, Expression, Social Interaction, Problem Solving, and Memory subscales are directly related to SLP, other subscales (e.g., Dressing) might be rated lower due to the presence of a CCD. For children where a more structured assessment is not possible (e.g., due to challenges with arousal), the WeeFIM can provide assessment data.

SLP Assessment for education-based SLPs

academic impact



Assessment- Speech & Language



Speech

- Where was the child's brain damage?
- Intelligibility
- AAC

Language

- Comprehensive Assessment of Spoken Language (CASL)
- Discourse analysis (Hall et al., 2021; Lundine et al., 2020)

Assessment- Swallowing, Hearing, & Social



Sensory

Screen/Monitor

Other sensory needs: light/sound sensitivity, visual deficits (e.g., field cuts, neglect)

Social

Observations

Self awareness?

School Social Behavior Scale Rating Form—Second Edition (SSBS)

The Social Skills Rating System (SSRS)

Assessment- Cognitive Communication



Cognitive Communication

Knowing the child's diagnosis, how might cognition/executive functioning be influencing their performance (on your evaluation and functionally)?

Behavioral Rating Index of Executive Function (BRIEF)

Student Functional Assessment of Verbal Reasoning and Executive Function (Student FAVRES)

Planning an Event, Making a Decision, Scheduling, & Building a Case

Assessment- General Academic Impact



Curriculum-Based/Class-Based Assessment (CBA)

- interdisciplinary evaluation on a child's academic and social performance
 - Team members can identify when and where a breakdown is occurring during an activity and identify strategies that could support the child's performance.
- can be tailored to a child's level of functioning within their functional environments
- high ecological validity
- The Concussion Learning Assessment and School Survey (CLASS; Gioia et al., 2020) could support a CBA

Assessment- General Functioning



what is the *underlying* or *foundational* skill that is negatively impacting functioning?

Assessment- Childhood TBI: Recommendations & Referral

Do your evaluations reflect the child's **functional performance** (in the classroom, socially, etc)?

How are **academics** currently being impacted? Future?

What **strategies** did you see the child using and what support did you provide them?

→ Modifications/Accommodations

Proper **identification**

Refer to related providers (mental health, counseling)

Assessment- Childhood TBI: Long-Term Monitoring

[CCCABI](#)

Specific Functional Difficulties (Check all noted) **Refer to Speech-Language Pathologist/Therapist** if problems noted.

Auditory Comprehension & Information Processing

Possible factors:

hearing, attention, memory,
receptive language;
comprehension, integration,
reasoning, and speed of
information processing

6. Hearing what is said, sensitivity to sounds, ringing in ears – Refer to Audiologist
7. Understanding words and sentences
8. Understanding long statements (discussions, lectures, news, TV)
9. Understanding complex statements (humour, subtle, implied information)
10. Integrating information – Cannot ‘glue’ information together to draw a conclusion or get the gist
11. Tendency to misunderstand or misinterpret discussions
12. Focusing attention on what is said (distraction, fatigue, interest)
13. Shifting attention from one speaker to another
14. Staying on track with the conversation, staying on topic
15. Holding thoughts in mind while talking or listening
16. Remembering new conversations, events, new information

Break



SLP Treatment

SLP Treatment

Little to no evidence on efficacy of treatment methods/approaches



Functional & contextualized

Goals:

- Developing and generalizing new skills
- Remediating lost functions
- Addressing unwanted behaviors

Support, accommodate, include the team

Consider **individual factors** for long-term planning and carry-over

(ASHA, 2020; Ciccia et al., 2021; Crook et al., 2023; Landis et al., 2006; Salley et al., 2019; Salley et al., 2020)

Childhood TBI: Treatment- SLP



- Impact of executive functioning & cognition
 - Fatigue
- Errorless learning strategies
 - Minimize errors: breaking tasks into small, discrete steps, modeling, carefully fading prompts/supports, no guessing
 - E.g., vocabulary training: A plant-eating animal is a (herbivore)
- Strategy-based training/accommodations
 - Teach!
 - Create routines
- Building on strengths to support weaknesses

Childhood TBI: Treatment



- **underserved** → high rates of **unmet need**
- Needs will likely persist **long-term** and **change over time**
- Also consider impacts of pharmacological treatments

Childhood TBI: Treatment- SLP Measuring Progress



Account for emergence of difficulties

- What has changed about the tasks/expectations?

Functional & meaningful gains

- Goal attainment scaling

Example of Goal Attainment Scaling Rubric

Level of Attainment	Scale 1 Out of Seat	Scale 2 Calling Out	Scale 3 Homework Completion
(-2) Much worse than baseline level of behavior	J. K. is out of his seat without teacher permission more than 12 minutes during math. [specify number of minutes]	J. K. calls out an answer without teacher permission 5 or more times during math. [specify number of times]	J. K. completes less than 60% of math assignments per week. [specify percent]
(-1) Somewhat worse than baseline level of behavior	J. K. is out of his seat without teacher permission 10-12 minutes during math.	J. K. calls out an answer without teacher permission 4 times during math.	J. K. completes 60-69% of math homework assignments per week.
(0) Baseline level of behavior	J. K. is out of his seat without teacher permission 7-9 minutes during math.	J. K. calls out an answer without teacher permission 3 times during math.	J. K. completes 70-79% of math homework assignments per week.
(+1) Somewhat better than baseline level of behavior	J. K. is out of his seat without teacher permission 4-6 minutes during math.	J. K. calls out an answer without teacher permission 2 times during math.	J. K. completes 80-89% of math homework assignments per week.
(+2) Much better than baseline level of behavior or has met goal	J. K. is out of his seat without teacher permission 3 or fewer minutes during math. [specify number of minutes]	J. K. calls out an answer without teacher permission 1 or fewer times during math.	J. K. completes 90-100% of math homework assignments per week.
Comments	Monitor daily	Monitor daily	Monitor weekly

Adapted from Coffe, G. & Ray-Subramanian, C.E., (2009). Goal attainment scaling: a progress-monitoring tool for behavioral interventions. *School Psychology Forum: Research in Practice*, 3, 1-12.

SLP Treatment for acute, medically-based SLPs



Childhood TBI: Treatment- Early Mobilization



early and often

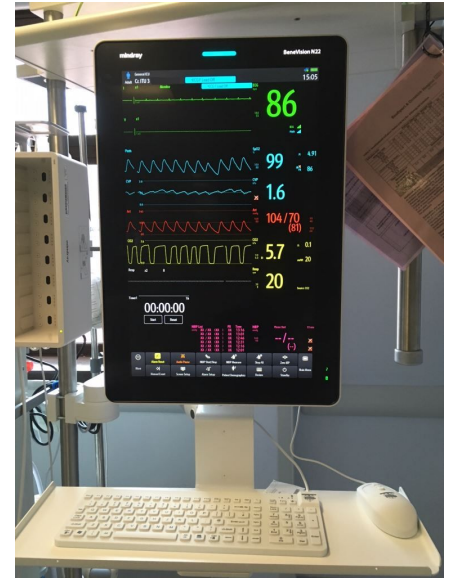
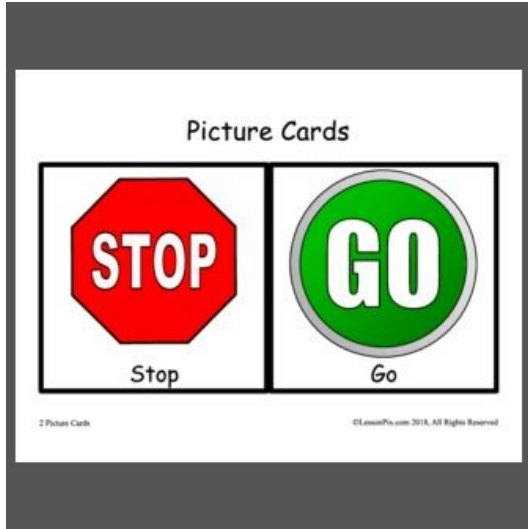
- decrease complications
 - reduce hospital length of stay
 - improve motor function
 - decrease time on mechanical ventilation
-
- increase autonomy



Childhood TBI: Treatment- Early Mobilization



interdisciplinary



SLP Treatment for education-based SLPs

academic impact



Review Article

Speech-Language Pathology Treatment of Cognitive-Communication Deficits in School-Aged Children With Traumatic Brain Injury: A Scoping Review

Libby Crook,^a  Jessica S. Riccardi,^a  Hannah S. Ruddock,^a and Angela Ciccia^a 

^aCommunication Sciences Program, Department of Psychological Sciences, Case Western Reserve University, Cleveland, OH

Childhood TBI: Treatment Strategies



- behavioral: practicing the skill*, clinician modeling, parent or clinician feedback, reinforcement
- cognitive: cognitive exercises, problem solving or strategy instruction, self-monitoring
- using functional materials and activities

Childhood TBI: Treatment- Modifications & Accommodations

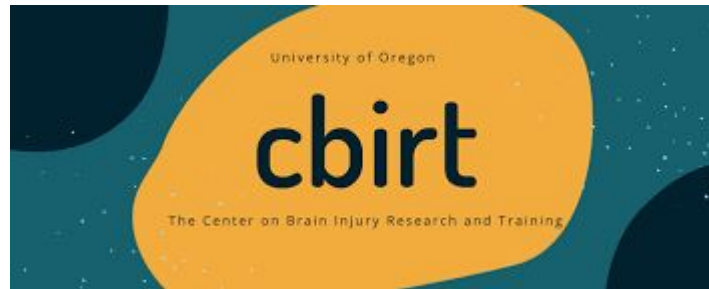


- **Modifications:** changes to the nature of an activity to facilitate participation and promote success in home, community, academic, and work settings
 - shortened class schedule or day, reduced number or type of assignment, or modified response type
- **Accommodations:** changes to the environment, task, or mode of response that allow an individual to access and participate in an activity without changing the activity itself
 - using note takers, listening to recorded lessons, receiving extra testing time, taking rest breaks, or reducing environmental noise and distractions in the classroom

Childhood TBI: Treatment- Modifications & Accommodations



- https://cbirt.org/sites/cbirt.org/files/resources/academic_accommodations_matrix.pdf
- https://cbirt.org/sites/cbirt.org/files/resources/classroomaccommodations_o_camp.pdf



Directions: Circle the challenges that affect your child or student. Check the accommodations that may be helpful.

Environment	Method of Instruction	Behavioral Needs	Assistive Technology
<ul style="list-style-type: none">○ Post class rules○ Post daily schedule○ Give preferential seating○ Change to another class○ Change schedule (most difficult in morning)○ Eliminate distractions (visual, auditory & olfactory)○ Modify length of school day○ Provide frequent breaks○ Provide a quiet work place○ Maintain consistent schedule○ Provide system for transition	<ul style="list-style-type: none">○ Repeat directions○ Circulate teacher around room○ Provide visual prompts○ Provide immediate feedback○ Point out similarities to previous learning & work○ Use manipulative materials○ Teach to current level of ability (use easier materials)○ Speak clearly○ Pre-teach or reteach○ Use peer tutor or partner○ Use small group instruction○ Use simple sentences○ Use individualized instruction○ Pause frequently○ Use cooperative learning○ Encourage requests for clarification, repetition, etc.○ Use examples relevant to student's life○ Demonstrate & encourage use of technology	<ul style="list-style-type: none">○ Early interventions for situations that may escalate○ Teach expected behavior○ Increase student academic success rate○ Learn to recognize signs of stress○ Give non-verbal cues to discontinue behavior○ Reinforce positive behavior○ Set goals with student○ Use social opportunities as rewards○ Teach student to use advance organizers at beginning of lesson○ Role play opportunities○ Use proactive behavior management strategies○ Daily/weekly communication with parents○ Modification of non-academic tasks (e.g., lunch or recess)○ Time & place to regroup when upset○ Additional structure in daily routine○ Frequent specific feedback about behavior	<ul style="list-style-type: none">○ Multimedia software○ Electronic organizers○ Shortcuts on computers○ Concept mapping software○ Accessibility options on computer○ Proofreading programs○ Alternative keyboards○ Voice output communication devices and reminders○ Enlarged text or magnifiers○ Recorded text & books○ Specialized calculators○ Picture & symbol supported software○ Talking spell checker & dictionary○ Computer for responding & homework○ Use of communication devices○ Word predicting programs○ iPad/tablet○ Smart Phone
Transitions <ul style="list-style-type: none">○ Specified person to oversee transition between classes or end of day○ Advanced planning for transition between grades/schools○ Modified graduation requirements○ Assistance with identifying post-secondary supports○ Identification of community resources for persons with brain injury			

Memory Deficits

- Monitoring planner (check-off system)
- Written & verbal directions for tasks
- Posted directions
- Frequent review of information
- Strategy for note taking during long reading assignment
- Provide a copy of notes
- Open book or note tests
- Reminders for completing & turning in work
- Repetition of instructions by student to check for comprehension

Visual Spatial Deficits

- Large print materials
- Distraction free work area
- Modified materials (e.g., limit amount of material presented on single page, extraneous picture)
- Graphs & tables provided to student
- Use of math & reading template or guide

Gross Motor/Mobility Difficulties

- Priority in movement (e.g., going first or last)
- Adaptive physical education
- Modified activity level for recess
- Special transportation
- Use of ramps or elevators
- Restroom adaptations
- Early release from class
- Assistance with carrying lunch tray, books, etc.
- Escort between classes
- Alternative evacuation plan
- Simple route finding maps & cues

Attention

- Visual prompts
- Positive reinforcement
- Higher rate of task change
- Verbal prompts to check work

Organizational Skills

- Study guide or timeline
- Daily calendar for assignments & tasks (digital or written)
- Instructions in using a planner or app
- Provide color-coded materials
- High-lighted materials to emphasize important or urgent information

Academic Progress

- Assigned person to monitor student's progress
- Contact person (home & school)
- Weekly progress report (home & school)

Fine Motor Difficulties

- Copy of notes provided
- Oral examinations
- Note-taker for lectures
- Scribe for test taking
- Recorded lectures

Curriculum

- Reduce length of assignments
- Change skill or task
- Modify testing type or setting
- Allow extra time
- Teach study skills
- Teach sequencing skills
- Teach memory strategies
- Write assignments in daily log
- Teach peers how to be helpful

Fatigue

- Reduced schedule
- Planned rest breaks
- Schedule arranged for high cognitive demand tasks to be followed by less stressful coursework

Processing Delays

- Complex direction broken into steps
- Repetition of pertinent information
- Cueing student to question prior to asking
- Use of precise language

Other Considerations

Home/School Relations

- School counseling
 - Scripts about the injury & hospitalization
 - Schedule regular meetings for all staff to review progress & maintain consistency
 - Schedule parent conferences every
-
- Parent visits/contact
 - Home visits

Disability Awareness

- Explain disabilities to other students
- Teach peers how to be helpful
- Training for school staff

concussion-specific?

General	Cognitive/Thinking	Fatigue/Physical	Emotional
Adjust class schedule (alternate days, shortened day, abbreviated class, late start to day).	Reduce class assignments and homework to critical tasks only. Exempt non-essential written classwork or homework. Base grades on adjusted work.	Allow time to visit school nurse/counselor for headaches or other symptoms.	Develop plan so student can discreetly leave class as needed for rest.
No PE classes until cleared by a healthcare professional. No physical play at recess.	Provide extended time to complete assignments/tests. Adjust due dates.	Allow strategic rest breaks (e.g., 5-10 minutes every 30-45 minutes) during the day.	Keep student engaged in extra-curricular activities. Allow student to attend but not fully participate in sports practice.
Avoid noisy and over-stimulating environments (i.e., band) if symptoms increase.	Once key learning objective has been presented, reduce repetition to maximize cognitive stamina (e.g., assign 5 of 30 math problems).	Allow hall passing time before or after crowds have cleared.	Encourage student to explore alternative activities of non-physical nature.

Childhood TBI: Treatment- SLP expertise



SLPs hold unique expertise in the educational setting to be leaders of care for students with TBI

Case Study

Case Study: Jacoby



Jacoby experienced a mild TBI at 2 years of age after a fall at daycare. He presented with a GCS of 14 at the ER and was discharged with no overnight stay. Two weeks later, Jacoby's mother returns to the hospital requesting an assessment for TBI due to behavior changes since his fall. The pediatrician ordered a CT scan, which was negative, but calls you to screen Jacoby. *If you are a medically-based SLP, create a brief plan for your time screening Jacoby.*

After his initial injury, his development or educational performance has not caused any concern for his parents or teachers. Jacoby is now in fourth grade and is presenting with difficulties in a few areas 1) social interactions, 2) independent work time during class, and 3) completing homework. You quickly learn that "independent work time" in Jacoby's class is often chaotic, with other peers talking, music playing in the background, and other distractions. Jacoby's teacher consults you for some informal strategies that the classroom staff can use to help Jacob in making friends and completing class work. About one week later, Jacoby's teacher feels the staff can't provide Jacoby the support he needs informally and calls for an educational team meeting. *If you are medically-based SLP, create a brief plan for Jacoby's time through his high school transition, including your approach to assessment and treatment.*

Case Study: Jacoby- Medical SLP

Jacoby experienced a mild TBI at 2 years of age after a fall at daycare. He presented with a GCS of 14 at the ER and was discharged with no overnight stay. Two weeks later, Jacoby's mother returns to the hospital requesting an assessment for TBI due to behavior changes since his fall. The pediatrician ordered a CT scan, which was negative, but calls you to screen Jacoby.

- 1) Create an assessment plan
 - a) choose 2-3 areas/domains/approaches to assessment
 - b) what tools would you use?
- 2) Create a treatment/discharge plan
 - a) what should next steps be?
 - b) how could you facilitate them?
 - c) how might this plan change if Jacoby was from a rural community (compared to urban/suburban)

Case Study: Jacoby- School/Private Practice SLP

After his initial injury, his development or educational performance has not caused any concern for his parents or teachers. Jacoby is now in fourth grade and is presenting with difficulties in a few areas 1) social interactions, 2) independent work time during class, and 3) completing homework. You quickly learn that “independent work time” in Jacoby’s class is often chaotic, with other peers talking, music playing in the background, and other distractions. Jacoby’s teacher consults you for some informal strategies that the classroom staff can use to help Jacob in making friends and completing class work. About one week later, Jacoby’s teacher feels the staff can’t provide Jacoby the support he needs informally and calls for an educational team meeting.

- 1) Create an assessment plan
 - a) choose 2-3 areas/domains/approaches to assessment
 - b) what tools would you use?
- 2) Create a treatment plan
 - a) what areas will you target?
 - b) what strategies might you use?
 - c) who should be involved on the team?

Case Study: Jacoby: Think, Pair, Share



Think: 10 minutes

Pair: 15 minutes

Share: 10 minutes

Summary of Clinical Recommendations for SLP Practice

- Assessment:
 - Regular monitoring, attention to skills during critical periods of development
 - Comprehensive: speech, language, swallowing, hearing, social comm., executive functioning/cognitive communication
 - Parent interviews/scales + standardized + functional (high demand tasks)
 - Examples in scoping review manuscript for language + cognition
 - Referral
- Treatment:
 - SLPs best professionals for long-term treatment (cog-comm)
 - Consider individual factors for planning & carry-over
- Education:
 - To caregiver for prevention, advocacy to seek services when needed

Summary of Clinical Recommendations



Medically-based

- **Educate** primary care providers on asking for TBI history or early identification and monitoring
- Use parent interviews/checklists for **assessment**
- **Educate** parents on long-term impacts of TBI
- **Refer** to early intervention

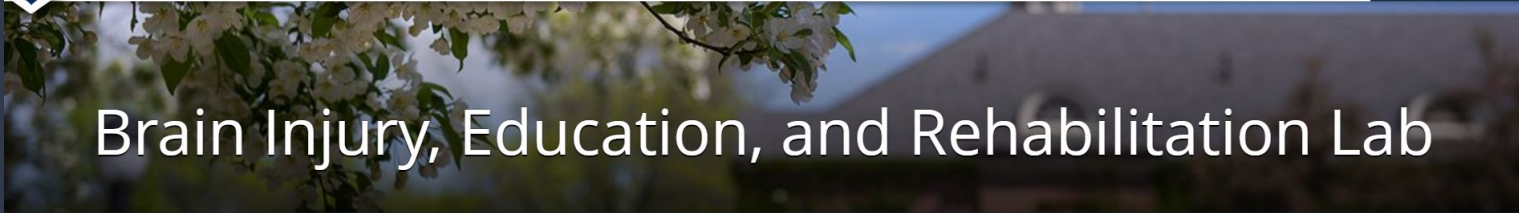
Educationally-based/Private Practice

- **Educate** school professionals
- **Screen** for TBI history
- Include EF/cog-comm in **assessments**
- Use functional activities for **treatment**
- **Refer** to counseling/MH providers

Conclusion & Key Takeaways



- Children with a history of TBI should be monitored long-term
 - Children with a history of childhood TBI present with unique outcomes, challenges, and needs
- SLPs are the most well-equipped professionals to assess, treat, and monitor children with TBI
 - Assessment: comprehensive, key developmental areas
 - Treatment: functional, changes over time, cognitive-communication/social-behavioral
 - Education: parents (acutely & L-T), health and educational professionals
 - Individual characteristics influence outcomes



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Questions

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