

THESIS

PROGRAM DEVELOPMENT OF BEST PRACTICES FOR STUDENTS WITH
TRAUMATIC BRAIN INJURY

Submitted by

Elin Guttormsen

Department of Occupational Therapy

In partial fulfillment of the requirements

For the Degree of Master of Science

Colorado State University

Fort Collins, Colorado

Summer 2014

Master's Committee:

Advisor: Pat Sample

David Greene

Lisa Daunhauer

Copyright by Elin Guttormsen 2014

All Rights Reserved

ABSTRACT

PROGRAM DEVELOPMENT OF BEST PRACTICES FOR STUDENTS WITH TRAUMATIC BRAIN INJURY

Rationale: Recent changes in Colorado legislation have led to implementation of new procedures in identification and classification of students with traumatic brain injury (TBI). The purpose of this study was to chronicle the subsequent process of training school personnel in Colorado to increase their capacity to implement the new school-based identification, assessment, and intervention processes for students with TBI. *Methods:* The study employed an interpretive case study design. Data collection measures included documentation review, field observations, and interviews with key informants. *Results:* Three thematic and chronological phases emerged from data analysis: (1) identifying the need for program change, (2) increasing awareness through preliminary staff trainings, and (3) creating expertise through secondary staff trainings. *Discussion:* Emergent themes present in program development included professional development, staff leadership, and interdisciplinary collaboration, and are supported by theoretical research. This program development in Colorado can serve as a procedural guide for other states attempting to implement new best practices for students with TBI.

ACKNOWLEDGEMENTS

Colorado Department of Education

Brain Injury Network Team

TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	iii
INTRODUCTION.....	1
METHODS.....	7
RESULTS.....	10
DISCUSSION.....	29
REFERENCES.....	38
APPENDIX A.....	44
APPENDIX B.....	46
APPENDIX C.....	48
APPENDIX D.....	55
APPENDIX E.....	58

INTRODUCTION

In the United States, over 2.5 million people sustain a TBI each year, with over 400,000 children under age fifteen requiring hospitalization (Brain Injury Association of America, 2014; Centers for Disease Control and Prevention, 2014). Many of these children, regardless of hospitalization, will develop a permanent disability (Clarke, Russman, & Orme, 1999).

Traumatic brain injury (TBI) is considered a subcategory of acquired brain injury (ABI), which refers to any brain damage sustained after birth. While causes of ABI include non-traumatic occurrences, such as stroke, anoxia, and infection, TBI refers only to a traumatic or violent occurrence from an external force (Brain Injury Network, 2014). Common causes of TBI include motor vehicle collisions, falls, and violence (Conti, 2012). Children are additionally particularly at risk for sustaining TBI during sports and recreation, including but not limited to football, cycling, playground activity, skateboarding, trampolining, and horseback riding (Centers for Disease Control and Prevention, 2011).

TBI, in any level of severity, can cause significant impairments in numerous cognitive, behavioral, and physical abilities (Savage, DePompei, Tyler, & Lash, 2005). Specifically, TBI may result in sleep disturbance; headaches; epilepsy; dizziness; irritability; blurred vision; and impairments in sensory processing, motor coordination, language expression and reception, attention, memory, abstract thought, emotional regulation, psychosocial behavior, problem solving, and information processing (IDEA, 2004; Jantz, Davies, & Bigler, 2014; Lundin, de Boussard, Edman, & Borg, 2006). The cognitive-based domains mentioned above collectively contribute to the skills of executive functioning, defined by Jantz & Coulter (2007) as an individual's "ability to reason, problem-solve, set goals, prioritize, self-monitor, self-correct, self

regulate, initiate or inhibit response behavior, organize and plan, and effectively execute purposeful behavior” (p. 88).

In comparison with adults with TBI, children with TBI may demonstrate especially severe deficits in emotional regulation and executive functioning, because the injury disrupts normal neurological development. Since children are still in the process of brain maturation, they ultimately have fewer compensatory skills available to readjust cognitive functioning and processes after brain injury (Jantz et al., 2014). Numerous studies have found that a lower age at injury results in more significant impairments later in development (Anderson et al., 2008; Fulton, Yeates, Taylor, Walz, & Wade, 2012; McKinley, Grace, Horwood, Fergusson, & MacFarlane, 2009).

Students with TBI tend to demonstrate low educational performance throughout schooling (Ewing-Cobbs, Fletcher, Levin, Iovino, & Miner, 1998). A review of research indicates that the complex and often unique combination of cognitive and emotional needs of each child with TBI cause severe challenges in successful functioning in both the social and academic realms of daily education (Taylor et al., 2003). Glang et al. (2008), explained:

Long term-studies of children conducted during the K-12 school years suggest that problems associated with TBI tend to persist or worsen as children progress through school. As they fall further behind their peers academically, behaviorally, and socially, children with TBI become vulnerable to multiple risk factors associated with school failure and problem behavior (p. 477).

In addition to competence for new learning, typical success in the school environment requires skills in interpersonal peer interactions, smooth transitions between play and learning, adherence to rules of authority figures, ability to work independently and quietly, and to follow a regimented pattern of daily activities (Jantz, et al., 2014). Ultimately, the cognitive and

emotional impairments caused by TBI often lead children with TBI to have lower functioning in all areas of the elementary school experience.

Despite the high incidence of TBI in American children annually, as well as the subsequent academic needs of children with TBI, the condition is considered a “low-incidence disability” in schools (Glang et al., 2008). Estimates indicate that only 12% of children with TBI who require academic supports actually receive individualized education plans (IEPs). This translates to approximately one third of children with TBI and one fifth of children with severe TBI receiving neither informal or formal services when returning to school post-injury (Glang et al., 2008).

A significant reason for the gap between incidence of pediatric TBI and appropriate school services is that symptoms of TBI may not present until much later in a child’s development. For example, a young child may sustain a head injury, but may not demonstrate impairments in cognitive functioning until years later, at which time the impairments may not be traced back to the head injury (Jantz, et al., 2014). Additional reasons children with TBI do not receive supports include: medical confidentiality; family confusion or concerns about special education; and family, hospital staff, and educator misconceptions about symptoms and presentation in children (Dettmer, Daunhauer, Detmar-Hanna, & Sample, 2007; Glang et al., 2004; Lash & DePompei, 2002; Savage et al., 2005).

As mentioned above, children with TBI may be disadvantaged because pediatric TBI remains a confusing and challenging condition for parents to comprehend and cope with. Savage et al. (2005), found that families experience continual challenges and frustrations with their child’s education related to: an ongoing need for informational updates, feelings of guilt,

inability to anticipate or predict the future, and the continual experience of working with new staff as their child advances through school.

Several studies show a lack of training and knowledge of childhood TBI among school staff. A 1997 study found that over half of general and special educators believed complete recovery from severe TBI was possible if the child wanted it enough (Farmer & Johnson-Gerard, 1997). A 2013 study subsequently found that up to 38% of special educators-in-training still believed this assertion, and that up to 82% believed TBI recovery significantly depended on the person's determination (Hux, Bush, Evans, & Simanek). Similar studies found lower—but nevertheless present—misconceptions among school specialty staff's awareness of pediatric TBI, such as speech-language pathologists and school psychologists (Evans, Hux, Chleboun, Goeken, & Deuelschram, 2009; Hooper, 2006; Hux, Walker, & Sanger, 1996). Other studies have found that 85-92% of educators have had no special training on TBI, with 58% of educators reporting having no knowledge whatsoever about TBI (Adams et al. 2012; Glang et al., 2006).

Collectively, these studies indicate significant shortfalls in staff training and awareness for TBI, and help explain parent frustrations with school staff readiness. Savage et al. (2005) argued that “even when parents find capable teachers and a responsive educational team, this supportive environment may change as the student moves from class-to-class, teacher-to-teacher and school-to-school” (p. 94). Despite this, school staff should not necessarily be blamed for shortfalls. In the past years, TBI simply has not received equal attention, resources, and training, as have many other special education categories (Cassel, Hotchkiss, & McAvoy, 2014). Increasing school staff awareness of TBI, both at the pre-service and in-service level needs to be a critical goal of school professional academic programs and state and district administrators, in

order for them to ensure appropriate service provision of interventions that best support the academic needs of all children and youth with TBI.

Recent studies have begun to explore strategies to increase school staff capacity to serve students with TBI. In the TBI Consulting Team Model, a group of school staff members are trained to become statewide peer experts to assist colleagues in understanding how to best meet the needs of students with TBI. This model was found to increase team members' knowledge of TBI and perceived competence, and program evaluation findings indicated parent and school staff satisfaction with the model's implementation (Glang et al., 2004). Similarly, the BrainSTARS model consists of (a) educating parents and school staff about the relationship of neurological impact of TBI to its behavioral symptoms, and (b) consulting by BrainSTARS specialists with parents and school staff, to develop supportive accommodations for students with TBI. Following program implementation, evaluations by parents and school staff reported significant improvements in student behavior (Glang et al., 2010). As described by Glang et al. (2004), development of TBI school staff training is a critical solution to address deficits in staff knowledge and experience: "until training in TBI is more fully integrated into university pre-service training programs...the provision of on-going, quality, research-based, and site-specific support and training for [school personnel] in the field is even more essential" (p. 229).

This research study focused on chronicling TBI program development by the Colorado Department of Education in Colorado schools, which were aimed at increasing staff awareness and competence in addressing the educational needs of students with TBI. I began with the generalized research questions of:

- 1) What is the process of developing TBI trainings for Colorado school staff?
- 2) Why was there a need in Colorado to develop TBI trainings?

3) What are the goals of these trainings?

As I became more familiar with the Colorado Department of Education's program development, I identified the purpose of this study should specifically chronicle the program development process of:

- 1) Identifying and responding to problems and limitations in Colorado schools' methods of diagnosing, serving, and tracking students with TBI.
- 2) Increasing awareness among Colorado school staff about changes related to diagnosing and tracking students with TBI.
- 3) Developing trainings, resources, and recommendations to assist school staff in best practice for the (a) school-based identification of a student's credible history of TBI; (b) assessment of the student's individual academic needs; and (c) intervention planning for the student with TBI.

METHODS

Purpose/Design

The purpose of this study was to chronicle the process of training school personnel in Colorado to increase their capacity to implement the new school-based identification, assessment, and intervention processes for students with TBI. I originally selected a descriptive case study design, because I solely intended to provide a detailed account of a phenomenon in a particular context (Laws & McLeod, 2004). As I became more invested in supporting effective TBI program development in Colorado schools, however, the study design changed to an interpretive case study, used when a researcher's intention is to (a) provide descriptive data in conceptual categories, and/or (b) "illustrate support, or challenge theoretical assumptions" present in the case (Laws & McLeod, 2004, p. 5).

Participants and Data Collection

Data were collected from multiple media in order to provide the most comprehensive overview of the process, and to gather triangulated data. The sources of data gathered for this study are summarized below.

Interviews

Three participants were recruited to be interviewed because of their immense knowledge and strong influence on TBI trainings, literature and resources, and conferences in Colorado. They were selected using a "critical case" style of purposeful sampling because the method supports validity of "logical generalization and maximum application to other cases" (Creswell, 2013, p. 158.) These key informants completed informed consent procedures (as approved by the Human Research Committee of Colorado State University), and understood that their

participation was voluntary and confidential. Participants took part in initial and ongoing follow-up interviews, which assisted me in (a) collecting information on updates to Level II training planning process, and (b) member-checking of my early development of qualitative themes.

During interviews, the study participants were asked, first, a set of open-ended questions regarding their area of expertise in the state's planning and implementation of the educational identification of TBI policy and protocol, such as:

- *How did you prepare for Level I trainings?*
- *What has been the feedback you have received following level II trainings?*
- *What are your goals for the future of TBI education in Colorado?*
- *What resources are available to support school personnel in understanding TBI?*

The latter half of the initial interviews tended to consist of specific leading questions by the researcher; these questions were used to clarify unclear elements in the data collected or gaps in the my knowledge.

Conference and Training Observations

I attended TBI trainings and conferences designated for Colorado school staff. The 6th Annual Translational Neuroscience & Educator' Conference in Denver, CO, targeted special education and related services staff and focused on pediatric brain injury. The 2013-2014 Regional Traumatic Brain Injury Level II Eligibility Training in Denver, CO also targeted school special education and related services staff, and focused on interdisciplinary assessment and intervention for students with education-identified TBI. Level I trainings for school staff concluded prior to this study's period of data collection. However, I interviewed the three study participants in-depth regarding the content and purpose of the Level I trainings.

Document review

I analyzed all collected documents for emerging data themes. Documents consisted of (a) my written and recorded field notes from conferences and trainings, (b) all PowerPoint slides and handouts from conferences and trainings, and (c) information and resources from the COkidswithbraininjury.com and CDE websites. These two websites contained all internet sources of material relevant to assessing school students for educational identification of TBI, and working in the school system with children and adolescents with TBI.

RESULTS

I examined the process of training Colorado school staff to implement the new school-based identification, assessment, and intervention processes for students with TBI. Three thematic and chronological phases emerged through data analysis: (1) identifying the need for program change, (2) increasing awareness through Level I trainings, and (3) creating expertise through Level II trainings. These phases are detailed below, followed by an analysis of overall program themes.

Phase I: Identifying the Need for Program Change

Program development was supported by changes to what had been two major obstacles to students with TBI receiving appropriate services in Colorado schools: (a) the design of IDEA disability categories, and (b) the requirement of medical documentation to diagnose TBI.

IDEA disability categories: TBI as a physical disability

Prior to December 2012, the Colorado Department of Education (CDE) modeled its disability categories after the Individuals with Disabilities Improvement Act of 2004 (U. S. Department of Education, 2004). Under IDEA law, students diagnosed under one of the disability categories were eligible to receive formal services to support a free and appropriate education (CDE, 2012; U. S. Department of Education, 2004). TBI fell under the category of physical disabilities, which additionally included autism spectrum disorder, orthopedic impairment, and other health impairment (CDE, 2012).

This large, general category of physical disability led to limitations in tracking accurate numbers of students with TBI in Colorado school districts. One key informant summarized:

The requirements for tracking in Colorado...was only at the category level, so we didn't require districts to go deeper than that. So basically, all districts were required to report

in that old [tracking] system of physical disability. We didn't have a good way to track any of those physical disabilities as being TBI-related.

Ultimately, there was no motivation for districts to track TBI at a level any lower than the broad category of physical disabilities. As of December 2012, only 523 children in Colorado schools were tracked as having an IEP-related to a diagnosis of TBI (Cassel et al., 2014). Furthermore, this general category meant there was minimal guidance to inform assessment and interventions for children with TBI. The problematic generalizability of the physical disabilities category is evident in this recommendation by the National Center on Accessible Instructional Materials:

Physical or motor disabilities often result in students being unable to read or use standard print materials. These students may have difficulty lifting, positioning, or holding books and turning pages and may require specialized formats of textbooks and core related instructional materials. The provision of accessible instructional materials via appropriate assistive technology generally enables students to access information, develop literacy skills, communicate independently and efficiently, and participate in educational activities (National Center on Accessible Instructional Materials, 2013).

The broad category of physical disabilities meant that students with TBI—with complex, individualized cognitive and behavioral needs—too often were lumped with other students in the category, creating a system under the category of physical disabilities in which all students were less likely to receive appropriate services. Specifically, the needs of students with TBI were severely oversimplified.

Medical documentation

Prior to December 2012, a student in Colorado could be diagnosed with TBI (under the school category of physical disability), only if medical documentation supported the diagnosis. Even if school staff suspected the presence of TBI in a student, the diagnostic process was always performed by a qualified medical professional. Because the responsibility of diagnosis ultimately fell outside the realm of the school system, there was significantly limited guidance

for school staff attempting to be involved in the diagnostic process. Explained by a key informant:

The only thing that existed to give any type of guidance was the IDEA definition; there was no other [available] criteria beyond that. So districts—if they [tried to help with obtaining a diagnosis], they only had the definition to go by, and no guidance for additional help in determining if a TBI was present.

The design of retrospectively diagnosing a child with TBI was therefore flawed because school staff—who observed a student’s cognitive and emotional functioning on a daily basis—had a severely limited role in investigating the possibility of an undiagnosed TBI.

Solutions

Colorado laws were modified in October 2012 to address these two obstacles to students with TBI receiving appropriate services in Colorado schools: 1) the design of IDEA disability categories, and 2) requirement of medical documentation to diagnose TBI. The category of physical disability was split so that the previous subcategories—TBI, autism spectrum disorder, orthopedic impairment, and other health impairment—all became their own category.

Additionally, the process of receiving a TBI diagnosis in the school system was modified to include an educational identification process (ED-ID), in which school staff could assign the diagnosis if a credible history of TBI was present. Under the Colorado Exceptional Children’s Educational Act (ECEA), amended by House Bill 11-1277, the new TBI category definition and diagnostic criteria were established:

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.

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 (CDE, 2013a, p. 15)

Full details denoting qualifications for identification of TBI are contained in *Appendix A* of this paper.

Phase II: Increasing Awareness through Level I Trainings

With a sudden surplus of new definitions and recommendations for the identification and intervention process, the need for statewide trainings for school staff became evident. A key informant explained:

We wanted to make sure that school districts and teams not only had a really good understanding of what traumatic brain injury is—the common causes, the statistics, all of those things—but also understood [how a student would] meet the criteria. When credible history was added [we knew we would get questions from school staff like], ‘What do you mean by credible history? How do you establish it? What kind of processes need to be in place? How do we work with parents and other community and school personnel?’

To ensure that the new definitions and processes actually supported appropriate service provision for students with TBI, the CDE and partnering agencies moved on to designing statewide trainings to increase school staff proficiency during the identification, assessment, and intervention process.

With addition of new disability category definitions and identification-based criteria, the CDE and partnering agencies encountered the new challenge of ensuring that statewide school staff understood and could apply this new information to cases of students with TBI. An immediate obstacle involved concerns about school staff’s lack of interest and knowledge about TBI. Explained by a key informant: “*When the TBI criteria and ECA category were created,*

there wasn't a lot of hype around traumatic brain injury. So, we didn't feel like we could do a stand-alone TBI training, so we attached ourselves to those other 'hot topic' areas." The trainings of these aforementioned "hot topic areas"—autism spectrum disorder and severe emotional and intellectual disability—became crucial support systems for TBI Level I trainings. All twelve statewide Level I TBI trainings were inserted into existing trainings for other disability categories. Additionally, an overview of TBI was provided at six statewide trainings that reviewed all thirteen disability categories.

With only 45 to 120 minutes dedicated to TBI at each training, Level I was designed to be an overview of critical information and an introduction to school staff to begin thinking about TBI differently. Of the objectives, key informants explained:

- *When we looked at what we could really do in an hour and a half, we really wanted to make sure they knew exactly what TBI was and how Colorado had changed the criteria for that category.*
- *The whole purpose was to educate about what the new rules were—to open their eyes to say, 'Oh! We can do TBI differently.'*

With a goal focused on an overview of TBI's new definition and identification process, key informants noted that they were flexible about who attended these trainings. Attendees primarily consisted of special educators, school psychologists, social workers, school nurses and related-service providers (speech-language pathologists, occupational therapists, and physical therapists.) In limited attendance were school administrators and special education directors. Because of administrators and directors' integral positions in schools, key informants wished they had higher numbers of attendees from these higher-level positions. Ultimately, it was critical to have in attendance *"any special personnel responsible for evaluation and intervention"* for students with TBI, as described by a key informant.

To provide a synopsis of TBI definitions, eligibility, and identification, training presenters overviewed the following concepts:

- Definition and eligibility criteria: A complete list of all criteria from the *Rules for the Administration of the ECEA* act was provided, with an explanation of the change to ED-ID. Additionally, presenters clarified the importance of demonstrating not just presence of a TBI, but a definitive impact on the child’s educational performance. Presenters clarified that the diagnosis of a TBI does not automatically qualify a student for an IEP.
- Difference between TBI and Acquired Brain Injury (ABI): Presenters gave a brief explanation that a student with ABI would still be staffed¹ under a category outside TBI, such as ‘other health impaired.’ However, because of the similar nature of symptoms, information from the presentation also could be applied to students with ABI.
- Domains of TBI symptoms: The presenters overviewed sixteen areas of functioning that frequently are impaired in students with TBI. These consisted of fundamental processes (attention, processing speed, memory, and sensory-motor skills); intermediate processes (learning processes, visuospatial processes, and language processes); higher order processes (social/emotional competency, reasoning, mental flexibility, planning, organization, and initiation); and overall functioning (adaptive living skills and cognitive academic skills) (CDE, 2013b). The presenters noted that these domains can be seen as a pyramid of functioning, with lower-level skills providing the foundational blocks for higher level skills (Figure 1).

¹ “Staffed” is a term frequently used by school personnel to mean assigning a student under a disability category.

- Assessments: Recommended assessment measures provided for each of the 16 domains.

Response to trainings

Strong, positive feedback on the Level I trainings supported the plan to develop and implement Level II trainings in 2014. A key informant explained: *“there was always a plan to go deeper. What we received by way of [Level I] evaluations was an overwhelming positive response—just wanting more, more, more. So that gave us the go ahead to develop the Level II trainings.”* Specific feedback from Level I attendees highlighted a need for more detail on the assessment process, the complexities of assessing credible history for ED-ID, and how to use CDE’s TBI resources to inform intervention.

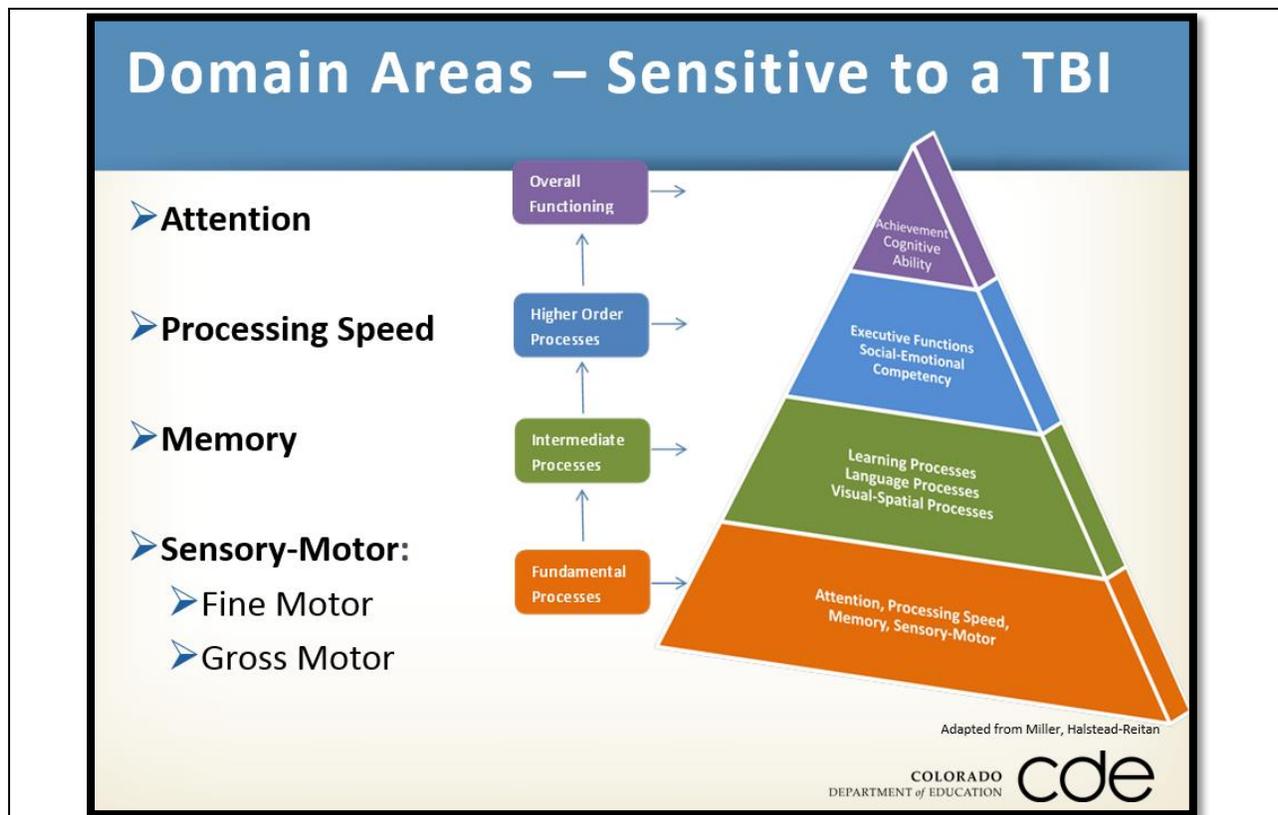


Figure 1. Pyramid of domains of cognitive functioning, by Colorado Department of Education. (2013b). *A child with a traumatic brain injury: ECEA disability category, definition and eligibility criteria* [PowerPoint slides]. Retrieved from http://www.cde.state.co.us/sites/default/files/ecea_overview_allcategories.pdf.

Phase III: Creating Expertise through Level II trainings

The Exceptional Student Services Unit of the Colorado Department of Education (ESSU-CDE) sponsored five regional all-day, complimentary Level II trainings throughout Colorado in early 2014. The trainings, titled as *2013-2014 Regional Traumatic Brain Injury Level II Eligibility Trainings: Identification → Intervention*, advertised a focus on applying a functional, interdisciplinary approach to identification, assessment, and intervention for students with TBI (CDE, 2014). Additionally, the Level II trainings reviewed content from Level I on eligibility, identification, and symptom overview; this was included because approximately two thirds of Level II attendees had not attended a Level I training.

Level II trainings targeted a more-specific audience than Level I trainings, which was summarized on the advertising flyer:

This training is designed for TEAMS of 2-4 full-time, Colorado-licensed and Colorado school-employed, special education and instructional teachers, related services providers and other associated education professionals (i.e. school psychologists, social workers, speech-language pathologists, special education teachers, behavior specialists, administrators). Due to limited capacity and the need to enroll professionals who are responsible for creating instruction, this course is not open to para-educators or SLPA's. All accepted participants will be asked to share the information with parents, para-educators, and administrators. In order to ensure fair representation across the state, the number of teams accepted to attend from each district may be limited to one team per district (CDE, 2014) (see flyer in *Appendix B* of this study).

These restrictions helped ensure that the trainings were attended by staff members who were key participants during each district's assessment and intervention process. Additionally, the limited availability and required professional qualifications emphasized that attendees were expected to be leaders and advocates from their districts, who would share lessons and strategies with other stakeholders in their districts.

Content of the trainings focused on relating a deeper understanding of how to create a supportive and efficient assessment and intervention process. Significant informational topics

included: (a) the recovery process and family grief; (b) the jurisdiction of TBI in the school system; (c) designing an interdisciplinary assessment and intervention plan; (d) using print and online resources in practice, and (e) exploring the complexity of the terms “credible history” and “Educational Identification of TBI” (ED-ID) in students.

Understanding the recovery process and family grief

Presenters overviewed the physiology of child brain maturation to help attendees understand the lengthy and confusing process of recovery from TBI. This included lessons explaining how injury to an immature brain can cause impairments in later brain maturation as the child develops (as discussed above in this paper). Ultimately, this pattern can be confusing for both parents and school staff when new impairments emerge as the student ages and has increased responsibilities. For staff, this leads to uncertainty about how to address impairments that may improve or worsen with time. For parents, it leads to a cycle of grief and hope as they try to anticipate the life-long recovery process and potential challenges for their child.

The presenter dedicated time to explaining the unique grieving process experienced by parents of children with TBI:

One thing that is very unique to...brain injury is that these kids typically were—developmentally—born perfect. And what is very unique about this disability is that something happens at some point that many parents have a very hard time grieving. It’s not a rational process, but as parents, you know how we take responsibility for everything that happens to our kids...so you hear from parents things like ‘If I just didn’t turn my back for that one second, he wouldn’t have fallen out that window. If I hadn’t bought him that bike...’ The amount of guilt and grief for parents of children with TBI and ABI can sometimes be a big barrier, to even them disclosing to you that there was even an injury at some point...they feel some amount of shame or guilt about this injury—even if it wasn’t their fault. And they would like to believe that’s not what’s causing the problems now. [It] makes the assessment of [brain injury] a little bit different, and it makes us professionals have to be very, very skillful in how we work with our families, and how we get this information to even know if there was an injury (McAvoy, 2013).²

² Quote taken from presentation at the 6th Annual Translational Neuroscience & Educator’ Conference in Denver (Sept. 2013), which served as a content bridge between Level I and II.

The speaker introduced the idea that understanding incidence, symptoms, and educational needs of students with TBI is not fully sufficient to create a collaborative relationship with parents during the assessment and intervention process. School staff must additionally comprehend the parental experience associated with identification of a child with TBI, particularly in regards to feelings of grief, guilt, denial, and uncertainty about their child's future. Understanding the parental experience provides the foundation to support their productive involvement in an interdisciplinary approach.

The jurisdiction of TBI in the school system

Following content on the changes to TBI's definition and identification process in the school system, the presenters discussed the problem that emerges as to which staff professional is to specialize in the assessment of and interventions for these students with TBI. While other disability categories have a more obvious "go-to" specialist (such as a learning disability teacher for specific learning disability, or a school mental health practitioner for serious emotional disability), there is no clearly identified school professional's role, which logically can assume the jurisdiction of TBI; this must be decided and assigned at the discretion of the school district.

Through Level I trainings, it was argued that there simply is no easy assignment of jurisdiction for TBI due to the varied and complex needs of each student. With potential impairments in language, socialization, cognition, emotional regulation, and physical abilities, students with TBI will most benefit from a well-planned interdisciplinary approach.

An interdisciplinary approach to assessment and intervention planning

In the school system, an interdisciplinary approach refers to staff from several academic disciplines combining their expertise to collaborate on achieving a common goal (Cassel, et al., 2014). I summarized the content into a set of steps (see Table 1).

Table 1

Interdisciplinary Assessment and Intervention Plan

1. Gather all stakeholders in the case: the student, parents, teacher(s), related services, and community partners as deemed applicable, such as medical and mental health professionals, juvenile justice, care coordinators, social workers, and vocational support.
2. If investigating eligibility through credible history, ask purposeful, detailed questions about the student's background.
3. Begin by discussing the student's strengths across *all* settings: school, home, community, and health.
4. Ascertain areas of concern across *all* settings: school, home, community, and health.
5. Analyze areas of strength and concern: how are these areas affected by the student's social skills, executive functioning, and communication abilities?
6. Prioritize 5 concerns and assign a stakeholder as a specialist for each area.
7. Over the next month, each specialist assesses the student in the designated area of concern.
8. Reconvene approximately one month later to discuss results. Collectively identify deficits in skills, rather than in school subjects.
9. Design an intervention:
 - a. Determine who will intervene in each skill area by analyzing who is qualified to teach, reinforce, and help the student to generalize each skill.
 - b. Set objective measurements and designate a timeline to track progress and support staff communication.

Adapted from Cassel et al., (2014). *Eligibility and school-based interdisciplinary assessment and intervention: A common sense approach*. [PowerPoint slides]. Colorado Department of Education.

To support efficacy of screening and assessment of student needs, presenters also instructed attendees on how to use available measures and resources, including:

- Traumatic Brain Injury Identification and Protocol flow chart: A resource demonstrating the recommended process of screening, assessment, and potential outcomes (Figure 2).
- The Brain Check Survey: A parent-report survey of the child's medical history, emotions and behaviors, cognitive abilities, and sensory and motor processing that helps screen for presence of TBI or ABI (*Appendix C*).

- Comprehensive Health Assessment: A parent-report survey of the child’s general medical history (*Appendix D*).
- Brain Injury Observation Form: An observation checklist of a student’s executive skills that can be completed by school personnel (*Appendix E*).
- Youth Brain Injury Connections Referral Form: A referral to be completed by staff and/or parents. This referral involves the CDE, Healthcare Program for Children With Special Needs, and, when available, the contact information for the school district’s brain injury consultant team (Available at <https://biacolorado.org/>).

The trainings also included presentations and resources to support effective interdisciplinary formal assessments and intervention strategies specific to students with TBI. In each of the sixteen domains of cognitive functioning commonly affected by TBI, presenters overviewed examples of applicable assessments and concrete intervention suggestions (Figure 3).

Presenters also took attendees through the process of using the matrix system on the cokidswithbraininjury.com website. Prior to the implementation of Level II trainings, a key informant explained that this was a new step aimed at ensuring attendees could use recommended resources in practice after attending trainings:

The ideal is that someone would go through the Brain Check Survey and determine, ‘is there is history of brain injury? Are there some indications of ongoing impairment?’ Then, those ongoing impairments that are identified—let’s say memory, attention, whatever the case—then [the staff member] would use the matrix...to find what assessments they can give. So it’s about walking them through that really tangibly as a tool, because we’ve never done that yet.

Presenters reinforced use of this content by additionally including printed handouts of the content available on the CoKids matrix (for excerpt, see Figure 4), and referring to the free *Brain Injury in Children and Youth: A Manual for Educators* (for excerpt, see Figure 5). Presenters highlighted the multiple methods with which to access intervention (*continued on page 24*)

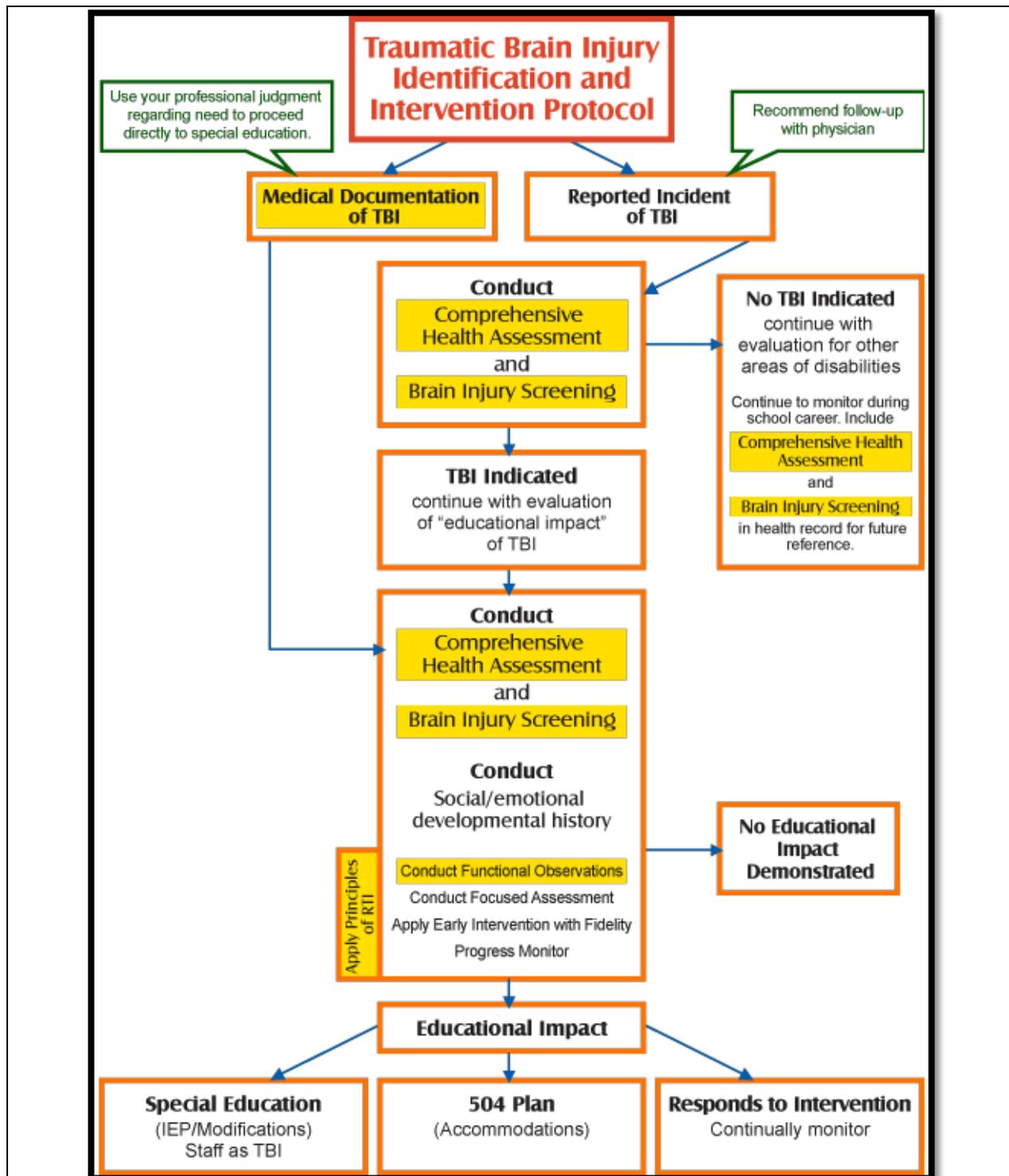


Figure 2: Traumatic brain injury identification and intervention protocol in Colorado, by Brain Injury Networking Team. (2013a). Traumatic brain injury identification and intervention protocol. Retrieved from <http://cokidswithbraininjury.com/educators-and-professionals/tbi-identification-protocol/>

Fundamental Processes

Assessments Attention

Fundamental Processes

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 3rd Edition
- Cognitive Assessment System (CAS)- Attention Composite (Consider Planning Composite)
- BASC II
- BRIEF
- Vanderbilt
- Behavior Observations during testing
- Classroom Observations- On Task/Off Task

COLORADO DEPARTMENT OF EDUCATION

107

Fundamental Processes

Interventions Attention

Fundamental Processes

Suggestions:

- Schedule most important work during times when the child has displayed their greatest concentration abilities.
- Seat nearest the location of instruction and away from distractions (e.g. doors, windows, high traffic areas, and other off-task children).
- Seat next to positive peers with age appropriate attention abilities.
- Clear desk and area of everything expect what needed for task at hand.
- Connect new learning to prior knowledge or with areas of interest.

COLORADO DEPARTMENT OF EDUCATION

108

Figure 3: Assessment and intervention recommendations from Level II trainings: The domain area of attention, by Cassel, T., Hotchkiss, H., & McAvoy, K. (2014). and school-based interdisciplinary assessment and intervention: A common sense approach. [PowerPoint slides].

Behavioral Impacts	Cognitive Academic Impacts	Assessment Suggestions	Environmental Supports & Interventions
<ul style="list-style-type: none"> • Fidgets/squirms in seat or doesn't stay in seat • Difficulties with turn taking • Interrupts conversation • Low frustration tolerance • Talks excessively • Loses things • Is easily distracted • Spacey and forgetful • Off topic 	<ul style="list-style-type: none"> • Has inconsistent performance in school • Careless mistakes on school work • Difficulties following directions • Fails to give close attention to school work • Erratic memory • Does not follow through with directions/tasks • Doesn't complete assignments 	<ul style="list-style-type: none"> • WJ-III Cognitive- Numbers Reversed, Auditory Working Memory, Auditory Attention, Functioning Subtests • NEPSY II Attention and Executive Functioning Subtests • D-KEFS Delis-Kaplan Executive Function System • Conners Rating Scale-Revised • Cognitive Assessment System (CAS)- Attention Composite (Consider Planning Composite) • BASC II • BRIEF • Vanderbilt • Behavior Observations during testing • Classroom Observations On Task/Off Task Peer Analyses • Behavioral Observations of Students in Schools (B.O.S.S.) 	<ul style="list-style-type: none"> • Seat child closest to point of instruction • Ensure that you have the child's focus prior to giving instructions • Reduce visual and auditory distractions • Use verbal and visual cues to refocus student as well as frequent checks for understanding • Reduce background noise • Eliminate interruptions as much as possible. • Allow student to complete work or test in alternate settings with fewer distractions • Provide cues for information is really important • Alter classroom activities to provide movement/hands on learning • Schedule most important work during times when the child has displayed their greatest concentration abilities • Use visual system to support staying on-task (e.g. stop light, stop sign, put a sticky note on desk to cue them to refocus) • Teach self-monitoring strategies and focusing strategies (self-talk, cues)

Figure 4: CoKids matrix printed version: The domain area of attention. Adapted by Cassel, Hotchkiss & McAvoy for the 2013-2014 Regional Traumatic Brain Injury Level II Eligibility Trainings: Identification→Intervention, from the Brain Injury Networking Team (2014b). *TBI matrix guide*. Retrieved from <http://cokidswithbraininjury.com/educators-and-professionals/information-matrix/>.

Attention and Concentration: Strategies for Intervention

- ▶ Schedule most important work during times when the child has displayed their greatest concentration abilities.
- ▶ Seat nearest the location of instruction and away from distractions (e.g. doors, windows, high traffic areas, and other off-task children).
- ▶ Seat next to positive peers with age appropriate attention abilities to help with redirection and understanding of instructions.
- ▶ Clear desk and area of everything except what needed for task at hand.
- ▶ Reduce background noise by experimenting with ear plugs, ear muffs/headphones, or introducing background sound such as, white noise or a music device with soft music.
- ▶ Eliminate interruptions as much as possible. Once students are focused on a task, it is very difficult to get them restarted if interrupted.
- ▶ Allow student to complete work or test in alternate settings where there are fewer distractions.
- ▶ Make sure to get student's attention when giving directions or cue them when information is really important.
- ▶ Use verbal and visual cues to refocus student as well as frequent checks for understanding.
- ▶ Provide opportunities for the student to take breaks throughout the day.
- ▶ Connect new learning to prior knowledge or with areas of interest.
- ▶ Break assignments into smaller and shorter steps and present information in short and concise segments.
- ▶ Limit the amount of information on worksheets, notes, etc.
- ▶ Remind and teach them how to check their work.
- ▶ Provide copies of guided classroom notes or outlines.
- ▶ Use a written or picture organizers and check off progress.
- ▶ Experiment with using timers and a motivating reward for on-task behavior and work completion.
- ▶ Use visual system to support student on staying on-task (e.g. stop light, stop sign, put a sticky note on their desk to cue them to refocus, etc.).
- ▶ Teach self-monitoring strategies and focusing strategies (self talk to remind brain to stay focused, saying the steps out loud when doing a task, etc.).
- ▶ Use technology (e.g. Interval Minder I-Pad app) to teach self monitoring. Have the student identify if they are on or off-task every time the application makes a beeping noise. Teachers can also do a whole classroom attention training where all of the students in the classroom mark if they were on or off task when it randomly beeps. Teachers can then "randomly" target students with issues and the student or entire class can earn privileges based on the number of times the teacher and student both agree they were on task. Teachers will need to do training up front of what good attention skills look like.

Figure 5: Strategies for intervention: The domain area of attention by Colorado Department of Education. (2013c). *Brain injury in children and youth: A manual for educators*. Retrieved from http://www.cde.state.co.us/sites/default/files/documents/cdesped/download/pdf/tbi_manual_braininjury.pdf

recommendations in order to increase attendees' awareness of: (a) the importance of implementing this content into practice, and (b) the numerous resources available to support best practice. Reference to the CDE and CoKids websites was additionally strategic, as both sites contain useful resources and information, including screening forms, referral agencies, past PowerPoint presentations, concussion information, and additional TBI-related handouts.

Use of role playing and group work to support skill development in education-based identification

Significant portions of the Level II trainings were dedicated to acting out case studies in large and small groups. The first case study occurred after presentations on credible history and the ED-ID process. Working as a whole group, attendees were given limited information on the

medical background of a teenage student, struggling with attention to homework, who potentially had experienced a TBI as young child after being hit by a car. Attendees took turns asking the student's concerned mother—played by a presenter—about details of the incident in order to establish if the student had a credible history of TBI. After approximately two dozen questions, attendees finally obtained enough information to establish that during the incident, the child had not hit his head or lost consciousness, and confirmed that there was not a credible history in this case. A key informant explained:

That was really to drive home that credible history piece. We really wanted to illustrate that it's not clean, and you do have to ask questions different ways, and perhaps three of four times...to actually get the right information...and I think that case really illustrates that piece well....

After presenters demonstrated the process through an example case study, attendees worked through a second case study in small table groups to practice going deeper into the assessment process. Groups received a completed Brain Check Survey and Initial Health Assessment, result scores from several familiar formalized assessments, and a brief summary of the student's current experience in a general education classroom. Mimicking an interdisciplinary team, table groups brainstormed questions to establish credible history, as well as ideas for assessment and intervention. Presenters visited group tables to answer questions and support the learning process. The case study concluded with tables sharing their ideas with the larger group. The goal of this second case study, according to a key informant, was summarized:

The intent is to guide you through [brainstorming] those guiding questions and [exploring] how you process as a team through this myriad of information...and make sure that you're really identifying well and thoughtfully the types of tools that will get you to that really rich information [to inform assessment and intervention planning].

This second case study specifically functioned to demonstrate to attendees their new knowledge and increased capacity to work in interdisciplinary groups to formulate an assessment and preliminary intervention plan. Following the case study, presenters reinforced the opportunity for

attendees to become advocates for change by sharing and demonstrating their knowledge and skills with colleagues.

Feedback on the Level II Trainings

Attendees completed a feedback form consisting of 4-point scaled statements and several open questions on improvements and recommendations. Feedback was overwhelmingly positive; an approximately 95% response rate revealed that:

- 100% of attendees agreed or strongly agreed that content and instruction were effective and comprehensive.
- 100% of attendees agreed or strongly agreed they would implement learned skills and strategies, knew how to access applicable resources, and believed their students would benefit from the training.
- 97% of attendees planned to share learned information with their colleagues.

Feedback from open questions additionally revealed that:

- Attendees found case studies helpful
- Attendees believed they could benefit from even more information on the assessment and intervention process
- Attendees recommended this training as important for school administrators to attend.

Starting after the first Level II training, presenters reviewed data from the Level II feedback forms and modified structure and content in order to further improve subsequent trainings. Additionally, attendees received a follow-up form two months after attending the training. Attendees were asked to evaluate (a) the training's effect on student learning and engagement, (b) any support from their district regarding the evaluator's attendance and later implementation of skills into practice, (c) the way in which they have shared learned

information, and (d) ways in which their knowledge and practice had changed since attending. Results were unavailable while this study was written, but the training developers and presenters note that the feedback will be used to inform any future trainings.

Looking forward

This study's key informants summarized goals for the future of program development and trainings:

- Continue to share content from Level I and Level II trainings, since many Colorado school staff were unable to attend either.
- Contact and continue to support existing or newly-formed TBI consulting teams in districts; act as consultants and knowledge sources for the identification, assessment, and intervention process.
- Visit neighboring districts and tele-conference with rural districts to assist with staff meetings, intervention planning, and classroom observations.
- Share resources and recommendations with other state Departments of Education and TBI researchers; at this time, resources such as the *Brain Injury in Children and Youth: A Manual for Educators*, were being used in school districts in other states.

Additionally, key informants noted their plan to explore potential development of a Level III training, which would delve even deeper into the interdisciplinary assessment and intervention process.

DISCUSSION

The purpose of this study was to chronicle the process of training school personnel in Colorado to increase their capacity to implement the new school-based identification, assessment, and intervention processes for students with TBI. This process included 1) development of new definitions and identification measures, led by the state Department of Education, 2) statewide trainings to increase knowledge of TBI, and skills in assessment and intervention, and 3) plans to support school staff, continually, through consultation and further trainings. This study aimed to deliver sufficient content in the results section to support and inform similar program development in other states; program development in Colorado may act as a model for effective content delivery.

I argue that the program development process of redesigning TBI identification, assessment, and intervention in Colorado schools can function as a procedural guide for other state departments of education aspiring to implement a similar process. The methods and strategies employed by the Colorado program developers are supported by theories of professional development, staff leadership, and interdisciplinary collaboration. As advocacy for the use of the Colorado program as an efficient procedural guide, theoretical themes are discussed below.

Staff education and professional development

This TBI-based program development in Colorado schools centered around the goal of increasing staff awareness and skills in order to improve student outcomes. The success of students with TBI ultimately relies on the dedication of individual and district staff to integrate skills learned in their training into their daily practice.

The numerous objectives and presentation methods of the Level I and II trainings suggest increased probability of success as an effective program aimed at changing school practices. In their book on school staff development, Joyce & Showers (2002) identified four primary outcome goals of school staff development:

1. Knowledge or awareness of new theories, practice guidelines, and curricula.
2. “Positive changes in attitudes toward self,” including confidence in implementing new practice, empathy for students and families, and understanding of staff roles.
3. Development of a skill.
4. Ability to implement knowledge and training into daily practice (p. 71).

The collective Level I and II trainings mirror Joyce & Showers’ (2002) guidelines. I synthesized the Colorado training objectives for school teams, to demonstrate how they pursued the following outcomes:

1. Knowledge and awareness: Increasing staff knowledge and awareness of TBI symptoms and changes in school policies.
2. Change in personal attitudes: Changing staff perceptions about best practice for students with TBI, understanding experiences of parents, instilling confidence in their abilities to share knowledge with colleagues, and embracing their new role.
3. Development of a skill: Ability to collaborate with coworkers to develop an interdisciplinary assessment and intervention process for cases of students with TBI.
4. Implementation of knowledge and training into daily practice: Outlining resources to guide new practice methods, and providing follow-up and consultation services to support long-term change.

Joyce & Shower (2002) additionally argue that objective four—implementation—is the most crucial goal in regards to increasing student achievement. When implementation is the focus of a training, a “multiple component design” is best practice, which includes dedicating training time to “theory, demonstration, practice, and peer coaching” (Joyce & Showers, 2002, p. 77). Colorado’s Level II trainings, with a primary objective of encouraging implementation of new skills, employed the multiple component design of theory (interdisciplinary approach, TBI information, parental grief, etc.), demonstration (taking attendees through case studies), and practice and peer coaching (small group work, role playing, presenting brainstormed ideas).

Perhaps most importantly, TBI program development and trainings will support implementation through various goals regarding follow-up: key informants noted a plan to support district TBI teams and provide in-person and teleconference consultation. Additionally, they may develop a third set of trainings to focus on further skill development and implementation of the skills into practice. Numerous studies have found that “to be successful, professional development must be seen as a process, not an event” (Guskey, 2002, p. 388). Following the end of Level II trainings, key informants and program developers consider the training process far from over.

Leadership and readiness for change

The presenters at Level I and II trainings encouraged attendees to view themselves as leading the implementation of changes in practice to support outcomes of students with TBI. Presenters noted that such a process takes time, and will involve dedication and advocacy by the attending school staff. Joyce & Showers (2002) provided a similar assertion, arguing that “cohesiveness and strong school leadership are critical to the success of [any] training” (p. 75). As support to their efforts to increase identification of and appropriate supports for students with

TBI, other state departments of education could consult the Model of Teacher Change, when developing trainings that would encourage attendees to take on the role of a strong school leader (Guskey, 2002).

Traditionally, changing school practices has been seen as reliant on first changing the attitudes and beliefs of school staff (Guskey, 2002). While changing staff beliefs and attitudes certainly is critical to assuring long-term implementation and program success, Guskey (2002) suggested that it is not necessarily required as the first step. Instead, Guskey (2002) proposed a model wherein evidence of effective change in student learning outcomes is ultimately what inspires school staff to fully commit to changing beliefs and attitudes. While phrased in terms of teacher change, this model additionally applies to all school staff focused on student outcomes (see Figure 6).

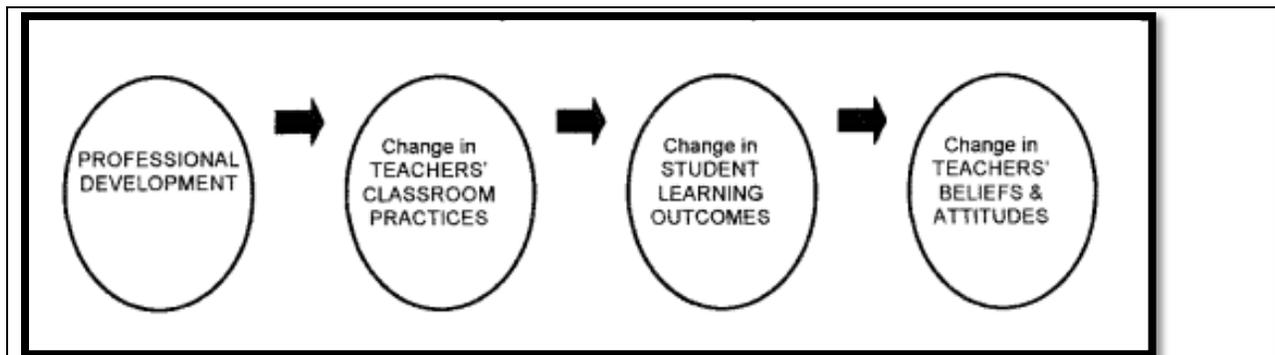


Figure 6: Guskey's (2002) model of teacher change, by Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice*, 8(3/4), p. 388.

I argue that the above model may be a helpful resource for Level I and II training attendees attempting to instill change in practice. Specifically, it can be used to introduce use of the interdisciplinary approach during assessment and intervention for students with TBI; the attendee does not force changes in beliefs and attitudes upon colleagues, but instead presents a

model in which staff beliefs and attitudes may change as a result of evidence of improved student outcomes.

Collaboration and the Interdisciplinary Approach

Key to the success of implementation into practice will be school staff commitment to the interdisciplinary approach. As attendees from trainings share their knowledge and skills with colleagues, all staff may benefit from using peer coaching—a method of practice that strongly supports positive and effective interdisciplinary collaboration. Peer coaching is defined as a “process through which two or more professional colleagues work together to reflect on current practice; expand, refine, and build new skills; share ideas; teach one another; conduct classroom research; or solve problems in the workplace” (Robbins, 1991, “A definition of peer coaching”) Thus, peer coaching can be used as a tool to assist TBI staff teams in monitoring progress, while they begin to use interdisciplinary assessment and intervention planning methods. Furthermore, because peer coaching encourages internal team reflection, interdisciplinary staff teams will be better able to communicate needs and concerns to district TBI consulting teams and the Colorado Department of Education.

The paramount objective of this TBI program development in Colorado schools was to instill changes in practices to support school success of students with TBI. Central to this implementation was the idea of creating a highly effective interdisciplinary system that would ultimately improve staff collaboration. I reviewed recommendations presented in the trainings and key themes from staff development research in order to present a model of effective interdisciplinary collaboration (see Figure 7). This model is comprised of six aspects deemed critical to successful implementation of an interdisciplinary approach to assessment and intervention for students with TBI:

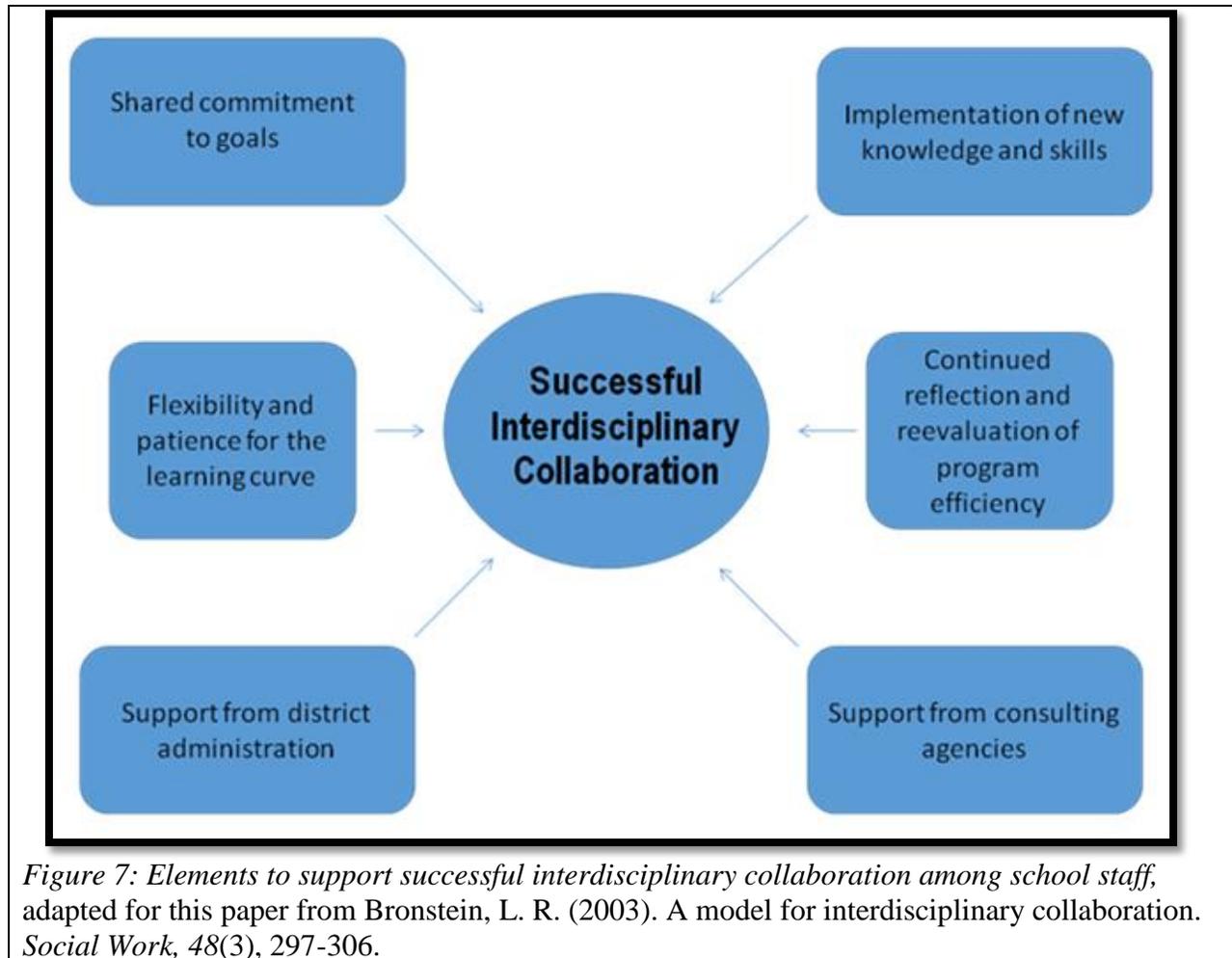


Figure 7: Elements to support successful interdisciplinary collaboration among school staff, adapted for this paper from Bronstein, L. R. (2003). A model for interdisciplinary collaboration. *Social Work, 48*(3), 297-306.

- *Shared commitment to goals:* The interdisciplinary approach is specifically unique to other approaches because team members look beyond their own specialty to pursue a common goal. When working with students with TBI, this means staff must share an understanding of the complexities of TBI symptoms (in physical, cognitive, and emotional domains) and related academic concerns in order to develop a plan that supports student functioning in all areas of daily school life.
- *Implementation of new knowledge and skills:* With inspiration from Guskey’s (2002) assertion that staff can change practice before changing beliefs and attitudes, interdisciplinary TBI teams must charge ahead with program implementation, trusting

that they possess the knowledge and skills to support positive student outcomes. This aspect strongly relies on leadership and advocacy from training attendees, who, in turn, can be supported by incorporating strategies of peer coaching.

- *Flexibility and patience for the learning curve:* Many studies on professional development note that changing practice can be a very gradual process (Guskey, 2002). When implementing any new practice—and particularly one that requires strong staff cohesion—there certainly will be obstacles and issues to be resolved. This aspect can additionally be supported by Guskey’s (2002) model; it takes time for changes in staff practice to produce a measurable influence on student outcomes.
- *Continued reflection and reevaluation of program efficiency:* Strongly linked to the above aspect of flexibility and patience, reflection and reevaluation are key to solving obstacles, issues, and concerns that emerge during the implementation process. Peer coaching can be used to structure positive and collaborative self-evaluation.
- *Support from district administration:* Finally, interdisciplinary collaboration must involve not just staff planning, assessment, and intervention, but support from district administration. Support can be provided via:
 - Providing staff with time for peer coaching, program review and evaluation, and meeting with students/families for assessment and intervention planning;
 - Encouraging staff to attend any trainings on using interdisciplinary assessment and intervention to help students with TBI—with the knowledge that this training can improve outcomes for students staffed under other interdisciplinary categories;

- Attending trainings themselves, as was recommended by key informants, training presenters, and training attendees.
- *Support from consulting agencies:* As mentioned, peer coaching can help interdisciplinary teams in identifying and expressing how district TBI consulting teams and the Colorado Department of Education can assist program implementation and sustainability, such as through site visits, teleconsultation, additional trainings, and provision of resources and referrals. Additionally, the Colorado Department of Education must be available to coordinate resources to support districts, as well as initiate follow-up and monitoring to evaluate the degree to which new skills actually are being implemented into practice.

These six factors (shared commitment to goals; implementation of new knowledge and skills; flexibility and patience; reflection and reevaluation; support from district administration; and support from consulting agencies) are all critical for successful implementation of new guidelines for best practice of serving students with TBI in Colorado schools. A deficit in any of the areas will decrease program success and may diminish the potential positive academic outcomes of students with TBI. Therefore, it is absolutely paramount that the Department of Education remain involved in persistently encouraging individual schools and districts to fully institutionalize these best practice guidelines for students with TBI. This can be achieved through (a) training additional school personnel on assessment and intervention protocols for students with TBI; (b) engaging in site visits and teleconsultations to assist directly with implementation into daily practice; and (c) providing frequent, long-term follow-ups with schools to evaluate the status of implementing the new policies and protocols into daily practice.

Conclusion

Rationale for developing a model of successful interdisciplinary collaboration, and ultimately of writing this study—was to provide recommendations for Level I and II training attendees and their Colorado school teams implementing new TBI program policies and protocols. I, along with this study’s key informants, and the TBI program developers in Colorado, strongly support the design and implementation of the new school-based identification, assessment, and intervention processes for students with TBI.

The model can be used as a procedural guide for interdisciplinary teams to identify strategies and goals that best support implementation in their own schools and districts in Colorado. Additionally, on a broader scope, this study was written with the hope of stimulating discussion in school districts and state departments of education outside of Colorado. Ultimately, national implementation of these best practice guidelines can support long-term academic outcomes for students with traumatic brain injury.

REFERENCES

- Adams, N. J., Irons, E. J., Kirk, E., Monk, P., & Carlson, N. L. (2012). Educators' knowledge of traumatic brain injury. *National Social Science Journal*, 37(2), 1-6.
- Anderson, V., Spencer-Smith, M., Leventer, R., Coleman, L., Anderson, P., Williams, J., Greenham, M., & Jacobs, R. (2009). Childhood brain insult: Can age at insult help us predict outcome? *Brain*, 132, 45-56.
- Brain Injury Alliance of Colorado. (2014). *Youth brain injury connections referral form*. Retrieved from <https://biacolorado.org/childrens-safety-net-referral-form/>
- Brain Injury Association of America. (2014). *Brain injury in children*. Retrieved from <http://www.biausa.org/brain-injury-children.htm>
- Brain Injury Network. (2014). *Definitions of ABI and TBI*. Retrieved from <http://www.braininjurynetwork.org/thesurvivorsviewpoint/definitionofabiandtbi.html>
- Brain Injury Networking Team (2014a). *TBI matrix guide*. Retrieved from <http://cokidswithbraininjury.com/educators-and-professionals/information-matrix/>.
- Brain Injury Networking Team. (2013b). *Traumatic brain injury identification and intervention protocol*. Retrieved from <http://cokidswithbraininjury.com/educators-and-professionals/tbi-identification-protocol/>
- Bronstein, L. R. (2003). A model for interdisciplinary collaboration. *Social Work*, 48(3), 297-306.
- Cassel, T., Hotchkiss, H., & McAvoy, K. (2014). *Eligibility and school-based interdisciplinary assessment and intervention: A common sense approach*. [PowerPoint slides]. Colorado Department of Education.

Centers for Disease Control and Prevention. (2011). *Nonfatal traumatic brain injuries related to sports and recreation activities among persons aged ≤19 Years --- United States, 2001—2009*. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6039a1.htm>.

Centers for Disease Control and Prevention. (2014). *Traumatic Brain Injury*. Retrieved from <http://www.cdc.gov/TraumaticBrainInjury/>

Clark, E., Russman, S., & Orne, S. (1999). Traumatic brain injury: Effects on school functioning and intervention strategies. *School Psychology Review, 28*(2), 242-250.

Colorado Department of Education. (2012). Questions and answers for HB11 1277 statutory changes to disability categories. Retrieved from https://cdeapps.cde.state.co.us/disability_statutory_changes.pdf

Colorado Department of Education. (2013a). *ECEA rules: Rules for the administration of the Exceptional Children's Educational Act 1 CCR 301-8*. Retrieved from <http://www.cde.state.co.us/sites/default/files/documents/spedlaw/download/ecearules-march2013.pdf>

Colorado Department of Education. (2013b). *A child with a traumatic brain injury: ECEA disability category, definition and eligibility criteria* [PowerPoint slides]. Retrieved from http://www.cde.state.co.us/sites/default/files/ecea_overview_allcategories.pdf.

Colorado Department of Education. (2013c). *Brain injury in children and youth: A manual for educators*. Retrieved from http://www.cde.state.co.us/sites/default/files/documents/cdesped/download/pdf/tbi_manual_braininjury.pdf

Colorado Department of Education. (2014). *2013-2014 Regional traumatic brain injury level II eligibility trainings: Identification →intervention* [flyer]. Retrieved from http://www.cde.state.co.us/sites/default/files/flyer_tbi_level2_2.pdf

“Comprehensive Health Assessment.” (2014). Retrieved from <http://cokidswithbraininjury.com/ckwbi/wp-content/uploads/2009/11/ComprehensiveHealthHistory.pdf>

Conti, G. E. (2012). Acquired Brain Injury. In B. J. Atchinson & D. K. Dirette (Eds.), *Conditions in Occupational Therapy* (4th ed., pp. 179-198). Philadelphia: Lippincott Williams & Wilkins

Creswell, G. E. (2013). Data collection. *Qualitative inquiry and research design: Choosing among the five approaches* (3rd ed., pp. 145-178). Philadelphia: Lippincott Williams & Wilkins.

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. *Journal of Head Trauma Rehabilitation, 22*(6), 339-349.

Evans, K., Hux, K., Chleboun, S., Goeken, T., & Deuel-Schram, C. (2009). Persistence of brain injury misconceptions among speech-language pathology graduate students. *Contemporary Issues in Communication Sciences and Disorders, 36*, 166-173.

Ewing-Cobbs, L., Fletcher, J. M., Levin, H. S., Iovino, I. & Miner, M. E. (1998). Academic achievement and academic placement following traumatic brain injury in children and adolescents: A two-year longitudinal study. *Journal of Clinical and Experimental Neuropsychology, 20*(6), 769-781.

Farmer, J. E., & Johnson-Gerard, M. (1997). Misconceptions about traumatic brain injury among educators and rehabilitation staff: A comparative study. *Rehabilitation Psychology, 42*(4), 272-286.

- Fulton, J. B., Yeates, K. O., Taylor, H. G., Walz, N. C., & Wade, S. L. (2012). Cognitive predictors of academic achievement in young children 1 year after traumatic brain injury. *Neuropsychology, 26*(3), 314-322.
- Glang, A., Dise-Lewis, J., & Tyler, J. (2006). Identification and appropriate service delivery for children who have TBI in schools. *Journal of Head Trauma Rehabilitation, 21*(5), 411-412.
- Glang, A., Todis, B., Sublette, P., Brown, B. E., & Vaccaro, M. (2010). Professional development in TBI for educators: The importance of context. *Journal of Head Trauma Rehabilitation, 25*(6), 426-432.
- Glang, A., Todis, B., Thomas, C. W., Hood, D., Bedell, G., & Cockrell, J. (2008). Return to school following childhood TBI: Who gets services? *Neurorehabilitation, 23*(6), 477-486.
- Glang, A., Tyler, J., Pearson, S., Todis, B., & Morvant, M. (2004). Improving educational services for students with TBI through statewide consulting teams. *NeuroRehabilitation, 19*, 219-231.
- Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice, 8*(3/4), 381-391.
- Hooper, S. R. (2006). Myths and misconceptions about brain injury: Endorsements by school psychologists. *Exceptionality, 14*(3), 171-182.
- Hux, K., Bush, E., Evans, K., & Simanek, G. (2013). Misconceptions about traumatic brain injury among students preparing to be special education professionals. *Support for Learning, 28*(3), 109-114.

- Hux, K., Walker, M., & Sanger, D. D. (1996). Traumatic brain injury: Knowledge of self-perceptions of school speech-language pathologists. *Language, Speech, and Hearing Services in Schools, 27*, 171-184.
- Jantz, P. B. & Coulter, G. Al. (2007). Child and adolescent traumatic brain injury: Academic, behavioural, and social consequences in the classroom. *Support for Learning, 22*(2), 84-89.
- Jantz, P. B., Davies, S. C., & Bigler, E. D. (2014). *Working with traumatic brain injury in schools*. New York, NY: Taylor & Francis.
- Joyce, B., & Showers, B. (2002). *Student Achievement through Staff Development* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.
- Lash, M., & DePompei, R. (2005). The right to know: Educating families when a child has a brain injury. *Brain Injury Source, 6*, 20-24.
- Laws, K. & McLeod, R. (2004). *Case study and grounded theory: Sharing some alternative qualitative research methodologies with systems professionals*. Retrieved from http://www.systemdynamics.org/conferences/2004/SDS_2004/PAPERS/220MCLEO.pdf
- Life Outcomes after Brain Injury Research Program. (No date). *Brain Check Survey*. Department of Occupational Therapy, Colorado State University: Fort Collins.
- Lundin, A., de Boussard, C., Edman, G., & Borg, J. (2006). Symptoms and disability until 3 months after mild TBI. *Brain Injury, 20*(8), 799-806.
- McAvoy, K. (2013). *School-based interdisciplinary assessment and intervention: A common sense approach*. Presented at the 6th Annual Translational Neuroscience & Colorado Educator's Conference, Denver, CO.

- McKinlay, A., Grace, R. C., Horwood, L. J., Fergusson, D. M., & MacFarlane, M. R. (2009). Long-term behavioral outcomes of pre-school mild traumatic brain injury. *Child: Care, Health and Development*, 36(1), 22-30.
- National Center on Accessible Instructional Materials. (2013). *Physical Disability*. Retrieved from http://aim.cast.org/learn/disabilityspecific/physical#.U02HM_ldU3J
- Robbins, P. (1991). A definition of peer coaching. In P. Robbins (Ed.), *How To Implement a Peer Coaching Program*. Alexandria, Va.: Association for Supervision and Curriculum Development. Retrieved from <http://www.ascd.org/publications/books/61191149/chapters/A-Definition-of-Peer-Coaching.aspx>
- Savage, R. C., DePompei, R. Tyler, J., & Lash, M. (2005). Paediatric traumatic brain injury: A review of pertinent issues. *Pediatric Rehabilitation*, 8(2), 92-103.
- Taylor, H. G., Yeates, K. O., Wade, S. L., Drotar, D., Stancin, T., & Montpetite, M. (2003). Long-term educational interventions after traumatic brain injury in children, 48(4), 227-236.
- Thompson, P. & Crawford, N. (No date). Brain Injury Observation Form. Retrieved from http://cokidswithbraininjury.com/ckwbi/wp-content/uploads/2009/11/BI_Observation-Form.pdf
- U. S. Department of Education. (2004). *Individuals with Disabilities Act Improvement Act of 2004: Part B*. Retrieved from <http://nichcy.org/wp-content/uploads/docs/PL108-446.pdf>.

APPENDIX A

Identification criteria for traumatic brain injury in the *Rules for the Administration of the Exceptional Children's Educational Act 1 CCR 301-8* (Colorado law):

- 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.
- 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 affect 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.

Colorado Department of Education. (2013a). *ECEA rules: Rules for the administration of the Exceptional Children's Educational Act 1 CCR 301-8*. Retrieved from <http://www.cde.state.co.us/sites/default/files/documents/spedlaw/download/ecearules-march2013.pdf>

APPENDIX B

Flyer for the 2013-2014 Regional Traumatic Brain Injury Level II Eligibility Trainings:
Identification → Intervention

cde COLORADO DEPARTMENT of EDUCATION



2013-2014 Regional Traumatic Brain Injury Level II Eligibility Training

Identification ⇒ Interventions

Dates/Location:	January 17, 2014	Grand Junction
	January 24, 2014	Denver Metro Area
	February 14, 2014	North Central
	March 14, 2014	Pueblo
	March 28, 2014	Denver Metro Area
Time:	8:00 a.m. to 3:30 pm (Check-in 8-8:30am)	

Institute Description: This is a follow up to the ECEA Eligibility “Level I” trainings that occurred in 2012-2013 (these trainings occurred collaboratively with other disability categories—ASD, SED, ID/MD). This is a one-day training that will be repeated in each of the regions on the dates above. The purpose of this training is to provide a framework for functional “interdisciplinary” assessment, planning and supports for children and youth with moderate to severe brain injury. Participants will gain an understanding of the definitions and the causes of brain injury and the special education criteria. In addition, we will take an in-depth look at classroom interventions (communication, literacy, and behavior) —for students of all ages.

Target Audience: This training is designed for TEAMS of 2-4 full-time, Colorado-licensed and Colorado school-employed, special education and instructional teachers, related services providers and other associated education professionals (i.e. school psychologists, social workers, speech-language pathologists, special education teachers, behavior specialists, administrators). Due to limited capacity and the need to enroll professionals who are responsible for creating instruction, this course is not open to para-educators or SLPA’s. All accepted participants will be asked to share the information with parents, para-educators, and administrators. In order to ensure fair representation across the state, the number of teams accepted to attend from each district may be limited to one team per district.

While this training will be focused on brain injury, teachers who have students with complex needs or “brain-based” issues (i.e., ADHD, Autism, FASD) will benefit from this training.

1560 Broadway, Suite 1175 Phone: 303-866-6694
Denver, Colorado 80202-5144 Fax: 303-866-6767

Exceptional Student Services Unit



Institute Requirements: Each team member must commit to attending the full day of the training. Certificates for 7 clock hours will be given at the end of the training.

Costs: The Exceptional Student Services Unit of the Colorado Department of Education provides the funding for the trainers, materials, venue, and food and beverages. There are no costs to the participant.

Meals: Coffee and tea and a working lunch will be provided each day. Vegetarian and gluten free meals will be accommodated, as indicated on the registration form. If you have severe dietary needs or food allergies, please plan on bringing your meals. You are also welcome to bring your own snacks/beverages.

Registration Information: The registration link for each training can be found at: <http://www.cde.state.co.us/cdesped/SD-TBI.asp>

Registration will close one week before the training at 5pm. Each team member must register individually. A email confirmation will be sent to each participant after registration closes. The confirmation will include: location information and handouts for participants to download/print before the training. Internet connection is not guaranteed, therefore it is imperative to download the handouts before the training. If capacity is reached, a waitlist will be generated and notifications will be sent.

PLEASE NOTE: Registration does not mean acceptance into the training.



If you are confirmed to attend and your plans change, please contact Debora Toliver at Toliver_d@cde.state.co.us immediately so that others on a waitlist may attend, and/or to allow time to cancel meals.

Colorado Department of Education. (2014). 2013-2014 Regional traumatic brain injury Level II eligibility trainings: Identification→intervention [flyer]. *Colorado Department of Education*. Retrieved from http://www.cde.state.co.us/sites/default/files/flyer_tbi_level2_2.pdf

APPENDIX C

Brain Check Survey

Code: _____ Date Received: _____



Brain Check: Screening Tool Project

Parent/Guardian Survey



Department of Occupational Therapy
College of Applied Human Sciences
Fort Collins, Colorado 80523-1573
(970) 491-6253
FAX: (970) 491-6290

Student Information

Today's Date: ___/___/___

Child's Age: _____

Child's Date of Birth: ___/___/___

Child's Gender: Male Female

Child's race:
(circle one or more)

- | | |
|--|------------------------------|
| 1: American Indian/Alaska Native | 4: Black or African American |
| 2: Asian | 5: White |
| 3: Native Hawaiian or Other Pacific Islander | 6: More than one race |
| | Please describe: _____ |

Child's ethnicity:
(circle one)

- | | |
|---------------------------|----------------------------|
| 1: Hispanic or Latino | 3: Unknown or Not Reported |
| 2: Not Hispanic or Latino | |

Injuries or Illnesses

Injury or Illness	Age	Outcomes
<i>Please check all that apply</i>		
<input type="checkbox"/> Blow to Head (from sports, playing, biking, falling, getting hit by an object, etc.)	At what age? _____	Check all that apply: <input type="checkbox"/> Concussion <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem
<input type="checkbox"/> Whiplash	At what age? _____	Check all that apply: <input type="checkbox"/> Concussion <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem
<input type="checkbox"/> Car accident (resulting in any degree of injury or lack of injury)	At what age? _____	Check all that apply: <input type="checkbox"/> Concussion <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem

Code: _____

Injury or Illness	Age	Outcomes
<i>Please check all that apply</i>		
<input type="checkbox"/> Assault/Violence (child abuse, fights, firearm injury)	At what age? _____	Check all that apply: <input type="checkbox"/> Concussion <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem
<input type="checkbox"/> Sustained High Fever	At what age? _____	Check all that apply: <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem
<input type="checkbox"/> Brain Tumor	At what age? _____	Check all that apply: <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem
<input type="checkbox"/> Anoxia (definition: lack of oxygen; caused by such events as a near-drowning experience or suffocating experience)	At what age? _____	Check all that apply: <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school
<input type="checkbox"/> Meningitis	At what age? _____	Check all that apply: <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem
<input type="checkbox"/> Encephalitis	At what age? _____	Check all that apply: <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem
<input type="checkbox"/> Seizures (example: epilepsy)	At what age? _____	Check all that apply: <input type="checkbox"/> Loss of consciousness, *for how long? _____ <input type="checkbox"/> Coma, *for how long? _____ <input type="checkbox"/> Confusion or altered mental state <input type="checkbox"/> Missed school <input type="checkbox"/> Resulted in no problem

Code: _____

Injury or Illness	Age	Outcomes
-------------------	-----	----------

Please check all that apply

Overdose of _____ At what age? _____
 drugs or alcohol, or
 inappropriate use of
 prescription drugs or over
 the-counter medication?

- Check all that apply:
- Loss of consciousness, *for how long? _____
 - Coma, *for how long? _____
 - Confusion or altered mental state
 - Missed school
 - Resulted in no problem

Other: _____ At what age? _____

- Check all that apply:
- Concussion, *for how long? _____
 - Loss of consciousness, *for how long? _____
 - Coma, *for how long? _____
 - Confusion or altered mental state
 - Missed school
 - Resulted in no problem

Other: _____ At what age? _____

- Check all that apply:
- Concussion, *for how long? _____
 - Loss of consciousness, *for how long? _____
 - Coma, *for how long? _____
 - Confusion or altered mental state
 - Missed school
 - Resulted in no problem

Has your child ever been to the emergency department? Yes No

If YES, at what age? _____ Please explain:

Behaviors that can affect learning

Please tell us about your child's learning styles and behaviors

Learning Style or Behavior	Not Applicable? (check)	Circle the number on the scale which best describes your child:					
		No Problem		↔	Extreme Problem		
	€ N/A	1	2	3	4	5	6
Focusing and maintaining attention	€ N/A	1	2	3	4	5	6
Getting started on activities, tasks, chores, homework and the like, on his or her own	€ N/A	1	2	3	4	5	6
Being understood (speech is easy to understand, speaks clearly)	€ N/A	1	2	3	4	5	6
Understanding others	€ N/A	1	2	3	4	5	6
Coping with change or transitions	€ N/A	1	2	3	4	5	6
Maintaining family and friend relationships	€ N/A	1	2	3	4	5	6
Letting go of one activity to attend to another	€ N/A	1	2	3	4	5	6
Reaction to simple problems	€ N/A	1	2	3	4	5	6

Code: _____

Learning Style or Behavior	Not Applicable? (check)	Circle the number on the scale which best describes your child:					
		No Problem	↔		Extreme Problem		
Monitoring own progress on homework, assignments, chores, and the like	€ N/A	1	2	3	4	5	6
Solving everyday problems (example: thinking of different options when something is not working for him/her.)	€ N/A	1	2	3	4	5	6
Waiting for his or her turn in a game	€ N/A	1	2	3	4	5	6
Learns from past mistakes or behavior	€ N/A	1	2	3	4	5	6
Thinks before speaking or acting	€ N/A	1	2	3	4	5	6
Listens without interrupting others often	€ N/A	1	2	3	4	5	6
Handles a change in plans	€ N/A	1	2	3	4	5	6
Demonstrates good judgment	€ N/A	1	2	3	4	5	6
Learns new things easily	€ N/A	1	2	3	4	5	6
Remembers lists	€ N/A	1	2	3	4	5	6
Remembers day-to-day events	€ N/A	1	2	3	4	5	6

Symptoms

If your child has experienced any of the following symptoms, rank the severity of those symptoms.

Please check all that apply:

Symptom	Not Applicable? (check)	Circle the number on the scale which best describes your child:					
		No Problem	↔		Extreme Problem		
	€ N/A	1	2	3	4	5	6
Headaches and/or Migraines (sudden, not responsive to medications, can last for more than a day)	€ N/A	1	2	3	4	5	6
Loss of muscle coordination (can look like awkward movements, problems with balance, slowed reactions, uncoordinated running and catching)	€ N/A	1	2	3	4	5	6
Blackouts/ Fainting	€ N/A	1	2	3	4	5	6
Confusion	€ N/A	1	2	3	4	5	6
Blank staring/Day dreaming	€ N/A	1	2	3	4	5	6
Dizziness	€ N/A	1	2	3	4	5	6
Change in vision (blurred vision, double vision, depth perception)	€ N/A	1	2	3	4	5	6
Fatigue (tires easily, is often tired)	€ N/A	1	2	3	4	5	6
Seizures	€ N/A	1	2	3	4	5	6
Slurred speech	€ N/A	1	2	3	4	5	6
Has trouble finding the "right" word when talking	€ N/A	1	2	3	4	5	6
Noise sensitivity (can be easily upset by loud noises or specific sounds like a ticking clock.)	€ N/A	1	2	3	4	5	6

Code: _____

Symptom	Not Applicable? (check)	Circle the number on the scale which best describes your child:					
		No Problem	↔		Extreme Problem		
Light sensitivity (can be easily upset by bright or strobe lights)	€ N/A	1	2	3	4	5	6
Sleepiness (has trouble staying awake during the day)	€ N/A	1	2	3	4	5	6
Mood swings (unusual and/or quick changes between sadness, happiness, depression, anxiety, anger and the like; irritability)	€ N/A	1	2	3	4	5	6

Educational Services

Is your child having difficulties with school performance? Please describe: _____

What does your child do best at in school? Please describe: _____

Is your child currently receiving any of the following services?

Check all that apply (If "yes", please check if they are provided through school and/or being provided privately).

Service	Child's Status (please check)	
Occupational therapy	<input type="radio"/> No <input type="radio"/> Yes	<input type="radio"/> Yes If <u>Yes</u> , please check whether these services are delivered by: <input type="checkbox"/> school-supported specialists (the school pays for the specialist); and/or <input type="checkbox"/> by private specialists (you and/or your insurance pays)
Physical therapy	<input type="radio"/> No <input type="radio"/> Yes	<input type="radio"/> Yes If <u>Yes</u> , please check whether these services are delivered by: <input type="checkbox"/> school-supported specialists (the school pays for the specialist); and/or <input type="checkbox"/> by private specialists (you and/or your insurance pays)
Speech-Language therapy	<input type="radio"/> No <input type="radio"/> Yes	<input type="radio"/> Yes If <u>Yes</u> , please check whether these services are delivered by: <input type="checkbox"/> school-supported specialists (the school pays for the specialist); and/or <input type="checkbox"/> by private specialists (you and/or your insurance pays)
Other: _____	<input type="radio"/> No <input type="radio"/> Yes	<input type="radio"/> Yes If <u>Yes</u> , please check whether these services are delivered by: <input type="checkbox"/> school-supported specialists (the school pays for the specialist); and/or <input type="checkbox"/> by private specialists (you and/or your insurance pays)

Has your child ever been evaluated for special education services? € YES € NO

If Yes, at what age was your child first evaluated? _____

Does your child have a 504 plan? € YES € NO

If Yes, are the accommodations helping your child's school performance? € YES € NO

Does your child have an IEP, Individualized Education Plan?

Code: _____

No

Yes → if YES, please answer 1 & 2 immediately below:

1. Is the IEP helping your child's school performance? YES NO

2. Please check all categories listed on the IEP:

- Autism
- Hearing Disability
- Multiple Disabilities
- Physical Disability - Conditions such as, but not limited to, attention deficit disorder, attention deficit hyperactivity disorder, and cerebral palsy may qualify as a physical disability
- Pre-School Child with a Disability
- Significant Identifiable Emotional Disability (SIED)
- Specific Learning Disability (SLD)
- Speech-Language Impairment
- Significant Limited Intellectual Capacity (SLIC)
- Traumatic Brain Injury (TBI)
- Vision Disability
- Other _____

Family Information

Please answer the following questions about **YOURSELF**

Are you the student's (circle all that apply):

Mother Father Foster Parent Other (ex: stepmother) please describe: _____

Your Age: _____ Date of Birth: ___/___/___

Your race: (circle one or more)

1: American Indian/Alaska Native	4: Black or African American
2: Asian	5: White
3: Native Hawaiian or Other Pacific Islander	6: More than one race

Please describe: _____

Your ethnicity: (circle one)

1: Hispanic or Latino	3: Unknown or Choose not to Report
2: Not Hispanic or Latino	

What is your highest level of education? (Check one.) This question is optional.

- | | | |
|---|---|--|
| <input type="radio"/> Some high school | <input type="radio"/> High school graduate | <input type="radio"/> Some college |
| <input type="radio"/> College graduate (Associate's Degree) | <input type="radio"/> College graduate (Bachelor's Degree) | <input type="radio"/> Some graduate training |
| <input type="radio"/> Master's Degree | <input type="radio"/> Doctorate or professional degree (lawyer, PhD., M.D., etc.) | |

Code: _____

Family Gross Income (Before taxes-- check one.) This question is optional.

Note: If parents are divorced and child lives in both families, then record the income of both households separately.

- | | | |
|-------------------------|--------------------------|----------------------------|
| 1. less than \$5,000 | 8. \$35,001 to \$40,000 | 15. \$90,001 to \$100,000 |
| 2. \$5,000 to \$10,000 | 9. \$40,001 to \$45,000 | 16. \$100,001 to \$150,000 |
| 3. \$10,001 to \$15,000 | 10. \$45,001 to \$50,000 | 17. \$150,001 to \$200,000 |
| 4. \$15,001 to \$20,000 | 11. \$50,001 to \$60,000 | 18. \$200,001 to \$250,000 |
| 5. \$20,001 to \$25,000 | 12. \$60,001 to \$70,000 | 19. \$250,001 to \$300,000 |
| 6. \$25,001 to \$30,000 | 13. \$70,001 to \$80,000 | 20. more than \$300,000 |
| 7. \$30,001 to \$35,000 | 14. \$80,001 to \$90,000 | |

Thank you very much for your time!

Life Outcomes after Brain Injury Research Program. (No date). *Brain Check Survey*.
Department of Occupational Therapy, Colorado State University, Fort Collins.

Note: A new edition of the Brain Check Survey was created in 2014. However, it was the previous edition distributed at Level II trainings.

APPENDIX D

Comprehensive Health Assessment

INITIAL HEALTH ASSESSMENT

IDENTIFYING INFORMATION:

LEGAL NAME OF CHILD: _____
 BIRTHDATE: _____ AGE: _____ SEX: _____ GRADE: _____
 ADDRESS: _____
 This form is completed by: _____ Relationship to Child: _____
 MOC PHONE: Home _____ Work _____ Cell _____
 FOC PHONE: Home _____ Work _____ Cell _____
 Message Number: _____ Best time to call: _____
 Child lives with: Both Parents ___ Mother ___ Father ___ Other (explain) _____
 Language spoken in home: English: ___ Spanish ___ Other (list) _____
 My child has the following health care coverage: Medicaid: ___ CHP+ ___ Private: ___ None: ___

PREGNANCY AND BIRTH:

Month into pregnancy that medical care began: _____ Length of pregnancy: _____
 Were there any medications taken while pregnant?
 Explain: _____
 Length of labor: _____ Birth Weight: _____
 Did baby come home with mother? Yes ___ No ___
 Explain: _____
 Did the baby need oxygen after birth: Yes ___ No ___
 Explain: _____
 Did baby turn yellow enough to be treated? Yes ___ No ___
 Explain: _____

DEVELOPMENTAL HISTORY:

Did your child crawl by 9 months? Yes ___ No ___
 Did your child walk by 18 months? Yes ___ No ___
 Did your child say words by 15 months? Yes ___ No ___
 Was your child toilet trained by 3½ years? Yes ___ No ___
 Were there problems with balance coordination? Yes ___ No ___
 Were there problems with fine motor skills? (buttons, handwriting, picking something up) Yes ___ No ___
 Do you have other concerns about your child's development? Yes ___ No ___
 Explain: _____

ILLNESSES, HOSPITALIZATIONS, SURGERIES, AND/OR ACCIDENTS:

Major Illnesses: _____
Hospitalization/Surgeries: _____
Accidents/Injuries: _____
Child's Doctor: _____ Date of Last Visit: _____ Reason: _____

BODY SYSTEMS HISTORY:

TEETH:

Are there any dental concerns? Yes ___ No ___
Explain: _____
Date of Last Dental Exam: _____ Dentist: _____

EARS:

Does your child have any known hearing problems? Yes ___ No ___
Explain: _____
Do you have any concerns about your child's hearing? Yes ___ No ___
Explain: _____
Ear Infections? No ___ Yes ___ Age when started? ___ How many per year? ___
Within last year? No ___ Yes ___ Were PE tubes placed? No ___ Yes ___ Number of sets? ___

EYES:

Does your child have any problems seeing? Yes ___ No ___
Explain: _____
Does your child wear glasses/contacts? Yes ___ No ___
When? _____
Date of last eye exam? _____ Doctor's Name: _____

CARDIAC:

Does your child have any heart problems? Yes ___ No ___
Explain: _____
Does your child fatigue easily, or have poor endurance? Yes ___ No ___
Explain: _____

RESPIRATORY:

Does your child have any breathing problems? Yes ___ No ___
Explain: _____
Is he/she prone to upper respiratory infections? Yes ___ No ___
Explain: _____
Does your child have asthma? Yes ___ No ___
Triggers: _____
Uses inhaler, nebulizer, or medication? Yes ___ No ___

GASTROINTESTINAL AND URINARY:

Does your child have any problems going to the bathroom? Yes ___ No ___
Explain: _____
Bedwetting: Yes ___ No ___
Constipation: Yes ___ No ___
Difficult to train: Yes ___ No ___
Does your child have dietary/food needs or concerns? Yes ___ No ___
Explain: _____
Does your child have frequent stomach aches? Yes ___ No ___
Explain: _____

SKELETAL AND MUSCULAR:

Has your child ever had a broken bone? Yes ___ No ___
When and which one? _____
Does your child have any physical disabilities? Yes ___ No ___
Explain: _____
Are there any restrictions for activity? Yes ___ No ___
Explain: _____

NEUROLOGICAL:

Has your child ever had seizures? Yes ___ No ___ Date of last seizure: _____
Does your child have frequent headaches? Yes ___ No ___ Explain: _____
Has your child ever had a head injury or concussion? Yes ___ No ___ If unconscious, how long? _____
After injury: Dizziness? ___ Memory problems? ___ Headaches? ___ Fatigue? ___
Was a physician seen? Yes ___ No ___ Who? _____
Hospitalized? Yes ___ No ___ Where? _____
Does your child have sleeping/bedtime concerns? Yes ___ No ___
Explain: _____
Does your child have a limited attention span? Yes ___ No ___
Do you think your student is distractible? Yes ___ No ___
Is your student impulsive? Yes ___ No ___

ALLERGIES: (Identify and explain)

Medications allergies? Yes ___ No ___ What/Reactions: _____
Food Allergies? Yes ___ No ___ What/Reactions: _____
Insect/wasp/bee sting allergy? Yes ___ No ___ What/Reactions: _____
Environmental Allergies? Yes ___ No ___ What/Reactions: _____
Seeing an Allergist? Yes ___ No ___ Who/When?: _____

MEDICATIONS:

Is your child currently taking medications (prescription and/or over-the-counter)? Yes ___ No ___
List Name, Dose, and Time: _____

Signature of person completing this form

Date

“Comprehensive Health Assessment.” (2014). Retrieved from <http://cokidswithbraininjury.com/ckwbi/wp-content/uploads/2009/11/ComprehensiveHealthHistory.pdf>

APPENDIX E

Brain Injury Observation Form: Page 1 of 5

Less positive More Positive

ATTENTION SUBTYPE	1	2	3	4	5
SELECTIVE/FOCUSED	Significantly Below Average	Slightly Below Average	Average	Slightly Above Average	Significantly Above Average
Focuses on teacher lecture					
Attends to detail					
Orients to speaker & staff					
Looks at board appropriately					
Responds to questions with on-topic answers					
Resists subtle classroom distractions-noise, lights					
SUSTAINED					
Focuses for long periods of time					
Completes in-class assignments					
Looses train of thought when talking or writing					
Looses place when working on task or when reading					
SHIFTING/DIVIDED					
Can multitask-note taking while listening					
Can attend to more than one task at a time appropriately					
Switches from activity to activity appropriately					
Responds when watching audio or video activities					
OTHER					
Overall attention capacity					
Energy level when performing long academic tasks/tests					
Organized with materials					
Organized thoughts- (analyze writing samples)					
Initiates tasks without prompts					
Time management (e.g. keeps schedules /dates)					
Impulsivity					
Talking / Verbal interruptions					

Copyright Free: Free to copy and utilize as needed— Peter Thompson, Ph.D., Nicole Crawford, Ph.D.

Thompson, P. & Crawford, N. (No date). Brain Injury Observation Form. Retrieved from http://cokidswithbraininjury.com/ckwbi/wp-content/uploads/2009/11/BI_Observation-Form.pdf