

Teachers Understanding of Traumatic Brain Injury

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By

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### **Abstract**

Approximately 435,000 children each year are diagnosed with traumatic brain injuries. Head injuries are a major problem in the United States and in the school systems. Unfortunately, teachers are not well prepared for working with students with traumatic brain injuries. The researcher wanted to understand what the teachers at a Midwestern urban school district understood about traumatic brain injuries (TBIs) and their level of understanding of how to serve students with TBIs. A questionnaire was created and sent to 300 teachers to determine teachers levels of knowledge about traumatic brain injuries. Responses indicate that teachers don't have a deep understanding of traumatic brain injuries and often aren't well prepared to serve these students in their classrooms. Recommendations include the need to offer professional development for all teachers in school district where the research was conducted.

Traumatic brain injury is a major problem in America effecting 435,000 school children a year. Unfortunately the number is increasing despite the push for seat belt and helmet use. How can educators identify and help these students when they come to the classroom? What do educators know about traumatic brain injuries and how to help students with traumatic brain injuries in the classroom? These are some of the questions educators in a large inner city school in the Midwest responded to in this research.

## **Review of Literature**

### **Definition**

Before beginning this discussion, it is first necessary to define a Traumatic Brain Injury (TBI). The Mayo clinic defines traumatic brain injury as a swift, forceful blow to the head that starts the brain on a collision course with the interior of the skull. The blow and collision may cause the brain to bruise or nerve fibers to tear and cause bleeding. Symptoms that may occur from the trauma can be broad since the brain controls thoughts, behaviors, feelings, and movements. The instant physical effects from the blow usually include contusion and major swelling. When the swelling occurs it pushes against the skull which causes more damage (Staff, n.d.).

According to the Center for Disease Control (CDC), traumatic brain injuries add to the number of deaths and disabilities every year. Yearly, in the United States, 1.4 million people sustain a head injury. Of those, 50,000 die and 235,000 are hospitalized; while 1.1 million are cared for and then sent home from the emergency room. Half of those emergency visits were children (National Center for Injury Prevention and Control, n.d). A number of people with TBI's aren't seen in the emergency room at all and don't even realize they have a TBI. CDC

estimates that two percent of Americans have a long-term need for help due to a TBI (Injury prevention and control: Traumatic brain injury, 2010)

The National Institute of Health concludes that fifty percent of traumatic brain injuries are from car, bicycle, or motorcycle crashes. Twenty percent is due to violence or child abuse. The remaining 30 percent is random, mostly due to falls especially among the elderly. Traumatic brain injuries are a major cause of injury in the Iraq and Afghanistan wars. Those at highest risk for brain injuries are male ages 15 to 24 due to sports injuries, aggressive driving, and military service (Wade, 2004). The next section provides some basic facts about traumatic brain injuries.

### **Diagnosis**

There are three levels of TBIs: mild, moderate, and severe. The severity is determined by the Glasgow Coma Test which measures the loss of consciousness and level of difficulty in answering basic questions. Mild TBIs are commonly called concussions and usually have a 13-15 Glasgow coma scale (GCS) score and loss of consciousness for less than 30 minutes. Moderate TBIs occur when the loss of consciousness is more than 30 minutes but less than 24 hours and the person has a GCS score of 9-12. The worst would be a severe traumatic brain injury which is characterized by a GCS score of 3-8 and a loss of consciousness for more than 24 hours (Brain Injury Association, n.d. ). Table 1 provides details of the Glasgow coma scale scores (Center for Outcome Measurement in Brain Injury, n.d.).

Table 1

*Glasgow Coma Scale*

<b>Glasgow Coma Score</b>		
<b>Eye Opening (E)</b>	<b>Verbal Response (V)</b>	<b>Motor Response (M)</b>
4=Spontaneous	5=Normal conversation	6=Normal
3=To voice	4=Disoriented conversation	5=Localizes to pain
2=To pain	3=Words, but not coherent	4=Withdraws to pain
1=None	2=No words.....only sounds	3=Decorticate posture
	1=None	2=Decerebrate
		1=None
		<b>Total = E+V+M</b>

**Symptoms**

Immediately following an accident or fall, doctors at the Mayo Clinic advise looking for the following problems. For a mild traumatic brain injury or a concussion, the following symptoms need medical attention immediately: headache, confusion, amnesia, short periods of unconsciousness, dizziness, or mood changes.

When hospitals encounter a moderate or severe TBI, the catalog of symptoms include the same symptoms for a mild TBI in addition to slurred speech, persistent headache, numbness, profound confusion, confrontation, anxiety, inability to sleep, and trouble with organization.

Traumatic brain injuries have consequences that last for short term and/or indefinite periods of time. Consequences include motor, language, cognitive, behavioral, and emotional problems.

**Motor problems.** Motor problems include coordination, walking, and spasticity. Coordination and speech are the most commonly seen problems with a TBI. Motor functions are the first to recover after a TBI and return quite quickly, usually in the first few months. Because motor function is the first to recover, most educators may feel the student has recovered, which is

not true and most unfortunate for the student (Clark, 1996) as the teacher may expect him/her to again perform in the typical range as he/she did prior to the TBI.

**Language problems.** Language problems such as speech deficits recover at about the same rate as motor problems. However, higher level communication and receptive language deficits are more persistent. These involve word finding, pragmatics, and verbal fluency which likely correspond to the cognitive recovery (Clark, 1996). One of the most common problems is word-finding, also known as anomia, or anomic aphasia which is translated as ‘can’t name’. A successful strategy for addressing word-finding problems is by working with a speech therapist and having the individual write down what he/she wants to say on note cards.

**Cognitive problems.** Cognitive problems include memory, attention, language comprehension; concept formation, problem solving, integrating, organizing, generalizing information, and judgment. Children with moderate to severe traumatic brain injuries are at greater risk for these cognitive problems (Clark, 1996). A large study demonstrated the impact of TBIs on IQ for children. Levine (2005) investigated the change in IQ of students with TBIs who took two IQ tests, one before turning seven years old after their TBI, and the other after age seven. She found IQs diminished most in the students who had a TBI with seizures and major headaches.

Cognitive problems associated with TBIs impact organization and planning as most injuries are frontal lobe injuries. The left and right frontal lobes are responsible for planning activities, evaluating possible errors, and putting things in the right sequence. The left side is responsible for language, while the right side is responsible for visual organization. When an individual has a frontal lobe injury, he/she will have a hard time getting organized (Johnson, 1998).

**Behavioral problems.** Specific behavioral problems in students with TBIs noted by Yeates (2006) are withdrawal from peers and the general population. Students are frequently anxious and depressed and experience social problems such as fitting into the group. Attention problems are definitely seen in students with moderate to severe traumatic brain injuries.

As noted earlier, attention deficit disorder is a secondary effect associated with traumatic brain injury. Rule breaking behavior such as talking out without raising their hand and talking back to teacher are additional behaviors noted by classroom teachers in addition to aggressive behaviors such as hitting or throwing things. Yeates (2006) followed children with severe, moderate and mild TBIs for a year and found that most behavioral problems were reported in students with severe TBIs followed by those with moderate and finally mild TBIs.

**Emotional problems.** In some ways, social and emotional behaviors are intertwined with behavioral issues. Withdrawing, being depressed, and experiencing social problems with peers have been categorized as both emotional and behavioral problems. Mood swings, paranoia, impulsivity, restlessness, and blaming others for problems are connected to cognitive insufficiency related to the child's traumatic brain injury. Confabulation, the confusing of past events with current ones, affects students with moderate and severe traumatic brain injury, and can cause students to become upset and confused when someone corrects them (Jantz, 2007).

Children with TBI's have a hard time transitioning back into the school environment. Many times teachers are reluctant to begin a behavior plan nor do they want to say anything to the child at first because of the disability. This is both a disservice to the child and to the teacher (Yeates 2006). Children with brain injuries are more likely to have emotional and behavioral problems than any other injuries (i.e., orthopedic or physical injuries). The parent, teacher, and student

need to work together before the child steps foot in the school to help ease the transition back into the classroom (Yeates, 2006).

### **Misdiagnosis During Recovery**

Behavioral and emotional problems are the main focus of this paper, as it is the author's belief and experience that many children in the school district where the author is employed have been given a diagnosis of Emotional Disorders (ED), when in fact, they may have been misdiagnosed and should instead have a diagnosis of TBI.

Children going through recovery, as Mayfield (2005) suggests, should be seen as experiencing "improvement." A few weeks to months after a child experiences a trauma as a direct result of the injury might be hostile, impulsive, unable to control anger, and limited inhibitions (Mayfield, 2005). The indirect result of the brain injury could be an inability to predict consequences, stay on task, and pay attention (Mayfield & Homack, 2005). These characteristics are commonly associated with ADHD and have also been termed secondary ADHD (Slater, 2008).

Children who did not have behavioral issues before the TBI are less likely to have behavioral problems after the TBI. That being said, those who develop behavioral problems due to the TBI usually don't appear to have problems for months or years afterwards. Additionally, a TBI can double or triple the behavioral problems that may have already been present.

The consequences of a brain injury can affect all aspects of life, including personality. A brain injury is different from a broken bone or a bruise. An injury in these areas limits the use of a specific part of the body, but personality and mental abilities remain the same. Most often, these body structures heal and regain their previous function. Brain injuries do not heal like other injuries. Recovery is functional, based on factors that remain uncertain.

No two brain injuries are alike, and the consequence of two similar injuries may be very different. Symptoms may appear right away or may not be present for days or weeks after the injury. One of the consequences of brain injury is that the person often does not realize that a brain injury has even occurred.

Mild traumatic brain injury (concussion) has an estimated eighty percent recovery rate. The twenty percent who do not recover are often misdiagnosed during the years following the incident. These individuals are more likely to have moderate brain injury or other brain injuries. Most patients who go to the hospital and receive a diagnosis of a concussion, may experience symptoms of a mild traumatic brain injury that may take several months up to a few years to develop. Delayed symptoms, especially in children, may come in the form of reading delays and comprehension problems that may cause behavior problems due to frustration (Swatzyna, 2009).

### **Education Law and Traumatic Brain Injuries**

The definition of a traumatic brain injury according to the Individuals with Disabilities Act (IDEA) defines a traumatic brain injury as

...an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's performance. This term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognitive: language; memory; attention; reasoning; abstract thinking; judgment; problem solving; sensory; perceptual and motor abilities; psychosocial behavior; physical functions; information procession; and speech.

The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induce by birth trauma. (57 Fed. Reg. 189, 1992)

The IDEA has been in effect since 1992, but a University of Utah study demonstrated that teachers do not know which students with TBIs are eligible for services and which are not (Anderson, 1995). The study reported the main reason for this finding is that teachers don't know what to look for, and students may be misdiagnosed and receive services under another category of special education as the IDEA federal law is sometimes misunderstood.

The IDEA focuses on providing an equal education in the least restricted environment to the children with the following categories of disabilities: mental retardation, visual impairment, hearing impairment, speech impairment, emotional disturbance, orthopedic impairment, autism, traumatic brain injury, specific learning disabilities, or other health impairment (57 Fed. Reg. 189, 1992).

IDEA makes sure students with traumatic brain injury are treated the same as students that do not have a disability. The students are also put in the least restricted environment, the place where they will be able to learn the best. The law may be misunderstood because it does not include students with medical conditions, only those that experienced blunt trauma to the head. The State of Ohio felt that rule should be changed and added services for students with medical conditions to their law.

### **State Law**

In *Whose IDEA Is This? A Parent's Guide to the Individuals with Disabilities Education Improvement Act of 2004*, the State of Ohio's law defines traumatic brain injury as:

...an acquired injury to the brain caused by an external physical force or by other medical conditions, including but not limited to stroke, anoxia, infectious disease, aneurysm, brain tumors and neurological insults resulting from medical or surgical treatments. The injury results in total or partial functional disability or psychosocial impairment or both, that

adversely affects a child's educational performance. The term applies to open or closed head injuries, as well as to other medical conditions that result in acquired brain injuries. The injuries result 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 does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma. [N.A. 2008 P. 61]

In order to for a student to be identified to receive special education services under the Ohio TBI definition, the Ohio Department of Education, Office for Exceptional Children (ODE-OEC) provides the following guidance for the Multifactor Evaluation Team, "The Multifactor Evaluation Team needs to include the medical records and the results of injury criteria in the Evaluation Team Report in order to identify a child for special education services under the TBI category" (Cave, 2004, p.170).

### **Section 504 of the Rehabilitation Act of 1973**

Students who achieve near, at or above grade level with TBI's may not qualify for an IEP because they may not need specifically designed education. For students who still may need modifications, accommodations, or help to access the general education curriculum, a 504 plan can be provided (Glang, 2008).

Students who need accommodations such as physical, occupational, speech, or language therapies or modifications other than direct instruction can have a 504 plan written which ensures students will not be discriminated against and guarantees equal access to the same education available to children without disabilities. To qualify for a 504 plan, a child needs to have a documented disability as defined by the law. A traumatic brain injury qualifies children for a 504

plan if they “(1) have a physical or mental impairment that substantially limits one or more major life activities; (2) have a record of such an impairment; or (3) are regarded as having such an impairment/she is doing making adequate achievement academically” (34 C.F.R. Part 104).

The student can also be served with a 504 plan while being monitored under a response-to-information (RTI) model (Duff, 2009). RTI is defined and described in the following section.

### **Interventions**

Children and parents are under a great deal of stress following a traumatic brain injury. What can educators do to help? There are several web sites devoted to traumatic brain injury, yet one must be careful because some are sponsored by lawyers that unfortunately want to make money off the situation.

Traumatic Brain Injury is not something visible like a broken leg or paralysis but it is still an important issue to attend to. Teachers and parents need to know how to deal with children that don't understand why their brains are not letting them be the people they used to be. They may try and act as if they haven't changed, but they aren't the same, and they never will be, so it is important to get them into the right program with the right interventions.

**Response to intervention (RTI).** In the case of moderate to severe TBI's it is important for professionals to complete a functional behavioral assessment before leaving the hospital. This will help foresee post-discharge adjustment. A functional behavioral assessment (FBA) is the procedure of gathering and examining data about a child's behavior. It helps determine where the child should be placed and guide the design and implementation of interventions. Gurka (1999) demonstrated that functional behavioral assessments aided in the re-entry of students up to 24 months later.

Response to intervention is defined by the Individuals with Disabilities Act (IDEA 2004) as a system of interventions that requires schools to deliver a tiered service to help children with specific learning disabilities to achieve. RTI is not specifically needed for TBI but it has shown to be successful for students with TBIs (Dykeman, 2009).

The three-tiered system consists of a first tier that is characterized by observation that occurs during regular classroom instruction. If students are experiencing difficulties an intervention team meets and provides suggestions on how to make modifications and accommodations in the classroom. If the child is unsuccessful he/she will be referred to tier two which follows a problem solving model. Tier two includes classification, analysis, development, implementation, assessment, and modification. If tier two interventions are unsuccessful, the student is referred to tier three which begins with a referral for special education services. Dykeman found that an estimated 40 percent of students with TBIs returned needing tier two services and would not need to go onto tier three services. Tier three services were needed by only 21 percent of the students with TBIs if the school system used the RTI system and did not place the student directly into special education (Dykeman, 2009).

**Web-based interventions.** Wade and Carey (2006) and Wade (2004) conducted a study to determine differences between two treatment options. They studied how parents of children with moderate to severe traumatic brain injuries using an online family problem-solving therapy and internet resources, in addition to regular care, compared with a control group of regular care only. The problem-solving group reported less stressors, less distress, and less anxiety. The authors found the benefits of the online supports in addition to regular therapy held only in the short term, but in a follow-up, there was limited difference between the two groups (Wade & Carey, 2006; Wade, 2004).

**Academic accommodations.** Students with a traumatic brain injury in a classroom may experience poor attention, impulsivity, have difficulty organizing thoughts, and recovering information. What are teachers suppose to do? Cave (2004) suggests following five steps first suggested by Savage and Michkin:

1. Construct a bridge beginning from old to new to help the student focus and bring in prior knowledge. This helps the child bring in something personal which connects part of the brain and helps the child remember.
2. Practice recently taught classwork with a rationale. It is important to guarantee learning by having the student reconstruct the information.
3. Simplify the knowledge to new circumstances. Have the students draw, write, sing or compare the information to something else.
4. Reinforce the child's learning needs by using the child's strengths. Find out if the child is visual, auditory, or kinesthetic. Then use that learning. It is very important to use all three to help support the brainlobes to process information.
5. Each child needs to work toward independence. Let the student decide which is the best way they recall information. (p. 170-172)

Teachers of students with traumatic brain injuries should slow down their teaching, prioritize, and structure their instruction and classroom. All teachers should examine the nine-week curriculum and decide what content is the most important to cover. Unfortunately, with the focus on standardized testing today, school systems do not allow much content to be omitted. However, teachers should structure the child's curriculum, prioritize what is most important, and slow down so the child will have time to absorb the information. It is also important for

educators to partner with physical therapists, speech therapists, occupational therapists and other professionals in the building.

**Social interventions.** Academic difficulties aren't the only ones that effect children with traumatic brain injuries. Socio-emotional interactions can prove difficult such as problematic peer relationships and staff interactions being misunderstood which can lead to more problems. It was stated before that students with TBIs experience poor impulse control. They often say things they don't mean to say and may experience outbursts, especially students with frontal lobe injuries. The best advice is to provide support for teachers and students.

Students who lack empathy and emotional control after a TBI will have a harder time than those who don't experience these difficulties (Tonks, 2008). It is best to have a plan in place and to realize the student is not doing it to hurt the teacher. A behavioral plan is important but teachers must remember that the child may not be able to control him/herself. It is often just as frustrating to the student as it is to the adult (Tonks, 2008).

### **Teacher Perceptions**

Hawley (2005) presents a case study of a student called "AZ." AZ suffered a brain injury at age 8 and experienced difficulty in school since the brain injury. His family had no follow-up nor were they told what to expect with the TBI. His teachers were put in the same situation. Hawley sent a questionnaire with a list of likely problems associated with traumatic brain injuries to all the teachers who ever had AZ in class. Hawley asked teachers to rate AZ as compared to his peers. Even though the teachers all had the same student in class, they seemed to be inconsistent in their ratings of AZ.

One reason for differences in teacher ratings may be that they had AZ in class at varying times or years since the accident. Identified problems included: temper, headaches, mood

swings, aggression, low self-esteem, clumsiness, tiredness, and problems with coordination. No teacher rated word-finding difficulties as occurring frequently, but ratings were split for 'not at all' and 'occasionally'. When it came to behaviors such as inappropriate behavior, problem with school work, memory problems, and doing his school work, ratings were very high for occurring 'frequently' or 'occasionally' and extremely low for 'not at all'. These findings demonstrate that AZ performed differently in different classes and experienced the most difficulty with behavior during unstructured times (Hawley, 2005).

Blosser and DePompei (1991) identified two major problems students encounter when reentering the school system after a traumatic brain injury. First, many times the school does not have a plan to help the students transition back into school, and second, teachers lack an understanding of traumatic brain injuries.

Chapman looked at how prepared teachers in rural areas are to have students with traumatic brain injuries in their classrooms. He sent out 300 questionnaires to teachers in four states living in rural areas that had less than 9000 people. He received 188 questionnaires back and found that teachers reported not feeling adequately prepared to have a child with a traumatic brain injury in their classrooms because they did not have the necessary training and did not understand everything a child with traumatic brain injury might need (Keith, 2000).

Extensive research has been conducted regarding traumatic brain injuries which is very helpful. However, limited research is available regarding teacher's perceptions and what can be done to assist the teacher in the classroom in providing children with traumatic brain injuries the best education possible. This lack of information has led to the following research about teachers' knowledge of TBIs and perceptions of serving children with TBIs in the classroom.

## **Method**

The purpose of this research was to understand teachers' perceptions of children with traumatic brain injuries and educational strategies to use with them if the students were in their classrooms.

### **Participants**

The participants in this study were teachers and administrators from a large urban Midwestern school district. The questionnaire was sent primarily to teachers that weren't working in schools primarily for children with special needs. In this particular Midwestern district there have four such schools. Two are for students identified with emotional disabilities (elementary and middle) and the other two are for all other high-incidence special needs (elementary and middle/high school). Three hundred teachers were randomly selected by the school district's computer center. Teachers who worked in the four schools specifically for students with disabilities were excluded from the random selection and were disqualified from participating in the study.

### **Instrumentation**

A survey created using Survey Monkey was sent to 300 teachers by the computer center E-mail director of a large Midwestern school district. The technology director sent the questionnaire out and followed with three reminders. It was sent marked 'postmaster' so when teachers responded, the survey went back to the computer center. At that time the email director would forward the anonymous responses to the researcher. This ensured that all information would be kept confidential. The researcher did not know who received or responded to the email which enhances the validity and reliability of the responses.

## **Procedures**

Following IRB approval, an invitation to participate in the research was randomly sent via email to approximately 300 people with an email cover letter explaining the details of the research. If an individual agreed to participate, he/she was instructed to click on a link in the email that would take him/her directly to the survey. The email included a due date for responding. One week later, a reminder email was sent to encourage participation. Three reminders in all were sent to the participants. Once the due date was past, the data was analyzed. Confidentiality was ensured since the email invitation and the survey link was sent to a random selection of teachers in a large Midwest urban school district by the district's technology department. Results were returned directly to the district technology office who forwarded the anonymous results to the researcher with no identifiers.

## **Data Analysis**

The qualitative data was analyzed by compiling the data from all the respondents, reading them over, and coding for major themes. The findings were then summarized and compared to existing research that has already been done on children with traumatic brain injuries.

## **Results**

### **Defining TBI**

Survey responses were received from 28 individuals out of the 300 randomly distributed surveys. This resulted in a 9% response rate which is consider a low response rate. Possible reasons for such a low response rate are addressed in the discussion section of this paper.

The data collected from 28 teachers in a large midwest urban school district provided information regarding how much teachers actually knew about traumatic brain injuries. The first

question asked teachers to define a traumatic brain injury. Most responses were identical and stated,

A traumatic brain injury occurs when an external force traumatically injures the brain. TBI can be classified based on severity, mechanism (closed or penetrating head injury), or other features (e.g. occurring in a specific location or over a widespread area). *Head injury* usually refers to TBI, but is a broader category because it can involve damage to structures other than the brain, such as the scalp and skull.

Interestingly, this response is taken word for word from Wikipedia which indicates the teachers knew very little about traumatic brain injury. One unique answer stated, “Any injury to the brain after normal development.” From this response, it was clear this respondent knew something traumatic brain injury, especially judging from the remainder of the individual’s answers.

Additionally, all of the teachers surveyed were unsure of how Ohio’s definition of a traumatic brain injury was different from the federal IDEIA definition.

### **Characteristics of TBI**

Responses to a question asking teachers to list common characteristics of children with a TBI and another asking which conditions are associated with children with brain injuries became intertwined. It appears respondents took the answers from the multiple choice question regarding associated conditions and used those choices as answers to the common characteristics question. Most teachers include all the options (i.e., physical impairments, memory problems, orthopedic, speech problems, hearing problems, normal development and vision impairments) except one (ADHD), which was surprising because many individuals with TBIs exhibit characteristics similar to attention deficit disorders. As mentioned earlier, the one symptom that is considered a secondary condition to TBI is attention deficit disorder.

## **Symptoms**

Teachers were asked about red flags that would indicate a student might have a TBI. Teachers responded by with several different answers such as problems processing information, developmental delays, slurred speech, poor vision, motor and musculo-skeletal weaknesses. The main answer that was consistent from the respondents who answered that question was cognitive delays. This has been shown to be a very important problem that needs to be addressed at school. To help the students the following intervention and strategies will be important.

## **Interventions and Strategies**

Teachers were also asked how they work with students with TBI who exhibited emotional problems. Twelve teachers responded that emotional problems are associated with TBI and the students disturbed the class. This aspect of TBI seems to be the one most written about and well recognized when it comes to traumatic brain injury, but in reality it is not the main problem for most individuals with TBIs. The emotional disturbance frequently comes from the frustration of not being able to do the things they use to be able to do.

Teachers were also asked about guidelines for interventions and when interventions should begin for individuals with traumatic brain injuries. All teachers felt the interventions should start right away. As for what the interventions should be, the teachers' answers were varied and ranged from no extra help, understanding how to teach students with cognitive delays and behavioral issues, to professional development in traumatic brain injury and the adaptations they may need. One teacher felt she would need the help of all therapists and support staff in the building. It is critical to bring in the support staff and the therapist because as the literature suggests, the student and teacher cannot do this on their own.

Teachers were asked to describe what academic or behavior strategies are needed to help a child with traumatic brain injury. Most respondents left this question blank or responded that it depends on the specific injury. Other teachers provided great suggestions such as one-on-one instruction, repetition, and lots of patience in response to necessary academic strategies. These strategies are appropriate and will work for students with a variety of disabilities.

In terms of behavioral strategies, teachers suggested behavior contracts, positive intervention strategies, and consistency. Again, these are all appropriate strategies, in particular consistency, as children need as much structure and consistency as possible. In addition, it helps to support their memory if they know what is expected and what is going to happen on a daily basis.

The responses that surprised the researcher the most were in response to the question, what injuries cause a traumatic brain injury? Every participant responded: car accident, bike, or skateboarding accident. Some also included birth and lead poisoning. Birth was a response on ninety-percent of the questionnaires. However, according to IDEA, birth injuries or traumas are not included in the definition of traumatic brain injuries.

All participants were able to identify the main injury types correctly as mild, moderate and severe. Additionally, teachers were asked where should a child with a TBI should receive his/her education. The respondents identified the full range of emotional disturbance (ED) classroom, self-contained classroom, and a general education classroom.. Finally, half of the teachers responded correctly that according to state standards, a child with a tumor or an aneurysm can be considered as having a TBI.

Even though the response rate was low, the data provided the researcher with an idea of what teachers already know or what help and information they still need. Most teachers had a

good understanding of what interventions would work for most students with disabilities. The teachers were also quite open and willing to participate in professional development to learn more about TBIs which is an exciting prospect.

### **Discussion/Recommendations/Implications for Practice**

Twenty eight responses were received from 300 randomly distributed questionnaires resulting in a 9% response rate. Several reasons may account for such a low response rate. First, teachers in urban schools are very busy at the end of the academic year and are trying to finish up the school year. Surveys were distributed in the spring of the academic year which is also the time teachers are focused on state-mandated high-stakes competency exams.

Next, the questionnaire came from the district technology office with the sender listed as ‘postmaster’ instead of an individual, so many teachers may have ignored and/or deleted the message. However, the reason it was sent from the postmaster (district technology office) was to ensure confidentiality for the respondents.

The arrangement of the questions on the questionnaire might also have been problematic. Beginning by asking how teachers defined a traumatic brain injury might have made teachers think the entire survey was just for special education teachers, or may have confused them. Ninety-nine percent of the teachers who answered the first question wrote the same answer that was copied directly from Wikipedia. It is clear from that response, that those teachers had no idea what traumatic brain injury is. However, all teachers recognized the need for, and responded that they were willing to attend professional development regarding traumatic brain injuries.

Finally, teachers all responded correctly to the two questions that provided all the answers, and they only had to choose the correct items from a list. The teachers were aware of some successful intervention for the students. Students with traumatic brain injuries are like most

students with mild to moderate disabilities and basic interventions will usually work. The results indicated that teachers were less than proficient in their knowledge about TBIs but they all wanted to learn more.

It is clear from the results that teachers need to learn more about traumatic brain injuries. They also understand the need to individually get to know the students and find out more about their TBIs and what strategy will work best for each student. Next, teachers need to be provided with professional development designed to help them identify and understand TBIs and how to better support students with TBIs in the district.

The findings from this research will be shared with the administration of the Midwest urban school district where the research was conducted. Using these findings, in addition to research being conducted by a school psychologist in the district, a professional development training session is being developed by the researcher and the school psychologist. This research and training will help make a difference in the lives of students with traumatic brain injuries in this district and any other district that might take advantage of the professional development.

### **Conclusions**

Sadly, it is clear that the majority of the respondents did not have an understanding of traumatic brain injuries. In the urban district where this study was completed, there are 300 students being served who have traumatic brain injuries. It is also clear that professional development focusing on identifying and serving students with traumatic brain injuries would be a great resource and service to the faculty, students, and families. These students are not currently being ignored, but it appears they may be underserved. Therefore, it is important for them to have every resource possible.

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