SCHOOL SPEECH-LANGUAGE PATHOLOGIST’S COMFORT WORKING WITH

TRAUMATIC BRAIN INJURY / ACQUIRED COGNITIVE DISORDERS

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ABSTRACT

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Children and older adolescents have the highest rate of traumatic brain injury (TBI)-related emergency department visits. Also, recently there has been an increase in fall-related TBI seen in emergency departments among children aged 14 years and younger. For children who are affected by TBI, speech-language pathology (SLP) services may be needed to help them manage their deficits and make gains in functioning. Previous research has shown that school SLPs lack confidence in working with students with TBI and in providing education to others about TBI. In regard to knowledge, previous studies have found that school SLPs hold some accurate perceptions and some misconceptions concerning TBI and its consequences. The purpose of the current study was to examine educational background knowledge, interest level, comfort level, and self-perceived effectiveness of school-based SLPs in the area of TBI. Ohio SLPs who currently work or have previously worked in a school setting responded to an online survey. Participants reported feeling more comfortable and more effective in assessment and treatment of students in general as compared to students with acquired cognitive disorders/TBI (ACD/TBI). Also, SLPs who had one or more classes in either their bachelors program or masters program primarily devoted to ACD/TBI felt they had a sufficient amount of academic experiences related to ACD/TBI. They also rated themselves as feeling more comfortable in assessment and more effective in assessment and treatment of ACD/TBI (compared to those who did not have any classes devoted to ACD/TBI). Compared to students in general, Ohio school-based SLPs reported lower ratings of comfort and effectiveness working with students with TBI.
However, academic coursework devoted to ACD/TBI appears to have had a positive impact on school-based SLPs’ self-reported comfort and effectiveness in regard to services provided to students with ACD/TBI. This reveals a continued need for an increase in academic coursework devoted to ACD/TBI in order to increase school-based SLPs’ comfort in providing the services that are crucial for students with TBI to successfully reintegrate into the school environment.
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## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Definition of TBI</td>
<td>1</td>
</tr>
<tr>
<td>Cognitive effects in Children and Adolescents</td>
<td>6</td>
</tr>
<tr>
<td>SLPs’ role in assessing and treating TBI survivors</td>
<td>7</td>
</tr>
<tr>
<td>SLP Knowledge and Confidence</td>
<td>9</td>
</tr>
<tr>
<td>Misconceptions</td>
<td>10</td>
</tr>
<tr>
<td>Summary and Rationale</td>
<td>14</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td>16</td>
</tr>
<tr>
<td>Survey Development</td>
<td>16</td>
</tr>
<tr>
<td>Participants</td>
<td>17</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>18</td>
</tr>
<tr>
<td>RESULTS</td>
<td>19</td>
</tr>
<tr>
<td>Comparison of participants who completed the survey vs. those who did not</td>
<td>19</td>
</tr>
<tr>
<td>Impact of Education on Interest/Comfort/Effectiveness</td>
<td>19</td>
</tr>
<tr>
<td>Comfort/Effectiveness with students in general vs. with students with ACD/TBI</td>
<td>22</td>
</tr>
<tr>
<td>Comfort and Effectiveness working with students with ACD/TBI</td>
<td>26</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>29</td>
</tr>
<tr>
<td>SLPs’ Role</td>
<td>29</td>
</tr>
<tr>
<td>Academic/Clinical Training</td>
<td>30</td>
</tr>
<tr>
<td>Perceived Comfort and Effectiveness</td>
<td>33</td>
</tr>
<tr>
<td>Limitations</td>
<td>35</td>
</tr>
<tr>
<td>Implications</td>
<td>36</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1  Effect of Education on interest, comfort, and effectiveness ................................ 21
Table 2  Correlations of the relationship between years practicing, interest, comfort, effectiveness ........................................................................................................ 28

LIST OF FIGURES

Figure 1  Self-ratings of comfort in assessment and treatment ........................................... 24
Figure 2  Self-ratings of effectiveness in assessment and treatment................................. 26
INTRODUCTION

Definition of TBI

Traumatic brain injury (TBI) may be broadly defined as brain injury due to an external insult, which may result in a significant impairment of physical, cognitive, and psychosocial functioning (National Institutes of Health Consensus Development Panel on Rehabilitation of Persons with Traumatic Brain Injury, 1999). More specifically TBI may result in impairments in one or more of the following areas: cognition, language, memory, attention, reasoning, abstract thinking, judgment, problem-solving, psychosocial behavior, physical functions, information processing, speech, and sensory, perceptual, and motor abilities (Federal Register, 2006).

Incidence and prevalence of TBI

An estimated 1.7 million people sustain a TBI each year in the United States. Of those who sustain a TBI, 52,000 individuals do not survive the injury (Faul, Xu, Wald, & Coronado, 2010). Due to advances in emergency medicine, innovations in medical treatment, and applications of life-saving technologies, over 1.6 million children and adults are surviving TBI each year and living in the U.S. with a potentially large array of residual impairments and disabilities along a wide spectrum of severity levels (Arroyos-Jurado, Paulsen, Merrell, Lindgren, & Max, 2000). Overall, it is estimated that 5.3 million Americans currently live with disabilities related to brain injury, which comprises approximately 2% of the population in the United States (Langlois, Rutland-Brown, & Wald, 2006). However, it is impossible to truly determine the total number of cases of TBI since there is no estimate for the number of people who survive a TBI that are not seen at a hospital, never report their injury, or never seek medical assistance after their injury. This unknown number of TBIs that are not diagnosed may still
result in long-term disabilities for the individual (NIH, 1999). There are a variety of causes of TBI and a number of factors that may have an effect on the outcome of children and adults who sustain a TBI.

Causes and Severity of TBI

The leading causes of TBI include falls, being struck by or against something, motor vehicle accidents, and assaults (Faul et al., 2010). Besides these direct causes of TBI, other variables may affect the severity of the outcome of the injury itself. Factors that influence the severity of outcomes following a TBI may include the severity of injury (Catroppa & Anderson, 2004; Levin, Hanten, Zhang, Swank, Ewing-Cobbs, Dennis et al., 2004), type of brain lesion (Brookshire, Chapman, Song, & Levin, 2000; Levin et al., 2004), premorbid cognitive functioning (Arroyos-Jurado et al., 2000; Fay, Yeates, Wade, Drotar, Stancin, & Taylor, 2009), presence and length of unconsciousness (Fey et al., 2009; McCrea, Kelly, Randolph, Cisler & Berger, 2002), gender (Dick, 2009; Majerske, Mihalik, Ren, Collins, Reddy, Lovell, et al., 2008), postconcussive activity levels (Majerske et al., 2008), post-traumatic amnesia (McCrea et al., 2002), and environmental factors (Catroppa & Anderson, 2004; Fey et al., 2009). These factors may contribute to the wide range of effects that occur in survivors of TBI.

Along with these other factors, age at injury is a significant predictor of outcomes following TBI in the areas of language use, information structures, literacy skills, reading accuracy, and working, visual, and verbal memory skills (Brookshire et al., 2000; Catroppa & Anderson, 2004). Very young children (aged 0-4 years) have the highest rate of TBI-related emergency department visits, followed by older adolescents aged 15-19, then older adults aged 75 years and older (Faul et al., 2010).
Age at injury was found to be a significant predictor of outcomes following TBI in the areas of language use, information structures, literacy skills, reading accuracy, and working, visual, and verbal memory skills (Brookshire et al., 2000; Catroppa & Anderson, 2004; Levin et al., 2004; Majerske et al., 2008). Overall, the younger the child’s age at time of injury the poorer the performance in outcome measures following TBI (Brookshire et al., 2000; Catroppa & Anderson, 2004; Levin et al., 2004; Majerske et al., 2008). Similarly, older children had better outcomes and more improvement following traumatic brain injury (Brookshire et al., 2000; Catroppa & Anderson, 2004; Levin et al., 2004; Majerske et al., 2008). However, Levin et al. (2004) found that older children’s scores tended to increase more slowly over time, as compared to the younger children, following TBI.

Age at time of injury is an important factor because beliefs on the effects of age at time of injury have been changing (Ylvisaker, Szekeres, & Feeney, 2008). The traditional view on the effects of age at injury is influenced by the plasticity hypothesis. This idea contends that older age at time of TBI is predictive of a worse outcome; conversely, younger age is predictive of a better prognosis due to the youth’s brain plasticity and adaptation (Ylvisaker et al., 2008). Recently, this hypothesis has been challenged (Ylvisaker et al., 2008) and now it is thought that an older brain, which has already acquired a certain operation/process, will have a better chance of recovering that operation than a younger brain that never acquired the operation/process.

**Effects of TBI**

Residual effects of TBI, whether in children or adults, may include deficits in movement, sensation, concept formation, general cognition, adaptive behavior, and language expression and comprehension (Arroyos-Jurado et al., 2000). Impairments in each of these domains differ in
their manifestation and may range from mild to severe for each individual. It is important to note that together all of the deficits following TBI may have negative social consequences for the individual (NIH, 1999).

Many impairments following TBI are not readily apparent such as changes or deficits in thinking, sensation, language, behavior, and emotions. For example, an individual can have residual cognitive deficits without any apparent visible physical impairment. Without adequate assessment these hidden deficits may continue without treatment and the consequences from the injury may, therefore, be long lasting. These impairments also may become exacerbated when reentering community, work, or school settings, since the individual who sustained a TBI may still be dealing with their deficits, yet they may also be expected to perform at preinjury levels. This may lead to frustration and anger, which may impede the recovery process.

**Cognitive Effects**

Cognitive consequences of TBI may be broad, change over time, and be long-lasting (Konrad, Geburek, Rista, Blumenroth, Fischer, Husstedt, et al., 2011). Some of the most common and persistent problems include memory impairment and difficulties in attention and concentration (NIH, 1999), which may be present in even the mildest forms of TBI, resulting in cognitive deficits. Individuals who sustained mild TBI have been found to show cognitive deficits, increases in simple and complex reaction times, and increases in processing speed (Sosnoff, Broglio, & Ferrara, 2008). Individuals also showed deficits in verbal memory and visual memory, and adverse affects on composite balance scores, visual ratio scores, somatosensory ratio scores, and vestibular ratio scores (Sosnoff et al., 2008). Konrad et al.
(2011) found deficits in learning, long-term memory, working memory, attention, and executive functions in individuals who sustained a mild TBI.

Some of the most vulnerable functions include frontal lobe functions such as executive skills, problem solving, abstract reasoning, insight, judgment, planning, organizing, learning processes, and information processing (NIH, 1999). Damage to the frontal lobe may also have a strong impact on an individual’s behavior. Common behavioral deficits following TBI include decreased ability to initiate responses, verbal and physical aggression, agitation, shallow self-awareness, impulsivity, and social inhibition (NIH, 1999). Mood disorders, personality changes, altered emotional control, depression, and anxiety are also prevalent following a TBI (NIH, 1999).

Changes in rates of TBI

In recent years there has been in increase in diagnosis and recognition of TBI. From 2002 to 2006 there was a 14.4% increase in TBI related emergency visits and hospitalizations (Faul et al., 2010). Possible reasons for this increase are that there were more fall related TBIs reported, overall population growth, and increased public awareness of TBI (Faul et al., 2010). Due to the increased attention to sports-related brain injury in college and professional sports more people are taking assaults to the head more seriously (Guilmette & Paglia, 2004).

Along with increased awareness and advances in medical healthcare, there was a 62% increase in fall-related TBI seen in emergency departments among children (aged 14 years and younger) from 2002 to 2006 (Faul et al., 2010). Given the increased incidence of TBIs in children, SLPs should expect to see an increase in the number of children with TBI-related issues on their caseload.
Cognitive effects in Children and Adolescents

Cognitive sequelae following TBI in children can be similar to those seen in adults including reduced processing speed, poor attention, and impaired cognitive functioning (McCrory, Collie, Anderson, & Davis, 2004). The deficits mentioned earlier (movement, sensation, concept formation, general cognition, adaptive behavior, and language expression and comprehension) may also be seen in children as well as adults (Arroyos-Jurado et al., 2000). However, children who sustain a TBI also have their own set of consequences with the interactions of physical, cognitive, and behavioral sequelae interfering with new learning in school (NIH, 1999).

Various cognitive impairments may develop in adolescents who sustain a TBI. Such cognitive impairments include general cognitive deficits in subjects such as reading, spelling, and math, deficits in working memory, attention, processing, code substitution, and language especially during discourse and narratives. In addition, some cognitive deficits may persist into adulthood and lead to permanent cognitive impairments (Arroyos-Jurado et al., 2000).

In the school-aged population, cognitive impairments associated with TBI are significant because they may interfere with academic performance, negatively affecting the mastery of academic subjects such as reading, spelling, and math (Arroyos-Jurado et al., 2000; Sim, Terryberry-Spohr, & Wilson, 2008). Deficits in working memory, altered cognitive processing speed, and impaired attention similarly can have negative consequences upon language learning and language performance (Arroyos-Jurado et al; Brookshire et al., 2000). For example, working memory mediates the development of many cognitive and academic skills, thus children with disrupted ability in working memory have been shown to demonstrate a slower rate of
learning and acquire less information, which limits what they are able to recall in the future (Brookshire et al., 2000; Dennis et al., 2004; Levin et al., 2004).

These deficits following TBI may have a secondary impact on educational and social development of school-aged children. These potentially impaired processes are crucial for performing common daily activities required of a child in school, such as acquiring new knowledge, attending to school work, and socializing with peers. Along with academic issues, children may have issues socializing with peers due to cognitive processing difficulties, behavioral changes and problems, and difficulty comprehending social cues (NIH, 1999).

One segment of the school-aged population that has been shown to be affected by TBI is athletes. After a TBI, school-aged athletes are significantly worse compared to the non-injured group and their own baseline performance on measures of simple reaction time, spatial processing, continuous performance, code substitution, and code substitution delayed tests (Sim, Terryberry-Spohr, and Wilson, 2008). The primary findings from this study indicated that high school athletes demonstrated neurocognitive impairments in reaction time, processing speed, and delayed memory functioning following a concussion compared to their non-injured peers and their own baseline performance before the injury.

**SLPs’ role in assessing and treating TBI survivors**

Speech-Language Pathologists (SLPs) have a role in helping individuals who have sustained a TBI. The American Speech-Language-Hearing Association (ASHA) Scope of Practice for Speech-Language Pathologists (ASHA, 2007) states that SLPs address many areas of communication and cognition, which includes attention, memory, sequencing, problem solving, and executive functioning. According to ASHA’s position statement (ASHA, 2005a)
and knowledge and skills document on cognitive-communication disorders (ASHA, 2005b), the SLP’s role in this area includes prevention, assessment, intervention, education, and other services.

ASHA has also noted the expanded role of school SLPs in ASHA’s Roles and Responsibilities of Speech-Language Pathologists in Schools (ASHA, 2010a). The professional practices of SLPs have greatly evolved due to changing legal mandates (such as the Individual’s with Disabilities Education Act) and a more expanded scope of practice for SLPs across settings. These evolved and more expanded roles have re-defined SLPs’ work in schools (ASHA 2010a). Due to the changing legal mandates and expanding role of the school SLP, the school SLP’s provision of services are no longer focused solely on fluency, voice, articulation, and language disorders, with more students with a wider variety of disabilities being served in the school setting, including those who have sustained a TBI (ASHA, 2010a).

According to the American Speech-Language-Hearing Association schools survey (ASHA, 2010b), approximately 17% of school SLPs in the United States served clients who have sustained a TBI in 2010. This number has remained relatively unchanged since 2004. The number of TBI survivors being served in 2010 was on average two per school speech-language pathologist, which has also remained relatively unchanged since 2004 (ASHA, 2010b). With the survival rate of people who sustain TBIs increasing and the increasing awareness of the potential for negative effects from mild, as well as, moderate and severe TBIs (Arroyos-Jurado et al., 2000; Brookshire et al., 2000; Catroppa & Anderson, 2004), SLPs should expect to see more TBI survivors on their caseload.
SLP Knowledge and Confidence

To meet the educational needs of the TBI population, teachers, school administrators, SLPs, and other support staff have an obligation to become more knowledgeable and sensitive to the special needs of students with TBI (Hux, Walker, & Sanger, 1996). If other professionals in the schools are not knowledgeable about the TBI population, it may be the responsibility of the SLP to educate them, especially regarding the needs of this population (ASHA 2005a; ASHA 2005b). However, Hux et al. (1996) found that many school SLPs reported a lack of confidence in dealing with TBI survivors, even though they were still treating these individuals.

With the literature in social psychology clearly showing that confidence and expectations are related to knowledge, perceptions, and behavior (Blood, Mamett, Gordon, & Blood, 2010), it is important to investigate Hux et al.’s (1996) claim that SLPs report a lack of confidence in dealing with TBI survivors. Blood et al. (2010) identified four variables as predictors of confidence in SLPs: on-the-job training, general knowledge, attendance at professional development programs, and knowledge about collaborative efforts. Another finding from the study revealed that over half of the school SLPs reported obtaining their current knowledge not from preservice training programs, but from on the job training and/or attendance at professional development conferences (Blood et al., 2010). This is a positive finding in that school SLPs are finding ways to develop and enhance their knowledge and experience (Blood et al., 2010).

Hux et al. (1996) found a large disparity in the confidence levels of SLPs who had prior training in TBI and those who did not. Overall, those with prior training reported more confidence in all areas of assessment, treatment, education, and management of students who sustained TBI. This reveals that TBI training appears to have a positive impact on school SLPs’ confidence and willingness to provide services to students with TBI. However, Hux et al. (1996)
found that SLP respondents with prior TBI training and SLPs without prior TBI training did not perceive themselves as qualified to serve as IEP managers for students with TBI or to provide educators or students with TBI information. Both groups also appeared to be more confident in treatment but not assessment of students with TBI. This suggests that not only is more training needed on addressing the needs of students with TBI, but also that the training efforts experienced by school SLPs were perceived as insufficient to allow the SLPs with training to feel confident in these areas. Therefore, more adequate training efforts may be needed in the formal education programs and continuing education programs to increase confidence for SLPs.

Misconceptions

The large numbers of people sustaining TBI suggests that TBI is an important health concern facing the general population. Reporting and treating this health concern appropriately requires true understanding by the general public and health professionals, including speech-language pathologists. Despite the large numbers of people who sustain TBI, survivors and professionals who work with them often report that people in the general public do not understand the physical, cognitive, behavioral, and psychosocial consequences of sustaining brain damage (Hux, Schram, & Goeken, 2006).

In regard to knowledge, school SLPs hold some accurate perceptions and some misconceptions concerning TBI and its consequences (Hux et al., 1996). SLPs’ overall responses to questions concerning federal legislation indicated confusion about what types of brain damage can potentially result in TBI. SLPs were correct in many of their beliefs concerning characteristics and behaviors displayed by students who sustained TBI; however, they held misconceptions regarding incidence of TBI regarding gender and aphasic behaviors.
SLPs appeared to hold some misconceptions concerning assessment and treatment needs of students with TBI also; although they did express some understanding in the areas of importance of pre-injury backgrounds and the importance of descriptive measures over standardized tests (Hux et al., 1996).

Guilmette and Paglia (2004) conducted a public survey to find what misconceptions the public hold about TBI, as a follow up to previous surveys. They found that a significant number of participants held inaccurate beliefs about moderate to severe TBI and the resulting sequelae. They did find, however, a greater level of knowledge about mild TBI as compared to previous studies on public misconceptions (Guilmette & Paglia, 2004). Even though this increase in knowledge of mild TBI by the general public is a good sign, it is distressing that the public’s knowledge of moderate to severe TBI and its sequelae have remained relatively unchanged since 1988.

Inaccurate and inadequate knowledge about brain injury is not only common among the general public, but also among health professionals. In a UK-based study, Swift and Wilson (2001) interviewed people who survived brain injury, caregivers, and professionals who provide social rehabilitation after brain injury on their perceptions of the knowledge level of the general public and health professionals without expertise in TBI. The participants reported many common themes of misconceptions among the general public and health professionals. Overall, Swift and Wilson (2001) found four major themes reported by the participants: (1) the general public and non-expert health professionals do not fully appreciate the long-term nature of brain injury; (2) people are considerably unaware of the vast diversity of deficits that brain injury can cause, especially cognitive and behavioral deficits; (3) a lack of awareness that impairments from brain injury can be visible, invisible, or both, which causes unrealistic expectations of a brain-
injured person’s abilities; and (4) the appearance and behavior of a brain-injured person being confused with or misidentified as indicating a mental health problem or learning disability (Swift & Wilson, 2001).

All of the participants reported that the general public holds misconceptions about the long-term nature and recovery from brain injury. They reported that people often believe that a more complete and swifter recovery has been made than is actually the case, and that brain injury recovery occurs simultaneously with recovery from physical injuries (Swift & Wilson, 2001). This misconception could lead to greater misunderstandings if there is no physical sign of injury after TBI. Most participants expressed that due to the general public’s attitudes and perceptions, brain-injured people with no physical injury/disability were at a disadvantage because their problems were not immediately evident and often had to live up to higher expectations from family members, friends, and the general public (Swift & Wilson, 2001).

The participants also expressed that the general public did not have an understanding of the diversity of potential symptoms following brain injury, not linking the fact that a brain injury could cause behavioral and physical deficits (Swift & Wilson, 2001). In particular, participants mentioned that the general public and non-expert health professionals did not associate behavioral problems with brain injury (Swift & Wilson, 2001). The participants also agreed that both the general public and non-expert health professionals held a poor understanding of cognitive sequelae following brain injury, especially problems with motivation and memory (Swift & Wilson, 2001). This can be problematic, due to cognitive deficits such as motivation issues being thought of as laziness or memory problems. This can then lead to real deficits being misinterpreted and not believed to be true problems, which can lead the general public and health professionals to think the brain injured person is faking it. Non-expert health professionals may
acknowledge such deficits, but then often trivialize them, being unaware of the deficits’ effect on the individual and their family. The participants expressed that both the general public and health professionals poorly understood that a brain-injured person’s performance on tasks could vary day-to-day.

Inaccurate knowledge of the general public can lead to inappropriate expectations, misunderstandings, and hurt feelings, which can feel devastating to the brain-injured person. However, inaccurate knowledge among health professionals may have more serious consequences in terms of treatment and recovery (Swift & Wilson, 2001). The harmful effects from misconceptions can be significant. Given that misconceptions of brain injury do exist, they inevitably impact not only people who have sustained TBI, but also their families.

There have been many speculations to what causes these misconceptions. In Swift and Wilson’s (2001) study, the participants speculated on two possible causes of these misconceptions: the media contributing to the misconceptions about recovery and denial of the long-term nature and multiple sequelae of brain injury could be a type of coping mechanism for friends and family. Swift and Wilson (2001) hypothesized that a few societal beliefs may be maintaining certain misconceptions, such as the societal belief that being discharged from a hospital means that the person is in good health and since the chronic nature of brain damage is not implied by the term ‘brain injury’ individuals believe that injury is always followed by recovery; this may also stem from a general misunderstanding of brain biology and function.

Overall, a major contributor to the persistence of misinformation about TBI among the general population is when multiple sources repeatedly endorse incorrect information, which creates reinforcement and perpetuation of false belief (Evans, Hux, Chleboun, Goeken, & Deuel-Schram, 2009).
Only after people understand the seriousness and pervasiveness of TBI are they likely to support prevention efforts and rehabilitation services and report accidents more often. Without this understanding people who sustain TBIs will continue to receive services that are likely to fall short of their actual needs (Hux et al., 2006). Hux et al. (2006) believe that additional education targeting the general population on TBI and its consequences in structured formants and through popular media is paramount.

**Summary and Rationale**

The two age groups that have the highest rate of TBI-related emergency department visits are young children 0-4 years and older adolescents aged 15-19 years (Faul et al., 2010). Also, from 2002 to 2006, there was a 62% increase in fall-related TBI seen in emergency departments among children aged 14 years and younger (Faul et al., 2010). For all children who are affected by TBI, SLP services may be needed to help them manage their deficits and make gains in functioning. The rate of TBIs in children, and the increase in fall-related TBIs affecting children should reflect an increase in students with TBI on school SLPs’ current and future caseloads. Given that the number of TBI survivors being served by school SLPs in 2010 has remained relatively unchanged since 2004 (ASHA, 2010b), the increase in children affected by TBI has not been reflected in an increase in students with TBI on the caseload of school-based SLPs.

ASHA (2005a, 2005b, 2010a) states that SLPs’ role in TBI includes prevention, assessment, intervention, education, and other services. Previous research has shown that school SLPs may not be confident working with students with TBI or providing education to others about TBI (Hux et al., 1996). Research has also found that in regard to knowledge, school SLPs hold some misconceptions concerning TBI and its consequences (Hux et al., 1996).
The purpose of the current study was to examine the educational background knowledge, interest level, comfort level, and self-perceived effectiveness of school-based SLPs in the area of TBI. This study also seeks to determine what factors contribute to reported comfort level of school SLPs. Specifically, the current study:

- Describes the background knowledge, interest level, comfort level, and self-rated effectiveness of school-based SLPs;
- Compares the relationship between educational experience, and interest/comfort/effectiveness in working with students with ACD/TBI;
- Compares general comfort/effectiveness with comfort/effectiveness working with students with ACD/TBI; and
- Describes the relationship between comfort level and effectiveness, specific to working with students with ACD/TBI.
METHODOLOGY

Survey Development

A survey consisting of 42 items served as the basis for this study. Survey items addressed demographics of the survey respondents, educational background related to cognitive disorders/TBI, continuing education related to cognitive disorders/TBI, and professional experience with cognitive disorders/TBI (See APPENDICES A and B).

The demographics section included nine questions on information about the survey responder including age, gender, race, when he/she earned his/her degree(s), professional job setting, and overall interest in cognitive disorders/TBI. The educational background section consisted of seven questions regarding the number of courses that were taken during formal education and comfort level of working with individuals with acquired cognitive disorder/TBI at the time of graduation. The continuing education section consisted of five questions related to the number of continuing education activities related to cognitive disorders/TBI, the quality of the continuing education related to cognitive disorders/TBI, interest in attending continuing education cognitive disorders/TBI, and belief on sufficient educational opportunities.

The section on professional experience with cognitive disorders/TBI consisted of eighteen questions related to the number of students with TBI on the caseload, satisfaction with the amount of time with those students, comfort with working with students with TBI and educating others about TBI, perceived success with students with TBI, and perceived quality of care provided to students with TBI. The main outcome measures of interest are perceived comfort assessing and treating cognitive disorders/TBI, along with self-perceived effectiveness assessing and treating cognitive disorders/TBI. Background and service provision items were in multiple choice, yes/no, check all that apply, and fill-in formats. TBI interest, comfort, and
effectiveness items were in Likert-type scale. Three additional questions regarding motivation for answering the survey, specific experiences working with students with TBI in the schools, and any other additional thoughts/comments were added to the survey to discriminate any possible population bias of participants who completed the survey.

To assess for content validity once the survey was fully developed, a draft survey was designed and distributed to four certified SLPs for input concerning ambiguity and organization (See APPENDIX C). Feedback from these professionals was used to revise the survey. The final version of the survey was sent to the Human Subjects Review Board (HSRB) for approval to send the survey to school SLPs in Ohio. HSRB approval was obtained on August 2, 2011 (See APPENDIX D).

Participants

A link to the survey was sent out to SLPs who hold licensure in the state of Ohio. An email list of 3,860 SLPs in Ohio was received from the Ohio Board of Speech-Language Pathology and Audiology, and permission was granted to send the survey to those on the list. Of the 3,860 email addresses, 3,824 were valid addresses. Of these 3,824 sent mails, there were 199 emails returned as undeliverable, for a possible total of 3,625 successfully sent mails.

Survey respondents included 280 Ohio SLPs who currently work or have previously worked in a school setting. The majority of the SLP respondents who completed the survey were female (97.5%) and Caucasian/White (95.7%), with a mean age of 43.18 (SD = 11.75; range = 25-76). The majority of SLPs also reported obtaining/holding CCC-SLP (88.2%), state license (97.1%), and school certification (82.9%), and 94.6% (n=265) indicated that they obtained a
master’s degree. SLPs reported working a mean of 16.83 years (SD = 11.29; range = 2-46) with 233 (83.2%) SLPs currently working in the school setting.

Data Analysis

Data analysis for this study included descriptive analysis, correlations, and Analyses of Variance (ANOVAs). Descriptive analysis included reports of mean, standard deviation (SD), and range for all continuous variables. Descriptive analysis also included frequency counts and percentages for variables that were not continuous. Background information/knowledge, interest level, comfort level, and self-rated effectiveness of school-based SLPs were treated descriptively. For Likert-type scale items, overall means provided a general indication of response to the survey statement.

Along with descriptive and frequency data, correlations were conducted to examine relationship between items. Pearson-Product Moment Correlation (PPMC) analysis was used to examine the relationships between the following items: years practicing as SLPs, interest, academic preparation, TBI caseload size, experience with students with TBI, comfort in assessment and treatment of students with TBI, and self-perceived effectiveness in assessment and treatment of students with TBI.

ANOVA testing was completed to examine the effect of participants’ educational experiences on interest/comfort/effectiveness in working with students with ACD/TBI and to compare participants’ comfort and effectiveness in general vs. comfort and effectiveness with students with ACD/TBI.
RESULTS

Comparison of participants who completed the survey vs. those who did not

Although 349 Ohio SLPs started to respond to survey, 280 SLPs completed the entire survey (See APPENDIX A). In an attempt to characterize any possible difference between the SLPs who finished the survey and those who did not, a comparison between the two groups’ age, years practicing as SLPs, and interest in assessment and treatment of individuals with ACD/TBI were completed. Between-subjects Analysis of Variance (ANOVA) testing revealed no significant multivariate difference between the participants who completed the survey and those who did not complete the survey [F(1,347)=1.153; p=0.328; η²=0.010]. Further, there were no univariate differences in regard to age of participants [F(1, 347)=1.903; p=0.169; η²= 0.005], years participants have been practicing as SLPs [F(1, 347)=3.153; p=0.077; η²=0.009], and participants’ interest level in assessment and treatment of individuals with ACD/TBI [F(1, 347)=0.042; p=0.837; η²<0.001]. Overall, there were no differences between the participants who completed the survey and those who did not complete the survey in regard to age, years as practicing SLPs, and interest in ACD/TBI. The subsequent results are based solely on the participants who completed the survey.

Impact of Education on Interest/Comfort/Effectiveness

The majority of respondents indicated they had at least one class that was primarily (more than 50% of the class) devoted to ACD/TBI (69.3%, n=194), with 86 respondents (30.7%) reporting that they did not have any classes primarily devoted to ACD/TBI during either their bachelors program or masters program. Even though the majority of respondents (69.3%) reported having at least one class devoted to ACD/TBI during either their bachelors program or
masters program, less than half of the respondents (34.6%) felt that they had sufficient amount of academic educational experiences related to cognition/ACD/TBI. Similarly, in regard to continuing education, only 36.4% of respondents felt that they have had sufficient amount of continuing education to adequately assess, treat, and work with students with ACD/TBI.

Cross-tab analysis was used to further examine the breakdown of academic preparedness ratings within both individuals who have had, and who have not had a course dedicated to TBI. Of the respondents that reported they had sufficient amount of academic educational experiences related to cognition/ACD/TBI, 87.6% (N=85) had one or more classes primarily devoted to cognition/ACD/TBI during their bachelors and masters programs. Overall, participants who reported having one or more classes primarily devoted to cognition/ACD/TBI during their bachelors and masters programs were also those who reported that they have sufficient amount of academic educational experiences related to the subject.

Multivariate repeated measures ANOVA testing was completed to examine the effect of participants’ educational experience on interest/comfort/effectiveness in working with students with ACD/TBI. The independent variable for this test was whether respondents had a class related to TBI or not. Dependent variables that were examined included interest, self-rating of academic preparation, self-rating of comfort, and self-rating of effectiveness. This test was used to compare the difference in interest, comfort, and effectiveness in working with students with ACD/TBI, based on whether participants had at least one class in either their bachelors program or masters program that was primarily devoted to ACD/TBI.

Across dependent variables, results revealed statistically significant multivariate effects in regard to if the participants had any classes primarily devoted to ACD/TBI [F(8, 271)=9.33; \( p<0.01; \eta^2=0.22 \)]. Univariate analysis revealed no statistically significant effects for interest
[F(1, 278)>0.01; \( p=0.995; \eta^2=0.01 \)] nor comfort in treatment of students with ACD/TBI \[ F(1, 278)=3.40; \ p=0.066; \eta^2=0.01 \]. However, statistically significant effects were found in regard to self-rating of academic preparation \[ F(1, 278)=61.78; \ p<0.01; \eta^2=0.18 \], comfort in assessment of students with ACD/TBI \[ F(1, 278)=9.51; \ p<0.01; \eta^2=0.03 \], comfort in educating others on ACD/TBI \[ F(1, 278)=9.35; \ p<0.01; \eta^2=0.03 \], effectiveness in assessing with students with ACD/TBI \[ F(1, 278)=8.04; \ p<0.01; \eta^2=0.03 \], and effectiveness in treating with students with ACD/TBI \[ F(1, 278)=5.39; \ p=0.02; \eta^2=0.02 \]. Specifically, results indicated that people who reported having one or more classes in either their bachelors program or masters program that was primarily devoted to ACD/TBI also reported feeling more comfortable in assessment and educating others on ACD/TBI, more effective in assessment and treatment of students with ACD/TBI, and that they felt they had a sufficient amount of academic experiences related to ACD/TBI. Therefore, participants who did not have any classes primarily devoted to ACD/TBI in either their bachelors program or masters program reported feeling less effective and generally less comfortable. Results for this test are summarized in Table 1.

**TABLE 1.** The effect of participants' educational experience on interest/comfort/effectiveness in working with students with ACD/TBI. Mean (Standard deviation) of self ratings, where 1 = Very interested/prepared/comfortable/effective and 5 = Very disinterested/unprepared/uncomfortable/ineffective.

<table>
<thead>
<tr>
<th></th>
<th>One or more TBI classes</th>
<th>No TBI classes</th>
<th>p-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>194</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Interest</td>
<td>2.27(0.79)</td>
<td>2.27(0.83)</td>
<td>( p=1.00 )</td>
</tr>
<tr>
<td>Academic Preparation</td>
<td>2.45(0.97)</td>
<td>3.55(1.29)</td>
<td>( p&lt;0.01^{**} )</td>
</tr>
<tr>
<td>Comfort in Assessment</td>
<td>2.70(1.00)</td>
<td>3.10(1.07)</td>
<td>( p&lt;0.01^{**} )</td>
</tr>
<tr>
<td>Comfort in Treatment</td>
<td>2.57(1.00)</td>
<td>2.81(1.11)</td>
<td>( p=0.07 )</td>
</tr>
<tr>
<td>Comfort in Educating Others</td>
<td>2.71(1.08)</td>
<td>3.15(1.17)</td>
<td>( p&lt;0.01^{**} )</td>
</tr>
<tr>
<td>Effectiveness in Assessment</td>
<td>2.44(1.02)</td>
<td>2.84(1.18)</td>
<td>( p&lt;0.01^{**} )</td>
</tr>
<tr>
<td>Effectiveness in Treatment</td>
<td>2.47(0.95)</td>
<td>2.78(1.20)</td>
<td>( p=0.02^{*} )</td>
</tr>
</tbody>
</table>

* = Significant at the 0.01 level (2-tailed).
* = Significant at the 0.05 level (2-tailed).
Comfort/Effectiveness with students in general vs. with students with ACD/TBI

Multivariate repeated measures ANOVA testing was completed to compare participants’ comfort and effectiveness with students with ACD/TBI vs. participants’ comfort and effectiveness with students in general. Within this test there were two repeated independent variables. The first independent variable was service type (2 levels, assessment versus treatment), and the second independent variable was student type (2 levels, general students versus students with ACD/TBI). Dependent variables that were examined included self-rating of comfort and self-rating of effectiveness. This test was used to compare participants’ overall perceived comfort and effectiveness in regard to assessment and treatment of their students in general and their students with ACD/TBI.

Multivariate results revealed statistically significant main effects in regard to participants’ general comfort and effectiveness in comparison to comfort and effectiveness with students with ACD/TBI [F(92, 278)=195.28; p<0.01; η²=0.58]. Results also revealed significant main effect in regard to comfort and effectiveness in assessment vs. treatment [F(2,278)=7.3; p<0.01; η²=0.05]. Along with the two main effects, results also revealed an overall multivariate interaction effect between variables [F(2,278)=13.86; p<0.01; η²=0.09]. Univariate results for comfort and effectiveness are examined separately below.

Comfort

Univariate statistics revealed statistically significant main effect for participants’ comfort in regard to general students versus students with ACD/TBI [F(1,279)=341.42; p<0.01; η²=0.55], along with significant main effect for participants’ comfort in regard to assessment versus
treatment \[F(1,279)=5.86; \ p=0.02; \ \eta^2=0.02\].  Univariate statistics also revealed statistically significant interaction effects between comfort of overall assessment and treatment vs. comfort of assessment and treatment of students with ACD/TBI \[F(1,279)=18.57; \ p<0.01; \ \eta^2=0.06\].  As a result of this interaction effect, main effects will not be discussed.

To interpret the significant interaction effect across student type and service type, separate paired-groups post-hoc \(t\)-tests were completed.  The student type comparison (general students and students with ACD/TBI) was examined separately for assessment and treatment.  Specific to assessment, testing revealed a significant difference for assessment of students in general versus assessment of students with ACD/TBI \([t(279)=-19.03; \ p<0.01]\).  Testing also revealed a significant difference for treatment of students in general versus treatment of students with ACD/TBI \([t(279)=-15.39; \ p<0.01]\).  Specifically, results indicated that participants felt less comfortable assessing and treating students with ACD/TBI (See Figure 1).  As further analysis of this interaction effect, a comparison of assessment vs. treatment, was also completed separately for both students in general and students with ACD/TBI.  Testing revealed a significant difference for assessment versus treatment for students with ACD/TBI \([t(279)=4.87; \ p<0.01]\) with no significant assessment versus treatment differences for students in general \([t(279)=-0.88; \ p=0.38]\).  Overall, results indicated that participants felt less comfortable assessing and treating students with ACD/TBI, as compared to students in general.  Also, participants felt more comfortable treating students with ACD/TBI compared to assessing them, with no such difference for students in general (See Figure 1).
Figure 1. Self-ratings of comfort in assessment and treatment of both students in general (general), and students with ACD/TBI (TBI). (1=Very Comfortable, 2=Comfortable, 3=Neither comfortable nor uncomfortable, 4=Uncomfortable, 5=Very uncomfortable) (Assessment=light grey; Treatment=dark grey)

**Effectiveness**

Univariate statistics revealed a statistically significant main effect for participants’ perceived effectiveness in regard to general students versus students with ACD/TBI [$F(1,279)=347.03; p<0.01; \eta^2=0.55$]. Results also revealed a main effect for participants’ perceived effectiveness in regard to assessment versus treatment [$F(1,279)=5.62; p<0.02; \eta^2=0.02$]. Univariate statistics also revealed statistically significant interaction effects between perceived effectiveness of overall assessment and treatment vs. comfort of assessment and
treatment of students with ACD/TBI \(F(1,279)=7.69; p<0.006; \eta^2=0.03\). Due to this interaction effect, main effects will not be interpreted.

To interpret the significant interaction effect across student type and service type, separate paired-groups post hoc \(t\)-tests were completed. Assessment and treatment were compared for each level of student type (general students and students with ACD/TBI). Post-hoc testing revealed no significant difference for assessment versus treatment for students with ACD/TBI \([t(279)=0.00; p=1.00]\); however, a significant difference was found for assessment versus treatment for students in general \([t(279)=-3.61; p<0.01]\). Specifically, results indicated that participants felt more effective in assessment than treatment of students in general; however, they did not perceive a difference in effectiveness in regard to assessment and treatment of students with ACD/TBI (See Figure 2). Next, student type was compared separately for assessment and treatment. Specific to assessment, testing revealed a significant difference for assessment of students in general compared to assessment of students with ACD/TBI \([t(279)=-18.27; p<0.01]\). Testing also revealed a significant difference for treatment of students in general versus treatment of students with ACD/TBI \([t(279)=-16.96; p<0.01]\). Overall, results indicated that participants felt less effective in both assessment and treatment of students with ACD/TBI, as compared to students in general. Also, participants felt more effective assessment of students in general compared to treating them, with no such difference in regard to assessment and treatment of students with ACD/TBI (See Figure 2).
Figure 2. Self-ratings of effectiveness in assessment and treatment of both students in general (general), and students with ACD/TBI (TBI). (1=Very effective, 2=Somewhat effective, 3=Neither effective nor ineffective, 4=Somewhat ineffective, 5=Very ineffective) (Assessment=light grey; Treatment=dark grey)

Comfort and Effectiveness working with students with ACD/TBI

In order to describe the relationship between comfort level and effectiveness specific to working with students with ACD/TBI, correlations were run on the questions regarding years practicing as SLPs, interest, academic preparation, number of students with ACD/TBI on their caseload, amount of experience working with students with ACD/TBI, comfort, and effectiveness. Results revealed the following significant positive correlations: (1) interest – all comfort measures; (2) interest – all effectiveness measures, (3) academic preparation – all comfort measures; and (4) academic preparation – all effectiveness measures. The following
significant negative correlations were found: (1) number of students with ACD/TBI on caseload – comfort (only treatment and education); (2) number of students with ACD/TBI on caseload – effectiveness (only assessment); (3) experience with children with ACD/TBI – comfort; and (4) experience with children with ACD/TBI – effectiveness (See Table 2). As interest and academic preparedness increased, comfort and self-perceived effectiveness also increased. Also, more students with ACD/TBI on the caseload was correlated with an increase in self-ratings of comfort in treating and education and an increase in self-ratings of effectiveness in regard to assessment. Finally, increased experience with children with ACD/TBI was correlated with increased ratings of comfort in assessing, treating, and educating and increased ratings of effectiveness in assessing and treating students with ACD/TBI.
Table 2. Correlations of the relationship between participants’ years as practicing speech language pathologists (Years Practicing), interest rating in assessment and treatment of individuals with ACD/TBI (Interest), ratings of how well educational/academic coursework prepared them for working with ACD/TBI (Academic preparedness), the number of students with ACD/TBI on their caseload, and experience in working with children with ACD/TBI. These items were compared to participants’ ratings of comfort and self-perceived effectiveness in assessing and treating students with ACD/TBI, and comfort in educating students, students’ families, staff, and/or others regarding issues related to ACD/TBI.

<table>
<thead>
<tr>
<th></th>
<th>Years Practicing</th>
<th>Interest</th>
<th>Academic preparedness</th>
<th>TBI Caseload</th>
<th>Experience with Students with TBI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>Sig.</td>
<td>r</td>
<td>Sig.</td>
<td>r</td>
</tr>
<tr>
<td>Comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessing</td>
<td>0.085</td>
<td>*0.155</td>
<td>0.394</td>
<td><em>0.001</em>*</td>
<td>0.468</td>
</tr>
<tr>
<td>Treating</td>
<td>0.057</td>
<td>*0.345</td>
<td>0.413</td>
<td><em>0.001</em>*</td>
<td>0.475</td>
</tr>
<tr>
<td>Educating</td>
<td>0.064</td>
<td>*0.289</td>
<td>0.427</td>
<td><em>0.001</em>*</td>
<td>0.419</td>
</tr>
<tr>
<td>Effectiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessing</td>
<td>0.062</td>
<td>*0.305</td>
<td>0.361</td>
<td><em>0.001</em>*</td>
<td>0.468</td>
</tr>
<tr>
<td>Treating</td>
<td>0.066</td>
<td>*0.274</td>
<td>0.361</td>
<td><em>0.001</em>*</td>
<td>0.452</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).
DISCUSSION

The purpose of the current study was to examine the educational background knowledge, interest level, comfort level, and self-perceived effectiveness of school-based SLPs in the area of TBI. To achieve this purpose, four main goals were examined. (1) Describe the background knowledge, interest level, comfort level, and self-rated effectiveness of school-based SLPs. (2) Compare the relationship between educational experience, and interest/comfort/effectiveness in working with students with ACD/TBI. (3) Compare general comfort/effectiveness with comfort/effectiveness working with students with ACD/TBI. (4) Describe the relationship between comfort level and effectiveness, specific to working with students with ACD/TBI.

The study’s findings provide information about school-based SLPs’ educational experience, and interest/comfort/effectiveness in working with students with ACD/TBI. This information can be used to develop new academic/continuing education programs or enhance existing academic/continuing education programs to improve services to students with ACD/TBI.

SLPs’ Role

Cognitive disorders and the communication deficits that arise from acquired cognitive disorders such as TBI are new and expanding areas for SLPs. The SLP’s role in cognitive communication disorders includes prevention, assessment, intervention, education, and other services (ASHA, 2005a, b); which includes services provided in the school setting (ASHA, 2010a). Due to changing legal mandates (such as the Individuals with Disabilities Education Act) and a more expanded scope of practice for SLPs, the services provided in the schools have
greatly evolved. These evolved and more expanded roles have re-defined SLPs’ work in schools (ASHA 2010a).

Despite this increase in services being provided in schools, the percent of school SLPs serving students with TBI and the number of students with TBI being serviced has remained relatively unchanged since 2004 (ASHA, 2010b). Approximately 17% of school SLPs in the United States that served students with TBI in 2010, with the number of students with TBI being serviced was on average two per school SLP (ASHA, 2010b).

The current study found that 54.6% (N=153) of participants had one or more students with ACD/TBI on their caseload each month. This is considerably larger than the 17% of school SLPs from 2010. The mean number of students being served by the participants in the current study was 1.37 (SD=2.842), which is much closer to the two students per school SLP being serviced in 2010.

A possible reason for the discrepancy found between the current study’s percent of school SLPs working with students with ACD/TBI and the percent reported by ASHA (2010b) may be explained by the 62% increase in fall-related TBI seen in emergency departments among children (Faul et al., 2010). Given this increase in fall-related TBI in the school-aged population and younger, it is not unexpected that a higher percentage of SLPs would therefore be working with students with ACD/TBI. Also, methodological differences between the two studies may account for this difference.

**Academic/Clinical Training**

The majority of responding Ohio school-based SLPs indicated they had at least one class that was primarily devoted to ACD/TBI during either their bachelors program or masters
program. However, the majority of school-based SLPs also reported that they do not think they had sufficient amount of academic educational experiences nor continuing education related to cognition/ACD/TBI to adequately assess, treat, and work with students with ACD/TBI. These findings confirm that a large portion of SLPs did not think that their academic course work prepared them for working with students with ACD/TBI. Similar findings were reported by Hux (1996). Based on a survey of 494 school-based SLPs from 10 different states, Hux et al. (1996) found that many school SLPs reported a lack of confidence in dealing with TBI survivors. Overall, school SLP respondents did not perceive themselves as qualified to serve as IEP managers for students with TBI or to provide educators or students with TBI information (Hux et al., 1996).

Blood et al. (2010) conducted a survey of SLPs’ perceptions of their educational and clinical training in evaluating and treating written language disorders. They also examined sources of knowledge about written language disorders, confidence levels, and predictors of confidence in working with written language disorders. These researchers found that SLPs were generally “somewhat confident” for both assessment and treatment even though there were high ratings of dissatisfaction with academic and clinical training (Blood et al., 2010). This revealed that something other than academic and clinical training led to the perceived confidence in written language.

In the current study, respondents who reported having one or more classes in either their bachelors program or masters program that was primarily devoted to ACD/TBI also reported feeling more comfortable in assessment and educating others on ACD/TBI, more effective in assessment and treatment of students with ACD/TBI, and that they felt they had a sufficient amount of academic experiences related to ACD/TBI. Therefore, participants who did not have
any classes primarily devoted to ACD/TBI in either their bachelors program or masters program reported feeling less comfortable and less effective (except in regard to comfort in treatment). Further examination of the breakdown of academic preparedness ratings revealed that participants who reported having one or more classes primarily devoted to cognition/ACD/TBI during their bachelors and masters programs were also those who reported having a sufficient amount of academic educational experiences related the subject and their educational/academic coursework prepared them for working with ACD/TBI. These findings do not fully support Blood et al.’s (2010) data, as they reported a disconnect between satisfaction with academic/clinical training and confidence. The current study found a connection between academic courses and ratings of comfort and effectiveness, with one or more courses revealing increased reported ratings of comfort and effectiveness.

Hux et al. (1996) studied the confidence levels of SLPs who had prior training in TBI and those who did not and found a large disparity between the two groups. Those with prior training reported more confidence in all areas of assessment, treatment, education, and management of students who sustained TBI. This revealed that TBI training appeared to have a positive impact on school SLPs’ confidence and willingness to provide services to students with TBI (Hux et al., 1996). Similarly, the current study found that participants who did not have any classes primarily devoted to ACD/TBI in either their bachelors program or masters program reported feeling generally less comfortable and less effective.

In a survey study of 278 school SLPs on their training and confidence associated with working with school-age children who stutter, Brisk, Healey, and Hux (1997) found that the majority of respondents believed they have received adequate fluency disorders preparation through academic courses, clinical training, and continuing education. It was also found that
these feelings were further reflected in positive reports of success and confidence working with school-age children with fluency disorders (Brisk et al., 1997). Similarly, Schwartz and Drager (2008) also found a relationship between classes and comfort. Specifically, they completed a survey study of 67 school-based SLPs on their knowledge and confidence in working with children with autism and found that the majority of SLPs took part in one or more courses that they felt adequately addressed autism in both their undergraduate and graduate coursework. Also, although they felt that they could have benefited from additional coursework and training in autism, the majority of school SLPs reported feeling competent in their ability to determine goals for children with autism and were comfortable counseling parents of children with autism (Schwartz & Drager, 2008). The current and previous findings together suggest that relevant academic coursework does have an effect on SLPs’ comfort and effectiveness.

**Perceived Comfort and Effectiveness**

Overall, the school-based SLPs surveyed in the current study reported feeling more comfortable and more effective in assessment and treatment of students in general as compared to students with ACD/TBI. This is similar to Hux et al.’s (1996) finding that training/academic classes that pertain to cognitive disorders/TBI increase SLPs’ feelings of comfort and effectiveness. School SLPs may have experienced more training and educational classes in other topics as compared to cognitive disorders/TBI increasing the school SLPs’ comfort and self-perceived effectiveness in those other areas.

Hux et al. (1996) found that overall, school-based SLPs appeared to be more confident in treatment but not assessment of students with TBI. This corresponds to the current study’s finding that SLPs reported feeling more comfortable in treatment than assessment of students
with ACD/TBI. Interestingly, though, this difference in treatment and assessment comfort was not found for ratings of students in general. It is possible that SLPs feel equally comfortable in assessment and treatment when they have had adequate education and training in an area. Also, the SLPs who have had education and training in cognition may have more heavily emphasized treatment procedures than assessment procedures, leading to this discrepancy.

Although the current study and Hux et al. (1996) both found increased confidence/comfort in treatment compared to assessment, two previous studies have found different results. Specifically, Brisk et al. (1997) found that respondents felt more competent evaluating than treating students with fluency disorders. Also, Blood et al. (2010) found that confidence ratings for SLPs in written language were extremely similar in regard to assessment and treatment. The majority of SLPs reported that they were “somewhat confident” in both assessment and treatment of written language (Blood et al., 2010). Blood et al.’s (2010) results more similarly coincide with the current study’s findings on school SLPs’ reports of comfort in regard to assessment and treatment of students in general (non-TBI).

In regard to predictors of confidence in SLPs, Blood et al. (2010) found that on-the-job training, general knowledge, attendance at professional development programs, and knowledge about collaborative efforts were most likely to predict higher level of confidence. This reveals that adequate continuing education efforts can aid in SLPs’ development of new knowledge and boost their confidence in a certain subject matter. Continuing education training perception was collected in the current study, but it was not a focus of the current analysis. Future research should examine the effect of being able to be a part of a team and collaborating with other professionals and its effect on school SLPs’ confidence. With continued efforts toward
improving academic and clinical training, and improved continuing education services, SLPs can gain the knowledge base and confidence to adequately service students with TBI.

Based on correlation analysis, the current study found comfort and effectiveness in assessment and treatment of students with ACD/TBI were significantly correlated with interest, academic preparation, number of students ACD/TBI on their caseload and experience with children ACD/TBI. As interest and academic preparedness increased, comfort and self-perceived effectiveness also increased. Also, more students with ACD/TBI on the caseload was correlated with an increase in self-ratings of comfort in treating and education and an increase in self-ratings of effectiveness in regard to assessment. Finally, the more overall TBI-related experience school SLPs reported was correlated with increased ratings of comfort in assessing, treating, and educating and increased ratings of effectiveness in assessing and treating students with ACD/TBI.

Limitations

There are a number of limitations that should be considered in interpreting the results of this study. First, it should be noted that participants’ exact motivation for completing the survey is unknown. Participants who were particularly interested or perhaps particularly disinterested in cognitive disorders/TBI may have had more motivation to complete the survey. However, one survey question hoped to account for this by asking participants what motivated them to complete the survey. Many respondents reported that their single motivation was to “help out” the researcher by completing the survey and providing the data needed for a successful study. Another limitation to this study dealt with the sample of SLPs. Surveys for this study were only sent out to Ohio SLPs who were on an email list received from the Ohio Board of Speech-
Language Pathology and Audiology. It is unknown if there are regional differences in educational programs/continuing education opportunities available to school-based SLPs in Ohio as compared to other regions.

Another limitation, in regard to the respondents, was that not all respondents who began the survey completed the survey. A total of 69 respondents did not complete the entire survey. Testing revealed no differences between the participants who completed the survey versus those who did not complete the survey in regard to age, years as practicing SLPs, and interesting in ACD/TBI. To further examine possible reasons for respondents to not complete the survey, the questions at which the respondents dropped out were reviewed. It was found that there were three common questions that were the stopping point for the respondents who did not complete the survey. All three of the questions were at the beginning of different sections of the survey (Educational Information section, Continuing Education section, and Professional Experience section). It is unknown how the survey would have turned out if these individuals had completed and submitted the survey.

**Implications**

The current study and previous studies (Hux et al., 1996; Blood et al., 2010) found that adequate education and training appear to have a positive impact on SLPs’ confidence/comfort/effectiveness in providing services, including those services to students with TBI. However, this study found that the majority of SLP respondents felt less comfortable and less effective in providing assessment and treatment services to students with TBI compared to other students receiving services. Also, the majority of SLPs did not think that they experienced sufficient amount of academic educational experiences nor continuing education related to
cognition/ACD/TBI. This indicates that not only is more education and training needed, but also more effective, lasting education and training programs are needed for SLPs to feel comfortable and effective in working with this population. Given the difference between assessment and treatment comfort, these education and training programs should be sure to include specific suggestions/strategies on assessment and treatment information and ways to educate others on the impact of TBI on students.

Additional, effective training for school-based SLPs will hopefully promote increased comfort and effectiveness in the assessment and treatment of students with TBI and in educating others on the topic of TBI. Schools are the most functional and appropriate facility for students with TBI to regain their skills in the academic and in the social domain. If school SLPs have the proper training required to adequately support these students and provide the proper services, students with TBI may be successfully reintegrated into the school environment. As a field, it is important to develop more effective academic and continuing education activities to best educate SLPs on the best practices for serving students with TBI.

Although the current sample size was large enough to detect consistent patterns of findings across SLPs, further research should focus on a larger, more national population to find if those results are similar to the smaller sample of participants taken in Ohio. The current study included SLPs who either currently work or have previously worked in the school setting and did not factor out any SLPs that also had experience in another setting. Future research may focus solely on SLPs who have only worked in the school setting. Another possible direction for future research is to survey SLPs in other settings such as skilled nursing facilities and hospitals to compare the SLPs in those settings with the SLPs in the school setting. Although the knowledge, comfort, and effectiveness of SLPs in other settings/facilities is also largely
unknown these data could answer the question of whether the current data are specific to schools, or can be generalized to other facilities. Further research could also focus on other specific populations compared to the TBI population. For example, SLPs in schools may encounter children with dysphagia, or other medical populations, and it is unknown how many educational opportunities exist that focus on medical populations in the school setting. Finally, future research may also focus on creating an objective measure of effectiveness to replace the self-perceived effectiveness scale the current study employed.

**Conclusions**

Although the current scope of practice for SLPs includes prevention, assessment, intervention, education, and other services to students with TBI (ASHA, 2005b), the current results indicate that school-based SLPs report being less comfortable and less effective in providing services to students with ACD/TBI (when compared to general treatment). This may result in negative effects on the type of services delivered to students with ACD/TBI. School personnel and the students themselves may rely on the school SLPs to assume leadership roles by educating and adequately serving students with TBI. School SLPs therefore need to be able to educate themselves appropriately to be more comfortable and effective in providing these services to students with TBI.
REFERENCES


## APPENDIX A

### School Speech-Language Pathologists’ Experience with Acquired Cognitive Disorders

#### DEMOGRAPHICS

1. **Age**
   - N = 280; Mean = 43.18; SD = 11.747; range = 25-76

2. **Gender**
   - Female: N = 273; percent = 97.5%
   - Male: N = 7; percentage = 2.5%

3. **Race**
   - Caucasian or White: N = 268; percent = 95.7%
   - Non-Caucasian or White: N = 16; percent = 17.5%

4. **In what year did you earn each degree?**
   - BS/BA: N = 257; mean = 1991.1; SD = 11.693; min = 1963; max = 2010
   - MS/MA: N = 257; mean = 1995.88; SD = 10.521; min = 1967; max = 2009
   - Ph.D./Ed.D.: N = 10; mean = 1999.8; SD = 12.164; min = 1982; max = 2013

5. **How many years have you been a practicing speech-language pathologist?**
   - N = 280; mean = 16.83; SD = 11.287; min = 2; max = 46

6. **Do you hold a:**
   - CCC-SLP: N = 247; percent = 88.2%
   - State License: N = 272; percent = 97.1%
   - School Certification: N = 232; percent = 82.9%
   - None of the above: N = 0; percent = 0%

7. **What is your current or most recent work setting?**
   - N total = 280
   - a. Schools (pre-K-12): N = 233; percent = 83.2%
   - b. Acute care hospitals: N = 16; percent = 5.7%
   - c. Nursing facility / long-term care: N = 28; percent = 10%
   - d. Home health agency: N = 8; percent = 2.9%
   - e. Inpatient rehabilitation: N = 10; percent = 3.6%
   - f. Outpatient rehabilitation: N = 18; percent = 6.4%
   - g. Private Practice: N = 21; percent = 7.4%
   - h. University: N = 13; percent = 4.6%
   - i. Early Intervention: N = 15; percent = 5.4%
   - j. Other (describe): N = 22; percent = 7.9%

8. **How many years of professional experience do you have in the following settings?**
   - a. Schools (pre-K-12): N = 280; mean = 13.29; SD = 11.258; min = 0; max = 44
   - b. Acute care hospitals: N = 280; mean = 1.41; SD = 4.151; min = 0; max = 37
   - c. Nursing facility / long-term care: N = 280; mean = 1.56; SD = 3.61; min = 0; max = 28
   - d. Home health agency: N = 280; mean = 0.77; SD = 3.139; min = 0; max = 28
   - e. Inpatient rehabilitation: N = 280; mean = 0.95; SD = 3.139; min = 0; max = 20
   - f. Outpatient rehabilitation: N = 280; mean = 1.51; SD = 4.006; min = 0; max = 37
   - g. Private Practice: N = 280; mean = 1.53; SD = 4.93; min = 0; max = 37
   - h. University: N = 280; mean = 0.25; SD = 2.735; min = 0; max = 25
   - i. Early Intervention: N = 280; mean = 1.24; SD = 3.694; min = 0; max = 25
   - j. Other (describe): N = 280; mean = 0.34; SD = 2.128; min = 0; max = 26
9. Rate your INTEREST in assessment and treatment of individuals with acquired cognitive disorders/TBI? N = 280; mean = 2.2679; SD = 0.80079
   1. Very Interested N = 43; percent = 15.4%
   2. Interested N = 136; percent = 48.6%
   3. Neither interested nor disinterested N = 86; percent 30.7%
   4. Disinterested N = 13; percent = 4.6%
   5. Very disinterested N = 2; percent = 0.7%

10. Indicate the number of courses devoted the following levels primarily devoted to acquired cognitive disorders/TBI (more than 50% of the time devoted to acquired cognitive disorders / TBI):
    _______ bachelor’s N = 226, mean = 0.39; SD = 0.73, min = 0; max = 5
    _______ master’s N = 249, mean = 1.15; SD = 1.066; min = 0; max = 10
    _______ doctoral N = 27; mean = 0.24; SD = 0.777; min = 0; max = 2

11. Indicate the number of courses at each of the following levels that was partially devoted to acquired cognitive disorders / TBI (less than 50% of the time devoted to acquired cognitive disorders / TBI):
    _______ bachelor’s N = 240; mean = 0.95; SD = 1.08; min = 0; max = 10
    _______ master’s N = 240; mean = 1.62; SD = 1.2; min = 0; max = 7
    _______ doctoral N = 27; mean = 0.19; SD = 0.557; min = 0; max = 2

12. Rate how well your educational/academic coursework in acquired cognitive disorders/TBI prepared you for working with acquired cognitive disorders/TBI. N = 280; mean = 2.7857; SD = 1.19008
1. Very prepared N = 21; percent = 7.5%
2. Somewhat prepared N = 139; percent = 49.6%
3. Neither prepared nor unprepared N = 31; percent 11.1%
4. Somewhat unprepared N = 57; percent = 20.4%
5. Very unprepared N = 32; percent = 11.4%

13. Estimate the percentage of your clinical training hours that was devoted to the diagnosis and treatment of acquired cognitive disorders/TBI at the following levels:
    Undergraduate: _____% N = 243; mean = 3.34%; SD = 7.433; min = 0%; max = 50%
    Graduate: _____% N = 250; mean = 19.36%; SD = 24.384; min = 0%; max = 200%
    Clinical Fellowship Year (CFY): _____% N = 202; mean = 14.73%; SD = 24.384; min = 0%; max = 150%

14. At the start of your CFY, how comfortable were you with assessment of individuals with acquired cognitive disorders/TBI? N = 280; mean = 3.2214; SD = 1.00585
1. Very Comfortable N = 11; percent = 3.9%
2. Comfortable N = 56; percent = 20%
3. Neither comfortable nor uncomfortable N = 101; percent 36.1%
4. Uncomfortable N = 84; percent = 30%
5. Very uncomfortable N = 28; percent = 10%

15. At the start of your CFY, how comfortable were you with treatment of individuals with acquired cognitive disorders/TBI? N = 280; mean = 3.1143; SD = 1.0024
1. Very Comfortable N = 12; percent = 4.3%
2. Comfortable N = 65; percent = 23.2%
3. Neither comfortable nor uncomfortable N = 107; percent 38.2%
4. Uncomfortable N = 71; percent = 25.4%
5. Very uncomfortable N = 25; percent = 8.9%

16. Do you think that you have had a sufficient amount of academic educational experiences related to cognition/ acquired cognitive disorders/TBI to adequately assess, treat, and work with students with acquired cognitive disorders/TBI. N = 280
CONTINUING EDUCATION
Continuing education includes workshops, conferences, presentations, in-services, on the job training, or similar activities.

17. List the number of continuing education activities you engaged in that were related to acquired cognitive disorders/TBI?

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>271; mean 3.50; SD = 6.282; min = 0; max = 50</td>
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</tbody>
</table>

18. Rate your satisfaction of the continuing education experiences that focused on acquired cognitive disorders/TBI that you have attended. (Skip this question if none attended.) N = 200; mean = 2.205; SD = 0.69671

| 1 Very Satisfied | N = 26; percent = 9.3% |
| 2 Satisfied      | N = 112; percent = 40% |
| 3 Neither satisfied nor dissatisfied | N = 58; percent 20.7% |
| 4 Dissatisfied   | N = 3; percent = 1.1% |
| 5 Very Dissatisfied | N = 1; percent = 0.4% |

19. Rate your level of interest in attending more continuing education related to cognition/acquired cognitive disorders/TBI. N = 280; mean = 2.3429; SD = 0.85736

| 1 Very Interested | N = 40; percent = 14.3% |
| 2 Interested      | N = 132; percent = 47.1% |
| 3 Neither interested nor disinterested | N = 83; percent = 29.6% |
| 4 Disinterested   | N = 22; percent = 7.9% |
| 5 Very disinterested | N = 3; percent = 1.1% |

20. Do you think that there are sufficient opportunities for continuing education in cognition/ acquired cognitive disorders/TBI available to you? N = 280

| Yes N = 151; percent = 53.9% |
| No N = 129; percent = 46.1% |

21. Do you think that you have had a sufficient amount of continuing educational experiences related to cognition/ acquired cognitive disorders/TBI to adequately assess, treat, and work with students with acquired cognitive disorders/TBI. N = 280

| Yes N = 102; percent = 36.4% |
| No N = 178; percent = 63.6% |

PROFESSIONAL EXPERIENCE

22. Describe your experience in working with children with acquired cognitive disorders/TBI? N = 279; mean = 2.0789; SD = 0.64111

| 1 No experience | N = 40; percent = 14.3% |
| 2 Minimal experience | N = 184; percent = 65.9% |
| 3 Moderate experience | N = 48; percent = 17.2% |
| 4 A lot of experience | N = 7; percent = 2.5% |

23. On average, how many students are on your caseload each month? N = 277; mean = 47.96; SD = 20.788; min = 0; max = 85

24. On average, how many students with acquired cognitive disorders/TBI are on your caseload each month? N = 278; mean = 1.38; SD = 2.85; min = 0; max = 25

25. What percentage of your students are in the following groups:
26. Relative to their needs, how satisfied are you with the amount of time you have to see students in general? N = 280; mean = 3.1107; SD = 1.15403
   1 Very Satisfied N = 18; percent = 6.4%
   2 Satisfied N = 92; percent = 32.9%
   3 Neither satisfied nor dissatisfied N = 37; percent = 13.2%
   4 Dissatisfied N = 107; percent = 38.2%
   5 Very Dissatisfied N = 26; percent = 9.3%

27. Relative to their needs, how satisfied are you with the amount of time you have to see students with acquired cognitive disorders/TBI? (You may skip this question if you have never had students with acquired cognitive disorders/TBI on your caseload.) N = 184; mean = 3.2011; SD = 0.9396
   1 Very Satisfied N = 3; percent = 1.6%
   2 Satisfied N = 44; percent = 23.9%
   3 Neither satisfied nor dissatisfied N = 63; percent = 34.2%
   4 Dissatisfied N = 61; percent = 33.2%
   5 Very Dissatisfied N = 13; percent = 7.1%

28. In general, how COMFORTABLE are you with assessment? N = 280; mean = 1.5536; SD = 0.73615
   1 Very Comfortable N = 25; percent = 8.9%
   2 Comfortable N = 105; percent = 37.5%
   3 Neither comfortable nor uncomfortable N = 87; percent = 31.1%
   4 Uncomfortable N = 11; percent = 3.9%
   5 Very uncomfortable N = 1; percent = 0.4%

29. How COMFORTABLE are you in assessing students with acquired cognitive disorders/TBI? N = 280; mean = 2.8214; SD = 1.0388
   1 Very Comfortable N = 25; percent = 8.9%
   2 Comfortable N = 91; percent = 32.5%
   3 Neither comfortable nor uncomfortable N = 87; percent = 31.1%
   4 Uncomfortable N = 11; percent = 3.9%
   5 Very uncomfortable N = 1; percent = 0.4%

30. In general, how COMFORTABLE are you with treatment? N = 280; mean = 1.5893; SD = 0.73267
   1 Very Comfortable N = 25; percent = 8.9%
   2 Comfortable N = 114; percent = 40.7%
   3 Neither comfortable nor uncomfortable N = 11; percent = 5%
   4 Uncomfortable N = 14; percent = 5%
   5 Very uncomfortable N = 2; percent = 0.7%

31. How COMFORTABLE are you in treating students with acquired cognitive disorders/TBI? N = 280; mean = 2.6429; SD = 1.03745
   1 Very Comfortable N = 30; percent = 10.7%
   2 Comfortable N = 113; percent = 40.4%
   3 Neither comfortable nor uncomfortable N = 79; percent = 28.2%
   4 Uncomfortable N = 43; percent = 15.4%
   5 Very uncomfortable N = 15; percent = 5.4%
32. In general, how COMFORTABLE are you educating students, students’ families, staff, and/or others? N = 280; mean = 1.7-36; SD = 0.71941
   1 Very Comfortable N = 118; percent = 42.1%
   2 Comfortable N = 133; percent = 47.5%
   3 Neither comfortable nor uncomfortable N = 25; percent = 8.9%
   4 Uncomfortable N = 2; percent = 0.7%
   5 Very uncomfortable N = 2; percent = 0.7%

33. How COMFORTABLE are you educating students, students’ families, staff, and/or others regarding issues related to acquired cognitive disorders/TBI? N = 280; mean = 2.8464; SD = 1.12705
   1 Very Comfortable N = 32; percent = 11.4%
   2 Comfortable N = 86; percent = 30.7%
   3 Neither comfortable nor uncomfortable N = 75; percent = 26.8%
   4 Uncomfortable N = 67; percent = 23.9%
   5 Very uncomfortable N = 20; percent = 7.1%

34. In general, how EFFECTIVE do you feel you are in assessing students? N = 280; mean = 1.35; SD = 0.59176
   1 Very effective N = 194; percent = 69.3%
   2 Somewhat effective N = 78; percent = 27.9%
   3 Neither effective nor ineffective N = 5; percent = 1.8%
   4 Somewhat ineffective N = 2; percent = 0.7%
   5 Very ineffective N = 1; percent = 0.4%

35. How EFFECTIVE do you feel you are in assessing students with acquired cognitive disorders/TBI? N = 280; mean = 2.5643; SD = 1.08566
   1 Very effective N = 43; percent = 15.4%
   2 Somewhat effective N = 105; percent = 37.5%
   3 Neither effective nor ineffective N = 81; percent = 28.9%
   4 Somewhat ineffective N = 33; percent = 11.8%
   5 Very ineffective N = 18; percent = 6.4%

36. Relative to their needs, how EFFECTIVE do you feel you are in treating students? N = 280; mean = 1.4679; SD = 0.63841
   1 Very effective N = 164; percent = 58.6%
   2 Somewhat effective N = 106; percent = 37.9%
   3 Neither effective nor ineffective N = 7; percent = 2.5%
   4 Somewhat ineffective N = 1; percent = 0.4%
   5 Very ineffective N = 2; percent = 0.7%

37. Relative to their needs, how EFFECTIVE do you feel you are in treating students with acquired cognitive disorders / TBI? N = 280; mean = 2.5643; SD = 1.03841
   1 Very effective N = 38; percent = 13.6%
   2 Somewhat effective N = 111; percent = 39.6%
   3 Neither effective nor ineffective N = 79; percent = 28.2%
   4 Somewhat ineffective N = 39; percent = 13.9%
   5 Very ineffective N = 13; percent = 4.6%

38. Overall, across all academic and support services, rate the quality of services provided to students in your school district? N = 280; mean = 1.8214, SD = 0.7967
   1 Very good N = 113; percent = 40.4%
   2 Good N = 109; percent = 38.9%
   3 Average N = 53; percent = 18.9%
   4 Poor N = 5; percent = 1.8%
   5 Very poor N = 0; percent = 0%
39. Overall, across all academic and support services, rate the quality of services provided to students with acquired cognitive disorders/TBI in your school district? N = 280; mean = 2.5357; SD = 0.8331
   1  Very good N = 33; percent = 11.8%
   2  Good N = 92; percent = 32.9%
   3  Average N = 128; percent = 45.7%
   4  Poor N = 26; percent = 9.3%
   5  Very poor N = 1; percent = 0.4%

FINAL THOUGHTS

1. What motivated you to respond to this survey?
   Examples of answers:
   “I have only one child labeled TBI. I would like to know more as well as be helpful to you.” (#196)
   “e-mail, easy/quick” (#204)
   “To help the graduate student in your research.” (#253)
   “Support of student who generated it. I see a need to advance research into this field.” (#10)

2. Do you have any specific experiences you would like to share about your experiences with TBI in the schools?
   “Families of TBI kids often have a lot of information about their student's needs as they have spent the time observing outpatient therapies, etc. When I worked in outpt. rehab AND the schools at the same time, it was helpful for me to be the connection between rehab and the school setting. Outpatient facilities are often not informed about educational settings and school personnel need to understand TBI.” (#25)
   “We are currently evaluating a student and considering the educational label of TBI. If she is identified in that way she will be one of only two students in a school of 1300 with that label.” (#45)
   “I think my comfort level with treating students has decreased every year since graduate school.” (#99)
   “This survey makes me realize that within our specialized population, a lot more education of staff members around TBI should be done.” (#228)

3. Is there anything else you would like to share?
   “Most of my early experience as a grad student with TBI/aquired cog disorders was with adults rather than children.” (#260)
   “With such large caseloads in the schools, I find it frustrating that I might not be as effective in treatment as I would like to be due to scheduling constraints and groups of up to 4 students to treat at one time.” (#249)
   “I think there is more incident of TBI in school age children especially with all the sports injuries that you see (concussions etc.) As an SLP I would like to see more Continuing Education on the subject for how it impacts in the schools and the SLP's role to help.” (#231)
   “I would like help in how to deal with teachers/staff that remember how a student was before the TBI and why they can't hold them to the same standard. What do you do for the teachers that just can't get past "they aren't themselves anymore" ???” (#200)
APPENDIX B

School Speech-Language Pathologists' Experience with Acquired Cognitive

Consent

School Speech-Language Pathologist's Comfort Working with Traumatic Brain Injury/Acquired Cognitive Disorders

INFORMED CONSENT PAGE

Introduction

My name is Brianna Chapman and I am a graduate student in the Department of Communication Sciences and Disorders at Bowling Green State University. For my Master's thesis, I am conducting a survey of school speech-language pathologists (SLPs). You are invited to participate in this anonymous survey if you are an SLP who currently works in the school setting or if you have worked in a school setting. You must be at least 18 years of age to complete this survey.

Purpose

The purpose of my thesis is to examine the background, interest, comfort, and effectiveness of school-based SLPs in the area of Traumatic Brain Injury (TBI) and other acquired cognitive disorders.

Procedures

Your participation in the study will involve the completion of one anonymous survey, which should take approximately 6-15 minutes of your time. This survey will include demographic questions, questions about your educational background, continuing education experiences, interest levels, experience levels, and comfort working with children who have experienced TBI or other acquired cognitive disorders.

Risks

There are no known risks associated with participation in this study.

Benefits

While there may be no immediate benefit to you as a result of your participation in this study, I hope that you will take this opportunity to share your experiences. The information gathered will allow researchers to gain a better understanding of the experiences of school-based SLPs. Also, information gained in this study and other studies should help improve education and services offered to students diagnosed with TBI or other acquired cognitive disorders.

Payment / Costs

Your participation in this study is voluntary. You will receive no payment for participation. Likewise, there will be no financial cost for participating.

Confidentiality

All records related to this research will be maintained on secure (password-protected) computer equipment. The investigators will not have access to your identity. Because this is an electronic survey, there are some recommendations to ensure confidentiality: (1) Some employers may use tracking software so you may want to complete your survey on a personal computer. (2) Do not leave survey open if using a public computer or a computer others may have access to. (3) Clear your browser cache and page history after completing the survey.

Security

The survey will be conducted through http://www.surveymonkey.com. This website is secure. Specifically, "Secure Sockets Layer (SSL) technology protects user information using both server authentication and data encryption, ensuring that user data is safe, secure, and available only to authorized persons." (http://www.surveymonkey.com/about/sslsecurity.aspx)

Questions

If you have any questions, feel free to contact Brianna Chapman, B.S. at 419-372-2515 (bchapman@bgusu.edu). You can also contact my advisor Alexander Gobran, Ph.D., at 419-372-2516 (gobran@bgusu.edu). Questions about rights as a human subject can be directed to the chair of the
School Speech-Language Pathologists' Experience with Acquired Cognitive

Human Subjects Review Board at 419-372-7716 (hsrb@bgus.edu).

Consent

Your participation in this survey is voluntary. You may choose to not participate or stop the survey at any time without repercussions. By continuing on with this survey, you are indicating consent to serve as a participant in this research.

Bowling Green State University HSB - Approved for use
HSRB Project No.: H12T0010X2
Effective: 8/2011
Expires: 7/20/12
School Speech-Language Pathologists' Experience with Acquired Cognitive

Demographics

*1. Age

*2. Gender

*3. Race
   - Caucasian or White
   - Hispanic or Latino
   - American Indian / Alaska Native
   - Asian
   - Native Hawaiian or Other Pacific Islander
   - Black or African American
   - Prefer not to answer
   - Other (please specify)

*4. In what year did you earn your degree?
   - BS/BA
   - MS/MA
   - Ph.D./Ed.D.

*5. How many years have you been a practicing speech language pathologist?

*6. Do you hold a:
   - CCC-SLP
   - State License
   - School Certification
   - None of the Above
**7. What is your current or most recent work setting?**

- □ Schools (pre-K-12)
- □ Acute care hospitals
- □ Nursing facility / long-term care
- □ Home health agency
- □ Inpatient rehabilitation
- □ Outpatient rehabilitation
- □ Private Practice
- □ University
- □ Early intervention
- □ Other (please specify): __________

**8. How many years of professional experience do you have in the following settings:**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Years of Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools (pre-K-12)</td>
<td></td>
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<tr>
<td>Acute care hospitals</td>
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<td>Nursing facility / long-term care</td>
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<tr>
<td>Early intervention</td>
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<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**9. Rate your INTEREST in assessment and treatment of individuals with acquired cognitive disorders/TBI?**

- ○ Very interested
- ○ Interested
- ○ Neither interested nor disinterested
- ○ Disinterested
- ○ Very disinterested
School Speech-Language Pathologists' Experience with Acquired Cognitive Disorders

Educational Information

**10.** Indicate the number of courses devoted the following levels primarily devoted to acquired cognitive disorders/TBI (more than 50% of the time devoted to acquired cognitive disorders / TBI):

- Bachelor's ____________________________
- Master's ____________________________
- Doctoral ______________________________

**11.** Indicate the number of courses at each of the following levels that were partially devoted to acquired cognitive disorders / TBI (less than 50% of the time devoted to acquired cognitive disorders / TBI):

- Bachelor's ____________________________
- Master's ____________________________
- Doctoral ______________________________

**12.** Rate how well your educational/academic coursework prepared you for working with acquired cognitive disorders/TBI.

- Very prepared
- Somewhat prepared
- Neither prepared nor unprepared
- Somewhat unprepared
- Very unprepared

**13.** Estimate the percentage of your clinical training hours that was devoted to the diagnosis and treatment of acquired cognitive disorders/TBI at the following levels:

- Undergraduate: ________________________
- Graduate: ____________________________
- Clinical Fellowship Year (CFY): _______
School Speech-Language Pathologists' Experience with Acquired Cognitive

**14. At the start of your CFY, how comfortable were you with assessment of individuals with acquired cognitive disorders/TBI?**

- Very comfortable
- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable
- Very uncomfortable

**15. At the start of your CFY, how comfortable were you with treatment of individuals with acquired cognitive disorders/TBI?**

- Very comfortable
- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable
- Very uncomfortable

**16. Do you think that you have had a sufficient amount of academic educational experiences related to cognition/ acquired cognitive disorders/TBI to adequately assess, treat, and work with students with acquired cognitive disorders/TBI.**

- Yes
- No
## School Speech-Language Pathologists' Experience with Acquired Cognitive Continuing Education

Continuing education includes workshops, conferences, presentations, in-services, on the job training, or similar activities.

**17. List the number of continuing education activities you engaged in that were related to acquired cognitive disorders/TBI?**

**18. Rate your satisfaction with the continuing education experiences that focused on acquired cognitive disorders/TBI that you have attended. (Skip this question if none attended.)**

- Very satisfied
- Satisfied
- Neither satisfied nor dissatisfied
- Dissatisfied
- Very Dissatisfied

**19. Rate your level of interest in attending more continuing education related to cognition/acquired cognitive disorders/TBI.**

- Very interested
- Interested
- Neither interested nor disinterested
- Disinterested
- Very disinterested

**20. Do you think that there are sufficient opportunities for continuing education in cognition/ acquired cognitive disorders/TBI available to you?**

- Yes
- No

**21. Do you think that you have had a sufficient amount of continuing education experiences to adequately assess, treat, and work with students with acquired cognitive disorders/TBI?**

- Yes
- No
### School Speech-Language Pathologists' Experience with Acquired Cognitive Disorders/TBI

#### Professional Experience

22. Describe your experience in working with children with acquired cognitive disorders/TBI?
- [ ] No experience
- [ ] Minimal experience
- [ ] Moderate experience
- [ ] A lot of experience

**23. On average, how many students are on your caseload each month?**

**24. On average, how many students with acquired cognitive disorders/TBI are on your caseload each month?**

**25. What percentage of your students are in the following groups:**

- Articulation
- Language
- Fluency
- Voice
- Cognition/TBI
- Dysphagia
- Other (please specify)

**26. Relative to their needs, how satisfied are you with the amount of time you have to see students in general?**
- [ ] Very satisfied
- [ ] Satisfied
- [ ] Neither satisfied nor dissatisfied
- [ ] Dissatisfied
- [ ] Very dissatisfied
27. Relative to their needs, how satisfied are you with the amount of time you have to see students with acquired cognitive disorders/TBI? (You may skip this question if you have never had students with acquired cognitive disorders/TBI on your caseload.)

- Very satisfied
- Satisfied
- Neither satisfied nor dissatisfied
- Dissatisfied
- Very dissatisfied

**28. In general, how COMFORTABLE are you with assessment?**

- Very comfortable
- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable
- Very uncomfortable

**29. How COMFORTABLE are you in assessing students with acquired cognitive disorders/TBI?**

- Very comfortable
- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable
- Very uncomfortable

**30. In general, how COMFORTABLE are you with treatment?**

- Very comfortable
- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable
- Very uncomfortable
School Speech-Language Pathologists' Experience with Acquired Cognitive

*31. How COMFORTABLE are you in treating students with acquired cognitive disorders/TBI?
   - Very comfortable
   - Comfortable
   - Neither comfortable nor uncomfortable
   - Uncomfortable
   - Very uncomfortable

*32. In general, how COMFORTABLE are you educating students, students' families, staff, and/or others?
   - Very comfortable
   - Comfortable
   - Neither comfortable nor uncomfortable
   - Uncomfortable
   - Very Uncomfortable

*33. How COMFORTABLE are you educating students, students' families, staff, and/or others regarding issues related to acquired cognitive disorders/TBI?
   - Very comfortable
   - Comfortable
   - Neither comfortable nor uncomfortable
   - Uncomfortable
   - Very Uncomfortable

*34. In general, how EFFECTIVE do you feel you are in assessing students?
   - Very effective
   - Somewhat effective
   - Neither effective nor ineffective
   - Somewhat ineffective
   - Very ineffective
### School Speech-Language Pathologists' Experience with Acquired Cognitive

**35. How EFFECTIVE do you feel you are in assessing students with acquired cognitive disorders/TBI?**
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Neither effective nor ineffective
- [ ] Somewhat ineffective
- [ ] Very ineffective

**36. Relative to their needs, how EFFECTIVE do you feel you are in treating students?**
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Neither effective nor ineffective
- [ ] Somewhat ineffective
- [ ] Very ineffective

**37. Relative to their needs, how EFFECTIVE do you feel you are in treating students with acquired cognitive disorders / TBI?**
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Neither effective nor ineffective
- [ ] Somewhat ineffective
- [ ] Very ineffective

**38. Overall, across all academic and support services, rate the quality of services provided to students in your school district?**
- [ ] Very good
- [ ] Good
- [ ] Average
- [ ] Poor
- [ ] Very poor
**39.** Overall, across all academic and support services, rate the quality of services provided to students with acquired cognitive disorders/TBI in your school district?

- [ ] Very good
- [ ] Good
- [ ] Average
- [ ] Poor
- [ ] Very poor
School Speech-Language Pathologists’ Experience with Acquired Cognitive

Final Thoughts

40. What motivated you to respond to this survey?

41. Do you have any specific experiences you would like to share about your experiences with TBI in the schools?

42. Is there anything else you would like to share?

Thank you for completing the survey!

The information gathered will allow researchers to gain a better understanding of the experiences of school-based SLPs. Also, information gained in this and other studies should help improve education and services offered to students diagnosed with TBI or other acquired cognitive disorders.

If you have any questions or comments, feel free to contact Brianna Chapman, B.S. at 419-572-2515 (bachapen@bgsu.edu). You can also contact my advisor Alexander Goberman, Ph.D., at 419-572-2518 (goberman@bgsu.edu).
APPENDIX C

Pilot Study Questions

1. How long did it take you to complete the survey? _____________________

2. Were any of the items/questions unclear?

3. Please comment on the clarity of the survey instructions and the format of the questions (size of print, spacing, or the rating scales used).

4. Which items or sections (if any) of the survey seemed less important?

5. What should be changed about this survey?

6. Any other comments about this survey:
APPENDIX D

Aug 3, 2011

TO: Brianna Chapman
CDIS

FROM: Hillary Harms, Ph.D.
HSRB Administrator

RE: HSRB Project No.: H12T001GX2

TITLE: School Speech-Language Pathologist’s Comfort Working with Traumatic Brain Injury/Acquired Cognitive Disorders

You have met the conditions for approval for your project involving human subjects. As of August 2, 2011, your project has been granted final approval by the Human Subjects Review Board (HSRB). This approval expires on July 24, 2012. You may proceed with subject recruitment and data collection.

The final approved version of the consent document(s) is attached. Consistent with federal OHRP guidance to IRBs, the consent document(s) bearing the HSRB approval/expiration date stamp is the only valid version and you must use copies of the date-stamped document(s) in obtaining consent from research subjects.

You are responsible to conduct the study as approved by the HSRB and to use only approved forms. If you seek to make any changes in your project activities or procedures, send a request for modifications to the HSRB via this office. Those changes must be approved by the HSRB prior to their implementation.

You have been approved to enroll 3860 participants. If you want to enroll additional participants you must seek approval from the HSRB.

Good luck with your work. Let me know if this office or the HSRB can be of assistance as your project proceeds.

Comments/ Modifications:
Please add text equivalent to the HSRB approval/expiration date stamp to the “footer” area of the electronic consent form (see attached for specific text).

c: goberma@bgsu.edu

Research Category: EXEMPT #2