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School Psychology Programs:
Graduate Preparation in Traumatic Brain Injury

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Abstract: Although traumatic brain injuries are the leading cause of death and disability among children and adolescents, it remains a low incidence category for special education identification. Students with TBI can present with unique educational and psychosocial needs. Using surveys administered to program directors and interns, this study explored how school psychologists are prepared to identify and facilitate appropriate services for students with TBI.

Introduction

Students who have sustained traumatic brain injuries (TBIs) may experience a number of adverse consequences, including cognitive, physical, psycho-social, behavioral, and emotional problems (Jantz & Coulter, 2007). For more than twenty years, traumatic brain injury has been a special education category in the Individuals with Disabilities Education Act (IDEA). Prior to the 1990 amendment that added the TBI category to IDEA, students with brain injuries were either not identified for special education or they were classified as having learning disabilities, mental retardation, or emotional disturbances. However, since the TBI classification has been added to IDEA, it remains a "low incidence" special education category, representing only 25,676 (.004%) students in special education in the United States (IDEA, 2010).

This number of identified students does not accurately reflect traumatic brain injury incidence and outcomes for youth in the United States. Traumatic brain injuries are the leading cause of disability for children ages 0 to 19 in the United States (Zaloshnja, Miller, Langlois, & Selaiss, 2008). As a result of TBIs, approximately 144,751 children ages 0-19 are currently living with long-term, significant alterations in social, behavioral, physical, and cognitive functioning (Zaloshnja et al., 2008). This may be a conservative estimate, as others have calculated that of the 60,000 moderate to severe TBIs sustained annually by children ages 0-19, half will not recover completely and will show long term changes in cognition, behavior, and physical abilities that will warrant special education (Langlois, Rutland-Brown, & Thomas, 2004). In other words, there may be 30,000 new pediatric TBI cases *each year* that warrant special education, but there are fewer than 30,000 K-12 students *total* identified in the TBI category. Although these students may be identified in another category (e.g., learning disabilities, emotional and behavioral disabilities) and receiving special education services, the failure to use the TBI category may reflect the evaluation team's lack of knowledge about brain injuries.

Following a TBI, survivors often experience a range of adverse effects, including impaired executive functioning and cognition, social and emotional problems, physical and sensory issues, and learning problems. Some skills and abilities remain intact while others are lost. Some students may appear "fine" after the injury and then show problems months or years later as new and more challenging skills are required. For some students, awareness that they are different than they were before the accident can lead to depression and anxiety. For others, the profound *lack* of self-awareness is one of the most debilitating factors (Prigatano, 2005).

Transitioning from the hospital or rehabilitation facility back to school after a TBI can be a difficult adjustment, particularly if school teams are inadequately prepared to meet the child's needs. School personnel's lack of knowledge and understanding about traumatic brain injuries has been identified as a primary complaint of parents of children with TBI upon return to school (Glang, Tyler, Pearson, Todis, & Morvant M., 2004).

Most school psychologists are trained as scientist-practitioners and are knowledgeable about identifying and intervening with variety of learning and behavior problems. Of all school personnel, school psychologists should be among the most informed about TBI. However, Hooper (2006) found that many practicing school psychologists endorsed significant numbers of myths and misconceptions pertaining to TBI. In the same study, 83% of respondents reported needing more professional development on the topic of TBI. This is similar to previous studies on speech-language pathologists' (Hux, Walker, & Sanger, 1996) and educators' (Farmer & Johnson-Gerard, 1997) understandings of TBI.

Thus, part of the reason for the lack of congruence between TBI incidence and special education identification may be educators' lack of knowledge and skills related to TBI. This insufficient knowledge and lack of skills may be partially attributed to inadequate instruction on TBI during graduate preparation programs. Results of a survey in the late 1990's indicated the extent of instruction offered by school psychology programs in brain injury and neuropsychology was very limited (Walker, Boling & Cobb, 1999). Although some forms of instruction were offered (e.g., observation of a student with TBI, a course in neuropsychology), it was limited in nature and content; the researchers felt this limited exposure to the topic might not meet the needs of graduates working directly with students with brain injuries in schools. It appeared that programs lacked the information and means for incorporating necessary TBI instruction into their existing courses.

The National Association of School Psychologists (NASP) Standards for Graduate Preparation of School Psychologists (2010) ensure that all approved programs prepare graduate students to identify a range of educational problems and apply research-based intervention strategies to address these problems. While many programs require coursework in biological bases of behavior, it seems that the content of those courses often does not correspond with the best practices for working with students with TBI. In coursework related to exceptionalities, TBI may be presented as one of the special education categories, but it may be described as "low-incidence" because this is how the textbooks classify it. This perpetuates the under-identification cycle, as many school psychologists then do not expect to encounter many cases of TBI. Intern supervisors may indicate that they "don't have any" students in their building with TBI. Students then emerge into the profession unprepared to recognize the signs of TBI and may fail to ask the correct questions during evaluations.

There is also a tremendous gap in the professional literature related to TBI. For example, a literature search revealed that in the past twelve years, the leading school psychology journals, *School Psychology Review* and *School Psychology Quarterly*, have not published any articles related to TBI. This leads practitioners, researchers, students, and professors to believe TBI is an unimportant issue in the field of school psychology, or that it is not a population school psychologists should attend to. Further, the literature provides no clear standards for TBI training in terms of depth and breadth of topic coverage.

For school psychologists who have attained knowledge and skills related to TBI, it is often gained through professional development workshops or other post-graduate instruction. For example, at the turn of the millennium, North Carolina State Department of Public Instruction (DPI) made an effort to systematically train school psychologists in advanced assessment strategies and evidence-based treatments for TBI (Hooper, Walker, & Howard, 2001). This training was completed through a series of workshops and subsequent clinical case supervision of TBI. School psychologists who completed both parts of the prescribed training were added to a Registry of Approved Providers to work with students with brain injuries. Interestingly, the instructional program was developed along the lines of a semester graduate course "in the hopes that the model would be adopted by School Psychology Training Programs" (Hooper et al., 2001, p. 353), but unfortunately, it was not.

School psychologists are key players on teams of professionals responsible for identifying and responding to the needs of students with TBI. Although the author has begun to explore practicing school psychologists' knowledge and skills related to TBI, the literature is limited in this area. Additionally, little has been written about the responsibility of school psychology programs in ensuring that their graduates are well-

prepared to recognize and respond to TBIs. Thus, in the current study a survey was conducted to answer the following questions: (1) To what extent do school psychology graduate programs provide instruction related to traumatic brain injuries? (2) What are current interns' perceptions of preparedness in working on TBI cases?

Method

Participants

Surveys were distributed via email to the directors of all NASP-approved school psychology graduate programs (n=189). In the email, program directors were asked to forward an *intern survey* link to current interns in their program. The objective was to obtain information from school psychology programs and interns from across the country.

Forty-two participants completed the online faculty survey (a response rate of 22%). Participating programs offered masters (39%), educational specialist (66%), and doctorate (42%) degrees. Sixty-three interns completed the intern survey. The response rate for the intern survey is unknown because program directors were not required to report whether or not they forwarded the survey to interns. The majority of respondents were in specialist-level programs (69%), compared to 20% masters students and 11% doctoral students.

Instrument

The survey was modeled from an instrument developed by the primary researcher in conjunction with researchers in the Center on Brain Injury Research and Training (C-BIRT) at Western Oregon University for another study assessing teacher preparation program coverage of TBI and teacher knowledge and skills related to TBI.

Prior to the online distribution, the original surveys were piloted with a group of faculty members at the University of Dayton and Western Oregon University who provided feedback regarding the items and formatting. Based on this feedback, modifications were made to the wording of items and the structure of the survey. The final version of the faculty survey was comprised of two sections: demographics (e.g., degree programs offered, respondent position at the university, and type of university) and questions related to how TBI is covered in the program. Participants indicated how the topic of TBI was covered in their program and then described the extent of that coverage. Finally, participants were asked to list texts and other resources that were used in their courses that pertained to TBI. The faculty survey was designed to take approximately five minutes to complete.

The final version of the intern survey consisted of relevant demographics (year in program, degree program) and the same questions the faculty answered related to how TBI was covered in their program, extent of coverage, and texts and resources used.

Interns then reviewed nine professional activities related to TBI (see Table 3) and checked the activities they felt qualified to perform. They then responded to the following open-ended question: "What are your primary concerns about providing services to students with TBI?"

Procedure

The faculty survey was distributed to school psychology program directors via an email link using SurveyMonkey, an online survey distribution tool. In the email, program directors were asked to forward the intern survey to current interns. Surveys were sent in April to ensure that interns had obtained almost a complete year of field experience. A follow-up reminder was emailed to program directors two weeks later. Prospective participants who did not want to complete the survey could delete the email. Each email contained an introduction to the study, explanation that completion of the survey served as informed consent, and a statement that completion of the survey was voluntary. Participants were informed in the email that they could contact the researcher's graduate assistant for a free Powerpoint presentation on TBI that could be used in their classes and shared with their students. The anonymous survey results were archived in the SurveyMonkey database that is managed through the Teacher Education Department at the University of Dayton.

Results

Most of the survey questions allowed participants to select one or more options, creating categorical variables and yielding percentages of participants selecting various choices. Responses to the open-ended questions were analyzed qualitatively, using a content analysis. The identification of themes was conducted by the primary researcher and a research assistant.

TBI Coverage in Program

Faculty members and interns were asked "How is the topic of TBI covered in your program?" and were instructed to check one answer that best described coverage. Table 1 presents the responses to this question.

Table 1
How TBI is Covered in School Psychology Programs

Response	Faculty (n=42)	Interns (n=61)
A specific course devoted to TBI	0%	2%
The topic is covered in parts of multiple courses	55%	48%
The topic is covered in one course	33%	38%
The topic is not covered at all	12%	13%

Respondents were then asked the title of courses in which TBI was covered and the extent of TBI coverage in the courses (e.g., within part of one class period, over one to two full class periods, or over more than two classes). If TBI was covered within part of one class period, participants were asked to estimate how many of the class period minutes were devoted to TBI. As shown in Table 2, independent raters summarized and categorized the responses independently at 100% inter-rater agreement.

Table 2
Extent of TBI Coverage

Response	Faculty (n=34)	Interns (n=44)
More than 2 classes	26%	11%
Over 1-2 classes	29%	23%
Within one class	44%	66%
<i>If in one class....</i>		
Less than 10 minutes	0%	19%
11-30 minutes	0%	6%
31-60 minutes	0%	19%
61-90 minutes	75%	44%
More than 90 minutes	25%	12%

Preparedness to Work on TBI Cases

Interns were asked the question, "Which of the following do you feel qualified to do at the present time?" regarding a variety of TBI educational related services and these responses are summarized in Table 3.

When asked about their primary concerns regarding providing services for students with TBI, most intern participants echoed the items in Table 3 related to perceived preparedness for various roles. A predominant theme was a perception that interns needed additional training and professional development. Another strong theme was concern about transition services (e.g., out of hospital or rehabilitation back to school). Almost a fourth of participants reiterated that they did not feel prepared to educate school staff and provide resources related to TBI.

Discussion

This study provides evidence that additional TBI instruction is needed for school psychology graduate students. Results are consistent with Walker et al.'s (1999) study, which found few programs offering adequate preparation related to working with students with TBI. In fact, program faculty themselves might be uneducated about TBI.

Table 3
Perceived Preparedness

Response	Percent of Interns (n=49)
Be part of a multidisciplinary team serving a student with TBI	86%
Serve as an IEP manager for a student with TBI	25%
Provide educators with information about TBI	47%
Provide students in my school with information about TBI	39%
Provide assessment services for students who display signs of TBI	63%
Provide appropriate school-based interventions for students with TBI	51%
Provide accommodations or modifications for students with TBI,	65%
Differentiate between students with TBI and students with other types of disabilities	33%
Monitor classroom behavior and academic progress for students with TBI	84%

The majority of school psychology programs that responded to this survey indicated they provided some degree of instruction on traumatic brain injury. About half of school psychology program directors and interns indicated that TBI content was covered in multiple courses; one third of programs indicated that the topic is raised in only one course. However, 12% of numerous programs indicated that they do not cover the topic at all.

Although there was general agreement between faculty and students on how TBI was covered, there were differences between perceptions of the extent of coverage. While it is not surprising that faculty members in general perceive programs as providing more instruction than overall time reported by interns, the extent of TBI coverage may be inadequate for understanding the unique needs of students who have sustained brain injuries.

At the end of their internship, most school psychology interns did not feel qualified to differentiate between students with TBI and students with other disabilities. Whereas interns generally felt qualified to be part of a multidisciplinary team serving a student with TBI (86%) and monitor behavior and academic progress for students with TBI (84%), it can be argued that these are general skills that all interns should be prepared to perform with all students. It was TBI-specific areas, such as providing TBI information to school staffs, providing TBI assessment services, and providing appropriate intervention for TBI, that yielded very low endorsements (47%, 63%, and 51% respectively). The responses to the open-ended question about primary concerns interns had related to serving students with TBI generally echoed the areas listed in Table 3: Interns did not feel prepared.

Given the rigor of the NASP (2010) Standards for Graduate Preparation of School Psychologists and the emphasis in most approved programs on preparing scientist-practitioners who are knowledgeable about and skilled in addressing learning and behavior problems, it is surprising that there is relatively little instruction and resulting skills in the area of traumatic brain injury. This may be due to competing content demands or lack of program faculty knowledge on TBI. Regardless of the reason(s), recent spikes in attention to TBI in the popular media due to professional athletes' concussions and veterans returning from wars with emotional problems linked to TBIs, are reminders that graduate preparation programs must pay particular attention to this topic and lead school psychologists toward a better understanding of this disability.

Limitations of Study

The results of this study were limited by a few variables. First, the questionnaire was administered by email to school psychology program directors. The directors were

then asked to forward a link with the intern survey to their current interns. Program directors may have chosen to ignore the survey and not forward the intern link; thus, the sample is not necessarily representative of all NASP approved graduate programs in the United States. Although the response rate was low (22%), research has found declining survey response rates across organizational sciences (Anseel, Lievens, Schollaert, & Choragwicka, 2010). Further, the sample is 22% of NASP-approved programs and this is only a portion of all school psychology graduate programs in the United States. The low response rate raises the possibility of volunteer bias (i.e., participants may have had an interest in TBI and therefore responded to the survey); however, the results are consistent with what the researcher has observed in discussions with faculty members and graduates from school psychology programs nationwide.

Additionally, data were pooled so questionnaire results were anonymous. Although this allowed for confidentiality of responses, it did not permit the researcher to "flesh out" or ask follow up questions to any of the respondents. Further, the intern questionnaire was administered while students were still in their training programs, and although it allowed them to reflect upon their entire graduate school experience, it is possible that their first year on the job would significantly increase their confidence in working with students with traumatic brain injuries.

This study examined the extent of TBI coverage in school psychology programs and knowledge and skills interns felt they had at the end of their internships. Other important factors, such as the quality of their instruction and reasons for a lack of coverage, were beyond the scope of this study. Further, intern perceptions of competence in other disability areas were not evaluated. It is possible that interns would report lower perceived skills in providing disability-specific information to educators and students, and differentiating between disability categories for *all* areas of disability. Despite these limitations, the results provide valuable information about the need for adequate instruction on TBI in school psychology programs.

Implications and Future Research

School psychologists are in a prime position to ensure that schools appropriately identify, advocate for, and serve students with traumatic brain injuries of all severity levels. Although professional development workshops, inservices, and continuing education coursework can be helpful, adequate instruction during graduate school is crucial. Some school psychology programs offer specialization areas in neuropsychology, but there is no guarantee that this coursework adequately covers traumatic brain injury, particularly in terms of intervention and progress monitoring.

At least one school psychology program (University of Colorado at Denver) has an elective specialization certificate in TBI, which allows students to pursue this concentrated field of study by taking four school psychology courses that focus on TBI.

This model may be ideal, but it is not feasible for all programs, as they are trying to address competing demands from other essential curriculum areas and meet NASP standards. Although it would be helpful to have a course devoted to TBI and/or a faculty member specializing in neuropsychology or brain injuries, a more realistic approach is a careful curriculum review by program directors to see where and how information on TBI can be better infused throughout the entire school psychology program. This might include more time devoted to TBI in each of the following broad school psychology program courses. (Although each program might apply a different label to these courses, the general content is covered in most programs, especially those that are NASP-approved):

- *Role and Function of the School Psychologist:* Address the role of the school psychologist in identifying and meeting the needs of children with brain injuries of all severity levels. Instructors might use response to *concussions* as an example of how school psychologists can be team leaders in cases that are not headed in the direction of special education, to broaden their role and visibility in the schools (Rossen, 2011).
- *Exceptionalities:* Ensure a clear understanding of the definition of a traumatic brain injury, which can vary from state to state, and subsequent difficulties that may occur.
- *Neuropsychology/Biological Bases of Behavior:* Discuss the biology of a brain injury, the difference between open and closed brain injuries, the parts of the brain affected by TBI, the resulting impairments, etc.
- *Child and Adolescent Psychopathology:* Cover comorbid disorders and preexisting conditions that can increase an individual's vulnerability to sustaining a TBI or having a protracted recovery period.
- *Consultation:* Use a TBI case study to discuss and practice providing appropriate consultation. This is often a unique consultation experience because of the several outside medical and rehabilitation team members who might be involved, as well as the rapidity with which the parents may have been thrown into the world of "experts" and special education (Glang et al., 2004).
- *Assessment:* Even though instruction on specific instruments sensitive to brain injuries (e.g., *Pediatric Test of Brain Injury*) can be useful, many school districts are not going to provide these instruments to school psychologists. Assessment courses can teach how performance patterns on frequently used standardized tests might indicate a TBI. One part of assessment for TBI involves a shift from a "test-driven" approach to a "construct-driven" approach (Hooper, Walker, & Howard, 2001). Assessment courses can also cover how universal screeners

- (e.g., DIBELS) can provide pre-injury baseline and allow for frequent progress monitoring during the recovery period.
- *Counseling*: Include discussion and practice related to the social, emotional, and behavioral problems frequently experienced by individuals with TBI.
- *Intervention*: The literature on evidence-based interventions (EBIs) for TBI is sparse (Ylvisaker et al., 2007), therefore, school psychologist trainees can learn to implement EBIs for students that have been successful for students with similar academic and behavior problems (e.g., executive functioning impairment).
- *Practicum and Internship*: Require observation, consultation, assessment, and/or intervention experience with students who have sustained TBIs.

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