Knowledge and Practices of Disability Services Professionals Who Serve Postsecondary Students with Traumatic Brain Injury

by

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Abstract

This study gathered information about disability services providers' knowledge, experiences, and practices in providing accommodations for postsecondary students with traumatic brain injury (TBI). This study surveyed disability service providers employed in a junior/community college system and one four-year institution in a southeastern state. Results revealed that the population reported adequate experience (one to five years) in the provision of accommodations for students with disabilities; also, they reported similar levels of work experience for students with traumatic brain injury. Participants also reported having received education related to traumatic brain injury derived from both coursework and continuing education. Participants reported higher levels of comfort and competency in meeting with and providing accommodations for students with milder forms of TBI and the lower levels of comfort and competency in meeting with and providing accommodations for students with severe levels of TBI. Participants indicated the need for more information on TBI, secondary effects and co-morbidities, appropriate accommodations, and other topics related to the provision of services and supports for students with TBI. Results suggest that participants are prepared and open-minded professionals: well-educated and experienced providers of accommodations and related services for students with TBI whom they serve. Participants indicated a desire for additional education and training to maintain high professional standards and job performance. Results confirm that expert knowledge, combined with experience developed over time, enable

disability services professionals to meet best practices in the provision of accommodations to postsecondary students with TBI.

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CHAPTER 1: INTRODUCTION

Postsecondary students with traumatic brain injury (TBI) often have complex academic and accommodation needs. Students with TBI report a number of cognitive, time management, social, and academic challenges (Kennedy & Krause, 2009, 2011; Kennedy et al., 2008). These stressors in the postsecondary academic environment make it is necessary that disability services providers have the requisite knowledge base and experiences in order to provide accommodations and related services for students with TBI that enable them to perform to their capacity academically. Therefore, it is instructive to understand disability services providers' educational backgrounds and experiences in working with students with TBI. The literature is replete with research related to the characteristics, needs, challenges, and expectations of students with TBI. However, to date no published studies have been located that address the knowledge, experiences, and practices of disability services providers in relation to students with TBI. To serve students with TBI effectively and efficiently, it is imperative that the knowledge and experiences of disability services providers be congruent with students' needs.

This study sought to gather information about disability services providers' knowledge, experiences and practices in assisting postsecondary students with TBI with accommodations. Expert knowledge of disability services providers concerning the academic and psychosocial needs of students with TBI and the appropriate uses of key accommodations is critical to the overall well-being of the students and their academic retention and success rates (Shaw & Dukes, 2006). For many students with disabilities, appropriate services and accommodations are

straightforward. For students with TBI, services and accommodations may be more complicated and time-intensive. Knowledge and experience inform practice. Practitioners with expert knowledge combined with experience developed over time may provide accommodations tailored to the unique needs of students with TBI of which novice practitioners are unsure. Research may indicate whether education and length/breadth of experience, or some combination result in accommodation choice.

Students with TBI thus have unique academic needs which require the assistance of disability services providers who have specialized knowledge and breadth of experiences (Clark & Kennedy, 2011; O'Rourke, 1999). Disability services providers' experiences with and knowledge of the unique needs of individuals with TBI are key to assuring the implementation of appropriate accommodations that foster success in college.

Approximately 50% of postsecondary students with TBI have contact with disability services (Kennedy et al., 2008). For those who have made contact with disability services, accommodations have been made in accordance with those provided for students with Attention Deficit Hyperactivity Disorder (ADHD) and/or those with learning disabilities (LD's) (O'Rourke, 1999). However, as O'Rourke (1999) has pointed out, students with TBI have unique characteristics which must be taken into account as accommodations are considered. To take O'Rourke's point a step further, it would be more accurate to say that students with TBI may need accommodations similar to those with ADHD and those with LD. In addition, they may have overlapping emotional disorders, such that the need for accommodations further expands and intensifies (Begali, 1997). Consequently, disability services providers who possess a specialized body of knowledge that addresses multiple conditions should be cognizant of various appropriate accommodations for the individual with TBI. Given the complex academic

and psychosocial needs of postsecondary students with TBI, identification of the knowledge and experiences of disability services providers who serve students with TBI is important. In turn, such knowledge can be applied in real-life situations.

Research Problem

Disability services providers who work with individuals with TBI need knowledge of various types of accommodations, as well as specialized knowledge of TBI and the typical co-morbidities and complications. The focus of this study was to address the lack of information related to disability services providers' knowledge of traumatic brain injury, and their experiences and practices for accommodations for students with TBI.

Purpose of the Study

The purpose of this study was to gather information concerning the knowledge and practices of disability services providers who serve with students with TBI. The purpose was further delineated by obtaining information related to service providers' experiences with students with TBI and corresponding accommodations.

Research Questions

The following research questions were developed to address the research problem.

1. What are the demographic characteristics of disability services professionals who provide accommodations to individuals with traumatic brain injury in terms of the providers': (a) gender, (b) type of employment institution or agency, (c) highest degree earned, (d) college major in highest degree earned, (e) position/title within their disability services office, (f) provision of direct services to students with TBI, (g) percentage of students with TBI on respondents' caseload, (h) number of academic courses taken related solely to TBI, (i) number of courses taken with TBI topics embedded, (j) number of continuing education courses taken

covering TBI, (k) types of certification or licensure held, (l) years of experience in providing accommodations for students with disabilities in a disability services office and (m) years of experience providing accommodations for students with TBI in a disability services office?

2. What types of work experiences do disability service providers have in serving persons with TBI in terms of providers': (a) K–12 teaching experience, (b) rehabilitation counseling, (c) physical or occupational therapy, (d) vocational evaluation, (e) psychological counseling?

3. Which of the following academic issues (Fluctuating grade point average, lowered grade point average, course failure, failure due to absences, change of major, change of college, reduced course load, medical withdrawal/resignation, suspension, expulsion, other) have disability service providers encountered in working with students with TBI?

4. What are the sources of referral of students with TBI to a disability services office?

5. What is the preferred method of communication (email, phone, personal meeting) used by students with TBI with the disability services office?

6. Which of the following academic referral services (tutoring, mentoring, academic coaching, life skills coaching, supported education, other) are available on your campus for students with TBI?

7. Which of the following accommodation practices (1.5 extended time on exams, double time on exams, unlimited time on exams, take home exams, word or formula bank for exams, quiet testing environment, scribe for exams, reader for exams, oral testing, alternative testing formats-no scantron, alternative testing formats-short answer, alternative testing formats-true/false and multiple choice, preferential seating, tape recorder, notetaker, extended time on

assignments, copies of in class materials, electronic/digital books, alternative assignments, reduced course load, priority registration and other) provide the most valuable assistance to students with TBI?

8. What is the extent to which students with traumatic brain injury use self-determination behaviors (request accommodations, discuss existing accommodations, change existing accommodations as needed, request assistive technology and associated training, inform me about accommodation issues and difficulties, meet with instructors as issues arise, plan a three-way meeting with instructor and me as issues arise) in the context of receiving postsecondary accommodations through the disability services office?

9. What is the comfort level of disability services professionals when meeting with students with mild, moderate and severe TBI?

10. What is the comfort level of disability services professionals in providing accommodations for students with mild, moderate and severe TBI?

11. What is the competency level of disability services professionals in providing accommodations for students with mild, moderate and severe TBI?

12. What types of training in competency areas related to serving students with TBI (TBI and related effects, accommodations, student self-determination skills, interpretation of reports, student study skills and compensatory strategies, campus referral sources and other) are needed by disability services professionals to better serve students with TBI?

Design of the Study

The design was a descriptive study which investigated the status quo related to the knowledge, experiences and practices of disability services providers who serve students with traumatic brain injury (TBI).

Participants

Participants were disability services professionals employed within Alabama junior/community colleges and one large university who have provided services and accommodations to college students with traumatic brain injury within their respective campus disability services offices. The number of participants was 16 out of 32.

Need for the Study

Postsecondary students with traumatic brain injury often have complex academic and accommodation needs. These students report a number of cognitive, time management, social, and academic challenges (Kennedy & Krause, 2009, 2011; Kennedy et al., 2008). Attentional deficits disrupt reading and listening and limit concentration, thus preventing simultaneous comprehension of lectures and notetaking. In addition, students with TBI often experience frustration and become overwhelmed in the competitive academic environment and with management of their own affairs. It is necessary that disability services providers have the requisite knowledge base and experiences in order to assist these students to perform to their capacity academically. Therefore, this study was designed gather information concerning disability services providers' knowledge, experiences and practices in providing accommodations for students with TBI. The literature is replete with research related to the characteristics, needs, challenges, and expectations of students with TBI. However, to date no published studies have been located that address the knowledge, experiences, and practices of disability services providers for students with TBI. To serve students with TBI effectively and efficiently, it is imperative that the knowledge and experiences of disability services providers be congruent with students' needs.

Significance of the Study

This study was designed to address information about disability services providers' knowledge, experiences and practices in providing accommodations for postsecondary students with TBI. Expert knowledge of disability services providers concerning the academic and psychosocial needs of students with TBI and the appropriate uses of key accommodations is critical to the overall well-being of the students and their academic retention and success rates. For many students with disabilities, appropriate services and accommodations are straightforward. For students with TBI, services and accommodations may be more complicated and time consuming. As an example, in the instance of an individual with complicated mild or moderate-to-severe TBI, it may not be enough to provide accommodations which are tailored to other student populations, such as those with learning disabilities and attention deficit disorders. The conditions are similar and accommodations may very well be the same, but an added level of accommodation may have to occur, especially for students with co-morbidities. These students may require additional services both on and off campus. For the student with a TBI, assistive technology, compensatory strategies and even supported education may be necessary to achieve academic success.

Knowledge and experience inform practice. Practitioners with expert knowledge combined with experience developed over time may provide accommodations of which novice practitioners are unsure. Research may indicate whether education and length/breadth of experience, or some combination result in accommodation choice. Researchers will want to build upon this study by exploring best practices in the provision of accommodations for students with TBI and in identifying the role and function of disability services providers who work with students with TBI. Brain injury support groups may benefit from this type of research in order to

assist students with TBI to achieve optimal educational goals. Due to sheer numbers of returning veterans with co-morbid TBI, veterans groups may also benefit from exploring knowledge, experiences and practices of disability services providers who serve individuals with TBI.

Assumptions

The following assumptions were made concerning the study:

1. The gender, education, training and experience (work, volunteer and personal experience) of disability services providers have directly impacted their understanding of accommodation needs of postsecondary students with TBI and the accommodation services they have provided to these students.
2. Disability services providers understood the survey questions.
3. The proper service providers had access to the survey and responded to the questions.
4. Participants responded honestly to the questions.
5. Students with TBI have disclosed their disability to the disability services office.

Limitations

This study was limited to data collected by means of a survey. Validity of the findings was dependent upon the quality of survey items, adequate return of the survey responses by respondents, the respondents' willingness to answer questions truthfully and to complete the entire survey. Collected data will be limited to disability services providers' experiences with students with traumatic brain injury who choose to disclose their condition to the disability services office. Respondents were limited to those individuals employed within the Alabama junior/community college system and a large, postsecondary public institution in the southeast.

Definition of Terms

[The] Disabilities Services Office (DSO). Postsecondary disability services offices came into being after the passage of the Americans with Disabilities Act (ADA, 1990). They exist to provide accommodations and services that ensure that no student with a disability is denied the benefits of, excluded from participation in or otherwise subjected to discrimination under educational programs and activities. These offices promote independence and inclusion of students with disabilities by providing academic and classroom accommodations and referrals to related services on and off the college campus.

Self-determination. Self-determination is an integral component of transition planning and an essential postsecondary behavior (Wehmeyer & Sands, 1998). Self-determined behavior includes four aspects: autonomy or choice, self-regulation, self-realization and psychological empowerment (Getzel & Wehman, 2005). Self-determined behavior includes: choice making-, decision-making-, and problem-solving skills (both impersonal and interpersonal problem-solving), goal setting and attainment skills, self-observation, self-evaluation and self-reinforcement skills, self-instruction skills, self-advocacy and leadership skills, internal locus of control, positive attributions of efficacy and outcome expectancy, self-awareness and self-knowledge.

CHAPTER 2: REVIEW OF LITERATURE

Chapter one provided an introduction to the study, and included the research problem, the purpose of the study, the research questions, the design of the study, a description of the participants, the need for the study, the significance of the study, assumptions concerning the study, limitations of the study, and a definition of terms used within the study. The literature review will highlight many of the issues faced by postsecondary students who are pursuing a degree in education after traumatic brain injury and will underscore the need for highly educated and experienced disability services professionals who provide accommodations and services for these students.

This chapter will begin with a review of the literature pertaining to the impact of physiological changes resulting from traumatic brain injury and the biopsychosocial and educational impact that these changes have upon students with TBI in postsecondary education. The chapter will describe historical and typical accommodations practices by disability services providers who accommodate postsecondary students with traumatic brain injury. The chapter will review recent research involving supported education for students with TBI in postsecondary institutions. The chapter will end with a rationale for standards for the provision of postsecondary disability services and for the articulation of essential components of disability services providers' job requirements and responsibilities. This section will include an overview of research-based standards and performance indicators which provide guidance for disability

services offices and articulate a best-practice model for the provision of accommodations and services by disability services professionals.

Education and Youth with Traumatic Brain Injury

Approximately two-thirds of individuals who sustain a TBI are between the ages of 15 and 26 years of age (MacLennan & MacLennan, 2008). Among these numbers are military personnel returning from serving overseas with TBIs; these individuals have a mean age of 28 years and a median age of 25 years (American Council on Education, 2010). These figures indicate that many students who are planning to attend, return to or are currently attending college have sustained a TBI. Most of these TBIs are mild with only 10% experiencing persistent post injury symptoms. However, even mild TBI that is considered transient can cause significant disruption in employment, education and relationships (Dennis, 2009; Roberts, 1999).

Landmark disability legislation of the latter part of the twentieth century, including the Rehabilitation Act (1973), the Individuals with Disabilities Education Act (IDEA, 1990), the Americans with Disabilities Act (ADA, 1990), and the Higher Education Opportunity Act (2008), have made postsecondary dreams and goals possible for students with disabilities (Martin, 2001); this includes postsecondary educational goals. Yet, as Wessel, Jones, Markle, and Westfall (2009) have indicated, postsecondary retention and graduation rates of students with disabilities do not compare well with those of their counterparts without disabilities. This is also the case for postsecondary students with traumatic brain injury. As just one example of this, the National Longitudinal Transition Study-2 (2005) reported that students with TBI whose injuries occurred prior to college had substantially lower college graduation rates than peers without disabilities.

The Postsecondary Educational Environment

Students with disabilities transition from an academic environment of entitlement (IDEA, 1990) to one requiring eligibility (ADA, 1990); this means that, in many cases, they must provide documentation to the disability services office at their college. A neuropsychological assessment is most appropriate for students with most levels of TBI because it specifically targets neurological areas of weakness, and cognitive, academic and emotional functioning (Johnson & Lovell, 2011). A comprehensive assessment should include a "profile of abilities across the following seven areas: cognitive processing, communication skills, psychosocial skills, academic skills, psychomotor abilities, vocational goals, and independent living skills" (Cook, 1991; Novack & Salisbury, 2008). For more severe injuries and existing or developing co-morbidities, a multidisciplinary, comprehensive treatment approach is needed to assist the postsecondary student with academic reintegration, including remediation, the use of compensatory strategies, and accommodation for academic functional limitations.

Additionally, these students must engage in components of self-determined behavior as they learn to become their own advocates (Thoma & Wehmeyer, 2005). Self-determination has been identified as one of several factors affecting the retention of college students with apparent and non-apparent disabilities (Belch, 2004; Wessel et al., 2009). Self-determination is an integral component of transition planning and an essential postsecondary behavior (Sands & Wehmeyer, 1996). Self-determined behavior includes four aspects: autonomy or choice, self-regulation, self-realization and psychological empowerment (Getzel & Wehman, 2005). As Wehman and Getzel point out, component elements of self-determined behavior include: choice making-, decision-making-, and problem-solving skills (both impersonal and interpersonal problem-solving), goal setting and attainment skills, self-observation, self-evaluation and self-

reinforcement skills, self-instruction skills, self-advocacy and leadership skills, internal locus of control, positive attributions of efficacy and outcome expectancy, self-awareness and self-knowledge. Problem-solving skills involve finding solutions to puzzles, math problems and anagrams, while interpersonal problem solving involves personal interactions with others. This complex process may be seen in group work and study, dorm living, membership in campus groups and socialization in and outside of class. This type of problem solving is complex, requiring "multiple processing demands" (Getzel & Wehman, 2005). Students with positive attributions of efficacy and outcome expectancy are aware that they can be successful in an endeavor, believe in their ability, and have an understanding of positive outcomes in relation to effort expended.

For most students, the adjustment to college life is difficult. College presents a very different environment for newly independent students, who are faced with managing their own academic programs and living arrangements and with becoming their own personal support system for the first time in their lives. The transition to college has been described as intrapersonal, a "physical manifestation of the individuation-separation process" (Sherwin & Frey, 2002). For students with disabilities, the adjustment can be very traumatic, especially if they do not have adequate academic background and preparatory courses and/or they have not learned advocacy skills (O'Neill, Markward, & French, 2012). For the student with TBI, the problem may be more complex, however, because the executive processes of time management, activity planning and setting of priorities and the very components of self-determination (i.e., self-regulation, self-realization, psychological empowerment and autonomy) may have been impacted, sometimes severely so, by the injury (Bunch, 2010; Getzel & Wehman, 2005). It is instructive to take a closer look at some of the cognitive and psychosocial processes necessary

for postsecondary education and how the student with TBI is impacted by cognitive and psychological symptoms related to the condition.

Characteristics of Postsecondary Students with Traumatic Brain Injury

While there is great variability in injury-related secondary effects and outcomes among students with TBI, there are several characteristics that many of these students have in common in all but very mild injuries without complications (Bunch, 2010). These characteristics can greatly impact the student's academic performance, and include psychosocial difficulties, cognitive deficits and communication difficulties. Most cognitive deficits are persistent and involve executive and self-regulatory functioning, speed of processing and attention, short-term memory and new learning (Cook, 1991; Mozeiko, Le & Coelho, 2010). These deficits overlap and exacerbate each other: for example, slowed information processing may affect attention, causing not only attention deficits but short term memory—working memory—deficits, and, therefore, new learning. Behavioral and emotional changes are also common. This is no surprise as the ventromedial cortex is "highly susceptible to impact injury and functional disruption during a closed head injury event" (van Noordt & Good, 2011). Integration of details concerning the external environment with the person's internal state facilitates affective regulation and its effects upon goal-directed behavior through neural connections. When these connections are disrupted, students with TBI may be unaware of their own deficits and the ways in which TBI has affected their cognition and emotions, and, they may be insensitive to the moods and emotions of others. They may make poor decisions and judgments, be impulsive, and unable to self-monitor. Additionally, many are lacking in goal-directed behavior; this is "characterized by apathy, depression, disinhibition, task impersistency, and general disorganization" (McAllister, 2008).

Cognitive-Communicative Disorders after TBI

Communicative inappropriateness and impairments can be tremendous obstacles to social interactions experienced by individuals with TBI (Turkstra, McDonald, & DePompei, 2001). This is certainly the case in relation to attending college with myriad academic and social communication responsibilities. Frontal lobe pathology due to axonal shearing appears to be the main cause of dysexecutive syndrome and contextual communication deficits. These deficits explain the social dysfunction experienced by so many people with very differing levels of TBI. The Speech-Language-Hearing Association (2005) provides a concise, core statement concerning difficulties in communication following TBI:

> Cognitive-communication disorders encompass difficulty with any aspect of communication that is affected by disruption of cognition. Communication may be verbal or nonverbal and includes listening, speaking, gesturing, reading, and writing in all domains of language (phonologic, morphologic, syntactic, semantic, and pragmatic). Cognition includes cognitive processes and systems (e.g., attention, perception, memory, organization, executive function). Areas of function affected by cognitive impairments include behavioral self-regulation, social interaction, activities of daily living, learning and academic performance, and vocational performance.

Discourse, or the use of language, is a hallmark communication disorder after TBI; it is not purely linguistic—words and sentences are available; rather, it is the use of language which is primarily impaired (Mozeiko, Le, & Coelho, 2010). The complexities of discourse demand linguistic and non-linguistic skills. Monologic discourse is non-interactive and includes procedural (e.g., directions to one's house) and descriptive discourse and story narratives. Conversational discourse is, as it implies, interactive. It is beyond the scope of this paper to

discuss levels of monologic discourse impairments following TBI, but they may be summed up as follows: reduced verbal output and communicative efficiency, decreased global thematic coherence (unity of text or speech), and failure to address implied meanings in narratives. Grammatical complexity and accuracy may be impaired and essential communicative content reduced; organization of semantic content may be impaired. In an effort to produce discourse, a student with TBI may not convey the most important points and may miss those of others. As Mozieko et al. (2010) point out, "…lexical productivity, communicative efficiency, and identification of relevant story information are more susceptible to cognitive deficits following TBI…." Of course, these difficulties have serious ramifications for written and spoken assignments, tests and participation, not to mention for conversing with instructors, administrators and peers.

Conversational Discourse Impairments

Students with TBI may have significant difficulty in conversing with others, specifically with alternating roles between initiating and responding and with topic initiation and management. As a conversational partner, a person is either an initiator or responder. Utterances that illicit responses from others are sometimes required, but more often are a means of keeping a conversation going. Studies have shown that people with TBI are less likely to illicit responses and carry the conversational "load"; they tend to have a "greater number of turns per conversation" (the implication of which is that they may be interrupting the conversation) and their responses may not be adequate to the conversation; they may be "redundant or insufficient" (Coelho, Ylvisaker, & Turkstra, 2005). To summarize, people with TBI show diminished interpersonal communication productivity, efficiency and coherence, reduced essential content and poor organization, poor topic initiation and management and content errors

(Ylvisaker, Turkstra, & Coelho, 2005). These deficits have the capacity to dramatically impact student academic performance and, perhaps most importantly, social interactions at all levels, which are such a significant part of college life. Conversations with faculty, staff and peers may suffer as a result, making it much more difficult to succeed in the college environment.

Executive Cognitive Functioning Difficulties

Executive cognitive functioning is a difficulty often faced by students with moderate to severe TBI, though students with mild TBI may experience it as well. Difficulties with processing, attention, working memory, planning, and reasoning may manifest as a direct result of traumatic brain injury (McCullagh & Feinstein, 2011). Post-TBI auditory manifestations that are not explained by audiometric findings are referred to as central auditory processing disorders. This is viewed as a deficit in neural processing that impacts efficiency and effectiveness of utilization of auditory information. A student who hears in the normal range, but has difficulty processing auditory information is at risk in the academic setting. This is problematic in postsecondary educational settings as information is often provided in an auditory manner in the form of lectures. Slowed processing can interfere with attention, and therefore, short-term and working memory and new learning, and long-term memory (Begali, 1997; Roberts, 1999).

Attention deserves extra consideration because, "…it is a prerequisite for successful performance in other cognitive domains" (Johnson & Lovell, 2011). In the postsecondary student population, selective, sustained, alternating or shifting and divided attention can be impaired (Roberts, 1999). Selective attention is the ability to select important elements upon which to focus. Sustained attention enables the hearer to comprehend and attend to complex and lengthy utterances. Shifting attention enables the hearer to make a change in response requirements. If short-term memory storage is challenged, the person may need supplemental

assistance in order to concentrate long enough to follow and store what is being said. Needless to say, complex discourse in distracting environments (such as lectures in an auditorium environment) may be very difficult to follow. The academic ramifications of this are clear.

Memory deficits are common following TBI and this includes temporary deficits (3–6 months maximum duration) experienced by individuals with mild TBI (Max, 2011; McCullagh & Feinstein, 2011). These include long-term and, more often, short-term memory—including working memory (Begali, 1997). Working memory involves manipulation of information and temporary storage activities, which are directly linked to attention. Long-term memory includes acquired and recalled knowledge, or declarative memory, and learning based on performance, or non-declarative, memory. The latter is less likely to be impacted by TBI, due to the rote, overlearning nature of this type of memory. Declarative memory is both episodic (related to events tied to a specific time and place) and semantic, or that based upon factual knowledge. Memory involves encoding, or processing of information, consolidation or organization and binding of information, and permanent storage. Retrieval involves activation of the stored knowledge. Word retrieval difficulties can slow communication or result in imprecise communication. These processes can be significantly affected by TBI, especially that which involves greater periods of amnesia (McCullagh, 2011). During the period of posttraumatic amnesia, the individual with TBI may not be able to form new memories; therefore, new information is not consolidated in long-term memory. Social conversation and "small talk" may suffer as a consequence since the person cannot remember recent events and conversations.

Executive Functioning and Self-Regulation

Executive functioning and self-regulation (or self-monitoring and self-control) impairments place students with TBI at "unique risk of postsecondary failure" (Kennedy &

Krause, 2011). To restate, cognitive impairments in attention, memory and learning combined with impairments in self-monitoring and self-control increase the risk of failure in a postsecondary environment. Add to this social and emotional impairments and it is clear that students with TBI have unique needs. Three components of executive functioning include task analysis, strategy selection/decision making and strategy monitoring (Borkowski & Burke, 1996). Self-regulation involves interactions among metacognitive knowledge and beliefs, self-monitoring, strategy decision and strategy execution. Self-monitoring is internal feedback which is incorporated into metacognitive content and used to navigate tasks and make a decision concerning strategies. Following execution of strategies, self-monitoring takes place again and the learning cycle continues. Impairments in self-regulation include lack of self-awareness and goal setting, of planning/self-directing/initiating, of self-inhibiting, self-monitoring and self-evaluation, and of the ability to problem solve in a flexible, efficient manner. These skills are essential to a successful college experience.

For many students with moderate or severe TBI, there are additional issues: lack of awareness and initiation. Lack of awareness is the inability to recognize cognitive and other deficits, including poor executive functioning skills (Flashman, Amador, & McAllister, 2011). Lack of self-awareness and the inability to self-evaluate prevents the individual from using compensatory strategies and accommodations because he or she is unaware of the need for them and/or is prevented from learning from his/her experiences and mistakes. Lack of initiation affects a variety of activities, including the setting of goals, and the sustaining of activities (Marin & Wilkosz, 2011). These impairments affect learning and communication adversely, making a severe impact on academics. Unfortunately, many executive functioning deficits are not always clearly revealed through standardized testing, and it is imperative that the examiner

use contextual, situational assessments in addition to standardized tests, in order to gauge a person's academic and social functional limitations, prior to reintegration (O'Rourke, 1999).

Pragmatics or Social Competence

The term "pragmatics" describes a potential academic problem for students with TBI, which is often shared by their peers with Asperger's. Pragmatics may be defined as a skill set required for competence in naturalistic, functional use of expressive and receptive language (Sohlberg & Mateer, 2001). The skills are a necessary part of social and academic life as they are comprised of language usage in a social context dependent upon culture and situation. Correct and flexible use of language and understanding of a speaker's use of language, including figurative language, proverbs and idioms, are components of pragmatics. The ability to make and understand inferences and to read non-verbal social cues, such as gestures ("extralinguistic" communication) and voice and facial expression ("paralinguistic" communication) are "critical to language competence" (Le, Mozeiko & Coelho, 2011).

Individuals with TBI who experience limitations in the ability to infer mental states from social cues also tend to experience deficits in social functioning in daily life (Byom & Mutlu, 2013). This inability to "read" and interpret other's interests is an impairment that affects both expressive and receptive language. The impairment includes difficulties in making inferences about others' mental states. The ability to read and understand other people's emotions, motivations and thoughts and their consequent behavior, referred to as Theory of Mind (ToM), is a subject of research consideration in regard to people with TBI. Theories as to the cause of this impairment involve loss of specific ToM ability due to injury on the one hand, or disruption to broad executive abilities due to diffuse neural network damage on the other. Tests of phonemic fluency (verbal fluency) are highly sensitive measures of executive dysfunction and very

sensitive to the presence of TBI. Henry, Phillips, Crawford, Ietswaar and Summers (2006) used tests of phonemic fluency, as well as pictures of pairs of eyes and faces to measure the responses of participants with TBI and those of a control group. The researchers concluded, "cognitive control processes responsible for mental flexibility and self-regulation may be implicated in reduced ToM following TBI". Regardless of the root cause, research findings to date reveal that those with TBI perform consistently more poorly on ToM tasks than controls (Bibby & McDonald, 2005). This impairment can lead to "serious problems in social functioning" (2006, p. 1627).

Co-Morbidities

Traumatic brain injury commonly co-occurs with psychological/psychiatric diagnoses. Silver, Kramer, Greenwald and Weissman (2001) reported findings from the National Institute of Mental Health (NIMH) New Haven Epidemiologic Catchment Area Study—a community probability sample—which indicate that individuals with a TBI had "a significantly greater number of psychological diagnoses compared to those with no history of injury…." Forty-three percent had "at least one psychiatric diagnosis". In fact, individuals with TBI have a higher than expected rate of pre-injury psychiatric disorders. Fann, Katon, Uomoto and Esselman (1995) reported that the rate has been as high as 50%. In the Catchment Study, individuals with TBI had a "higher proportion of depression, dysthymia, obsessive compulsive disorder, phobias, panic disorder, alcohol or substance abuse/dependence, bipolar disorder, and schizophrenia compared to those without TBI" (2001, p. 941). The most common of these disorders were major depression, substance use disorders and PTSD. These individuals were "significantly more likely" to have had a lifetime history of a suicide attempt, even after researchers adjusted for demographics, quality of life variables and alcohol abuse. Additionally, they were more

likely than their non-injured counterparts to sustain a "poorer quality of life" as measured by physical and emotional health, memory problems and receiving welfare or disability benefits. Results from the Catchment Study are similar to those of many other studies; thus, the need for psychological counseling and therapy that addresses both the injury sequelae and the co-morbid condition is warranted. Unfortunately, many individuals who have sustained a TBI in the past may have current symptoms and problems that they do not associate with the brain injury. Appropriate treatment of both conditions may not occur.

Matriculation Levels/College Experience of Postsecondary Students with TBI

Students with TBI attending college fall into one of three groups: those injured prior to college and entering as freshmen, those injured while attending college, and those injured after college who either need to supplement skills or change careers (Kennedy, 2011; Kennedy, Krause & Turkstra, 2008). Students who have experienced injury prior to college enrollment and have had the opportunity to have an IEP and be part of a transition team, are those most likely to succeed in college (Glang et al., 2008). Students who are in between high school and college with no supports are in danger of academic distress. Students who have experienced some college or who have graduated and been injured after college, and chosen to return to college to complete degrees or to be retrained, are those most likely to understand the academic and social demands of college life (O'Rourke, 1999). While these groups share similar characteristics of TBI, individuals in each group have their own personal needs based on readiness for college, prior college experience, levels of personal and financial support and motivation.

Students who have experienced a TBI report a number of cognitive, time management, social and academic challenges (Kennedy & Krause, 2011, 2010; Kennedy et al., 2008). Attentional deficits disrupt reading and listening and limit concentration, and prevent

simultaneous comprehension of lectures and notetaking. The loss or diminishment of prospective memory, which includes the ability to plan ahead, can result in missed deadlines. The capacity to transfer new learning into long-term memory via short-term, working memory is often impaired and this means that lecture material in the classroom and assigned readings are not retained for utilization during testing. Executive dysfunction affects the student's ability to "plan, organize, initiate and regulate behavior" (MacLennan & McLennon, 2008). Other challenges have to do with everyday routines, which many students without disabilities take for granted: health and activities of daily living, including money management and transportation issues can disrupt attendance and studies in college (Todis & Glang, 2008). On a very personal level, students with TBI often experience frustration and become overwhelmed in the competitive academic environment and with management of their own affairs. On top of this, often, many find their social circle limited and their relationships strained (Kennedy & Krause, 2009).

Traumatic Brain Injury (TBI) and Change

Many students with TBI are faced with tremendous personal change and require unique rehabilitation, counseling and educational assistance (Roberts, 1999). A personal coping style is needed as the student adjusts to negative and positive changes in physical, cognitive and emotional health, particularly if the injury has occurred within 12–36 months (which is the typical recovery window for most individuals with TBI) (McAllister, 2011). Backhouse and Rodger (1999) reported that transition programs and vocational rehabilitation counseling and programs can help students understand the realities of education and work and their own academic and employment strengths and limitations. Many students find the need to change colleges, majors, academic status (full to part-time student), career goals, living arrangements

and employment status in order to "accommodate" the changes that have occurred post-injury (O'Rourke, 1999). Stewart-Scott and Douglas (1998) found that postsecondary students in Australia learned to adjust to changes by enrolling in different courses of study, reducing course loads, altering educational and vocational goals, employing study skill strategies and accessing tutors and other accommodations. Compensatory study skill strategies included the use of a diary/calendar, weekly planners/timetable, lists/written information, highlighting/rewriting notes, summarizing lecture notes, extra repetition of learning information, and rehearsal of mental lists. Special considerations (accommodations) used included extended time and rest breaks during testing, exams in isolation to minimize distractions, take home exams, extensions on assignments and consideration of marks achieved for each subject.

Unfortunately, in Stewart-Scott and Douglas' findings (1998), students reported a decrease in the number of extracurricular activities in which they participated. They also reported changes in the nature of their relationship with peers; it appeared in this particular study that close relationships were not as common for these students. The authors concluded that given the nature of post-TBI cognitive and emotional changes, support and guidance are needed. Academic, personal, independent living and financial assistance may be needed to assist these students in reaching their postsecondary goals. Adjustment counseling and support groups may be beneficial for emotional changes such as "anxiety, lowered self-confidence, reduced motivation and mood swings" (p. 324).

Readiness for the College Classroom: Innovative Simulated College Experience

Traditionally, neuropsychological testing is utilized to determine readiness for college. These tests often include situational, ecological components; yet, many are "removed from the natural contexts of the complex tasks they are sometimes used to predict" (MacLennan &

MacLennan, 2008). Results from this type of testing cannot predict a person's "determination and persistence…used to study and learn college material" (2008, p. 527). MacLennan and MacLennan describe a simulated college experience in a Polytrauma Transitional Rehabilitation Program (16 one-hour sessions, 12 lectures, and 4 examinations), in which a realistic appraisal ("ecological assessment") is made of a student's ability to learn and retain information in a lecture-oriented classroom setting. The lecture content itself "focuses on the nature and effects of brain injury and on study skills". Compensatory study skills strategies such as spaced retrieval (small amounts of information are learned and then systematic retrieval of the information occurs across increasing time intervals) and accommodations are used to assess their benefits during the educational simulation. Spaced examinations are also part of the simulation. This type of situational assessment may be used by the person with TBI and his/her rehabilitation treatment team to decide if college courses will be beneficial. This type of assessment could be also be used as part of a preparatory program for students who are ready to begin or return to their college careers.

Postsecondary Education as a Component of Rehabilitation

For some individuals, the return to school can be considered a component of rehabilitation. With proper post-injury timing, student-educational environmental fit, and financial assistance, some students with TBI can be given the chance to regain cognitive and socialization abilities (Kimes, 2011), acquire remedial assistance, learn compensatory academic strategies and skills, learn to use appropriate accommodations and pursue an education at their own pace in a relatively sheltered environment. For many of these students, this can become a preparatory experience for future employment, as students with TBI learn to compensate and accommodate in the postsecondary educational environment.

Obstacles to Academic Success

The return to work and/or school is a primary productive outcome for many people with TBI (Dawson et al., 2007). Dawson et al. termed this phase, "return to productive activity (RTP)". In this cohort study, four variables were identified as contributing to variance in productivity: acute free recall, pain, depression, and coping behaviors. The researchers concluded that variance in productivity among 46 people with TBI was accounted for by maladaptive coping behaviors and self-reported pain "over and above that accounted for by injury severity" (mild vs. moderate-severe and time to recovery of free recall following post-traumatic amnesia). The researchers concluded that participation in productive activities (employment and/or school) could be influenced by personal and/or environmental factors and wondered if these factors are amenable to change. Cognitive behavioral therapy, coping effectiveness training and a program of chronic pain management are treatment approaches that may reduce depression and anxiety, enhance internalized locus of control and the use of adaptive coping strategies. Interestingly, almost 70% of the men in the study had returned to a productive activity as opposed to the women (just over 30%). This finding bears closer scrutiny.

Remediation, Compensation, and Accommodations

Remediation may not be possible or feasible for the student with TBI. Some four-year institutions and most junior and community colleges provide remedial courses for students. Many students practice a form of remediation when they choose to attend schools with remedial courses and/or programs or when they voluntarily place themselves in courses they have already taken or in courses that are pre-requisites to courses already taken. For many students, though, remediation is not an option and compensatory strategies and accommodations are selected to assist the student with the demands of coursework. Cognitive retraining, computer-assisted

attention training programs, strategic content learning, and memory aids are examples of compensatory strategies and skills acquisition which may enable some students with TBI to achieve greater academic success than would otherwise be possible; yet, they demand a significant amount of training and time (O'Rourke, 1999). Other compensatory external aids such as paper and electronic planners and organizers and lists have been mentioned elsewhere. Compensatory aids extend into the realm of assistive technology (AT). In fact, assistive technology may be classified as compensatory aid and/or accommodation, depending upon its usage. AT may be used for purposes of classroom participation and study and for purposes of testing access and completion of assignments.

Accommodations for Traumatic Brain Injury

Approximately 50% of adults with TBI have contact with disability services (Kennedy, Krause & Turkstra, 2008). It is speculated that the reason for this statistic is that individuals with TBI "may lack initiation, self-advocacy skills, or full appreciation of the academic struggles they will face" (Kennedy & Krause, 2011). Perhaps they have not fully adjusted to neurological, cognitive, and psychological changes resulting from the TBI. Historically, in postsecondary educational settings, accommodations have been made for students with TBI in accordance with those provided for students with ADHD and/or those with learning disabilities (Roberts, 1999). Disability service providers reasoned that students with TBI have executive dysfunction disorders similar to those with ADHD, and slowed processing speed and communication disorders, similar to those students with learning disabilities. However, as O'Rourke (1999) has pointed out, students with TBI have unique characteristics which must be taken into account as accommodations are considered. To take her point further, it would be more accurate to say that students with TBI may present accommodation needs similar to those with ADHD and those

with LD. On top of this, they may present with overlapping emotional disorders, such that the need for accommodations further expands and intensifies. A case in point is the accommodation of a word bank, an unusual accommodation for those with ADHD or learning disabilities, but very appropriate for someone with memory deficits, an attribute shared by many students with TBIs.

Typical accommodations for students with TBI include the use of assistive technology (including word processors and calculators) for classroom participation and testing, alternative assignments and testing formatting, classroom notes, instructor notes or outlines, usage of audio and video tape recorders for lectures and presentations, preferential seating, electronic access to textbooks and electronic screen reading, readers for exams, proctored exams in quiet testing environments, and extended time on exams (Begali, 1997; Kimes, 2011; Roberts, 1999). Additionally, academic supports include tutoring and developmental or organizational classes. As mentioned earlier, the one thing a student with TBI may need more than any other accommodation is the use of a memory bank—a word or formula bank (American Council on Education, 2010). Ironically, this may be the one accommodation that is most difficult to obtain, depending upon the focus of the course being taken. If memorization of material, a formula for instance, is an essential course requirement, then a formula bank is usually out of the question. If the focus is application of the formula, with memorization being secondary, then a formula bank may be acceptable. This scenario greatly depends upon the nature of the course and the instructor's stated learning objectives for her/his students.

The Provision of Postsecondary Services for Students with TBI

There may be an expectation on the part of the student with TBI's family that the college will serve *in loco parentis*, a notion shared by many families of college students with disabilities.

While this is not exactly the case, it is true that it takes a college campus to serve a student with TBI. More so than for students with less severe disabilities, the postsecondary student with a significant TBI (mild-complicated or moderate to severe) will need ongoing academic, social and emotional assistance and interventions from the disability support services office, the academic advisement staff, the housing office, the student counseling office, the office responsible for tutoring and academic counseling and remediation, and possibly the medical department (Roberts, 1999). These students will most likely need assistance in selecting a course of study, choosing a major, and possibly a minor area of study, and taking an appropriate course load (Stewart-Scott & Douglas, 1998). Regular monitoring of student progress and making necessary changes in support services on an as-needed basis are essential for student retention. Advocacy for the student is yet another service that may be needed, particularly in light of the aforementioned difficulties with memory and the need for alternative assignments and testing as well as memory aids, such as word and formula banks. Clearly, the disability services office is a provider of accommodations and related services, not rehabilitation, and for many students with TBI, referrals must be made to rehabilitation, neuropsychology specialists, cognitive, emotional and behavioral intervention planning and treatment and other specialists.

Supported Education

Clearly, there is a need for specialized supports and services for these individuals on the postsecondary campus and a need for these individuals to utilize these services. Virginia Commonwealth University offers a supported education program to assist students with disabilities of all types in managing their education and careers (Getzel & McManus, 2005). Consisting of a three-step model, the program provides initial supports in the Direct Coaching intervention phase. In this phase, students gain self-advocacy skills, begin to understand the

impact of their disability upon learning, become aware of campus and community resources, gain exposure to technology and ways to incorporate it into learning, identify interview and job shadowing experiences, obtain information on the Americans with Disabilities Act and develop disclosure plans for employment. They also begin to plan the transfer of accommodations and compensatory strategies to long-term work settings. In the consultation phase, students learn to utilize campus and community resources, to incorporate learning strategies, accommodations and technology into the learning environment, and to use self-advocacy skills in obtaining services and supports. In the monitoring phase, students are independent, notifying the program on an as-needed basis, and they are fully using accommodations and strategies and are progressing in their studies. Students learn to utilize accommodations and technology and to strengthen academic skills; the latter include writing strategies, reading skills, proofreading strategies, color-coding information, mnemonics, test-taking strategies, time management strategies, organizational strategies, self-evaluation strategies, role playing and study skills.

Similar to the supported education model, Kennedy and Krause (2011) describe a program that integrates self-regulated learning with supported education for college students with TBI using a dynamic coaching model. In this model, an intervention was used that emphasized "functional, academic skills while explicitly requiring students to self-assess their performance and make adjustments…." Studying and learning, time management and relating to others were the specific target areas pertaining to college life.

Kennedy and Krause (2011) further explain the necessity for self-regulation as a college student. Self-regulation includes "generation of task specific goals, planning (including strategy selection, weighing pros and cons), carrying out the plan, self-monitoring performance and making adjustments in the plan." Self-efficacy includes the belief about the ability to be

successful and the ability to identify goals and plan to achieve them. College students who believe in their abilities to achieve goals and be successful tend to be self-regulated learners; they "set specific goals, use more effective strategies to reach those goals, and are more likely to adjust the plan when needed than students without good self-efficacy" (2011, p. 213). TBI can affect these abilities, with the result that a student may have difficulty identifying goals, maintaining self-monitoring and self-control that enable them to make adjustments in strategies when necessary.

Coaching intervention in the study included assistance in helping students to make their metacognitive experiences explicit. The two students in the study were taught self-regulated learning strategies via direct instruction and were provided ways to self-assess their effectiveness and the amount of effort it took to achieve them. During regular coaching sessions, the students were asked to report on use, effectiveness and amount of time and effort taken while using the strategies. As students assessed and reassessed their performance, they also adjusted goals and strategies. Large, complex academic assignments with multiple steps were analyzed, so that steps were identified and a schedule for completion devised. Weekly review sessions analyzing progress on assignments kept the students on track. Every assignment was reviewed each week. Weekly schedules were reviewed and self-assessment of performance with and without accommodations allowed students to determine need for accommodations. Student grades and student and coaches' feedback enabled students to engage in the very real process of refining study and learning strategies. An electronic student portfolio was devised to describe relative strengths and weaknesses, various study and learning strategies and time management tools that had proven effective for their use and that might be used in future courses and assignments. While this program appeared to be somewhat successful for the two students involved in the

study, it is clear that the amount of time involved in this process makes it less than feasible for most disability service providers.

University of Minnesota's Electronic College Survey for Students with Brain Injury

The researchers' purpose in conducting this study was "to document the perceived effects of TBI and academic experiences reported by adults who had attended college after sustaining a TBI…and to describe the services these individuals reported as having received as college students" (Kennedy et al., 2008). The survey contains nine sections, with most responses measured either by Likert scale or by short answers. A demographic section is followed by a descriptive section for type of brain injury and age at occurrence. The next section's questions concern the history of the injury, including hospitalization, consciousness and therapy/ rehabilitation, whether the student took a break from school or work and whether brain injury is the primary disability. Section IV concerns effects of brain injury, including physical, cognitive social and psychological/emotional symptoms and whether therapy has been received. This is followed by a section concerning various types of counseling and therapy received due to brain injury. The next section is a means for the student to describe his/her experiences as a college student since the brain injury. Statements are provided which describe potential problem areas in academics, for instance, "I forget what has been said in class." Section VII addresses services used in college since the brain injury; the section following this one involves rating the services. The final section involves changes the student has made in "life plans, goals, work situation…" since the injury.

Thirty-five students responded. Of these, most reported the need "to review material more" and that others "do not understand their problems". Most reported becoming nervous before tests, forgetting what is said in class, and being overwhelmed in class. Many of these

findings were documented for the first time in research. As might be imagined, students who reported more injury effects, primarily cognitive in nature, also reported more academic challenges. These challenges included changes in classroom and study behaviors. Another finding was that psychosocial factors were related to academic challenges: these factors included depression, anger, mood changes, and trouble with relationships. The authors suggest that psychosocial factors might be less likely to receive attention during transition planning and campus-based services; yet, these factors and their interaction with cognitive impairments should be emphasized in a holistic approach to providing assistance for these students.

The authors described other findings: "more than 80% of the students reported problems with schoolwork, yet less than half had used campus disability services, and 20% claimed to be unaware of these services" (Kennedy et al., 2008). Students had sought counseling or other services for depression but not for other psychosocial changes. The authors conclude that a time gap exists between injury and time of return to college and that transition planning with formal linkages to services does not take place. Students therefore may not know about services and may have "limited awareness of their deficits". When they begin to struggle in class, they may become aware of the need for assistance. The authors conclude that for some students with TBI, there is a reluctance to self-identify. They suggest that two optimal referral points for postsecondary services are at discharge from rehabilitation and at college orientation.

Summation of Postsecondary Students with Traumatic Brain Injury Research

From this review of the literature, it appears that researchers are making use of a combination of qualitative methodologies, including descriptive statistical collection, retroactive data analyses and case histories, to document the experiences and complicated needs of postsecondary students with TBI. Students with TBI in college are a low incidence,

heterogeneous group of individuals. It would appear that large, quantitative studies of this population are needed, but a pressing question has to do with specifics as to how this might be accomplished. A summation of relevant literature may be found in Table 1. The focus of the literature review now shifts to the role and function of postsecondary disability services providers.

Table 1

Research Concerning Post-Secondary Students with TBI

Author (Year)	A. Research Question	B. Sample	C. Independent Variable	D. Dependent Variable	E. Outcomes	F. Limitations
Kennedy, M. R. T., & Krause, M. O. (2011)	A. Objective: To describe a program that integrates self-regulated learning theory with supported education for college students with traumatic brain injury using a dynamic coaching model; to demonstrate the feasibility of developing and implementing such a program; to identify individualized outcomes. B. Two severely injured students with cognitive impairments C. A dynamic coaching model of supported education which incorporated self-regulated learning D. Success in college as defined by this study. Academic and functional treatment effects as measured by standardized test scores, course grades, GPA, credits completed versus credits attempted as well as aspects of self-regulated learning (e.g., number of reported self-regulated academic strategies and strategy specificity ratings). And academic, work and living decisions. E. Coaching support that incorporated self-regulated learning principles appeared to lead to positive outcomes for the two students involved in the study. It is feasible to deliver a hybrid supported education program that is responsive to individual students' needs and learning styles.					

(table continues)

Table 1 (continued)

Author (Year)	A. Research Question	B. Sample	C. Independent Variable	D. Dependent Variable	E. Outcomes	F. Limitations
		F. Self-selected sample; potential bias. No objective documentation of participant reports. Students with TBI may be unaware of their deficits. This bias would lead to under-reporting of deficits rather than over-reporting. Sample bias: individuals who were unsuccessful in college might be less likely to respond. Those with TBI might be less likely to respond.				
MacLennan, D. L., & MacLennon, D. C. (2008)	A. The implied research question was the extent to which the simulated college experience (as described in the research) predicts whether people with TBI will be able to successfully perform postsecondary coursework.	B. Three people with TBI seeking to attend postsecondary educational institutions	C. Simulated college program	D. Three college student's performance on the simulated experience	E. Performance within the college simulation was "predictive of both successful and unsuccessful performance in college."	F. Small number of participants and case series methodology. The setting is an acute care rehabilitation setting; therefore follow up with patients is difficult because they leave to go home, usually to another state. This particular experience is lecture-based, with TBI as the coursework emphasis. This limits information as to potential success in core areas of study. Other types of educational experience (seminar) and other course subjects are needed.
O'Rourke, C. (1999)	A. 1st phase of research: What are the enrollment trends of students with traumatic brain injury attending Ontario community colleges? What learning deficits do the students bring to the learning environment? What are the key aspects of service delivery from the perspective of service providers in Ontario colleges? 2nd phase of research: By way of two case histories, what are the key issues confronting two students with TBI enrolled in an Ontario community college?					

(table continues)

Table 1 (continued)

Author (Year)	A. Research Question	B. Sample	C. Independent Variable	D. Dependent Variable	E. Outcomes	F. Limitations
	B. 14 of 22 English-speaking community college disability service providers in Ontario; case studies: two students with TBI enrolled in the 1996-1997 academic year in an Ontario community college C. N/A D. N/A E. Provides information concerning accommodations and support systems needed by the community college students with TBI in this study; provides information concerning two students with TBIs attempting to attain an education in a community college in Ontario. F. Descriptive information and case histories while informative cannot necessarily be generalized to other student populations					
Todis, G., & Glang, A. (2008)	A. What are the effects of different high school experiences and levels of transition support during high school on postsecondary outcomes for students with TBI? What are the postsecondary experiences of students with TBI, and how are these experiences influenced by internal and external factors? What internal, person-centered factors and external, environmental factors are important to study in the area of transition, and how should they be measured? B. Quantitative study: 89 youth with TBI living in Oregon and Washington. Qualitative study: a total of 33 young adults and their parents (a subset of the larger sample). Selective sampling was used over the first two years of the project. Later, purposive sampling was used. The authors refer to this study as a qualitative longitudinal design. C. N/A D. N/A					

(table continues)

Table 1 (continued)

Author (Year)	A. Research Question	B. Sample	C. Independent Variable	D. Dependent Variable	E. Outcomes	F. Limitations
	E. High school programs for the particular students in this study did not adequately prepare them for postsecondary education; they were tracked with modified diplomas; special education teachers were not prepared to meet their needs; students were pushed to graduate on time and were thus unable to link themselves with community-based supports and training in independent living skills. Those students who did enroll in college found that college was appropriate but challenging. Findings from the study have implications for the design and interpretation of quantitative research in the areas of transition and childhood TBI. F. The study was limited to a small sample of mostly white participants in the Northwest; the sample was selected to explore particular characteristics and experiences and is not representative of the overall population of young adults with TBI in the 17-23 year age group.					
Wehman, P., Targett, P., Yasuda, S., McManus, S., & Briel, L. (2007)	A. Literature review related to return to work and school post-TBI for minorities; Two case studies B. Part 1: Review and comparative analysis of three research studies; Part 2: two case studies of two students C. N/A D. N/A E. Identification of important issues for the focus of future work in this area F. Literature review and case histories provide current information and guidance for future research.					

Standards and Skills of Postsecondary Disability Services Providers

Disability services offices have experienced rapid growth and change, beginning with the impact of major disability legislation occurring in the 1990s. Enrollment of students with disabilities rose to a high of 17% in 2000 (National Center for the Study of Postsecondary Educational Supports [NCESPES], 2002). However, there were no standards for provision of postsecondary disability services or essential components of the disability services provider's job within the legislation (Guzman & Balcazar, 2010). In addition, disability services professionals derived their education and training from a number of disciplines, and did not receive standardized training (Brinckerhoff, Shaw & McGuire, 1993). Clearly, standards for the profession were needed.

Association on Higher Education and Disabilities (AHEAD) Program Standards

Standards were developed by the Association on Higher Education and Disability (AHEAD), a professional membership organization for disability services providers and for individuals involved in the development of policy and the provision of quality services to meet the needs of persons with disabilities involved in all areas of higher education (AHEAD, 2015). Program standards were developed and approved by members of AHEAD in 1999 and published in 2001 (Shaw & Dukes, 2001). These standards were supplanted by new standards in 2004 and published in 2006 (Shaw & Dukes, 2006). The standards are research-based, informing the public of the ethical, professional and programmatic requirements within the disability services framework, and they provide "clear indicators' of the essential requirements or functional skills needed to perform the disability services provider's job (Guzman & Balcazar, 2010).

The AHEAD program standards and performance indicators describe the breadth of skills and knowledge required of disability services professionals. They are meant to enhance service

provision for students with disabilities by directing program evaluation and development efforts, improving personnel preparation and staff development, guiding the formulation of job descriptions for disability services professionals, describing appropriate practice and expanding vision of postsecondary disability services (Shaw & Dukes, 2006). The standards include the following areas: consultation/collaboration, information dissemination, faculty/staff awareness, academic adjustments, counseling and self-determination, policies and procedures, program administration and evaluation, and training and professional development.

Standard 1. Consultation/Collaboration. Standard one includes two performance indicators: campus advocacy for students with disabilities and disability representation on campus.

Standard 2. Information Dissemination. Standard two focuses upon campus-wide communication concerning disability access. This area includes three performance indicators: electronic and print information, service that provide access to the campus community and information concerning campus resources.

Standard 3. Faculty/Staff Awareness. Standard three emphasizes the critical role faculty play in understanding the needs of students with disabilities and in being aware of services provided by the disability services office. Performance indicators include: informing and consulting with faculty and administration about accommodations, compliance with legal responsibilities and instructional, programmatic and curriculum modifications, providing disability awareness training for faculty, administration and staff, and providing information to faculty about services for students with disabilities.

Standard 4. Academic Adjustments. Standard four addresses the determination and provision of appropriate academic accommodations (termed “academic adjustments”).

Performance indicators include maintenance of records, determination of appropriate accommodations and services and collaboration with faculty to ensure that reasonable accommodations do not fundamentally alter the program of study.

Standard 5. Counseling and Self-Determination. Standard five focuses upon using a service delivery model that encourages students with disabilities to develop independence. This is the sole performance indicator for Standard 5.

Standard 6. Policies and Procedures. Standard six pertains to the development and revision of written policies and guidelines. Performance indicators include procedures for determining and accessing reasonable accommodations, institutional rights and responsibilities, student rights and responsibilities, confidentiality of disability information and complaint and conflict resolution.

Standard 7. Program Administration and Evaluation. Standard seven pertains to student services; performance indicators include mission-based services, coordination of services through a full-time professional, collection of student feedback, collection of data related to use of disability services, program evaluation, fiscal management and adaptive equipment purchase and assistance.

Standard 8. Training and Professional Development. Standard eight includes three performance indicators that stress the provision of staff with on-going opportunities for professional development, the delivery of services by personnel with training and experience working with college students with disabilities, the assurance that staff can understand and interpret assessments/documentation and the assurance that personnel adhere to and apply relevant codes of professional ethics (e.g., AHEAD) when faced with professional dilemmas.

In conclusion, several points must be made concerning the AHEAD program standards and performance indicators. First, the program standards and performance indicators represent fundamental service components and parameters for essential postsecondary educational services for students with disabilities. These parameters allow disability services providers to evaluate their own programs and approaches for students with disabilities. Second, the standards and performance indicators are intended for all postsecondary institutions. Third, the standards and performance indicators provide guidance for disability services providers in meeting the letter of civil rights law in the provision of postsecondary accommodations for students with disabilities. Institutions that meet these standards and performance indicators are providing a level of support absolutely necessary for students with disabilities to obtain equal access to postsecondary education. The implication is that disability services providers can and should go above and beyond the standards and performance indicators in providing disability services. It is up to disability services practitioners to meet the spirit of disability law by tailoring accommodations and related services to the unique needs of students with disabilities, including those with TBI. Several AHEAD standards and performance indicators are especially relevant to this study: knowledge of campus-based resources to enhance college life for students with TBI, collaboration with faculty and staff concerning these students, the provision of appropriate accommodations for students with TBI, the support of student self-determination behaviors and student acquisition of self-determination skills, and training and education about TBI and related topics, are incorporated into questionnaire items within this study.

CHAPTER 3: METHODS AND PROCEDURES

Chapter one presented an introduction to the research problem and background information. In addition, Chapter one included the stated research problem, purpose of the study, twelve research questions, research design and participant descriptions, the need for and significance of the study, assumptions pertaining to the study, limitations of the study and definition of terms within the study. Chapter two presented a comprehensive review of relevant literature and related research. Topics within the literature review included education and youth with traumatic brain injury, the postsecondary educational environment, academic characteristics of postsecondary students with traumatic brain injury, college experiences of students with TBI, accommodations and services for postsecondary students with TBI, recent research pertaining to postsecondary students with TBI and programmatic standards and performance indicators that form a best-practices model for postsecondary disability services providers. This chapter covers the methods and procedures used to complete the study.

Population and Sample

The population was composed of professionals who are employed in disability services offices in postsecondary institutions of higher education within the junior/community college system and within one four-year institution in a southeastern state of the United States. These were professionals employed in positions that allow them to provide services and accommodations to college students with traumatic brain injury.

Instrumentation

A twenty-six item questionnaire was used to collect information pertaining to demographic, education and work experience, and professional practice. One item addressed additional training needs. The questionnaire was developed for alpha testing prior to the beta testing. Alpha testing helps to minimize or eliminate errors, inconsistencies, redundancies, and unclear items prior to finalizing an instrument for distribution for a field (beta) test. This stage of pre-testing "is designed to elicit suggestions based on experience with previous surveys and knowledge of study objectives" (Dillman, 2007).

Alpha testing included a review of the questionnaire by a panel of experts. The panel of experts included four individuals. Three of the panel members were highly-experienced disability services professionals having served for three or more years in a disability services office. These professionals had extensive knowledge, experiences and practices in the provision of accommodations to postsecondary students with disabilities, including students with traumatic brain injury. These three individuals provided input for questionnaire content. The fourth panel member was an expert research methodologist. This individual provided overall guidance and direction for item construction, questionnaire format, scoring, and face validity. The panel of experts provided feedback on the appropriateness, clarity, breadth, format, and scoring of questionnaire items. Their comments and suggestions were incorporated into the final questionnaire that was distributed to respondents.

Questions one through thirteen on the questionnaire collected demographic information about disability services professionals. These questions asked participants about gender, type of employment institution, highest degree earned, college major, position held within the disability services office, confirmation or denial of direct services, estimate for numbers of students with

TBI seen by the office within the previous year, number of academic courses taken solely related to TBI, number of academic courses taken with TBI embedded in the course material, number of continuing education courses covering TBI, types of licensure or certification held, years of experience providing accommodations in a disability services office and years of experience providing accommodations to students with TBI in a disability services office. Eleven of the items asked respondents to select one response. These items were of the following form:

What is the highest degree you have earned?

___ Bachelor's

___ Master's

___ Specialist

___ Doctorate

One item, Question 7, was open-ended and asked participants to estimate the percentage of students with traumatic brain injury that comprised their caseload over the last year.

Questionnaire items fourteen through twenty-one collected information concerning disability services professionals' experience. For example, question fourteen concerned types of work or volunteer experience with persons with TBI other than experience within the disability services office. This question allowed for multiple responses on a checklist. The checklist was as follows:

Q14 What types of work or volunteer experiences have you had with persons with traumatic brain injury other than the disability services office? Check all that apply.

____ School or teaching experience

____ Vocational rehabilitation counseling

____ Other non-profit organization (e.g., Easter Seals)

____ Psychological counseling

____ Physical or occupational therapeutic setting

____ Vocational evaluation

____ Brain injury support groups or organizations

Five tables were developed for participants to record their responses. Response choices were listed on the rows and frequency of occurrence was listed on the columns. Such tables were developed for several questions (items 19, and 22 through 25) related to disability services providers experiences and professional practices. Respondents were able to choose responses by checking the grid accordingly.

Questions twenty-two through twenty-five pertained to professional practice. Based upon their own professional observations concerning the self-determination behaviors of students with TBI, respondents were asked to rank the extent to which each student's self-determination behavior occurred. For example, item 22 addressed self-determination behaviors. Behavioral choices, such as request accommodations, and discuss existing accommodations were listed in rows, while frequency of occurrence (Occurs Very Frequently, Occurs Frequently, Occurs Infrequently and Never Occurs) were listed as column headings. Respondents were asked to rank responses by checking the grid accordingly.

Respondents were asked to rank perceived level of comfort in meeting with students with each of three levels of TBI (mild, moderate, severe) in item 23. Levels of TBI were listed in rows, while frequency of occurrence (Very High, High, Low, Very Low) were listed as column headings. Respondents were asked to rank responses by checking the grid accordingly. In addition, in items 24 and 25, respondents were asked to rank level of comfort and level of competency, respectively, in providing accommodations to students with each of three levels of

TBI. As in item 23, levels of TBI were listed in rows, while frequency of occurrence (Very High, High, Low, Very Low) were listed as column headings.

The final questionnaire item asked respondents to indicate training that they needed to better serve students with TBI. Respondents were asked to check all that apply from a list of seven items, and they were given an opportunity to write additional items. Following is the list of items: traumatic brain injury and related secondary effects and common co-morbidities, appropriate accommodations, self-determination skills acquisition and techniques, interpretation of neuropsychological and other reports, study skills and compensatory strategies acquisition and techniques, and appropriate referral sources on campus and in the community. Participants were able to enter additional training needs not included in the list of items.

Validity

The panel of experts was asked to check the survey instrument for appropriateness, clarity, breadth, and format of questionnaire items. Panel members agreed that the survey met its intended purpose, which was to gather information concerning disability services professionals' knowledge, experience and practices in providing accommodations for students with traumatic brain injury in a postsecondary educational environment. They added that the survey items appeared to identify the knowledge, experiences and practices of disability services professionals; that is, the items collectively identified what the survey was intended to identify, thus achieving content validity (Ary, Jacobs, & Razavieh, 2002). In addition, the panel agreed that the survey items adequately sampled the knowledge, experiences and practices of disability services professionals who provide accommodations to students with traumatic brain injury in a postsecondary environment. That is, they agreed that the survey items were, "an adequate sample of a defined domain of content that defines the trait being measured" (Bolton, 2001).

The panel was in agreement that items one through seven sampled participants' demographic information: these items were designed to gather information about educational background such as college major and degree attained, and position held in a disability services office, and the percentage of students with traumatic brain injury with whom they have worked. The panel agreed that items seven through thirteen sampled the knowledge base of disability services professionals; these items were designed to gather information concerning participants' academic and continuing education courses covering the topic of traumatic brain injury, certification and licensure held by participants, and number of years of experience in the provision of accommodations to postsecondary students in a disability services office and number of years of experience in the provision of accommodations to postsecondary students with traumatic brain injury.

Panel feedback indicated that items fourteen through twenty-one sampled the education and experience of disability services professionals. These items were designed to gather information about another source of information about TBI: volunteer and employment experiences which expose the professional to individuals with traumatic brain injury. This type of education and experience results in a "working knowledge" of individuals with TBI and an awareness of academic issues that students with TBI face. These items gathered information concerning work or volunteer experiences other than those in the disability services office, types of brain injury in the student population with whom the disability services professional works, numbers of students with TBI seen during an academic year, academic issues encountered in working with students with TBI, referral sources that have sent students with TBI to the disability services office, preferred communication style used by students with TBI, campus-

based referral services to meet the needs of students with TBI, and accommodations providing the most valuable assistance to students with TBI.

The panel agreed that items twenty-two through twenty-five sampled the professional practice of disability services professionals. These items were designed to gather information concerning their practices in the provision of accommodations for students with TBI. These items included the observations of disability services providers with regard to the extent to which students with TBI use self-determination behaviors in the context of receiving accommodations through the disability services office, the disability services providers' level of comfort in meeting with students with TBI, level of comfort in providing accommodations to students with TBI, and level of competency in providing accommodations for students with TBI.

The panel agreed that item twenty-six, the final survey item, was designed to gather information concerning disability services providers' training needs in competency areas related to serving postsecondary students with TBI.

The sampling of these domains, that is, the knowledge, experiences and practices of disability services professionals in the provision of accommodations for postsecondary students with TBI, were identified as critical for effective services to students with TBI. Based upon their knowledge, experiences, and practices in the provision of accommodations for students with disabilities in general and students with TBI in particular, disability services providers are able to make decisions about accommodations for students with TBI by taking into account students' accommodation needs, their self-determination skills, their communication preferences and available campus and community referral sources. Thus, the survey instrument was designed in part to report observations made by disability services providers concerning their own

accommodation and service provision behaviors as well as related behaviors observed in the student population with TBI with whom they work.

Reliability

Cronbach's alpha for the internal reliability of survey items was conducted for all items combined and for each of the four subscales (Demographic Information, Education and Experience, Professional Practice, and Skill Sets Related to Postsecondary Students with Traumatic Brain Injury). The overall alpha for all 16 items combined was .93, indicating that most items were moderately or strongly correlated with one another. An alpha of .70 or greater is generally accepted as a high level of item reliability. Cronbach's alpha for the seven items on the subscale for self-determination behaviors of students with traumatic brain injury was .85. Each of the remaining subscales included three items each. The Cronbach alpha for each subscale was as follows: (a) counselors' level of comfort meeting with students with traumatic brain injury (alpha = .83); (b) counselors' level of comfort in providing accommodations for students with traumatic brain injury (alpha = .88); and (c) counselors' perceived competency level in providing accommodations) (alpha = .86) (Spicer, 2005).

Data Collection

There are twenty-five institutions within the junior/community college system in the state of Alabama. Each institution has an office and/or a designated employment position directly related to the provision of disability services. In many institutions, the position is entitled Americans with Disabilities Act (ADA) Coordinator. There are several institutions in which a dean functions in two positions, that of dean and ADA Coordinator. The Institutional Review Board (IRB) at Auburn University provides guidelines that stipulate that a site authorization letter (see Appendix B) must be obtained for each location where research will be conducted. A

letter for each site was obtained, prior to the questionnaire packet being mailed to that institution. Site authorizations were emailed to the IRB as they accumulated in the researcher's electronic folder. It was determined that the method of dissemination for the survey would be a mailed paper copy of the survey sent through the United States Postal Service with a self-addressed stamped envelope for participants to return the survey.

The researcher downloaded a directory for the Alabama community college system from the worldwide web. This was an alphabetized directory. The mailing address for each institution, and a list of names, positions, departments, and contact numbers of administrators were listed in the directory. The researcher telephoned the dean of students located in the first institution listed in the directory. This dean of a junior college in the southern portion of Alabama was a member of a professional listserv which included the names of either deans or disability services professionals employed within the twenty-five junior/community college system in the state. This listserv was used for the purpose of system-wide academic updates, conference and agenda postings, and professional development topics, questions and responses. The dean proposed to email members of the listserv with an introduction to the researcher and the researcher's work. The dean also asked for a copy of the site authorization letter developed by the researcher to attach to the listserv email. This dean and other professionals emailed the signed site authorization to the researcher. The dean who was a member of the listserv also emailed the listserv addresses to the researcher. The researcher followed up on the listserv email with phone calls and emails to the individuals on the list serv. All members were contacted. The researcher used a script during phone conversations with junior/community college administrators. The researcher used the script to consistently request site authorization and assistance in locating the name of an institution's disability services specialist or coordinator.

The term ‘Americans with Disabilities Act (ADA) coordinator’ was used by many of the junior/community colleges. Once site authorization was approved by a site administrator, the researcher mailed a packet to the disabilities services professional for that institution. The packet included the following: the introductory letter (see Appendix A), the site authorization letter (see Appendix B), the Auburn University-approved Institutional Review Board Letter (see Appendix C), the survey – Disability Services Professionals who Serve Students with Traumatic Brain Injury (see Appendix D), and a self-addressed stamped envelope in which to return the survey to the researcher at Auburn University.

After one month, the researcher contacted the dean of students in the junior college system that had previously sent an introduction to the researcher’s work via the listserv. The researcher requested that the dean email members of the listserv again due to low participation rates. The dean repeated the email to the listserv four weeks after the initial email due to low participation rates. In all, ten site authorizations and surveys were returned from junior colleges.

Data Analysis

The IBM SPSS Version 22 program was used to analyze the data. Data were entered and coded by the researcher. Data were examined for input errors. Basic descriptive statistics were calculated that included the use of frequencies and percentages to summarize the data. Data for all items are reported by frequency and percent.

CHAPTER 4: RESULTS OF THE STUDY

Chapter one presented an introduction to the research problem and background information. In addition, Chapter one included the stated research problem, purpose of the study, twelve research questions, research design and participant descriptions, the need for and significance of the study, assumptions pertaining to the study, limitations of the study and definition of terms within the study. Chapter two presented a comprehensive review of relevant literature and related research. Topics within the literature review included education and youth with traumatic brain injury, the postsecondary educational environment, academic characteristics of postsecondary students with TBI, college experiences of students with TBI, accommodations and services for postsecondary students with TBI, recent research pertaining to postsecondary students with TBI, and an overview of the standards and skills necessary for the provision of quality services by disability services providers in postsecondary education. Chapter three presented the methods and procedures used to complete the study. Chapter three included information concerning the sample for the study, instrumentation, face, content, and construct validity, reliability, and data collection and analysis.

This chapter presents the results of the study. This was a descriptive study that investigated the status quo related to the knowledge, experiences, and practices of disability services providers who serve students with TBI. Disability services providers who work with individuals with TBI need knowledge of various types of accommodations, as well as specialized

knowledge of TBI and its typical co-morbidities and complications. Specifically, the focus of this study was to gather information related to disability services providers' knowledge of traumatic brain injury and their experiences and practices in providing accommodations for students with TBI. Results of the study are presented in narrative and tabular form.

Descriptive Analysis and Results

An initial set of demographic questions (items 1–13) was developed to address characteristics of postsecondary disability services professionals who provide accommodations to individuals with traumatic brain injury seeking accommodations. These questions were designed to provide answers to Research Question One: What are the demographic characteristics of disability services professionals who provide accommodations to individuals with traumatic brain injury in terms of the providers' (a) gender, (b) type of employment institution or agency, (c) highest degree earned, (d) college major in highest degree earned, (e) position/title within their disability services office, (f) provision of direct services to students with TBI, (g) percentage of students with TBI on respondents' caseload, (h) number of academic courses related solely to TBI, (i) number of courses with TBI topics embedded, (j) number of continuing education courses related covering TBI, (k) types of certification or licensure held, (l) years of experience in providing accommodations for students with disabilities in a disability services office, and (m) years of experience providing accommodations for students with TBI in a disability services office?

Thirty-two disability services providers were contacted with a request to take the survey; of the thirty-two, sixteen providers chose to participate in the survey. Seven, or approximately forty-four percent (43.7%) were male, and nine, or approximately fifty-six percent (56.3%) were female. Close to equal numbers of males and females indicated no obvious gender bias. Ten

respondents, or sixty-two and one-half percent (62.5%) of the respondents were employed at the Alabama junior or community college institutional level and six participants, or thirty-seven and one-half percent (37.5%) were employed in a university setting. All but one respondent had either a master's degree or a doctoral degree. Respondents' attainment of higher educational degrees included bachelor's (approximately 6.3%), master's (approximately 81.2%) and doctorate (12.5%). Concerning college majors, educational degrees accounted for approximately one-third, or 31.4%, while counseling, clinical psychology, and rehabilitation counseling accounted for more than one-half, or 56.5%. The remaining degrees were from other disciplines, such as theology and accounting information systems.

Almost ninety percent were either disability specialists or directors in a disability services office. More than one-half, or 56.3%, of the positions held by respondents were as disability specialists; approximately one-third, or 31.3%, were directors or assistant directors of programs. All but two of the respondents, or eighty-seven and one-half percent (87.5%) had provided direct services to students with TBI; 12.5%, or two of the respondents, had not.

Fifteen respondents indicated that they had a caseload that included students with TBI; the average of the reported percentages of their caseloads comprised of students with TBI was 3.52%, with a standard deviation of 3.60. Six respondents reported less than two percent of the students they served had TBI. Five respondents reported five percent or more of the students they served had TBI. The minimum percentage of students served was zero and the maximum percentage was 12.5%. Results may be found in Table 2.

Table 2

Reported Percentage of Caseload Comprised of Students with TBI

n	Percent	Reported Percentage of Students with TBI
1	6.67 %	0.0 %
1	6.67 %	0.5 %
4	26.65 %	1.0 %
2	13.33 %	2.0 %
1	6.67 %	3.0 %
1	6.67 %	3.77 %
3	20.00 %	5.0 %
1	6.67 %	10.0 %
1	6.67 %	12.5 %

Respondents were asked to indicate the number of students with TBI seen during an academic year. The average number of students with TBI on disability services professionals' caseloads was four. Six respondents reported that the number of students with TBI who they saw was two or less. One respondent reported that the number of students with TBI seen by him or her was in the 9–11 range. At least three respondents had three to eleven students with TBI on their caseload. The minimum reported number of students with TBI on a caseload was one and the maximum number was in the nine to eleven range. Results may be found in Table 3.

Table 3

Reported Number of Students with TBI Seen During Academic Year

n	Percent	Reported Number
4	25.00 %	1
2	12.50 %	2
1	6. 25 %	3 to 5
1	6. 25 %	6 to 8
1	6. 25 %	9 to 11
7	43.75 %	unsure

No respondent had taken an academic course related solely to the topic of TBI. Sixty-two and one-half percent (62.5%) of respondents had taken one or more courses with embedded traumatic brain injury information. One-fourth of those respondents had taken three or more courses with embedded TBI information. Thirty-seven and one-half percent (37.5%) of respondents had taken one or more continuing education courses in which the topic of traumatic brain injury was covered. Of these, twenty-five percent reported that they had completed three or more continuing education courses related to TBI.

In response to types of certification or licensure held, two respondents indicated that they are certified rehabilitation counselors, one was a licensed psychologist and one was a certified prevention specialist.

Respondents had a range of years of experience in providing accommodations to all students with disabilities served in their disability services office. Less than half of the respondents, or forty-four percent (44%), had one to five years of experience. Likewise,

respondents had a range of years of experience in providing accommodations for students with TBI served in their disability services office: half of the respondents, or fifty percent (50%), had one to five years of experience in providing accommodations for students with TBI.

Findings for Education and Experience

Findings for education and experience are presented based on results for items fourteen through twenty-one on the questionnaire. These eight research questions were developed to collect information on education and experience. Results of responses for these eight items follow.

The first of these eight items, item fourteen, corresponds with the second research question. This question was: What types of work experiences do disability services providers have in serving persons with TBI in terms of providers': (a) school or teaching experience, (b) vocational rehabilitation counseling, (c) other non-profit organization (such as Easter Seals), (d) psychological counseling, (e) physical or occupational therapeutic setting, (f) vocational evaluation, and (g) brain injury support groups or organizations? Thirty-one percent (31%) of the respondents indicated that they had school or teaching experience, and twenty-five percent (25%) indicated they had been affiliated with a non-profit organization. Twelve and a half percent (12.5%) indicated they had counseling experience.

Sixty-two and one-half percent (62.5%) had worked with students with mild TBI; sixty-nine percent (69%) had worked with students with moderate TBI and fifty percent (50%) had worked with students with severe TBI. Two respondents, or twelve and one half percent (12.5%), were unsure of the type or level of traumatic brain injury that had occurred in the student population with whom they had worked.

The third research question was stated as follows: Which of the following academic issues (fluctuating grade point average, lowered grade point average, course failure, failure due to absences, change of major, change of college, reduced course load, medical withdrawal/resignation, suspension, expulsion, other) have disability service providers encountered in working with students with traumatic brain injury? Respondents were able to choose from a list of academic issues they had encountered while working with students with TBI. They were able to check all issues that applied to their situation and to write about other issues as well. Approximately forty four percent (43.8 %) reported issues with GPA; approximately fifty six percent (56.2%) reported issues with course failure; approximately thirty one percent (31.3 %) reported issues with failure due to absences; approximately forty-four percent (43.8%) reported issues with change of major; seventy-five percent (75%) reported issues with reduced course load and fifty percent (50%) reported issues with medical withdrawal. These results are presented in Table 4.

Table 4

Academic Issues Encountered

Academic Issue	n	Percent	
		No	Yes
Fluctuating GPA	16	81.2 %	18.8 %
Lowered GPA	16	56.2 %	43.8 %
Course Failure	16	43.8 %	56.2 %
Failure due to Absences	16	68.7 %	31.3 %
Change of Major	16	56.2 %	43.8 %
Change of College	16	87.5 %	12.5 %
Reduced Course Load	16	25.0 %	75.0 %
Medical Withdrawal	16	50.0 %	50.0 %
Suspension	16	87.5 %	12.5 %
Expulsion	16	93.7 %	6.3 %
Other	16	87.5 %	12.5 %
Other (Conduct Problems)	16	93.7 %	6.3 %

The fourth research question was: What are the sources of referral of students with TBI to a disability services office? Respondents selected multiple sources when appropriate. Respondents indicated that approximately fifty-six percent (56.3%) of students with traumatic brain injury were self-referrals, whereas fifty percent (50%) were referred by another office on campus and approximately fifty-six percent (56.3) were referred by a health care provider. Fifty percent (50%) were referred by a family member. Approximately forty-four percent (43.8%)

were referred by a related service, such as vocational rehabilitation or Easter Seals, and twelve and one half percent (12.5%) were referred by a brain injury association. One respondent wrote that Veteran's Upward Bound had referred a student with TBI to the disability services office.

The fifth research question asked respondents to indicate the preferred method of communication (email, phone, personal meeting) used by students with traumatic brain injury with the disability services office. Respondents reported that seventy-five percent (75%) of students with TBI usually preferred a personal meeting with a disability services provider, while approximately forty-three percent (42.8 %) sometimes preferred to email, and approximately sixty-four percent (64.3%) sometimes preferred to phone a disability services provider. Results are reported in Table 5.

Table 5

Preferred Communication with the Disability Services Office

Preferred Communication	n	Usually	Sometimes	Never
Email	14	28.6 %	42.8 %	28.6 %
Phone	14	14.3 %	64.3 %	21.4 %
Personal Meeting	16	75.0 %	18.8 %	6.2 %

The sixth research question asked participants to indicate academic referral services (tutoring, mentoring, academic coaching, life skills coaching, supported education, other) that are available on their campus for students with TBI. Of referral services for students with traumatic brain injury on their campuses, one hundred percent (100%) indicated the availability of institutional tutoring, twenty-five percent (25%) indicated available mentoring, and

approximately sixty-nine percent (68.8%) indicated available academic coaching. Twelve and one-half percent (12.5%) indicated life skills coaching was available, and approximately nineteen percent (18.8%) indicated supported education was available. One respondent indicated the availability of a veterans' program.

Another aspect of professional experience was referred to in research question seven: Which of the following accommodation practices (1.5 extended time on examinations, double extended time on examinations, unlimited time on examinations, take home examinations, word or formula bank for examinations, quiet testing environment, scribe for examinations, reader for examinations, oral testing, alternative testing formats-no scantron, alternative testing formats-short answer, alternative testing formats- true/false and multiple choice, preferential seating, tape recorder, notetaker, extended time on assignments, copies of in class materials, electronic/digital books, alternative assignments, reduced course load, priority registration and other) provide the most valuable assistance to students with TBI?

Respondents were asked to choose accommodations that they considered most valuable for students with TBI from a list of twenty-two accommodations. Time and one-half on examinations (62.5%), double time on examinations (50%), quiet examination environment (68.8%), tape recorder (62.5%), note taker (68.8%) and copies of class materials (62.5%) had the highest percentages as valuable accommodations. Other accommodations selected by respondents included the following: word or formula bank (31.3%), reader for examinations (31.3%), preferential seating (37.5%), extended time on assignments (31.3%), electronic/digital books (31.3%) and reduced course load (43.8%). No respondents chose unlimited time on examinations, take home examinations, alternative testing formats-short answer or alternative assignments as valuable accommodations. Results are reported in Table 6.

Table 6

Accommodations which Provide the Most Valuable Assistance

Accommodation	N	Percent
Extended time on examinations (1.5)	10	62.50 %
Extended time of examinations (2.0)	8	50.00 %
Unlimited time on examinations	0	0.00 %
Take home examinations	0	0.00 %
Word of formula bank for examinations	5	31.25 %
Quiet/distraction free testing environment	11	68.75 %
Scribe for examinations	2	12.50 %
Reader for examinations	5	31.25 %
Oral testing	4	25.00 %
Alternative testing formats-no scantron	2	12.50 %
Alternative testing formats-short answer	0	0.00 %
Alternative testing formats-true/false and multiple choice	2	12.50 %
Preferential seating	6	37.50 %
Tape recorder	10	62.50 %
Notetaker	11	68.75 %
Extended time on assignments	5	31.25 %
Copies of in class materials	10	62.50 %
Books in alternate formatting (i.e., electronic/digital books)	5	31.25 %
Alternative assignments	0	0.00 %

(table continues)

Table 6 (continued)

Accommodation	N	Percent
Reduced course load	7	43.75 %
Priority registration	6	37.50 %
Other	1	6.25 %

Findings for Professional Practice

Respondents were asked to respond to four questions (items twenty-two through twenty-five) that pertain to professional practice.

Research question eight asked participants to rank the extent to which the self-determination behaviors (request accommodations, discuss existing accommodations, change existing accommodations as needed, request assistive technology and associated training, inform me about accommodation issues and difficulties, meet with instructors as issues arise, plan a three-way meeting with instructor and me as issues arise) of students with TBI occur in the provision of postsecondary accommodations. Fourteen of sixteen participants (87.5 %) reported that students themselves frequently requested accommodations, whereas all sixteen participants reported that students infrequently or never requested planned meetings with instructors. Results are reported in Table 7.

Table 7

Extent to Which Students with TBI Use Self-Determination Behaviors

Self Determination Behaviors	n	Very Frequently	Frequently	Infrequently	Never
Requests accommodations	16	25.00 %	62.50 %	6.25 %	6.25 %
Discuss accommodations	16	18.75 %	43.75 %	31.25 %	6.25 %
Change Accommodations	16		43.75 %	43.75 %	12.50 %
Request assistive technology	15	20.00 %	20.00 %	33.33 %	26.67 %
Inform DS professional	16	6.25 %	31.25 %	50.00 %	12.50 %
Meet with Instructors	16	6.25 %	62.50 %	25.00 %	6.25 %
Plan Meeting	16			62.50 %	37.50 %

Research question nine pertained to another aspect of professional practice related to meeting with students with TBI. Participants were asked to rank their comfort level in meeting with students with mild, moderate and severe TBI. All participants reported very high or high comfort levels during meetings with students with mild and moderate TBI, whereas several participants reported lower overall levels of comfort in meeting with students with severe TBI. This included low comfort levels reported by six of sixteen (37.5%) of participants in meeting with students with severe TBI. Results are reported in Table 8.

Table 8

Perceived Comfort Level During Meeting

Perceived Comfort Level	n	Very High	High	Low	Very Low
Meeting with Mild TBI	15	60.0 %	40.0 %		
Meeting with Moderate TBI	16	43.8 %	56.2 %		
Meeting with Severe TBI	16	18.8 %	43.3 %	37.5 %	

Research question ten asked participants to rank their comfort level in providing accommodations for students with mild, moderate and severe TBI. Thirteen of fifteen participants (86.75%) reported very high or high comfort levels in providing accommodations to students with mild TBI. Fourteen of sixteen participants (87.5%) reported very high or high comfort levels in providing accommodations to students with moderate TBI; whereas ten of sixteen participants (62.50%) reported very high or high comfort levels in providing accommodations to students with severe TBI. Results are reported in Table 9.

Table 9

Perceived Comfort Level in Provision of Accommodations

Perceived Comfort Level	n	Very High	High	Low	Very Low
Provisions Mild TBI	15	60.00 %	26.75 %	13.25 %	
Provisions Moderate TBI	16	43.75 %	43.75 %	12.50 %	
Provisions Severe TBI	16	25.00 %	37.50 %	37.50 %	

Research question eleven asked respondents to rank their competency level in providing accommodations for students with mild, moderate and severe TBI. Thirteen of fifteen

participants reported very high or high (86.7%) competency levels in providing accommodations to students with mild TBI. Twelve of sixteen respondents (75.0%) reported very high or high competency levels in providing accommodations to students with moderate TBI. Nine of sixteen respondents reported low or very low (56.3%) competency levels in providing accommodations to students with severe TBI. Results are reported in Table 10.

Table 10

Perceived Competency Level in Provision of Accommodations

Perceived Competency Level	n	Very High	High	Low	Very Low
Provisions Mild TBI	15	40.0 %	46.7 %	13.3 %	
Provisions Moderate TBI	16	25.0 %	50.0 %	25.0 %	
Provisions Severe TBI	16		43.7 %	50.0 %	6.3 %

Findings for Training Needs

Research question twelve pertained to training needs related to postsecondary students with traumatic brain injury. Respondents were asked to indicate additional training needs (TBI and related effects, accommodations, student self-determination skills, interpretation of reports, student study skills and compensatory strategies, campus referral sources and other) for serving postsecondary students with traumatic brain injury. Seventy-five percent (75%) indicated a need for traumatic brain injury and related secondary effects and common co-morbidities training, fifty percent (50%) indicated a need for appropriate accommodations training, approximately fifty-six percent (56.3%) indicated a need for self-determination skills acquisition and techniques, fifty percent (50%) indicated a need for training in interpretation of

neuropsychological and other reports, thirty-seven and one half percent (37.5%) indicated a need for study skills and compensatory strategies acquisition and techniques, and thirty-seven and one half percent (37.5%) indicated a need for appropriate referral sources on campus and in the community.

Results of this study may be summarized as follows: respondents were well-educated in areas of educational courses of study that should adequately prepare them to meet the needs of students with disabilities in general and traumatic brain injury in particular. They had taken coursework with embedded TBI information and continuing education courses covering TBI. One-half of the respondents reported adequate work experience (one to five years) with students with TBI. Respondents had most experience working with students with mild and moderate TBI, though one-half reported having worked with students with severe TBI.

Respondents reported academic issues encountered in working with students with TBI. The three issues of reduced course load, course failure and medical withdrawal were associated with reported percentages of 50 % or higher. Respondents reported that students with TBI usually preferred a personal meeting as opposed to telephone or email communication. Respondents reported extended time on examination, quiet testing environment, recording, and copies of materials were chosen as most valuable accommodations for students with TBI. Respondents reported that students with TBI frequently request accommodations but infrequently or never plan meetings with instructors and disability services professionals.

Respondents reported higher levels of comfort and competency in meeting with and providing accommodations for students with milder forms of TBI and the lower levels of comfort and competency in meeting with and providing accommodations for students with severe levels of TBI. Respondents indicated the need for more information on TBI, secondary

effects and co-morbidities, appropriate accommodations and other topics related to the provision of services and supports for students with TBI. A discussion of these results, along with implications for counselor practices are presented in Chapter Five.

CHAPTER 5: DISCUSSION

Chapter one presented an introduction to the research problem and background information. In addition, Chapter one included the stated research problem, purpose of the study, twelve research questions, research design and participant descriptions, the need for and significance of the study, assumptions pertaining to the study, limitations of the study and definition of terms within the study. Chapter two presented a comprehensive review of relevant literature and related research. Topics within the literature review included education and youth with traumatic brain injury, the postsecondary educational environment, academic characteristics of postsecondary students with TBI, college experiences of students with TBI, accommodations and services for postsecondary students with TBI, recent research pertaining to postsecondary students with TBI. Chapter three presented the methods and procedures used to complete the study. Chapter three included information concerning the population of the study, instrumentation, validity, including face, content and construct validity, reliability, data collection and data analysis. Chapter four presented results of the study, including descriptive analysis, and presented findings for education and experience, professional practice, and training needs. This chapter presents a discussion of the research results. Limitations of the study and implications and recommendations for further study are included.

This study addressed information concerning the knowledge, experiences and practices of disability services providers in assisting postsecondary students with TBI with accommodations. Disability services providers who work with individuals with Traumatic Brain Injury (TBI) need

knowledge of various types of accommodations, as well as specialized knowledge of TBI and typical co-morbidities associated with the injury and complications resulting from the injury. The focus of this study was to gather information related to disability services providers' knowledge of traumatic brain injury, and their experiences and practices for accommodations for students with TBI. The study was designed to gather information concerning the knowledge, and experiences of disability services providers in postsecondary disability services offices who serve with students with TBI. The purpose of this study was further delineated by information related to service providers' practices in providing accommodations to students with TBI.

It was anticipated that females would highly outnumber males in this employment area. However, sixteen respondents completed the survey with no obvious gender bias. Results confirmed that this population of disability services professionals is well educated with advanced degrees. This level of education was not anticipated prior to the gathering of results. The amount of formal training in TBI was not anticipated. Traumatic brain injury education was acquired as embedded material in college coursework and as a topic of continuing education.

Not surprisingly, findings indicated that students with traumatic brain injury are a small percentage of disability services providers' caseloads. They are referred from multiple sources. This implies that the general population has enough knowledge concerning students with TBI to refer them to a college support office for assistance. Respondents reported that students with TBI overwhelmingly prefer personal meetings with disability services providers as opposed to email communication and phone calls. This appears a logical choice, given the complexities of their needs. Email cannot convey many nuances that the personal meeting can facilitate.

It was anticipated that disability services providers would feel comfortable meeting with students with mild and moderate levels of TBI but feel less comfortable meeting with students

with severe levels of TBI. Respondents reported that they were comfortable meeting with all levels of TBI. While they reported feeling most comfortable in meeting with students with mild, moderate and severe levels of TBI, respondents reported feeling least comfortable providing accommodations for students with moderate and severe levels of TBI. Disability services providers expressed feeling least competent in providing accommodations to students with severe levels of TBI. These findings are not surprising as providing accommodations for students with moderate and severe levels of TBI can be a complex process, requiring trial and error in the use of accommodations. Often an accommodation must be discarded due to ineffectiveness and a new one added. In addition, students with TBI may not know which accommodations will work for them until they have actually experienced using them for coursework.

As expected, college degrees attained by respondents were predominantly from areas of education and counseling. Respondents were working as disability specialists. In the community college setting, these are known as American's with Disabilities Act (ADA) Coordinators. This is an interesting title, with legal overtones that appears to enforce civil rights legislation. In keeping with the literature, participants reported that students with TBI are low incidence groups among the population of students with disabilities who affiliate with postsecondary disability services offices. Respondents reported that the average number of students with TBI on their caseload was four.

The amount of traumatic brain injury education was surprising. Respondents reported that they received TBI education through embedded course material and continuing education. Interestingly, even though respondents indicated they had received this type of education related to traumatic brain injury, they also indicated the need for more education. Traumatic brain

injury has become a cultural topic of conversation due to high profile incidence of sports and other popular figures sustaining the injury. Newer types of medical imaging are revealing greater physiological information about the neurological impact of these types of injuries (Bigler, 2011). Information concerning physiological, psychological and educational limitations is continually updated and disseminated by the medical community. This leads to the conclusion that respondents acknowledge the complexity of traumatic brain injury and the need to stay updated on the topic.

One-half of the respondents had one to five years' experience in providing accommodations to students with traumatic brain injury. A majority of participants had worked with mild and moderate TBI and one-half had worked with students with severe TBI. This means that the population had a significant amount of experience working with students with TBI of all levels. Two of the respondents were unsure whether they had worked with students with TBI. Perhaps there were no students with TBI on their caseload. However, in keeping with the researcher's review of the literature, it is not surprising that two respondents were unsure as to whether they had worked with students with TBI, since students with TBI often choose to affiliate with disability services offices on the basis of a long-standing learning disability and/or ADHD (Max, 2011; McCullagh & Feinstein, 2011). These conditions may be longstanding, preceding the date of the TBI, or they may be a direct result of the TBI. Many students choose not to acknowledge the TBI, preferring the diagnosis of ADHD or learning disability. Perhaps these diagnoses are preferred to TBI, since the term "brain injury" implies a brain deficiency.

It is not surprising that respondents reported multiple academic issues encountered when working with students with TBI; a majority reported academic issues of reduced course load, course failure and medical withdrawal. A significant number, approximately forty-four percent

(43.8 %) reported lowered GPA and approximately forty-four percent (43.8 %) reported change of major as academic issues. One-half of the respondents reported student medical withdrawal as an academic issue. These findings are in keeping with literature. Identification of these issues may be used in the future by disability services professionals when considering academic accommodations, recommendations and referrals for students with TBI on their caseloads.

More than one-half of the students with TBI on the respondents' caseloads were self-referrals. This is an encouraging result, with the implication that these students knew they needed accommodation assistance to complete their course of study. One-half were referred by another campus office. While this percentage is somewhat encouraging, it points to the need to make additional TBI education available for other campus departments. The disabilities services office should provide campus-wide faculty and staff education concerning traumatic brain injury in order to assist students with TBI to obtain needed student support services. One-half of the students with TBI were referred by a health care provider and one-half by a family member. Less than half were referred by related services. There was redundancy in these data. Interestingly, one respondent mentioned a veteran's organization as a referral source of students with TBI. Clearly, students with TBI are referred from multiple sources, which implies that there is an awareness about TBI and the need for accommodations for postsecondary students with TBI among the general population.

All of the respondents indicated the availability of campus tutoring services for students with TBI, and a majority indicated the availability of academic coaching. Even though tutoring is available for students, it is assumed that these tutors do not have education in tutoring a specific population, such as students with TBI. This finding can become a starting point for

further research that is designed to determine the extent to which campus tutors and coaches are prepared to provide their services to students with TBI.

The literature review revealed a number of accommodations that have proven beneficial for students with TBI. These include: use of word processor/calculator, alternative assignments and testing, classroom and instructor notes, use of recording devices, preferential seating, electronic textbooks, reader for tests, proctored tests and extended time on tests (either time and a half or double time). The study's findings were in accord with the literature review. Respondents selected all accommodations they considered as providing most valuable assistance for students with TBI. Extended time on exams, a quiet testing environment, tape recorder, note taker and copies of class materials had the highest percentages as valuable accommodations for students with TBI. Other accommodations that were chosen included: word or formula bank, special classroom seating, extended time on assignments, electronic/digital books, and reduced course load. No respondents chose unlimited time on exams, take home exams, alternative testing formats-short answer or alternative assignments as valuable accommodations for students with TBI. This information verifies the current knowledge base concerning accommodation practices for students with TBI. The literature review led to the researcher's conclusion that tools that enable retention of material, such as electronic textbooks, and mnemonic devices, such as word or formula banks, are critical for student success in the classroom and on exams. It appears that some of the participants in this study viewed these accommodations as most valuable for students with TBI. Further research should address the extent to which accommodations are actually being used by students with TBI and are being found beneficial by students with TBI.

It was not surprising that respondents reported that students frequently request accommodations. This is a basic but necessary self-determination behavior for a student who chooses to affiliate with a postsecondary disability services office. Likewise, respondents reported that students with TBI very frequently discuss accommodations and change accommodations.

Respondents also reported that students infrequently requested assistive technology. The reasons for this may vary; students may not have had experience with technology or may not be able to articulate needs for technology. If a technology lab is unavailable or if no technology assistant is available in a department, technology may not even be considered as part of the accommodation picture.

Respondents reported that students with TBI infrequently informed disability services professionals about accommodation issues and difficulties. This is not a surprising finding since students with disabilities in general often want to try to resolve issues on their own without assistance from others. Also, students with disabilities often express an unwillingness to report accommodation issues for fear of reprisals by faculty members (O'Rourke, 1999). Respondents reported that students with TBI frequently met with instructors as issues arose. This was an encouraging finding as it points to self-advocacy behaviors of students with TBI that are necessary for postsecondary success. Respondents reported that students with TBI infrequently plan a three-way meeting with instructors and the disability services professional as issues arise. This is not surprising since this type of meeting involves more initiative on the part of students and demands more complex interactions of the student with two other individuals, who may be viewed as having positions of power. Often, students with disabilities will request that the

disability services professional arrange such a meeting, but are hesitant to plan for the meeting themselves.

In summation, respondents reported that students engage in basic self-determination behaviors related to accommodations, such as requesting accommodations and meeting with instructors, but neglect more complex self-determination behaviors such as requesting meetings with both instructors and disability services professionals. Students with disabilities who have histories of IEP meetings, in which they are asked to lead IEP committee meetings, should be prepared to plan meetings with instructors and disability services professionals. Future research should be developed to determine the extent to which postsecondary students with TBI utilize self-determination behaviors during the accommodations process and in the classroom.

While respondents reported higher comfort levels in meeting with students with mild and moderate TBI, they reported lower comfort levels in meeting with students with severe TBI. Respondents reported higher comfort levels in providing accommodations to students with mild TBI. They reported lesser comfort levels in providing accommodations for students with severe TBI. Further research should be designed to determine the extent to which respondents' attitudes impact their ability to provide accommodations for students with TBI.

Respondents reported higher competency levels in providing accommodations to students with mild TBI and slightly less high competency levels in providing accommodations to students with moderate TBI. Respondents reported lower competency levels in providing accommodations to students with severe TBI. This is not surprising, given the complex accommodation needs of students with severe TBI. Again, further research should be designed to determine the extent to which respondents' attitudes impact their ability to provide accommodations for students with TBI.

Three-quarters of the respondents indicated the need for additional training related to TBI and secondary effects and co-morbidities. One-half indicated the need for appropriate accommodations training. Slightly more than one-half indicated a need for self-determination skills acquisition and techniques, and one-half indicated a need for interpretation of neuropsychological and other reports. Clearly, even though respondents have had TBI training in the form of embedded class materials and continuing education hours, they want additional training on the subject. One can only speculate as to reasons for this. Traumatic brain injury has been in the cultural, medical and scientific spotlight for several years, with more and more information appearing in print and on the web about the condition. Medical discoveries about the condition are being made with the newest scanning technologies (Bigler, 2011). As these discoveries are made, it is clear that even what were once considered "mild concussions" can have long-lasting consequences that disrupt education.

Limitations

Participation was lower than expected. Of twenty-five public junior/community colleges contacted within the Alabama Community College system, ten respondents chose to participate in the survey. Perhaps the respondents felt that they did not have information to contribute or perhaps these respondents did not think that they had worked with students with TBI. Perhaps the students with TBI on their caseloads did not disclose TBI as a disability, and chose, instead, to disclose secondary effects from TBI, such as attentional deficits as their disability. One potential participant expressed that she did not feel she could take time to complete the survey because her institution was undergoing a Southern Association of Colleges and Schools (SACS) accreditation. Another potential participant indicated that she felt uncomfortable participating in

research of any kind, despite reassurance that survey results would be completely confidential and survey return and storage of data would be non-identifiable.

The questionnaire distribution was limited to one state in the southeastern portion of the United States. The survey was distributed to the population of disability services providers within one junior/community college system and one postsecondary institution within the southeastern United States.

Implications and Recommendations for Future Research

Given the complex academic and psychosocial needs of postsecondary students with TBI, identification of the knowledge, experiences and practices of disability services providers who serve students with TBI can be applied in real-life situations by disability services providers. These findings may be used to inform disability services providers' practice. Practitioners with expert knowledge combined with experience developed over time should provide optimal accommodations for students with TBI. Future research should explore best practices in the provision of accommodations for students with TBI and identify the role and function of disability services providers who work with students with TBI. Further research should address the extent to which brain injury and veterans support agencies prepare postsecondary students with TBI for the postsecondary academic environment and their own accommodation needs.

The survey was designed to gather information concerning disability services providers' knowledge, experiences and practices in providing accommodations for students with traumatic brain injury. The information gathered described the knowledge, experiences and practices of disability services providers in postsecondary disability services offices who have provided accommodations for students with TBI but did not address underlying explanations or reasons for these practices. Further research should seek to determine the underlying rationale as to

accommodation practices, or the extent to which disability services professionals attitudes determine their accommodation practices.

Future studies should survey the perspectives of students with TBI concerning their affiliation with disability services offices, their accommodations, their self-determination and self-advocacy skills in the process of receiving and using accommodations and their own roles in the accommodations process. This research should add valuable information to the body of knowledge concerning accommodations for postsecondary students with TBI.

Conclusions

Findings from this study indicated that students with traumatic brain injury are a small percentage of disability services providers' caseloads. Yet, it may be the case that providers are serving more students with traumatic brain injury than they realize. Regardless, given their cognitive deficits, students with TBI, particularly those with moderate and severe TBI, will often present the disability services provider with a complex set of accommodation needs. Accommodating students with complex needs can be time-consuming and frustrating for both the disability services provider and the student with complex needs. It is in the best interests of students with the condition to receive optimal accommodations that well-educated and well-informed disability services can provide. It seems that disability service professionals agree to this statement, as they have expressed the need for additional training and education concerning traumatic brain injury and other topics related to the subject.

Findings were encouraging in this regard. Participants were well educated, with higher degrees and appropriately educated, with degrees in subjects which prepare students for work with vulnerable populations. Participants had been prepared for work with this student population primarily by courses with embedded TBI information and by continuing education

courses upon the subject. Even so, they expressed the need for additional information about TBI, thus revealing a willingness to continue the educational process, avoiding intellectual stagnation. Participants indicated they were comfortable with meeting students with all levels of TBI and providing accommodations to students with mild and moderate levels of TBI. They expressed less comfort and competency levels in providing accommodations for students with severe TBI. This is not an unexpected result but can be a goal for improvement by the population. On the whole, participant responses indicated that they are engaging in their employment practices with the knowledge and experiences needed to provide appropriate accommodations for students with TBI.

Recommendations

Results from this study indicated that disability services professionals' ideas and practices concerning accommodation practices for students with traumatic brain injury were outdated. Professionals reported that they considered extended time on examinations, quiet testing environment, recording, note taking, and copies of class materials as being of most valuable assistance for students with TBI. These longstanding accommodations are appropriate for students with many conditions, including learning disabilities, attention deficit disorders and TBI. However, these accommodations alone may not be adequate for many students with TBI. To remedy this situation, disability services providers must consider the impact of TBI upon the individual and use this knowledge to help students determine most appropriate accommodations during the accommodations decision-making process. Academic functional limitations, including frequently-occurring post-TBI memory loss—particularly short term or working memory loss—and/or processing disorders may require additional accommodations useful for completion of coursework, preparation for examinations and participation in the examination

process. This is necessary because preparation for examinations and examination results may be poor for students with TBI.

Atypical accommodations, including the use of word or formula banks during examinations, alternative testing formats, alternative assignments and additional assistance on examinations, such as scribes and readers for examinations, can assist students with memory loss and other neurological impairments in satisfactorily completing coursework and testing. Since institutional accommodations policies have historically circumvented or even denied the provision of such accommodations, disability services providers may not consider them as "legitimate" or appropriate. Yet the literature indicates they are both. Disability services professionals therefore would benefit from additional training in the provision of atypical accommodations for the population of students with TBI.

As the professional organization for individuals involved in policy development "and in the provision of quality services to meet the needs of persons with disabilities involved in all areas of higher education," the Association on Higher Education and Disability (AHEAD, 2015), must take a leadership role in the provision of current and high-quality TBI education and training for the membership. The organization educates the membership on select topics through numerous training webinars and conferences, workshops, listserv information, publications, and consultation. Education, training, and guidance in the provision of appropriate and comprehensive accommodations for postsecondary students with TBI should be ongoing. It is AHEAD's responsibility to promote effective accommodation practices for students with TBI and to ensure that members are aware of novel approaches to accommodations for these students among the membership. Further, AHEAD must promote the practices of universal design for learning (UDL) among the membership. Alternative assessments are a case in point and just one

example of UDL. Faculty and instructor education and training concerning the use of alternative assessment methods for students with memory and processing impairments may make accommodations unnecessary in some instances. For example, a student who cannot adequately remember dates, names and places for a History examination may be given an alternative assessment such as an out-of-class project or an open-book examination, to demonstrate knowledge on the topics covered by the examination. Accommodations may or may not be needed in this case. At the campus level, disability services providers can promote such practices among instructors through education and advocacy.

At the statewide level, and in the particular context of community college systems, TBI training should be supported and mandated by the upper level administration of the state's office of postsecondary education, because top-down change is necessary to counteract monolithically inherent resistance to change. Training should be supported by the state's office of postsecondary education, the vocational rehabilitation office and the brain/head injury foundational support office. Together, these agencies can formulate specifics of a training program and implement one that can be used repeatedly by multiple agencies in the context of preparation for students with TBI for postsecondary education and accommodations (e.g., vocational rehabilitation transition counselors, postsecondary disability services providers, head injury rehabilitation transition program providers). Due to budget constraints, and limited travel funds, webinars may be the best venue for dissemination of information. For today's busy professionals, online asynchronous and modular training ensure convenience and flexibility in the dissemination of information.

Changes in accommodations practices resulting in the implementation of new types of accommodations and alternative methods of ascertaining the knowledge of students can be

facilitated by disability services professionals when working with faculty and members of the administration who are resistant to unfamiliar accommodation methods. Disability services professionals must take an advocacy stance for students with all types of disabilities through the use of education, guidance, training and follow up with their instructors. This includes education and guidance for instructors concerning types of accommodations which may not be typical or familiar and which may be resource-intensive, requiring the services of additional personnel, such as graduate teaching assistants, for assistance, during implementation.

Instructors have many demands upon their time. Disability services offices can create convenient online modular training for basic information concerning brain injury and suggested accommodations. The training modules would introduce TBI and accompanying impaired learning processes and typical and novel accommodations for students with the condition. However, education alone does not suffice in promoting unusual accommodations; disability services professionals must be willing to provide guidance and must plan to meet and follow up with instructors concerning their accommodation practices. Disability services providers must ensure that questions concerning accommodations are answered, that accommodations are meeting the student's needs, and that instructors are correctly providing accommodations in an effective manner.

Disability services professionals further extend advocacy awareness by combatting bias concerning external appearances. Students with TBI often have invisible injuries. They may face instructor biases similar to those encountered by students with learning and psychological disabilities and no apparent disability. Instructors look at such students and surmise there is no disability. Without disclosing confidential information concerning a student, disability services professionals must educate and remind instructors that many disabilities are invisible and may

materialize slowly during the progression of a semester or at certain key points during the semester, such as the first exam, or mid-term examinations or during group work. Disability services providers can help prepare instructors for these possibilities. This type of information should be given to all instructors through training sessions and should be available online in the form of modules and instructional videos.

Advocacy education further extends to the student with a disability. Disability services providers are able to draw upon the advocacy skills of the student, and where those do not exist, provide information about and model behaviors related to self-determination skills and strategies acquisition. During their initial meetings, disability services providers can prepare students with TBI for accommodations meetings with instructors. These face-to-face meetings with instructors are perhaps the most important part of the accommodations process as students inform instructors of their accommodation needs. The interaction between the student and instructor may make a difference in academic outcomes as it sets the tone for all subsequent communication. The meeting between student and disability services professional prior to the first meeting between student and instructor is an excellent time for the disability services professional to prepare the student for dialogue through the use of techniques such as role playing and provision of a script. Both disability services provider and student can role play student and instructor parts in a simulation of the accommodations process, taking turns in each role. A script may be written for the student to follow during the accommodations request meeting. Such "on the spot" training prepares the student for future interactions with instructors, building confidence in communication abilities. This is especially needed for the recently-injured student with TBI who may have had no practice in self-advocacy during Individualized Educational Plan (IEP) meetings in high school. Using actors, these types of activities can be

scripted, filmed and displayed as short video clips shown on the disability services website or as organizational You Tube videos.

In addition to accommodations, a positive campus-wide disability support system must be in place to promote an equitable college education for students with disabilities. Support groups should be part of this system, as they provide socialization, networking and emotional support for persons with various disabilities. Brain injury support groups must be fostered by the campus community and have the backing of administration. There must be system-wide support for the implementation of TBI awareness, education and training programs for faculty, staff and students. In particular, where campus wellness divisions occur, traumatic brain injury awareness and education and training for faculty, staff and students under the *aegis* of these wellness divisions can result in more assistance for students with TBI—more student self-identification of disability, and more referrals to needed services, including disability and accommodations services and other related counseling, medical and therapeutic services on campus and in the community-at-large. Finally, brain injury prevention is most needed on college campuses. Bicycle and pedestrian safety, driving safety, sports safety and alcohol awareness are various topics that should be promoted by college administration; yet these issues are routinely avoided on some campuses.

Finally, in conclusion, certification of disability services providers in the area of brain injury is an area of education that would benefit disability services departments. Currently, brain injury specialist certification is available through the Brain Injury Association of America (BIAA, 2015). Certification is available for persons with 500 hours of verifiable direct experience with an individual(s) with brain injury. This type of certification is meant to ensure that individuals working in the field of brain injury rehabilitation are informed about the “latest

brain injury research, treatment and practice information" (Academy of Certified Brain Injury Specialists, n.d.). The Brain Injury Association of America should consider the impact brain injury has upon postsecondary students and provide education and training for persons who work sporadically with individuals with TBI in a postsecondary educational setting. They should consequently develop and pilot a training program for alternative certification for such professionals. This would allow disability services professionals to remain up-to-date with their knowledge concerning TBI and lead to the establishment and maintenance of best practices in the provision of accommodations and related services to postsecondary students with TBI. Online distance courses in an asynchronous format or modules would allow busy professionals to continue their education at a comfortable pace. This type of certification would lend credibility to the study of TBI in the context of postsecondary disability services.

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Appendix A

Introductory Letter to Postsecondary Disability Services Professionals

Date

Name of Administrator or Disability Services Professional

Dear _____,

I am a doctoral candidate in the Special Education, Rehabilitation, and Counseling (SERC) Department at Auburn University. I also work in Auburn University's Office of Accessibility as a Disability Specialist. As part of a doctoral program dissertation requirement, I am conducting a study entitled, "Knowledge and Practices of Disability Services Professionals who Serve Postsecondary Students with Traumatic Brain Injury". I developed the study to gather information concerning disability services providers' knowledge of Traumatic Brain Injury and their practices and provisions for accommodations for students with Traumatic Brain Injury.

Your institution's Site Authorization letter is enclosed. You will also see the Auburn University approved- IRB Information Letter, which informs you about participation in the research project should you choose to do so. Finally, the survey, itself, is enclosed. I have provided a self-addressed stamped envelope for you to return the survey.

I appreciate your time and kindness in helping with this endeavor.

Sincerely,

Laura "Mimi" Smith, M.S., CRC
Doctoral Candidate, Department of Special Education, Rehabilitation, and Counseling
Disability Specialist, Office of Accessibility
1228 Haley Center
Auburn University, AL 36849
(334) 844-2096 (voice)
(334) 844-2099 (fax)

Appendix B

Site Authorization Letter

Name of Administrator

Please note that Ms. Laura M. Smith, Auburn University Doctoral Candidate, has the permission of name of college to conduct research at this campus for her study, "Knowledge and Practices of Disability Services Professionals who Serve Postsecondary Students with Traumatic Brain Injury". The study is developed with the purpose of gathering information concerning disability services providers' knowledge of Traumatic Brain Injury (TBI), and their practices and provisions for accommodations for students with TBI.

Ms. Smith will mail a letter explaining the survey and the survey form to the Americans with Disabilities Act (ADA) coordinator. The completed forms will be returned to Ms. Smith in a self-addressed stamped envelope that Ms. Smith will include with the letter. She will make a follow up telephone call to the ADA Coordinator two weeks after the survey is mailed. Her plan is to have all surveys mailed by the end of September, 2014. Ms. Smith's on-site research activities will be finished by October 31, 2014.

Ms. Smith has also agreed to provide to my office a copy of the Auburn University IRB-approved, stamped consent document before she mails the survey to the ADA coordinator. She will also provide a copy of any aggregate results upon request.

If there are any questions, please contact my office.

Signed,

Appendix C

Institutional Review Board Information Letter

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

INFORMATION LETTER
for a Research Study entitled
"Knowledge and Practices of Disability Services Professionals who Serve Students with Traumatic Brain Injury"

You are invited to participate in a research study to identify the knowledge and practices of disability services professionals who serve postsecondary students with Traumatic Brain Injury. The study is being conducted by Laura M. Smith, Doctoral Candidate, under the direction of Dr. Everett Martin, Professor and Head, in the Auburn University Department of Special Education, Rehabilitation and Counseling. You were selected as a possible participant because you are a postsecondary disability services professional and are age 21 or older.

What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete a paper survey. Your total time commitment will be approximately 10-15 minutes. If you wish to receive a copy of the results of this study, you may contact the researcher directly to make your request. Contact information for the researcher is provided at the end of this letter.

Are there any risks or discomfort? No risks are associated with participating in this study.

Are there any benefits in participation? If you participate in this study, you can expect to receive a copy of the results upon request. You will receive no other benefits of this study.

Is there compensation for participating? You will receive no compensation for participating in this study.

Are there any costs? No costs are involved for participating in this study.

If you change your mind about participating, you can withdraw at any time by discarding the survey. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Special Education, Rehabilitation and Counseling, or the researcher.

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide by collecting data anonymously. Information collected through your participation may be used to fulfill an educational requirement, published in professional journals, and/or presented at professional meetings. Upon completion of this study, all contact information about you will be deleted from the researcher's files.

If you have questions about this study, please contact Ms. Laura M. Smith at smithl3@auburn.edu or Dr. Marie Kraska, at kraskmf@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

_____

Investigator's Signature Date

_____

Print Name

If you would like a copy of the results of this study, please contact

Laura "Mimi" Smith, M.S., CRC
Doctoral Candidate
Disability Specialist, Office of Accessibility
1228 Haley Center
Auburn University, AL 36849
(334) 844-2096 (voice)
(334) 844-2099 (fax)
Smithl3@auburn.edu (email)

Appendix D

DISABILITY SERVICES PROFESSIONALS WHO SERVE STUDENTS WITH TRAUMATIC BRAIN INJURY

Demographic Information (Questions 1-13)

Q1
____ Male
____ Female
____ Other

Q2 Type of institution by which you are employed

____ Junior or Community College
____ Four year college
____ University

Q3 What is the highest degree you have earned?

____ Bachelor's
____ Master's
____ Specialist
____ Doctorate

Q4 What was your college major in the highest degree earned?
_____

Q5 What is your position in your disability services office?

____ Disability Coordinator or Specialist
____ Assistive Technology Specialist
____ Director or Assistant Director
____ Learning Specialist
____ Evaluator
____ Other _____

Q6 Do you provide direct services to students with traumatic brain injury?

____ Yes
____ No

Q7 Please estimate the percentage of students with traumatic brain injury that comprised your caseload over the last year ? _____

Q8 Number of academic courses you have taken solely related to the topic of traumatic brain injury.

____ 0 courses
____ 1 course
____ 2 courses
____ 3 courses
____ 4 or more courses

Q9 Number of courses you have taken with traumatic brain injury information embedded within the main course topic.

____ 0 courses
____ 1 course
____ 2 courses
____ 3 courses
____ 4 or more courses

Q10 Number of continuing education courses you have taken which covered traumatic brain injury.

____ 0 courses
____ 1 course
____ 2 courses
____ 3 courses
____ 4 or more courses

Q11 What type(s) of certification or licensure do you hold? Check all that apply.
____ Certified Rehabilitation Counselor (CRC)
____ Certified Brain Injury Specialist (CBIS)
____ Certified Brain Injury Specialist Trainer (CBIST)
____ Provisional Certified Brain Injury Specialist (PCBIS)
____ Certified Vocational Evaluation Specialist (CVE)
____ Certified Work Adjustment Specialist (CWA)
____ Certified Career Assessment Associate (CCAA)
____ Licensed Professional Counselor (LPC)
____ National Certified Counselor (NCC)
____ Certified Clinical Mental Health Counselor (CCMHC)
____ National Certified School Counselor (NCSC)
____ Master Addictions Counselor (MAC)
____ Other _____
____ None

Q12 How many years of experience do you have in providing accommodations in a disability services office?
____ Less than one year
____ 1 year to 5 years
____ 6 years to 10 years
____ 11 years to 15 years
____ 16 years to 20 years

Q13 How many years of experience do you have in providing accommodations for students with traumatic brain injury in a disability services office?
____ Less than one year
____ 1 year to 5 years
____ 6 years to 10 years
____ 11 years to 15 years
____ 16 years to 20 years

Education and Experience (Questions 14-21)

Q14 What types of work or volunteer experiences have you had with persons with traumatic brain injury other than the disability services office? Check all that apply.
____ School or teaching experience
____ Vocational Rehabilitation Counseling
____ Other non-profit organization (e.g., Easter Seals)
____ Psychological Counseling
____ Physical or Occupational Therapeutic setting
____ Vocational Evaluation
____ Brain injury support groups or organizations

Q15 What type(s) or level(s) of traumatic brain injury have occurred in the student population with which you have worked? Check all that apply.

____ Mild
____ Moderate
____ Severe
____ Unsure

Q16 Please check the number of students with traumatic brain injury that you saw during the 2011-2012 academic year?

____ 1
____ 2
____ 3 to 5
____ 6 to 8
____ 9 to 11
____ More than 12
____ Unsure

Q17 Which of the following academic issues have you encountered in working with students with traumatic brain injury? Check all that apply.

____ Fluctuating grade point average
____ Lowered grade point average
____ Course failure
____ Failure due to absences
____ Change of major
____ Change of college
____ Reduced course load
____ Medical Withdrawal/Resignation
____ Suspension
____ Expulsion
____ Other _____

18 Which of the following sources have referred students with traumatic brain injury to your office? Check all that apply.

____ Self-referral
____ Another campus office
____ Health care provider or rehabilitation center
____ Family member
____ Related service (i.e., vocational rehabilitation, Easter Seals)
____ Brain injury association
____ Other
_____

Q19 Based upon your experience, what is the preferred method of communication used by students with traumatic brain injury with your office when accommodation issues arise? Check within the appropriate box.

Preferred Communication with a Disability Services Office			
	Usually	**Sometimes**	**Never**
Email			
Phone			
Personal Meeting			

Q20 Which of the following academic referral services are available on your campus for students with traumatic brain injury? Check all that apply.

____ Tutoring
____ Mentoring
____ Academic Coaching
____ Life Skills Coaching
____ Supported Education
____ Other
_____
_____
_____

Q21 Based upon your experience, which of the following accommodations provide the most valuable assistance to students with traumatic brain injury? Check all that apply.

____ Extended time on exams (1.5)
____ Extended time on exams (2.0)
____ Unlimited time on exams
____ Take home exams
____ Word or formula bank for exams
____ Quiet/distraction free testing environment
____ Scribe for exams
____ Reader for exams
____ Oral testing
____ Alternative testing formats-no scantron
____ Alternative testing formats-short answer
____ Alternative testing formats-true/false and multiple choice
____ Preferential seating
____ Tape recorder
____ Notetaker
____ Extended time on assignments
____ Copies of in class materials
____ Books in alternate formatting (i.e., electronic/digital books)

____ Alternative assignments
____ Reduced course load
____ Priority registration
____ Other _____

Professional Practice (Questions 22-25)

Q22 The following items pertain to your observations about the self-determination behaviors of students with traumatic brain injury in the context of your office's provision of postsecondary accommodations.

Using a scale ranging from **Occurs Very Frequently** to **Never Occurs**, rank the extent to which the behavior in each item occurs. Check within the appropriate box.

Extent to Which Students with TBI Use Self-Determination Behaviors				
	Occurs Very Frequently	**Occurs Frequently**	**Occurs Infrequently**	**Never Occurs**
Request accommodations				
Discuss existing accommodations				
Change existing accommodations as needed				
Request assistive technology and associated training				
Inform me about accommodation issues and difficulties				
Meet with instructors as issues arise				
Plan a three-way meeting with instructors and me as issues arise				

Q23 The following items pertain to your perceptions of your work with students with traumatic brain injury.

Using a scale ranging from **Very High** to **Very Low**, rank your perceived comfort level when you meet with students with TBI. Check within the appropriate box.

Perceived Comfort Level in Meeting with Students with TBI				
	Very High	**High**	**Low**	**Very Low**
Meeting students with mild TBI				
Meeting students with moderate TBI				
Meeting students with severe TBI				

Q24 Using a scale ranging from **Very High** to **Very Low**, rank your perceived comfort level in providing accommodations for students with TBI. Check within the appropriate box.

Perceived Comfort Level in Providing Accommodations for Students with TBI				
	Very High	**High**	**Low**	**Very Low**
Provision of accommodations for Students with mild TBI				
Provision of accommodations for students with moderate TBI				
Provision of accommodations for students with severe TBI				

Q25 Using a scale ranging from **Very High** to **Very Low**, rank your perceived competency level in providing accommodations for students with TBI. Check within the appropriate box.

Perceived Competency Level in Providing Accommodations for Students with TBI				
	Very High	**High**	**Low**	**Very Low**
Provision of accommodations for students with mild TBI				
Provision of accommodations for students with moderate TBI				
Provision of accommodations for students with severe TBI				

Skill Sets Related to Postsecondary Students with Traumatic Brain Injury (Question 26)

Q26 I feel that I need more training in the following competency areas related to serving postsecondary students with traumatic brain injury. Check all that apply.

____ Traumatic brain injury and related secondary effects and common co-morbidities
____ Appropriate accommodations
____ Self-determination skills acquisition and techniques
____ Interpretation of neuropsychological and other reports
____ Study skills and compensatory strategies acquisition and techniques
____ Appropriate referral sources on campus and in the community
____ Other _____

Thank you for your participation in this survey!