AHEAD
Association on
Higher Education
And Disability®

107 Commerce Center Drive, Suite 204
Huntersville, NC 28078 USA
www.ahead.org

JOURNAL OF POSTSECONDARY EDUCATION AND DISABILITY • VOLUME *26*(1) • Spring 2013 • Pages 1 - 100

Journal of Postsecondary Education and Disability

Volume *26*(1), Spring 2013

AHEAD
Association on
Higher Education
And Disability®

Journal of Postsecondary Education and Disability

Executive Editor
David R. Parker, *CRG (Children's Resource Group)*

Managing Editor
Richard Allegra, *AHEAD*

Editorial Assistant
Valerie Spears-Jarrell, *AHEAD*

Editorial Review Board

Manju Banerjee - *Landmark College*
Loring Brinckerhoff - *Educational Testing Service*
Stephanie Cawthon - *University of Texas at Austin*
Connie Chiba - *University of California, Berkeley*
Justin Cooper - *University of Louisville*
Lyman Dukes III - *University of South Florida at St. Petersburg*
Sharon Field Hoffman - *Wayne State University*
Joanie Friend - *St. Louis Community College*
Elizabeth Evans Getzel - *Virginia Commonwealth University*
Christie L. Gilson - *Moravian College*
Sam Goodin - *University of Michigan*
Elizabeth G. Harrison - *University of Dayton*
Cheri Hoy - *University of Georgia*
Charles A. Hughes - *The Pennsylvania State University*
Michael John Humphrey - *Boise State University*
Anne L. Jannarone - *University of Arkansas*
Tori Kearns - *East Georgia College*
Kristina Krampe - *Kentucky Wesleyan College*
Sue Kroeger - *University of Arizona*
Tracy Knight Lackey - *Jackson State University*
Jennifer Lindstrom - *University of Georgia*
Ruth C. Loew - *Educational Testing Service*
Pamela Luft - *Kent State University*
Joseph W. Madaus - *University of Connecticut*
Elaine Manglitz - *Clayton College & State University*
Matthew Marino - *University of Central Florida*
Joan McGuire - *University of Connecticut*
Janet Medina - *McDaniel College*
Deborah Merchant - *Keene State College*
Ward Newmeyer - *Dartmouth College*
Christine O'Dell - *University of California, Davis*
Nicole Ofiesh - *Stanford University*
Hye-Jin Park - *University of Hawaii*
Betty Preus - *College of St. Scholastica*
Kelly Drew Roberts - *University of Hawaii at Manoa*
Frank R. Rusch - *The Pennsylvania State University*
Daniel Ryan - *SUNY at Buffalo*
Mary Catherine Scheeler - *Pennsylvania State Univ. Green Valley*
Sally Scott - *University of Mary Washington*
Stuart S. Segal - *University of Michigan*
Stan Shaw - *University of Connecticut*
Mike Shuttic - *St. Gregory's University*
Sharon K. Suritsky - *Upper St. Clair School District*
Tomone Takahashi - *Shinshu University, Japan*
Colleen A. Thoma - *Virginia Commonwealth University*
Audrey Trainor - *University of Wisconsin - Madison*
Mary Lee Vance - *Purdue University - Calumet*
Ruth Warick - *University of British Columbia*
Kristine Webb - *University of North Florida*
Roger Wessel - *Ball State University*
Marc Wilchesky - *York University*
Lee Woods - *Boise State University*

Practice Brief Review Board

Melinda S. Burchard - *Messiah College*
Doris A. Bitler Davis - *George Mason University*
Trey J. Duffy - *Cal Poly San Luis Obispo*
Alberto Guzman - *University of Arizona*
Andrea Henry - *Massasoit Community College*
Martha P. Jax - *Indiana University*
Donna Johnson - *University of Minnesota*
Andrew Jason Kaiser - *St. Ambrose University*
Colleen Lewis - *Columbia University*
Emily Lucio - *Catholic University of America*
Larry Markle - *Ball State University*
Lori R. Muskat - *Georgia School of Professional Psychology, Argosy - Atlanta*
Linda Nissembaum - *St. Louis Community College*
Christine Duden Street - *Washington University at St. Louis*
Jack Trammell - *Randolph-Macon College*
Susan A. Vogel - *Northern Illinois University*
Margaret P.Weiss - *George Mason University*

AHEAD Board of Directors

L. Scott Lissner, President; *The Ohio State University*
Bea Awoniyi, President-Elect; *Florida State University,*
Terra Beethe, Secretary; *Bellevue University*
Michael Johnson, Treasurer; *Monroe Community College - Damon City Campus*
Jamie Axelrod, Director; *Northern Arizona University*
Gaeir Dietrich, Director; *High Tech Center Training Unit, California Community Colleges*
Alberto Guzman, Director; *University of Arizona*
Katheryne Staeger-Wilson, Director; *Missouri State University*
Ron Stewart, Lead Standing Committee Chair; *Managing Consultant, AltFormat Solutions LLC*
Melanie Thompson, Director; *Northern Illinois University*
Mary Lee Vance, Director; *Purdue University - Calumet*
Stephan J. Hamlin-Smith, (ex-officio) Executive Director; *AHEAD*

The *Journal of Postsecondary Education and Disability* is published in accessible formats. Please contact AHEAD to discuss hard copy subscription requests. All members of the Association on Higher Education And Disability receive the *Journal*.

© 2013, The Association on Higher Education And Disability, 107 Commerce Centre Drive #204, Huntersville, NC 28078 USA

Table of Contents

Journal of Postsecondary Education and Disability

Volume *26*(1)

From the Editor 3 - 4
David R. Parker

The Forgotten: Formal Assessment of the Adult Writer 5 - 19
Daniel J. McNair
Toi L. Curry

Identifying College Students At Risk for Learning Disabilities: Evidence for Use of the Learning Difficulties Assessment in Postsecondary Settings 21 - 33
Steven T. Kane
Soma Roy
Steffanie Medina

College Student Disclosure of Non-Apparent Disabilities to Receive Classroom Accommodations 35 - 51
Derrick Kranke
Sarah E. Jackson
Debbie A. Taylor
Eileen Anderson-Fye
Jerry Floersch

Financial Barriers for Students with Non-apparent Disabilities within Canadian Postsecondary Education 53 - 66
Tony Chambers
Melissa Bolton
Mahadeo A. Sukhai

Assessing the Impact of ADHD Coaching Services on University Students' Learning Skills, Self-Regulation, and Well-Being 67 - 81
Sharon Field
David R. Parker
Shlomo Sawilowsky
Laura Rolands

PRACTICE BRIEF 83 - 88
b-Learning in a Distance Learning Graduate Program for Deaf Students
José Reis Lagarto
Ana Mineiro
Joana Pereira

PRACTICE BRIEF 89 - 99
Assessing Compensatory Strategies and Motivational Factors in High-Achieving Postsecondary Students with ADHD
Gary Schaffer

Author Guidelines Inside Back Cover

FROM THE EDITOR
DAVID R. PARKER

Self-determination is a widely researched topic in the literature on students with disabilities. The construct refers to both a process and an outcome. Young adults with higher levels of self-determination are more likely to experience academic success, financial independence, and employment satisfaction. Researchers created a consensus definition by noting that self-determination

> …is a combination of skills, knowledge, and beliefs that enable a person to engage in goal directed, self-regulated, autonomous behavior. An understanding of one's strengths and limitations together with a belief in oneself as capable and effective are essential to self-determination. When acting on the basis of these skills and attitudes, individuals have greater ability to take control of their lives and assume the role of successful adults (Field et al., 1998, p. 115).

While self-determination has been equated with autonomy, it may not be identical to independence. Young adults often think of "independence" as the ability to achieve one's goals completely on one's own. Far too many undergraduates with disabilities hope to succeed in college without partnering with disability service providers, faculty, mental health counselors, or other professionals who could enrich their collegiate experiences with authentic support, sage advice, and access to critical skills and resources. Why is that?

Adults who work with students (with and without disabilities) can promote their self-determination. We do so by modeling our own efforts to accomplish important outcomes, helping students take calculated risks if necessary to pursue goals that are important to them, enhancing their self-awareness and self-acceptance, guiding without controlling, and facilitating students' capacity to learn from their experiences. JPED readers understand just how rewarding – and challenging – this work can be! Students with non-apparent disabilities such as learning disabilities (LD), ADHD, and psychiatric disorders can face additional layers of complexity in becoming more self-determined in college. Their disability may not be diagnosed or well-understood. Their prior history of using accommodations and supports may be limited or even non-existent. They may resist seeking help if they feel stigmatized in doing so. This issue includes five research articles and two practice briefs that help us better understand topics that can contribute to the self-determination of students, campus staff, and faculty alike.

Despite the importance of written communication skills in college, there is a paucity of research on the assessment of adults who have learning disabilities in writing. McNair and Curry help fill this gap with their review of evaluation instruments that can be used to diagnose college students with this type of LD and better inform our decisions about appropriate accommodations and skills instruction.

In a related vein, Kane, Roy, and Medina present a large scale study that supports the efficacy of a no cost, online assessment tool to screen college students for a variety of learning disorders. Read more about the Learning Difficulties Assessment (LDA) tool and its potential use in different types of postsecondary settings.

Many sources report the emerging numbers of students with psychiatric disorders. Perhaps more than other non-apparent disabilities, students with mental health issues often grapple with fears of being stigmatized as they consider disclosing. Readers can learn more about students' perspectives on this topic in a new study by Kranke, Taylor, Jackson, Floersch, and Anderson-Fye.

Like students in many countries around the world, Canadian students pay for certain disability support services with governmental funding provided directly to them. Chambers, Sukhai, and Bolton used data from 1,026 students to examine the relationships between disability types, funding levels, and indebtedness. Students with medical needs emerged as an unexpected cohort with interesting policy considerations.

In the final research article, Field, Parker, Sawilowsky, and Rolands report the quantitative results of a 10-campus study of ADHD coaching. Learn more about a phone-based coaching model and its impact on undergraduates' learning, self-regulation, and well-being. Special thanks to Dr. Charlie Hughes, who oversaw all aspects of the review process for this manuscript.

This issue concludes with two practice briefs. Readers with an interest in this type of manuscript are encouraged to review the new author guidelines that appear online and in the back of this issue. In the first practice brief, Reis Lagarto, Mineiro, and Pereira describe their utilization of blended instructional formats to teach Portuguese Sign Language to deaf graduate students in a distance learning format.

Finally, Schaffer reports on the compensatory strategies high achieving students with ADHD used in a postsecondary setting and how these strategies related to their motivational levels.

References

Field, S., Martin, J., Miller, R., Ward, M., & Wehmeyer, M. (Fall 1998). Self-determination for persons with disabilities: A position statement of the division on career development and transition. *Career Development for Exceptional Individuals, 21*, 113-128.

Journal of Postsecondary Education and Disability, *26*(1), 5 - 19

The Forgotten: Formal Assessment of the Adult Writer

Daniel J. McNair
Toi L. Curry
Georgia Southern University

Abstract

This review of current writing assessment practices focuses upon the adult population, an area significantly underrepresented within psychoeducational literature. As compared to other populations, such as K-12 students, there are few options for the practitioner wishing to evaluate adult writers by means of standardized assessment instruments. This review of literature discusses common approaches to written expression assessment. While indirect assessment and cognitive processing approaches are reviewed in brief, significant attention is given towards the traditional approach of direct writing assessment. Aspects of direct assessment methods include syntax, cohesion, sense of audience, spelling, and fluency. In addition to these factors, the role of story prompts, rater reliability, and affective variables are considered. The paper concludes with brief overviews of applicable standardized assessment instruments for written expression assessment of this population. Particular focus is given towards the Wechsler Individual Achievement Test-II (WIAT-II) and the more recent edition of the Wechsler Individual Achievement Test-III (WIAT-III). The authors contend that although the WIAT-II may have been an adequate instrument for direct assessment of writing ability in adults, test developers have failed to maintain a focus on this population in the more recent WIAT-III. This inadequacy is evidenced in the omission of grade-based scoring tables for college populations and lack of content appropriate writing prompts for adults. Implications for practitioners working with postsecondary populations are discussed.

Keywords: Postsecondary, assessment, written expression, learning disability

Written expression simply refers to the ability to communicate one's thoughts and feelings through the written word; however, this activity is no simple process. Unlike basic writing skills such as handwriting, spelling, or sentence composition, written expression is a more involved process that requires the use of both basic writing and more complex cognitive skills. Although written composition requires mastery of elementary processes noted above, cognitive skills such as planning, organization, and cohesion are also required to create meaningful text passages for effectively communicating with others (Katz, Goldstein, & Beers, 2001).

Not only is writing ability a valuable life skill, but the development of such ability is important for determining an individual's ability to navigate educational systems, work environments, and social situations (Cole, Muenz, Ouchi, Kaufman, & Kaufman, 1997). As noted by Gregg, Coleman, and Lindstrom (2008), as the societal demands of literacy increase, writing ability becomes an increasingly important factor in allowing an individual to graduate from high school, achieve in the postsecondary setting, and succeed in the work environment. Many State exams require successful completion of writing assessments. Gregg et al. (2008) also note that the recent inclusion of an essay section on the College Board's SAT I test provides further indication of the increased concern of writing ability in graduating high school students.

Students transitioning from the secondary to postsecondary educational setting encounter multiple obstacles that include, but are not limited to, time management difficulties, increased stress, acclimation to a different environment, and new instructional methods. The list of potential difficulties for college students is non-exhaustive. However, in addition to these factors, students with disabilities also encounter unique obstacles that may occur as a result of their transition from the service model of K-12 educational systems.

According to Gregg (2009), after some frustration and much confusion, many students with disabilities learn that the legal requirements of disability documentation change in this new educational setting. Documentation requirements for learning disabilities in the postsecondary setting are often more comprehensive, therefore many students learn that their current eligibility documentation does not meet legal requirements for receipt of services. Therefore, there are students who must engage in additional psychoeducational assessments at the postsecondary level to provide adequate documentation of learning difficulties that were previously accommodated before entering tertiary educational settings. These psychoeducational evaluations are generally more stringent and encompassing measures of functioning, for which writing ability is a necessary component (Gregg, 2009). However, the assessment of writing ability using normative measures proves difficult for the practitioner working with adult populations. In comparison to other areas commonly assessed by psychologists, there is a lack of available instruments for the assessment of written expression in this population.

Evaluating the Adult Writer

The evaluation of writing ability is not a new concept. While models of written language disorders have been discussed by researchers beforehand, it was not until the 1970's that the diagnosis and treatment of written language disorders were legislated by the U.S. Office of Education (Hooper, 2002). However, despite this history of research, many professionals continue to lack confidence or understanding of the diagnosis, treatment, and definition of written language disabilities (Gregg, 1995). According to Hooper (2002), empirically-based research of written language disorders has only begun to gain increased popularity in the past two decades. In addition, these studies have not contributed greatly towards the understanding of etiology, developmental progression, or effective treatment for written expression disorders (Katz et al., 2001).

The lack of available research, in part, may be due to the nature of the writing process as a whole. To define a written language disability in and of itself poses difficulty since written language is such a broad term that encompasses so many skills and domains of ability (Cole et al., 1997; Katz et al., 2001). For example, the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision ([APA] American Psychiatric Association, 2000) defines a disorder of written expression as writing skills that are substantially below expected levels, given chronological age, intelligence, and education. An additional criteria is that these writing skill disturbances must also interfere with either academic progress or daily living. The next version of the DSM is currently in development with an expected release date of spring 2013. Preliminary reports suggest that learning disabilities will be grouped into one classification with specifiers rather than separate categories for each academic area. At the time of this writing, it also appears that diagnostic criteria will be reflective of those set forth by the Reauthorization of the Individuals with Disabilities Education Improvement Act of 2004 (IDEA). In other words, the DSM-V is expected to provide a more structured approach to diagnosing learning disabilities than currently exposed by the 4th edition of this manual. Although these definitions do provide some qualifying data for diagnosis, authors acknowledge that when compared to other learning disorders, there is less understanding of written expression disability and the standardized assessments of writing are not as well developed as those measuring reading or mathematical abilities. For the purposes of this paper, the terms "disorder of written expression" and "written expression disability" are used interchangeably.

The lack of research also creates uncertainty for practitioners wishing to evaluate the writing ability of individuals. Although the quantity of research on writing disorders has grown significantly over recent decades, the primary focus of previous researchers appears to have been on the writing of children (Newcomer & Barenbaum, 1991). Specifically, Newcomer and Barenbaum provide a comprehensive overview of studies on the writing abilities of children with learning disabilities occurring between 1980 and 1990. During this decade, studies of written expression appear to have not only increased in quantity, but also undergone a transitional shift from focusing upon basic factors such as syntax, fluency, and mechanics toward the more complex analysis of text structures, metacognition, and response to practice or intervention (Newcomer & Barenbaum, 1991).

With the exception of a few researchers, the majority of current learning disability studies continue to focus upon younger populations and fails to adequately address assessment and intervention for the writing of adult age populations (Gregg, Coleman, Davis, Lindstrom, & Hartwig, 2006; Gregg, Coleman, Stennet, &

Davis, 2002). It is likely that this underrepresentation may be attributed towards the increased focus upon early identification and treatment for learning disorders in school-aged children. Naturally, more attention has been given towards offering assistance to these younger populations with the enactment of legislation such as IDEA (2004) and the No Child Left Behind Act of 2002 (NCLB). In fact, most funding initiatives and programs have been directed toward the early identification and treatment for younger students with the supposition that earlier intervention will thwart or eradicate difficulties in later years (Gregg, 2009). However, researchers have illustrated that although such services are effective, individuals with learning disabilities often encounter continued difficulties despite such early attempts at remediation (Gregg, 2009).

While NCLB (2002) and the Reauthorization of IDEA (2004) are intended for K-12 settings, college age populations are served by means of Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Section 504 was designed to protect the civil rights of individuals with disabilities in programs and activities receiving federal funding. Widely recognized as the first civil rights statute for individuals with disabilities, Section 504 ensures that persons are not excluded from participation or denied benefits of public services based solely upon reason of a disability (Lissner, 1997). The Americans with Disabilities Act ([ADA], 1990), while similar to Section 504, expands upon the previous federal law by broadening the agencies and businesses that must adhere to nondiscriminatory operations. The ADA was amended in 2008 to provide further clarification of those protections described in the original law. Much of the language in each of these federal laws is similar in that they guarantee civil rights protections to individuals with disabilities. These civil rights are similar to those provided to individuals that protect against discrimination on the basis of race, color, sex, nationality, age, or religion (Lissner, 1997; Mangrum & Strichart, 1988).

There are, however, great differences in service delivery models resulting from these important legislative rulings. Whereas practitioners assessing school-aged children spend a great deal of time recommending interventions and guiding intervention delivery in order to increase skills and proficiencies, evaluations of college-age populations are primarily conducted to provide the documentation that is needed for an individual to gain access to accommodations (Gregg et al., 2006). In effect, whereas school age children are "treated" for a disability through services and interventions, the postsecondary student is granted "equal access" to the curriculum through accommodations, but there is no legislative requirement for the individual to receive remediation (Gregg et al., 2006). In other words, the primary purpose of IDEA (2004) and other K-12 legislation has been to provide remedial services to students and the ADA (1990) primarily serves the purpose of granting equal opportunity to students with disabilities in the postsecondary setting. Since relatively little research exists pertaining to college-aged learners who are writing disabled, study findings from younger populations are often generalized towards the assessment of college age populations. Although these studies with younger populations do provide valuable information pertaining to the identification of basic writing processes, they do not replace the need for research into the writing processes of older individuals.

Learning Disabilities and Typical Development

A common topic in writing disorder research is in differentiating between writers with learning disabilities and those writers who are typically developing. Numerous studies outlining characteristics of students with writing disabilities include analysis of word counts of written passages, diversity of word choices, and the inclusion of words with more than two syllables (Gregg et al., 2002).

In a study comparing the textual cohesion of college-aged students with and without diagnosed learning disabilities, researchers analyzed the expository writing of 45 female college students using an adapted scale for measuring the cohesive constructs of grammar ties, transition ties, and lexical ties (Gregg, 1985). Researchers utilized this adapted scale to obtain frequency and accuracy counts of these cohesive structures and concluded that students experiencing significant writing deficits encounter difficulties in their use of structural cohesion when writing. While overall results did not demonstrate significant differences between cohesive ties, findings did suggest that the students with learning disabilities were more likely to commit errors in accuracy, morphological endings, and omission of words (Gregg, 1985). Additionally, Gregg (1985) suggested that students with writing disabilities use fewer demonstratives in written language and may exhibit a lack of flexibility and diversity in word choices. This reluctance to utilize more complex transitional ties is often more reflective of inexperienced writers (Gregg, 1985; Gregg et al., 2008).

In a review of an elementary and middle school writing research program, investigators' efforts were targeted towards differentiating between students with learning disabilities and students without learning disabilities (Graham, Harris, MacArthur, & Schwartz, 1991). After reviewing their findings from four previous studies, the group concluded that typically developing writers were more likely to create responses that convey meaningful thoughts and ideas and were also more likely to focus on redeveloping their ideas during the revision process. The students with learning disabilities were found to be more likely to focus upon correcting basic grammar or mechanical errors rather than the substance of their written product. Interestingly, each group of writers appeared to demonstrate the same levels of confidence in their own writing abilities (Graham et al., 1991).

In a recent study focusing on the perceived writing quality of students with a writing disability and students without a writing disability, researchers suggest that the proper use of organization and cohesion are just as important as punctuation, grammar, and spelling (Gregg, Coleman, Davis, & Chalk, 2007). To reach these conclusions, researchers provided raters with three products of each student's writing sample. The first product was the original handwritten sample. The second was a typed version. The third version was typed and edited for spelling, punctuation, and grammatical errors without altering word complexity or cohesive ties. Overall results of this study concluded that the qualitative perceptions of raters were significantly influenced by the quantity of spelling errors contained in a writing sample. Handwriting ability and illegible writing samples also appeared to play a significant role in the scoring process. Both handwriting ability and spelling negatively influenced rater perceptions of a student's samples. In addition, the participants with dyslexia also received lower scores than the typically developing group when evaluators assessed the third version of writing that had been typed and corrected for spelling, punctuation, and grammar. Overall results suggest that even though handwriting and spelling play an important role in the student's ability to receive quality writing scores, the ability to succinctly and accurately convey a message in an organized and cohesive sample of writing may be just as important (Gregg et al., 2007).

Approaches to Assessment

Direct and Indirect Assessment Methods

There are two major theoretical methods for assessing the writing ability of individuals. These approaches are often utilized together in qualitative assessment, but formal standardized written expression assessments often focus upon one or the other. These approaches are termed "direct" and "indirect" assessment. Direct assessment refers to those methods of evaluation in which the learner is required to generate complete written discourse or essay (Hooper, 2002). These types of evaluations require a prompt such as a story starter or visual cue, and the writer then creates a written composition to meet task demands set forth by the prompt.

The other approach, termed indirect assessment, requires the learner to accurately respond to questions that target basic writing skills such as grammar, mechanics, and spelling (Hooper, 2002). The indirect approach does not require the learner to create a sample of connected discourse, but the goal of this approach is to identify skill areas and knowledge of writing conventions and rules without the requirement to apply those skills in creating an original sample of writing. The indirect approach most often consists of multiple choice formats, single item responses, and brief sentence composition (Muenz, Ouchi, Cole, 1999). The results of indirect assessment methods are then generalized to the broader skill of written expression ability.

Researchers have long debated the validity and reliability of each of these methods (Breland & Gaynor, 1979; Hooper, 2002; Miller & Crocker, 1990; Sabban & Kay, 1987). Miller and Crocker (1990) attest to this level of controversy and claim that the debate surrounding writing assessment has been greater than that of any other area of academic functioning. In addition, these researchers explain that although reading and math assessments have played a critical role in the development of many assessment programs, the development of writing assessments have not benefitted from the same degree of focus (Miller & Crocker, 1990).

Each of these approaches to writing assessment has advantages and disadvantages. Generally speaking, proponents of direct assessment argue that such methods provide a face valid artifact of writing ability (Breland & Gaynor, 1979; Miller & Crocker, 1990; Powers, Fowles, & Willard, 1994; Sabban & Kay, 1987). Supporters of indirect assessment methods argue that such approaches are more reliable and therefore a more accurate measure of writing skill. Even though there is no writing product, indirect assessment results are more objective and thus provide greater reliabilities than those produced in the qualitative assessment of writing samples (Gregg, 1995; Gregg, et al., 2007; Muenz et al., 1999). Miller and Crocker (1990) further their argument for indirect methods by citing the easier-to-score format of multiple choice or short answer responses over the often complicated and labor intensive process of analyzing a body of text.

Cognitive Processes of Writing

In addition to the assessment of writing through direct or indirect methods, researchers and practitioners have also identified multiple cognitive processes that are associated with writing skill. Executive functioning, crystallized intelligence, working memory, and long-term storage and retrieval have each been identified as basic cognitive processes that are necessary for proficient and skilled writing ability (Alamargot, Caporossi, Chesnet, & Ros, 2011; Gregg, 1995; Gregg et al., 2007; Hillis, 2008; MacArthur, Graham, & Fitzgerald, 2008). Identification of weaknesses in these cognitive areas may provide the practitioner with additional information when evaluating adult learners. But, as expected, research into the neuropsychological processes involved in the writing of college populations is lacking (Newcomer & Barenbaum, 1991; Semrud-Clikeman & Harder, 2010).

However, a recent study does provide some interesting findings concerning adult writers and working memory capacity (Alamargot et al., 2011). Although previous studies involving children have demonstrated the role of working memory in more elementary processes such as lexicon or orthographic processing, this study suggests that, for adults, working memory capacity is instrumental to the higher demands of the writing process such as audience awareness. These researchers evaluated the influence of working memory capacity on communicative efficiency and sense of audience in a procedural writing task. To achieve this, the eye and graphomotor movements of 25 graduate students were tracked using computer software during a writing task. The students were asked to create a written instructional guide for assembling a model turbine. Using the computer software, researchers were able to track the frequency of pauses and references toward a visual diagram provided to each writer to assist in their composition. By requiring the students to write about a complex procedural process, each writer had to refer back to the diagram. Findings suggest that the ability to maintain a sense of audience or a visual representation in memory while writing is a direct reflection of an individual's working memory capacity. Researchers also postulate that those individuals with stronger working memory were able to better communicate with their intended audience during the task (Alamargot et al., 2011).

Nevertheless, the majority of available literature on cognitive processes and writing ability does pertain to children. Therefore, practitioners must reference the more available literature discussions of children's writing abilities when assessing the writing of adults. However, researchers forewarn that all research into the writing ability of children should not be overgeneralized toward adult writers since many variables such as cognitive processes, language development, and experiences may vary across the lifespan (Gregg et al., 2008). Therefore, the evaluation of an adult's writing ability should not be solely based upon the cognitive processing literature as it relates to written expression in children. For this reason, either direct or indirect assessment approaches remain the most fruitful methods for determining the presence of a writing disorder in adult populations.

Direct Assessment Methods

Multiple areas have been identified as important factors to consider when evaluating written expression ability. Current research suggests the evaluation of syntax, cohesion, sense of audience, spelling, and fluency are instrumental in the determination of a writing deficit (Greg et al., 2008).

Syntax is defined as the number of words, clauses, diversity of sentence structures, variety of word choices, and error frequencies within a writing sample (Gregg et al., 2002; Gregg et al., 2008). These figures provide the evaluator with measures of quantity, accuracy, and diversity in a writing sample. In fact, it has been noted that a majority of research into the writing of college-aged populations has focused upon "frequency counts" of syntax components such as error count or number of sentences (Gregg et al., 2002).

Cohesion refers to the correct usage of cohesive ties and transitions (Gregg, 1995; Gregg et al., 2008). A passage lacking appropriate cohesion may rely upon restricted word choices or may contain ambiguous pronouns or demonstratives. Other significant effects of poor cohesion include a lack of organization or a passage that does not flow (Gregg, 1995; Gregg et al., 2008).

Sense of audience not only refers to the ability of the writer to identify the audience of a composition but also the ability to evaluate the purpose of a writing activity correctly (Gregg et al., 2008). Failure to consider possible readers may be a common occurrence for underachieving writers and such negligence on the part of the writer may result in ambiguous references or omission of supporting details. Also of importance and closely related to sense of audience is the ability of a writer to evaluate and perform edits to a writing sample to better address the needs of an intended audience. For the individual, the ability to take on the reader's perspective is an important skill when reviewing, editing, and revising a sample of writing (Gregg et al., 2008).

Spelling difficulties may also greatly affect a writer's ability to communicate ideas effectively. While spelling errors may occasionally influence the meaning of discourse, the lack of automaticity that is associated with poor spelling may play a more critical role in the quality of writing (Gregg & Mather, 2002). Since poor spellers may need to pause due to a lack of automaticity in spelling words, they may lose track or fail to remember planned ideas or concepts (Gregg & Mather, 2002; Viel-Ruma, Houchins, & Fredrick, 2007). In addition, the compositions of poor spellers may lack the diversity of word choices that is present in the writing of better spellers. This failure to utilize a greater complexity of word choices may portray the poor speller's writing as less sophisticated or scholarly (Viel-Ruma et al., 2007). Previous research has also demonstrated the positive correlation between spelling ability and writing quality (Viel-Ruma et al., 2007).

The quantity of written text is another important consideration when evaluating a sample of writing. Although substance is important, a writer's ability to work efficiently also plays a critical role in the writing process. Fluency refers to the quantity of words or sentences a writer is able to produce under timed conditions. In other words, fluency is simply a measure of the amount of writing that may be produced in a given time limit (Gregg et al., 2007; Gregg, et al., 2008).

Previous research has also suggested that the particular modality - such as pencil and paper, computer, or voice activated software - may also play a role in the quality and quantity of writing for some individuals. For example, the use of a computer during the writing process has been shown to improve fluency, editing, and quality of writing for both students with learning disabilities and typically developing students (Gregg et al., 2008; Gregg, 2009). According to Gregg (2009), the use of computers to accommodate writing difficulties has increased significantly since the 1980's. Other tools to accommodate writing difficulties include additional time, scribe/note taker, speech to text software, audio voice recorder, spell checkers, and word prediction software (Gregg, 2009).

Story Prompts

The content of a writing sample may be greatly influenced by the level of knowledge a writer possesses about a given topic; therefore, a writer may be able to produce more elaborate and better-organized text when working with a familiar topic (Gregg et al., 2008). Not only does a writer's product appear to be influenced by topic knowledge but also by the type of prompt utilized in a writing evaluation. Prior research reveals that writer productivity may be greatly influenced by story prompts and directives.

Previous research by Hooper et al. (1994) contends that a story prompt portraying at least two characters, an interesting scene, and some type of potential conflict by means of a color photograph may elicit the greatest possible response by writers. Other researchers have tested the hypothesis of Hooper et al. (1994) by evaluating the text of writers after exposure to two very different pictorial stimuli (Cole et al., 1997). A sample of 50 individuals, aged 13-46 years, was administered a stick figure pictorial stimuli and a photographic stimuli in two separate writing activities to ascertain the degree to which pictorial prompts affect quality of writing. The stick figure stimulus was taken from the PIAT-R written expression level II subtest and the photograph stimulus was created to fulfill all four criteria set forth by Hooper et al. (1994). An individualized scoring system was adapted from the PIAT-R and WIAT written expression scoring systems to properly evaluate for structural and mechanical characteristics of samples. Trained raters independently scored each sample; resulting scores between pictorial stimuli were significantly different. While mechanical items such as grammar and punctuation were unaffected, the compositions differed markedly in their use of structural items such as unity, organization, and development of ideas. Researchers concluded that the type of prompt used in a writing assessment makes a critical difference in the resulting writing sample (Cole et al., 1997).

Expanding upon prior work, Muenz, Cole, and Balderson (2000) evaluated the potential effects of a rater's prior knowledge of research hypotheses in evaluations of "Hooper-like and non Hooper-like" pictorial stimuli. In a study mirroring the work by Cole et al. (1997), a smaller sample of 29 participants aged 11-14 years were evaluated. All research parameters were replicated with the one exception of the rater who, in this instance, was unaware of the research hypothesis. As previously ascertained in the larger study, there was a significant difference observed in scores of the photographic stimuli meeting Hooper et al. (1994) criteria as compared to text resulting from the stick figure stimulus (Muenz et al., 2000). These findings provide further support for the criteria set forth by Hooper et al. (1994) and account for any possible rater bias that may have occurred in the initial study of larger size.

Affective Variables

Other considerations in the assessment of a writing sample include situational or affective variables of the writer. Writing performance may be influenced by the socio-emotional state of a writer and writing anxiety is a well-documented phenomenon that has garnered significant attention by educators and researchers. Previous research has shown that students with increased anxiety may receive lower grades on essays, written assessments, and writing tests (Martinez, Koch, & Cass, 2011).

Writing anxiety may be attributed to dispositional attitudes accumulated over time and prior experiences or it may be a result of a specific activating event such as the requirement of a specific writing task (Martinez et al., 2011). According to Ucgun (2011), writing anxiety may begin during early childhood and continue throughout the lifespan. Manifestations or presentations of writing anxiety may include tension, procrastination, physiological symptoms, or preoccupation (Martinez et al., 2011). Generally, the written products of anxious writers tend to be shorter in length, less fluent, and less diverse in selection of word choices (Ucgun, 2011).

Researchers have postulated that writing anxiety or apprehension may be related to the amount of writing experiences of an individual. In a study of college-aged students, 127 individuals participated in pre- and post-semester surveys to gauge writing anxiety and self-efficacy. Findings of the study conclude that as writing experiences increase, associated anxiety of writing decreases (Martinez et al., 2011). In other words, the more an individual is exposed to writing activities, the greater the likelihood that person may overcome writing anxieties. Results of the study also indicate that students demonstrating avoidance behaviors are more likely to experience additional writing anxiety over time (Martinez et al., 2011).

Further evidence of the benefits of increased writing exposure is provided by Shweicker-Marra and Marra (2000) in a study of 29 at risk 5th grade students. These students, identified as struggling writers, participated in a writing program to determine the effect of increased exposure to prewriting activities as a means of decreasing writing anxiety. Results of the study suggest that participants were able to decrease their writing anxiety and improve overall writing performance through increased exposure to prewriting activities (Schweiker-Marra & Marra, 2000).

In a study of the writing anxiety of elementary age students, researchers surveyed 1,407 Turkish students and found that writing anxiety decreased as a result of increased exposure to writing activities. Additionally, study results suggest that students exhibiting lower levels of writing anxiety were more likely to enjoy language classes, keep personal diaries, and read more books (Ucgun, 2011).

Available research suggests that affective variables such as anxiety may influence a writer's ability to construct written discourse that represents his or her best effort. In addition, it appears that a lack of positive writing experiences may be a contributing factor to the development of writing anxiety. Gregg and Mather (2002) have accepted the ramifications of affective variables to writing to such a degree that they encourage the use of a writing apprehension or writing anxiety scale when a writer's product appears to be influenced by such factors.

Reliability of Ratings

As previously mentioned, a significant concern of direct writing assessments is that of reliability. Even though the required writing activity and normative sample can control a degree of variability in scores, the greatest threat to test reliability is that of ratings given to samples of writing. Most test developers account for this reliability issue by providing some form of a scoring rubric.

Noted in a study conducted by Muenz et al., (1999), most forms of direct writing assessment have either poor reliability (coefficients less than .70) or lack appropriate validity. In this specific study, researchers compared the reliability and validity of items contained within the Peabody Individual Achievement Test-Revised (PIAT-R) and Wechsler Individual Achievement Test (WIAT). In their analysis, these instruments were administered to 50 individuals aged 13 to 46 years. A panel of three graduate students conducted ratings, while reliability of items were established by means of inter-rater agreement and item validity was determined by item-total correlations. Overall results of the study indicated that the WIAT Written Expression cluster provides a greater number of reliable and valid items than the PIAT-R (Muenz et al., 1999). However, additional research findings from this study may have more importance for the contemporary assessment of written expression. During the course of their study, researchers made an important distinction between structure and mechanics. Structural items - those that assess quality through means of unity, cohesion, organization, and idea development - were found to be more reliable amongst raters than the objective measurement of mechanics. Mechanics include the direct measures of grammar, punctuation, and spelling. Although authors expected that mechanics (grammar, punctuation, etc.) would be more reliable due to the objective rules for language use, the structural items were found to be more reliable between raters. Authors postulated that this unexpected result was due to the tendency for significant errors in writing structure such as cohesion or organization to be more readily apparent to readers on a consistent basis. Mechanical errors such as grammar and punctuation mistakes may not have been consistently identified if raters were relying upon memory for such rules when scoring writing samples. As a result, researchers concluded that future measures of written expression should include the use of a comprehensive reference source in addition to a scoring system of greater scope that would allow for greater distinctions between subtle differences in writing.

In an analysis of two distinct written expression rating systems, Knoch (2009) gathered score results from 10 evaluators after they rated 100 samples of writing. The raters utilized an empirically developed scale containing specific descriptors and an intuitively developed scale containing less specific descriptors to score each sample. After analysis of results, Knoch (2009) concluded rater reliability to be substantially greater when more comprehensive guidelines and descriptors are illustrated within scoring guidelines.

The benefit of training raters to interpret scoring guidelines was investigated in a study of primary grade instructors (Stuhlmann, Daniel, Dellinger, Kenton, & Powers, 1999). Researchers first split a group of 40 instructors into groupings of 23 and 17 individuals. The larger group was then trained to interpret a scoring rubric, while the smaller group of individuals received no training for use of the rubric scoring system. Each group then independently scored 20 first-grade writing samples based upon guidelines set forth by the scoring rubric. Resulting data indicated there to be more variability in assigned scores for the untrained rater group as compared to that of the trained group. Researchers conclude that training raters in their use of predetermined scoring guidelines increases their ability to reliably rate writing samples (Stuhlmann et al., 1999).

Assessment Instruments

There are few standardized writing assessments that are applicable to the college or adult population. While there are many choices for the evaluation of persons under age 18, there are limited options for the assessment of an adult writer. There are a few instruments that may be used for young adults, such as the Kaufman Test of Educational Achievement-II (KTEA-II), the Oral and Written Language Scales-II (OWLS-II), the Peabody Individual Achievement Test-Revised-Normative Update (PIAT-R/NU), and the Test of Adolescent and Adult Language-IV (TOAL-IV). Although these are highly regarded and well-researched tools, even these instruments fail to provide standardization samples of individuals older than their mid-twenties (Penner-Williams, Smith, & Gartin, 2009). A brief description of these formal assessment instruments is included in Table 1.

Of the more popular writing assessment instruments, two current instruments may be considered most adequate for use with the adult population because of their greater age ranges. These include the Woodcock Johnson Tests of Achievement III (WJTA-III) and the Wechsler Individual Achievement Test-III (WIAT-III). While each of these instruments includes normative samples for older individuals, the task requirements and approaches to assessing writing ability are fundamentally different.

Table 1

Summary of Standardized Written Expression Instruments for Adult Populations

Instrument	Age Ranges	Description of Writing Activity
KTEA-II	4:6-25	This direct assessment of writing ability contains developmentally appropriate story starters in which older individuals write sentences and an essay. Writing samples are evaluated upon structure, content, and sense of audience, and planning. A separate subtest measures spelling ability (Kaufman & Kaufman, 2004).
OWLS-2	3-21	This instrument provides a sampling of both indirect and direct assessment. The written expression scale of this instrument contains a diversity of writing tasks that includes sentence comprehension and paragraph writing (some tasks are open-ended, while others are more structured). Writing is evaluated upon conventions (spelling, punctuation, etc.) and structural components such as organization, details, and cohesion (Carrow-Wookfolk, 2011).
PIAT-R/NU	5-22:11	This direct measure of writing ability requires the examinee to compose a writing sample in response to a pictorial stimulus. Written samples are evaluated in terms of organization, grammar, and idea development. Spelling ability is assessed within a separate activity (Markwardt, 1997).
TOAL-4	12-24:11	This is an indirect measure of written language. Activities include verbal tasks and written response formats. Although this measure includes a sentence combining activity and an editing task, there is no opportunity for the student to construct a written narrative (Hammill, Brown, Larsen, Wiederholt, 2007).
WJTA-III	2-90	This battery includes indirect measures of written expression ability. Performance in various activities such as spelling, sentence combining, and editing are utilized to derive an overall writing score. There is no opportunity for the student to compose a paragraph or multiple sentence response in this battery (McGrew & Woodcock, 2001).
WIAT-III	4-50:11	In addition to evaluations of sentence combining and spelling activities, this instrument includes a direct measure of writing skill that is evaluated upon word count, theme development, organization, and grammar (Wechsler, 2009).

The WJTA-III includes an adequate sampling of persons up to age 80 years and written expression is measured through the subtests of Spelling, Writing Fluency, Writing Samples, Editing, and Capitalization/Punctuation. (McGrew & Woodcock, 2001) However, these subtests are used in an indirect assessment of writing skill. These activities do not provide a sample of narrative text of adequate length to evaluate cohesion, organization, planning, sense of audience, or theme development. Arguably, the WJTA-III is an excellent measurement tool when the practitioner wishes to evaluate writing ability through indirect methods. To evaluate writing conventions such as cohesion, organization, planning, etc., a direct measure of writing is required. The only legitimate direct writing assessment instrument for use with adult populations has suffered as a result of its latest revision. The WIAT-III fails to provide the same clinical utility in adult populations as was provided by the WIAT-II. Let us first review the predecessor of the WIAT-III, as the 2nd edition of this instrument may be considered a sound method for directly assessing the writing ability of individuals in college settings.

WIAT-II

The Wechsler Individual Achievement Test-2nd ed. (WIAT-II) is a comprehensive and nationally standardized instrument for the measurement of academic skills in children, college students, and adults (Wechsler, 2002). This edition of the Wechsler Individual Achievement Test was published in 2001 and has since been replaced by the more recent 3rd edition. The WIAT-II demonstrates good reliability and validity for interpretation of results. The normative sample consists of 5,586 individuals and reflects the U.S. population in terms of multiple demographic traits (age, sex, geographic region, race/ethnicity, self-education level [for adult sample]) at time of publication. In addition to the school-aged normative group, publishers conducted standardizations with two additional groups in order to create adult norms and expand upon the applicability of this instrument towards older age populations. For the adult norms, two separate samples consisted of a college group and an adult sample. The college group included 707 individuals from both 2-year and 4-year institutions. The adult group includes 500 participants aged 17-85 years. For the adult sample, five distinct age bands were created comprised of 100 members each. These smaller age groups are reflected in the age-based normative tables and include 17-20 years; 21-25 years; 26-35 years; 36-50 years; and 51-85 years. Data for these adult samples were collected during the 1999-2000 and 2000-2001 school years. Reliability of the Written Expression subtest was established by means of test-retest coefficients and intraclass correlations. Multiple approaches to establishing test validity include content related, construct related, and criterion related methods to ensure that items are adequately evaluating the skills they were designed to measure (Wechsler, 2002).

The WIAT-II provides a direct assessment method for writing ability coupled with similar tasks that are included in the WJTA-III. There is a sentence combining activity such as is found on the WJTA-III as well as objective measurements of spelling and word fluency. However, the WIAT-II also includes a direct assessment of the individual's ability to compose written text in a persuasive format. For practitioners wishing to utilize this type of assessment method in evaluating the writing of adult populations, the WIAT-II is a legitimate assessment instrument supported by numerous empirical studies (Konold & Canivez, 2010; Mayes & Calhoun, 2008; Mayes, Calhoun, & Lane, 2005; Wechsler, 2002). However, the WIAT-II normative data is now outdated and is no longer applicable for making assessment decisions when population comparisons are desired.

WIAT-III

In its latest edition, the Wechsler Individual Achievement Test 3rd edition (WIAT-III) has undergone multiple changes in administration and organization as compared to the previous WIAT-II. Rather than simply conducting new normative studies on the previous instrument, test developers restructured the instrument for the purposes of greater utility and applicability for decision-making (Wechsler, 2009). Revisions to the written expression cluster were enacted to offer greater coverage of the various levels of writing ability. These alterations include focused measures beginning with basic processes such as spelling and ranging towards higher order skills such as grammar, mechanics, and paragraph organization. Structural changes in the written expression cluster include the addition of a sentence-building activity along with the previous sentence-combining subtest. Additionally, the essay composition scoring rubrics have been redeveloped for greater rater reliability and there is only one story prompt rather than multiple options for story starters according to age or grade level. There are three specific scoring rubrics for the written essay, which include word count, theme development/organization, and grammar/mechanics.

The WIAT-III is a structurally and psychometrically sound instrument that has been validated through multiple phases of development (Wechsler, 2009). The normative group provides a representative sampling upon multiple demographic features of the U.S. population that include sex, age, race, grade, geographic location, and parent education levels. The sample group consists of 2,775 individuals for grade-based norms and an overlapping 1,826 individuals for age-based norms. This initial normative sample included grades PK-12 and an age range of 4 years-19:11 years. Evidence of reliability in the written expression cluster was evaluated through test-retest stability. As with the previous edition, internal structure validity and content validity were well established during development of this instrument (Wechsler, 2009).

The WIAT-III normative update containing adult standardization information was released approximately one year after the instrument's publication (Wechsler, 2010). The adult normative sample included 225 individuals aged 20-50 years. This adult group was divided evenly into three age groupings of 20-25 years, 26-35 years, and 36-50 years. Although the publishers completed an adult standardization, grade based normative information was not included in the WIAT-III. In fact, the interpretive utility of the WIAT-III for adult writing evaluation is limited by the exclusion of these grade-based norms. The WIAT-III adult norms only include age-based information and true comparisons based upon grade-based norms, age and grade equivalents, or growth scale values are not included. According to the manual, estimates of these grade-based scores may be obtained by comparing the adult's score results to the school age norm tables. The practitioner may either refer to PK-12 charts or elect to change the adult examinee's age to less than 20 years if using the computer scoring software. Nevertheless, these estimations are imprecise since the PK-12 normative sample is not intended for use with adult populations. Additionally, the use of the PK-12 sample is only applicable when the adult examinee's level of functioning is below grade 12. Unlike the WIAT-II, there are no college based normative samples included in the WIAT-III. As a result, the previous option of comparing the education level of adults that was offered by the WIAT-II is no longer a possibility with the WIAT-III. The clinical utility of the WIAT-III for use in postsecondary settings has been severely lessened as a result of failure to include college based normative samples and the omission of age and content appropriate essay prompts.

The Revised Normative Groups

Comparisons between the adult normative groups that were espoused for the 2nd and 3rd editions of the WIAT result in striking discrepancies. First, the WIAT-II included an adult normative group as well as a college normative group. The adult group included 500 persons and the college sample included 707 persons (Wechsler, 2002).

The WIAT-III only includes an adult normative group of 225 individuals, which is about half as large as that included in the 2nd edition (Wechsler, 2010). The age range of the WIAT-III terminates at 50 years, while the 2nd edition included an age range up to 85 years. Likewise, there is no inclusion of a college normative group in the WIAT-III. As a result, the WIAT-III not only lacks information for college grade level comparisons, but also the scope of the sample included in the WIAT-III is significantly less than what appeared in the 2nd edition.

The Wechsler Story Prompts

Previous research has demonstrated the importance of the story starter or cue in writing assessment (Cole et al., 1997; Gregg et al., 2008; Hooper et al., 1994; Muenz et al., 2000). Although the WIAT-III may provide greater utility for the practitioner, revisions to the written expression cluster do not provide the optional story starters that were included in the WIAT-II. For practitioners wishing to evaluate an adult writer, the WIAT-III story prompt may appear elementary or inappropriate. Rather than conducting standardization studies for adults using an alternate story prompt, the adult normative group completed the "favorite game" writing activity. This story prompt is in stark contrast to the previous prompt included in the WIAT-II, which required the adult writer to complete a persuasive essay arguing either for or against free tuition in higher education settings or alternatively writing a persuasive essay stating an opinion concerning the adoption of daylight savings time.

The writing tasks included within the WIAT-II and WIAT-III are markedly different. The WIAT-II stories are persuasive in nature and the WIAT-III story task appears to be that of a more expository or narrative format. While the lack of a persuasive writing requirement in the WIAT-III is not detrimental in and of itself, the use of a writing prompt that may be developmentally inappropriate for adults and the omission of an alternative writing prompt is concerning.

Conclusion

Research into the assessment of written expression, as compared to other academic areas, may still be a burgeoning field of study. However, despite growth in this area of psychoeducational assessment in recent years, the adult population has been largely overlooked by test developers. There are few options for the practitioner wishing to employ standardized measurement for the written expression abilities of adults. This may be expected and is certainly defensible from a pragmatic stance, since the collection of normative data for these populations may not be a financially beneficial undertaking for the widely marketed publishing groups. Arguably, the only direct writing assessment instrument truly validated for adult populations, the WIAT-II, is now outdated with the recent revisions in its 3rd edition. Although the newest edition of the WIAT-III includes adult sample groups, this instrument suffers from two significant limitations. Unlike the previous edition, the story cue is the same for all age groups. The “favorite game” writing activity is inappropriate for use with adult populations. Additionally, the WIAT-III adult norms are significantly lacking when compared to those that were included in the WIAT-II. While there was an adult sample included for the WIAT-III, it pales in comparison to the extensive sampling provided for college and adult norms that benefitted the WIAT-II.

These two shortcomings in this newest edition significantly weaken the usefulness of the WIAT-III in postsecondary school environments, which may be the arena in which measurements of adult writing are most likely to occur. Due to the limitations of the WIAT-III, there is no longer a viable standardized direct writing assessment for use with college populations. Despite the option to measure the written expression abilities of college students indirectly with the WJTA-III, there is now a real need for a direct writing assessment instrument for this population. For those few practitioners whose primary clientele include college-aged students and adults, the measurement of written expression becomes a complicated and often ambiguous undertaking. Future focus upon test development for adult writers would greatly benefit these practitioners, especially those working within postsecondary settings. The WIAT-III appears to be a highly useful instrument, but the lack of appropriate writing tasks and adult normative samples are in stark contrast to those provided in the previous edition. The lackluster attempts at a college and adult writing assessment measure contained in this newest edition of the WIAT-III is astoundingly limited. This oversight gives a sense that the adult writer was but a mere afterthought by test developers.

This discussion of written expression assessment may not be salient to those disability service providers who do not directly assess their students for formal diagnostic purposes. However, each of the previously discussed instruments is viable for determining functional impairments and guiding the determination of accommodations or strategy instruction in written expression. Readers who possess the appropriate training in the administration of these achievement tests may utilize them to gauge academic functioning. Although diagnostic decisions are reserved for those professionals who are otherwise qualified, most readers will be able to make use of these instruments to determine functional impairments.

While the purpose of this article has been to highlight the need for a better diagnostic tool for disorders of written expression in adult populations, all readers should be aware of the current lack of adequate direct writing assessment instrumentation. For those readers who review disability documentation or psychological reports, knowledge of the form of written expression assessment (i.e., direct or indirect) and consideration of the task demands of instruments can influence decision making in regards to academic supports. Some writing tasks on popular instruments are not reflective of expectations in postsecondary settings. For example, the writing activities on the WIAT-II and WIAT-III are markedly different. Although formalized assessment of writing is often necessary to determine the presence of a learning disorder, the determination of functional impairments in writing may be assessed through less structured methods than those included on the previously discussed standardized writing assessments.

The authors believe that making decisions about functional impairments after a student is determined eligible for disability services may be accomplished through a variety of techniques. Consider reviewing classroom samples or school records to determine areas of difficulty. Also consider scores from the Scholastic Aptitude Test (SAT) as a source of information. Some individuals may wish to obtain an informal writing sample from the student. An informal but highly valuable option would be to ask students to write a brief persuasive essay about a topic of your choosing. Give the student a limited amount of time to compose the essay. Then you may review the student's writing to inform your decision-making about possible accommodations or strategies for improvement. If the student does not plan effectively and the essay lacks acceptable structure, then writing workshops or campus writing services may be appropriate. Basic instruction in paragraph construction and planning may have a tremendous impact. If the student experiences difficulties due to poor handwriting, a word processor could be an appropriate accommodation. The need for spellcheckers is also quickly evident if you take the time to review an actual sample of writing from a poor speller. A student's failure to complete a writing assignment within specified time limits may warrant use of extended time.

Assessment practices for measuring written expression are varied, with no definitive consensus amongst researchers and experts on the issue. Although the authors are not fond of the newest changes that have occurred with the WIAT-III written expression subtest, we remain adamant in our opinion that direct samples of writing are invaluable in determining intervention strategies for improvement. While it is true that there are far fewer options for written expression assessment in older populations of students, this is in no way reflective of a decreased importance of this life skill as one matures. The procedures for determining the presence of written expression disorders may have been impacted by the latest revisions to the WIAT-III, but the ability of disability service providers to determine functional impairments remains as dynamic a process as ever. Be creative and deploy holistic techniques to examine direct samples of writing or choose quantitative measurement techniques by evaluating writing indirectly. Research and focus upon the written expression of adult populations is obviously limited. Disability service providers enjoy a degree of flexibility when using professional judgment to make accommodations decisions. In the case of written expression, that flexibility is not only afforded by your competency as a professional but also as an unfortunate necessity due to the decreased availability of standardized written expression assessments for college students.

References

Alamargot, D., Caporossi, G., Chesnet, D., & Ros, C. (2011). What makes a skilled writer? Working memory and audience awareness during text composition. *Learning and Individual Differences, 21*, 505-516.

Americans with Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 (1990).

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: American Psychiatric Association.

Breland, H., & Gaynor, J. (1979). A comparison of direct and indirect assessments of writing skill, *Journal of Educational Measurement, 16*(2), 119-128.

Carrow-Wookfolk, E. (2011). *Oral and written language scales* (2nd ed.) Torrance, CA: WPS.

Cole, J., Muenz, T., Ouchi, B. Kaufman, N., & Kaufman, A. (1997). The impact of pictorial stimulus on written expression output of adolescents and adults. *Psychology in the Schools, 34*(1), 1-9.

Graham, S., Harris, K., MacArthur, C., & Schwartz, S. (1991). Writing and writing instruction for students with learning disabilities: Review of a research program. *Learning Disability Quarterly, 14*(2), 89-114.

Gregg, N. (1985). College learning disabled, normal, and basic writers: A Comparison of frequency and accuracy of cohesive ties, *Journal of Psychoeducational Assessment, 3*(3), 223-231.

Gregg, N. (1995). *Written expression disorders: Vol. 10. Neuropsychology and cognition.* Boston, MA: Kluwer Academic Publishers.

Gregg, N. (2009). *Adolescents and adults with learning disabilities and ADHD: Assessment and accommodation.* New York: Guilford Press.

Gregg, N., Coleman, C., Davis, M., & Chalk, J. (2007). Timed essay writing: Implications for high stakes tests. *Journal of Learning Disabilities, 40*(4), 306-318.

Gregg, N., Coleman, C., Davis, M., Lindstrom, W., & Hartwig, J. (2006). Critical issues for the diagnosis of learning disabilities in the adult population. *Psychology in the School, 43*(8), 889-899.

Gregg, N., Coleman, C., & Lindstrom, J. (2008). Assessment of written expression in the adult population. In Wolf, L., Schreiber, H., & Wasserstein, J. (Eds.), *Adult learning disorders: contemporary issues.* New York: Psychology Press.

Gregg, N., Coleman, C., Stennet, R. B., & Davis, M. (2002). Discourse complexity of college writers with and without disabilities: A multidimensional analysis. *Journal of Learning Disabilities, 35*(1), 23-38, 56.

Gregg, N., & Mather, N. (2002). School is fun at recess: Informal analyses of written language for students with learning disabilities. *Journal of Learning Disabilities, 35*(1), 7-22.

Hammill, D. D., Brown, V., Larsen, S. C., Wiederholt, J. L. (2007). *Test of Adolescent and Adult Language* (4th ed.). Austin, TX: Pro-Ed.

Hillis, A. (2008). Cognitive processes underlying reading and writing and their neural substrates. *Handbook of Clinical Neurology, 88*(3), 311-322.

Hooper, S. (2002). The language of written language: An introduction to the special issue. *Journal of Learning Disabilities, 35*(1), 2-6.

Hooper, S. R., Montgomery, J., Schwartz, C., Reed, M. S., Sandler, A. D., Levine, M. D., Watson, T. E., & Wasileski, T. (1994). Measurement of written language expression. Baltimore: Paul H Brooks.

Individuals with Disabilities Education Improvement Act of 2004. 20 USC 1400

Kaufman, A. S., & Kaufman, N. L. (2004). *Kaufman test of educational achievemen*t (2nd ed.). Circle Pines, MN: AGS.

Katz, L., Goldstein, G., & Beers, S. (2001). *Learning disabilities in older adolescents and adults: Clinical utility of the neuropsychological perspective.* New York: Kluwer Academic Publishers.

Konold, T., & Canivez, G. (2010). Differential Relationships between WISC-IV and WIAT-II scales: An evaluation of potentially moderating child demographics. *Educational and Psychological Measurement, 70*(4), 613-627.

Knoch, U. (2009). Diagnostic assessment of writing: A comparison of two rating scales. *Language Testing, 26*(2), 275-304.

Lissner, L. S. (1997). Legal Issues concerning all faculty in higher education. In B. M. Hodge & J. Preston-Sabin (Eds.), *Accommodations-or just good teaching? Strategies for teaching college students with disabilities* (pp.5-22). Westport, CT: Praeger Publishers.

MacArthur, C., Graham, S., & Fitzgerald, J. (2008). *Handbook of writing research*. New York: Guilford Press.

Mangrum, C. T., & Strichart, S. S. (1998). *College and the learning disabled student: Program development, implementation, and selection* (2nd ed.). Philadelphia: PA: Grune & Stratton.

Markwardt , F. C., Jr. (1997). *Peabody individual achievement test-revised/normative updat*e (PIAT-R/NU). Bloomington, MN: Pearson.

Martinez, C. T., Koch, N., & Cass, J. (2011). Pain and pleasure in short essay writing: Factors predicting university students' writing anxiety and writing self-efficacy. *Journal of Adolescent & Adult Literacy, 54*(5), 351-360.

Mayes, S., & Calhoun, S. (2008). WISC-IV and WIAT-II profiles in children with high functioning autism, *Journal of Autism and Developmental Disorders, 38*(3), 428-439.

Mayes, S., Calhoun, S., & Lane, S. (2005). Diagnosing children's writing disabilities: Different tests give different results. *Perceptual and Motor Skills, 101*, 72-78.

McGrew, K. S. & Woodcock, R. W. (2001). *Technical manual. Woodcock-Johnson III*. Itasca, IL: Riverside Publishing.

Miller, M. D., & Crocker, L. (1990). Validation methods for direct writing assessment. *Applied Measurement in Education, 3*(3), 285-296.

Muenz, T., Cole, J., & Balderson, A. (2000). Written expression, Hooper, and blind rating. *Psychological Reports, 87*(1), 255-258.

Muenz, T., Ouchi, B., & Cole, J. (1999). Item analysis of written expression scoring systems form the PIAT-R and WIAT. *Psychology in the Schools, 36*(1), 31-40.

Newcomer, P., & Barenbaum, E. (1991). The written composing ability of children with learning disabilities: A review of the literature from 1980 to 1990. *Journal of Learning Disabilities, 24*(10), 578-593.

No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107-110, § 115, Stat. 1425 (2002).

Penner-Williams, J., Smith, T., & Gartin, B. (2009). Written language expression: Assessment instruments and teacher tools. *Assessment for Effective Intervention, 34*(3), 162-169.

Powers, D., Fowles, M., & Willard, A. (1994). Direct assessment, direct validation? An example from the assessment of writing. *Educational Assessment, 2*(1), 89-100.

Rehabilitation Act of 1973, Section 504, Pub. L. No. 93-112, 87 Stat. 394 (1973).

Sabban, Y., & Kay, P. (1987). Distinction between essay and objective tests in assessing writing skills of underprepared college students. *Journal of Research and Development in Education, 21*(1), 61-68.

Semrud-Clikeman, M., & Harder, L. (2010). Neuropsychological correlates of written expression in college students with ADHD, *Journal of Attention Disorders, 15*(3), 215-223.

Schweiker-Marra, K., & Marra, W. (2000). Investigating the effects of prewriting activities on writing performance and anxiety of at-risk students. *Reading Psychology, 21*(2), 99-114.

Stuhlmann, J., Daniel, C., Dellinger, A., Kenton, R., & Powers, T. (1999). A generalizability study of the effects of training on teacher's abilities to rate children's writing using a rubric. *Reading Psychology, 20*(2), 107-127.

Ucgun, D. (2011). The study on the writing anxiety levels of primary school 6, 7, and 8th year students in terms of several variables. *Educational Research and Reviews, 6*(7), 542-547.

Viel-Ruma, K., Houchins, D., & Fredrick, L. (2007). Error self-correction and spelling: Improving the spelling accuracy of secondary students with disabilities in written expression. *Journal of Behavioral Education, 16*, 291-301.

Wechsler, D. (2002). *Supplement for college students and adults. Wechsler individual achievement test* (2nd ed.). San Antonio, TX: NCS Pearson.

Wechsler, D. (2009). Technical manual. Wechsler individual achievement test (3rd ed.). San Antonio, TX: NCS Pearson.

Wechsler, D. (2010). Technical manual with adult norms. Wechsler individual achievement test (3rd ed.). San Antonio, TX: NCS Pearson.

About the Authors

Daniel McNair, a native of Sandersville, GA, received a BA degree in Communication Arts from Georgia Southern University in Statesboro, GA. Graduate work includes Master's and Educational Specialist degrees in School Psychology from the same institution. He completed school psychology practicum and internship requirements within Bulloch County Public Schools. Mr. McNair is a certified school psychologist in the state of Georgia and is currently employed on the campus of his alma mater with the Regent's Center for Learning Disorders- one of three such centers in the state- that specializes in psychoeducational evaluations of postsecondary students. His research interests include written expression assessment, cyberbullying, anxiety disorders, social deviance-particularly as it applies to younger populations, and cultural hegemony. He may be reached at: danielmcnair@georgiasouthern.edu

Dr. Toi Curry, a native of Yonkers, NY, earned her Bachelor's degree in psychology from Marist College. She then went on to earn her Master's and Doctoral degrees in Clinical Psychology from The Institute for Clinical Psychology at Widener University. While in her doctoral program she specialized in Clinical Neuropsychology and School Psychology. She is a certified School Psychologist in the state of Pennsylvania and holds licenses to practice psychology in both New York and Georgia. Dr. Curry completed a 2-year postdoctoral fellowship in Clinical Neuropsychology at the Lenox Hill Hospital's Center for Attention and Learning Disorders in New York City. Research interests include reading and math disabilities across the lifespan, language development, recovery and reintegration into education following head injury, and the impact of pregnancy complications on the developing brain.

Identifying College Students At Risk for Learning Disabilities: Evidence for Use of the Learning Difficulties Assessment in Postsecondary Settings

Steven T. Kane
Soma Roy
California Polytechnic State University - San Luis Obispo

Steffanie Medina
San Luis Obispo, California

Abstract

This article describes research supporting the use of the Learning Difficulties Assessment (LDA), a normed and no-cost, web-based survey that assesses difficulties with reading, writing, spelling, mathematics, listening, concentration, memory, organizational skills, sense of control, and anxiety in college students. Previous research has supported the instrument's item and factor structure, reliability, and predictive validity for identifying college students at risk for learning disabilities. In the current study, data from a large scale study (n = 775) demonstrate further psychometric evidence for the instrument's utility as a screening and referral tool for college students at risk for learning disabilities. Recommendations for use of the LDA by postsecondary disability support professionals are discussed as well as limitations of the study and implications for future research.

Keywords: College students, learning difficulties, learning disabilities, LD, academic at-riskness

The National Center for Education Statistics ([NCES], 2010) estimates that only about 57 percent of first-time students at four-year institutions nationwide complete a bachelor's degree or its equivalent at their original institution within six years. Graduation data for two-year community colleges are more dire, with less than 25% nationwide completing their two-year degrees within three years (Schneider & Lin, 2012; NCES, 2010). Given these findings, it is not surprising that research also indicates that at least a quarter of all university students and nearly three-fifths of community college students nationwide are academically underprepared and must complete some form of remedial coursework, often significantly delaying their academic progress (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007; Engle, Bermeo & O'Brien, 2006). At the same time, many college students and their families are facing enormous financial challenges and are under great pressure to complete their college studies in a timely manner. Perhaps most troubling, college students who drop out before completing their degrees often have the earning power of only a high school graduate (Schneider & Lin, 2012; Barton, 2002).

In addition to the above scenario, students with learning disabilities (LD) and Attention Deficit Hyperactivity Disorders (ADHD) are attending colleges and universities in growing numbers while funding for disability support services has been reduced on many campuses. In fact, as many as 4% of college students nationwide have an LD, while an estimated 1-4% of American college students have ADHD (American Psychiatric Association, 2000; Faraone, Sergeant, Gillberg and Biederman, 2003; Shifrin, Proctor and Prevatt, 2009). Moreover, a recent study found that approximately 2% to 8% of a college population reported clinically significant levels of ADHD symptomatology, and at least 25% of college students with disabilities were diagnosed with ADHD (DuPaul, Weyandt, O'Dell, & Varejao, 2009).

Having poor academic and cognitive skills has been identified as one of the leading predictors of early departure from college (Wilens, Faraone, & Biederman, 2004; Tinto, 1993; Tobey, 1997) and having a learning disability in particular is a primary risk factor for a lifetime of underemployment and lower wages (Thoma, Lakin, Carlson, Austin, & Boyd, 2011). Given these findings, there is a critical need for college-level screening and "early-alert" instruments that can help higher education professionals -- and disability support staff in particular -- quickly and accurately identify college students at risk for learning disabilities and related academic challenges. In an era of continuing budget cuts to disability support programs, there is an especially urgent need for a no-cost, reliable, and valid screening tool that can help disability support professionals determine who should be referred for the type of diagnostic assessment that can clarify students' learning needs and potentially qualify them for accommodations.

Relatively little research has been conducted on developing no-cost, psychometrically robust screening tools for identifying college students at risk for learning disabilities. This is surprising given the significant financial costs and emotional toll of dropping out of college. Most research efforts have focused on the assessment of learning styles in college students and the identification of children at risk for learning disorders, especially given recent federal legislation promoting early identification of at-risk children (Kettler, 2006). Though instruments such as the Scholastic Abilities Test for Adults (Bryant, Patton, & Dunn, 1991) and the Dyslexia Adult Screening Test (Fawcett & Nicolson, 1997) have been developed to screen for learning disabilities, assessments such as these are often expensive and must be individually administered. Being able to quickly screen college students at risk for learning disabilities is imperative as one study found that 31% of participants with specific learning disabilities indicated that their disability was first identified at the postsecondary level (National Center for the Study of Postsecondary Educational Supports [NCSPES], 2002). Another study found that when declaring a primary disability, 44% of the participants with an attention deficit/hyperactivity disorder (ADHD) indicated that their disability was first identified at the postsecondary level (National Council on Disability, 2003).

In this article, we present further data supporting the use of the Learning Difficulties Assessment (LDA), a normed and no-cost internet-based assessment that assesses difficulties with reading, writing, spelling, mathematics, listening, concentration, memory, organizational skills, sense of control, and anxiety in college students (Schmidt & Kane, 2009). Interested readers can take the LDA anonymously and at no charge (www.ldacv.com). Researchers can examine psychometric components (e.g., item and factor structure, scoring grid methodology) of the LDA via the American Psychological Association's PsychTESTS database (Kane, 2011). Empirical support for its reliability and validity are presented below along with implications for its use by postsecondary disability support professionals.

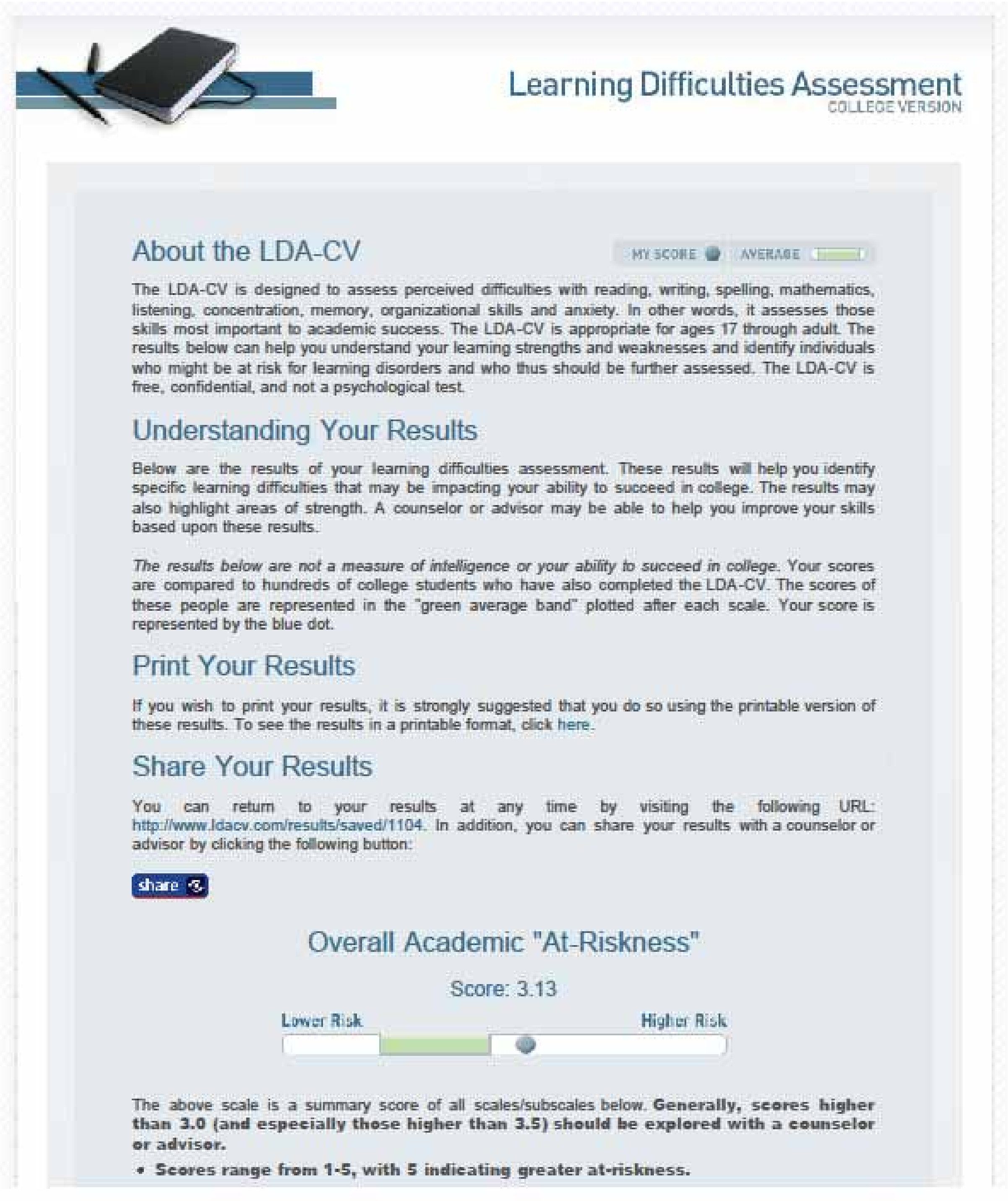
Development and Validation of the Learning Difficulties Assessment

Our goals when designing the LDA were fourfold. We wanted to create a no-cost, web-based assessment tool that could (1) map individual learning strengths and weaknesses, (2) provide users with a comparative sense of their academic skills, (3) integrate research in user-interface design to assist those with reading and learning challenges, and (4) identify individuals who may be at risk for learning disabilities and who should thus be referred for further assessment. Since the LDA was designed to be relatively simple to interpret, end users may be students, disability professionals, instructors, or evaluators. Easy-to-read, graphically driven instructions are included in the no-cost interpretive report. See Figure 1 for a sample page of the printout.

After extensive consultation with learning disability specialists, psychologists, academic advisors, and counselors, development of the LDA began over ten years ago from an initial pool of over 200 items. After multiple studies using confirmatory factor analysis, the LDA now has 123 items contributing to 23 scales and subscales. Table 1 lists the primary scales and subscales, along with item/scale inter-correlations and the number of items included in each scale. The final 123 items were derived both logically and empirically and a single item may contribute to several scales.

The LDA also offers the user an "overall academic at-riskness" score (hereafter referred to as the LDA "profile score") that correlates with their likelihood of having a learning disability or attention deficit disorder. Previous research has found that respondents scoring higher than 3.5 on the LDA profile score are statistically more likely to have a LD or ADHD and, if possible, should be further assessed by a qualified evaluator (Kane, Walker, & Schmidt, 2011). Thus, the

Figure 1. Sample Learning Difficulties Assessment Interpretive Printout.



About the LDA-CV

The LDA-CV is designed to assess perceived difficulties with reading, writing, spelling, mathematics, listening, concentration, memory, organizational skills and anxiety. In other words, it assesses those skills most important to academic success. The LDA-CV is appropriate for ages 17 through adult. The results below can help you understand your learning strengths and weaknesses and identify individuals who might be at risk for learning disorders and who thus should be further assessed. The LDA-CV is free, confidential, and not a psychological test.

Understanding Your Results

Below are the results of your learning difficulties assessment. These results will help you identify specific learning difficulties that may be impacting your ability to succeed in college. The results may also highlight areas of strength. A counselor or advisor may be able to help you improve your skills based upon these results.

The results below are not a measure of intelligence or your ability to succeed in college. Your scores are compared to hundreds of college students who have also completed the LDA-CV. The scores of these people are represented in the "green average band" plotted after each scale. Your score is represented by the blue dot.

Print Your Results

If you wish to print your results, it is strongly suggested that you do so using the printable version of these results. To see the results in a printable format, click here.

Share Your Results

You can return to your results at any time by visiting the following URL: http://www.ldacv.com/results/saved/1104. In addition, you can share your results with a counselor or advisor by clicking the following button:

Overall Academic "At-Riskness"

Score: 3.13

The above scale is a summary score of all scales/subscales below. **Generally, scores higher than 3.0 (and especially those higher than 3.5) should be explored with a counselor or advisor.**

- **Scores range from 1-5, with 5 indicating greater at-riskness.**

Table 1

Learning Difficulties Assessment Scales, Subscales, No. of Items & Item/Scale Inter-correlations

Scale / Subscale	No. of Items	Item / Scale Inter-correlation
General Reading Scale	23	.94
Reading-Physiological Aspects	5	.76
Reading-Processing and Comprehension	10	.89
General Listening Scale	16	.90
Listening-Memory and Concentration	8	.87
Listening-Information Processing	11	.85
General Concentration / Memory Scale	11	.90
General Writing Scale	18	.91
Processing	14	.86
Spelling	3	.89
Note Taking	8	.83
Copying	4	.75
General Math Scale	16	.89
Processing	8	.87
Symbolic understanding	6	.72
General Time Scale	18	.87
In-class & testing	5	.76
Procrastination	3	.81
Organization and Control Scale	18	.86
Organization	4	.71
Task Focus	6	.74
Anxiety / Pressure Scale	8	.78
Oral Presentation Scale	6	.72

Note: Number of items totals more than 123 because a single item may contribute to one or more subscales.

LDA may be useful in a variety of higher education settings for professionals seeking to identify academically at-risk college students. For a detailed history of the psychometric development of the LDA, please see Kane, Walker, and Schmidt (2011).

The LDA was programmed on a PHP/SQL platform and contains an automated demographic/research database. In designing the LDA, we followed many of the suggestions for effective web page design offered by Fowler and Stanwick (2004). Given that one of our goals was to use the LDA as a screening tool for learning disabilities, the reading level of LDA items was set at approximately the 6th grade level. Participants rate each item (e.g. "I don't retain much of what I read") on a 5-point Likert scale ranging from 5, "Agree Completely" to 1, "Disagree Completely." Summative LDA profile scores range from 1-5, with 5 indicating severe academic problems.

The LDA's on-screen field was designed to be visually appealing and clutter-free and items are presented to the user one at a time and in large fonts (see Figure 2). LDA questions advance automatically to reduce user fatigue and testing time, and can be completed in less than 15 minutes by most users. Though demographic data is collected from each respondent, no personal or identifying information is requested. Upon completion of the assessment, a no-cost four-page interpretive profile of the assessment can be printed immediately. In addition, a copy of the profile can be emailed to an advisor, teacher, or counselor. Perhaps most importantly, respondent scores are graphed relative to the norming population so that users have a comparative sense of their academic strengths and weaknesses.

Previous research has demonstrated item/scale inter-correlations ranging from .71 to .94 (Table 1). A Cronbach split-half reliability coefficient of .91 was obtained from a sample of 183 university students. A thirty-day test-retest reliability coefficient of .87 was obtained from a sample of 36 university students (Kane, et al., 2011).

The LDA has also demonstrated strong construct validity related to the assessment of learning strengths and weaknesses. For example, high profile scores on the LDA (indicating significant academic difficulties) were found to be significantly correlated with lower levels of academic self-efficacy for college-level learning (Kane, 2008). In a large scale five-year test of the LDA's predictive validity, a logistic regression analysis and Receiver Operating Characteristics analysis provided support for the instrument's ability to detect college students at risk for learning and attention deficit disorders (Kane, et al., 2011). The current version of the LDA was normed on an ethnically and socioeconomically diverse population drawn from over 1200 respondents from the western United States.

The Present Study

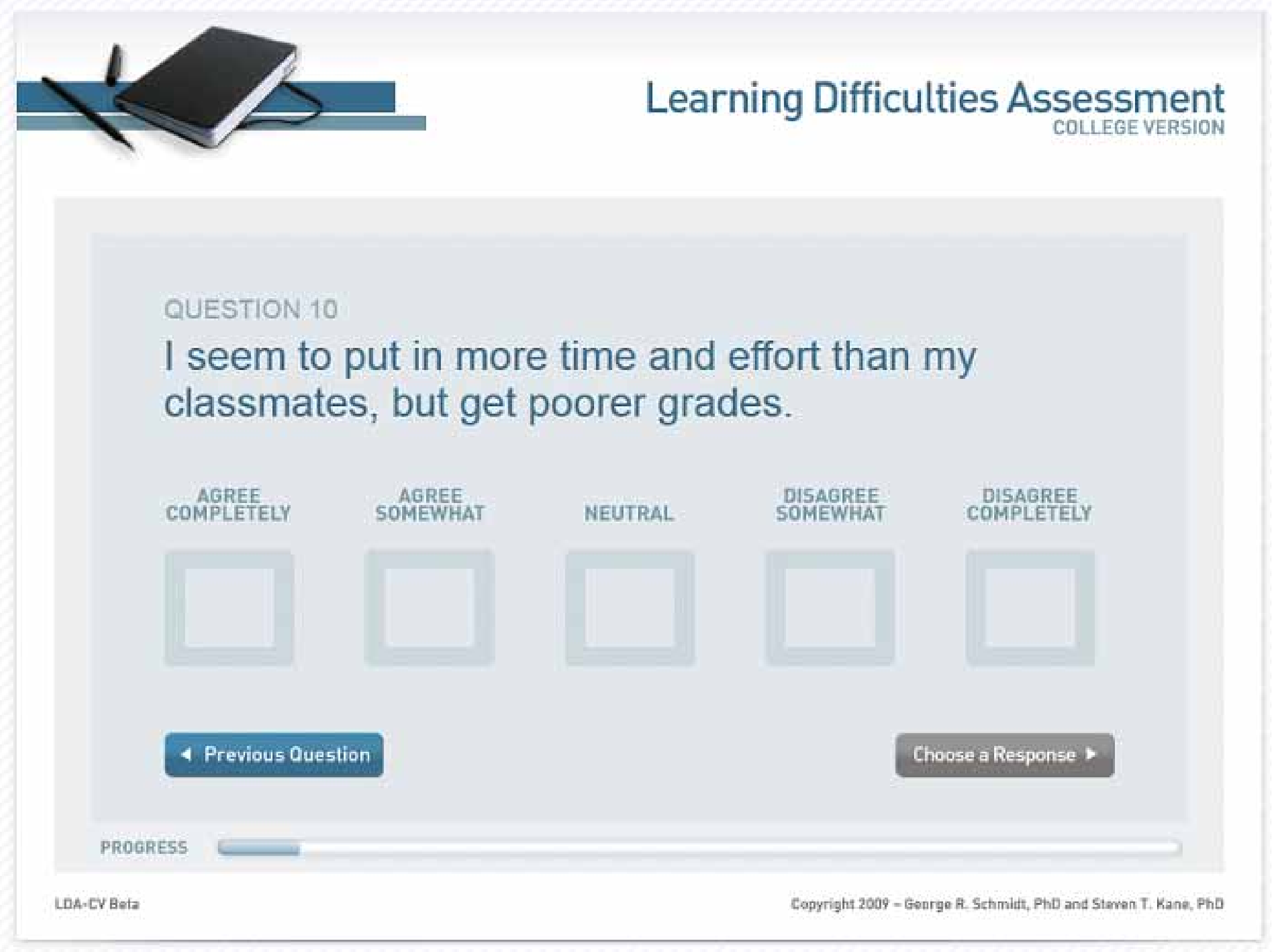
Given previous research supporting the LDA's reliability, validity, and factor structure, we wanted to explore the performance of the LDA relative to variables such as age, gender, and ethnicity on a large scale. We also wanted to examine more closely whether LDA scores are related to high school and college GPA, as well as whether LDA scores can predict the odds of a respondent having a learning disability. Thus, the research questions driving this study are: (a) Are there significant demographic differences in LDA profile scores? (b) Is the LDA profile score associated with high school GPA and college GPA? (c) Is the LDA profile score predictive of self-perceived "ability to succeed in college"? (d) Do LDA profile scores predict who might be diagnosed with a LD? And finally, (e) Are LDA profile scores predictive of severity of self-reported LD?

Method

Participants and Procedures

Data were collected anonymously from 775 participants who responded to the internet-based LDA from June 2011 to May 2012. Though anonymous, extensive demographic data was voluntarily collected from each participant as well as the self-reported data described below under "Measures." Google Analytics indicated that participants were primarily from California, Oregon, and Washington, but data were also collected from individuals in the Midwest and East Coast of the United States. Though some respondents were from as far away as Europe and the Middle East, these data were not included in present study. Data were collected regarding age, gender, race/ethnicity, current academic situation, highest level of education obtained, high school, and college GPA (see Table 2). Though some respondents may have discovered the LDA while searching the internet, many were referred to the LDA assessment by a counselor, academic advisor, and/or classroom instructor.

Figure 2. Sample Learning Difficulties Assessment Respondent Screen View and Question.



Learning Difficulties Assessment
COLLEGE VERSION

QUESTION 10

I seem to put in more time and effort than my classmates, but get poorer grades.

Copyright 2009 – George R. Schmidt, PhD and Steven T. Kane, PhD

Measures

To facilitate data analyses and test for the research questions described above, we collected data regarding the respondents' perceptions of their ability to succeed in college (academic self-efficacy), whether or not they have been diagnosed with (or suspect having) a learning disability, and if so, the perceived severity of their learning challenges. These data are summarized in Table 3.

To assess perceptions of their ability to succeed in college environments, each respondent was asked the following question: "Based upon what I know about my skills and abilities, I would rate my overall ability to succeed academically as…" Possible responses ranged from "Much higher than my peers" to "Much lower than my peers."

Individuals indicating a previous diagnosis of a learning disability were asked to rate the severity of their learning disorder on the following scale:

1. Very minor and does not affect college performance
2. A disruption that requires extra effort in some classes but does not affect my overall performance
3. A significant disruption that requires great effort to get the grades I want
4. A significant disruption that causes me to get lower grades than I am capable of
5. A significant disruption that may force me to drop out of school
6. A significant disruption that has already forced me to drop out of school

To reduce possible sampling error and increase the robustness of the data, only individuals who indicated scores higher than 3 on the above scale were included

Table 2

Respondent Demographics (n = 775)

Variable	Category Level	%
Gender	No response	3.61
	Female	51.42
	Male	34.97
Age (years)	No response	2.58
	16 or younger	1.29
	17-22	49.68
	23-28	17.42
	29-35	7.35
	36-49	9.55
	49 or older	12.13
Primary Ethnic Identification	No response	4.52
	Asian	8.77
	American Indian	0.52
	African American/Black	3.74
	Hispanic/Latino	8.90
	Pacific Islander	0.26
	European American/White	63.23
	Mixed heritage	10.06
Highest Level of Education	Less than high school, no response	6.96
	High school	28.39
	Some college	36.26
	College	10.97
	Graduate studies	17.42
High School GPA	No response	10.06
	1.00-1.50	0.39
	1.51-2.00	2.84
	2.01-2.50	8.52
	2.51- 3.00	14.97
	3.01-3.50	24.90
	3.51-4.00	29.68
	Greater than 4.00	8.65
College GPA (if applicable)	No response	23.23
	1.00-1.50	1.29
	1.51-2.00	5.29
	2.01-2.50	16.00
	2.51- 3.00	18.45
	3.01-3.50	18.84
	3.51-4.00	16.26
	Greater than 4.00	0.65
Current Situation	No response = 0	11.10
	Vocational school/technical college	1.42
	Community college	9.03
	Four-year college or university	51.61
	Graduate student	10.32
	Not enrolled	10.45
	Other	6.06

in the data analysis as having significant academic impairment. This is important given the self-report nature of the data. Previous research with the LDA in a highly controlled diagnostic environment using scales similar to those above found that college students were often accurate self-reporters of their LD and/or ADHD symptoms that in fact predicted a subsequent diagnosis of LD or ADHD (Kane et al., 2011).

Results

Separate one-way Analysis of Variance (ANOVA) models were run on Minitab 16 (Minitab 16, 2010) using LDA profile score as the dependent variable, and various explanatory variables reflecting our research questions as described above. As reflected in Table 4, the difference between males and females with regard to average LDA profile scores was found to be insignificant ($p = 0.095$); similarly, differences between race/ethnicity were also found to be insignificant ($p = 0.065$). In contrast, the data revealed a significant relationship between age group and LDA profile score ($p < 0.001$), with individuals 49 years or older scoring significantly lower on the LDA than those 35 years or younger. Please note that this implies that respondents 35 years or younger tended to have greater academic difficulties (i.e., higher LDA profile scores).

We also found evidence of a significant association between LDA profile scores and highest level of education ($p < 0.001$), high school GPA ($p = 0.006$), and college GPA ($p < 0.001$), if applicable (Table 4). More specifically, individuals who had completed graduate studies tended to score significantly lower on the LDA, on average, compared to those with only some college or less. Also, those with a college GPA higher than 4.0 were found to have significantly lower LDA profile scores, on average, compared to a college GPA of 3.0 or lower. Having a college GPA somewhere between 3.01 and 4.0 was, quite understandably, not found to be significantly different from having a college GPA higher than 4.0. Individuals with high school GPA higher than 4.0 were found to have significantly lower LDA profile scores, on average, compared to those with a high school GPA between 3.01 and 4.

Logistic regression was used to investigate LDA profile score as a predictor of (a) attitude toward one's ability to be academically successful, (b) the odds of being diagnosed with a learning disability (LD), and (c) self-reported severity of LD. We used Minitab 16 for running three separate logistic regression models, each with LDA profile score as the predictor (Table 5). We found very strong evidence of an association between LDA profile score and attitude towards academic success ($p < 0.001$); all else remaining equal, individuals with higher LDA profile scores are more likely to feel that their overall ability to succeed academically is lower than their peers, compared to those with lower LDA profile scores. Also, those with higher LDA profile scores were found to be significantly more likely to be diagnosed with a LD ($p < 0.001$), and significantly more likely to report the severity of their LD as "significant" rather than minor ($p < 0.001$).

Table 5 also gives the estimated odds ratios (OR), and the 95% confidence intervals for the corresponding OR. Logistic regression procedures and OR analyses are considered the most appropriate and effective methodologies for the analyses of categorical dependent variables such as those presented here (Agresti, 2007). The estimated OR for being diagnosed with LD was calculated to be 2.61, with the 95% confidence interval being 2.08, 3.27. Note that an OR of 1 would indicate that LDA profile score is not associated with being diagnosed with LD. Thus, we are 95% confident that all else being equal, an increase of one point in the LDA profile score increases the odds of being diagnosed with a LD by between 108% to 227%. The other OR can be interpreted similarly. The p-values for the Hosmer-Lemeshow goodness-of-fit tests can also be found in Table 5, and provide no evidence against model adequacy. In sum, the data provide significant evidence that LDA profile scores can be used as a predictor of attitude towards being academically successful ("academic self-efficacy"), being diagnosed with a LD, and self-evaluation of the severity of LD.

Discussion

The data presented above provide further evidence for use of the LDA as a screening tool to identify college students at risk for learning disabilities. Previous research has supported the item and factor structure of the LDA, as well as its reliability and predictive validity. The current study provides additional evidence for the LDA's validity and its use with relatively diverse college populations. For example, there were no significant ethnic or gender differences found on LDA profile scores. In the present study, higher LDA profile scores were found to be predictive of self-perceived "ability

Table 3

Descriptive Statistics for Perceptions of Learning Ability and Learning Disability Status (n = 775)

Variable	Levels	%
Ability to succeed academically?	No response	3.35
	Lower than my peers	66.58
	Same or higher than my peers	30.07
Diagnosed with a learning disability?	No response	3.35
	Yes	47.61
	No	49.03
Self-reported severity of learning disability?	No response	53.03
	Significant	33.29
	Minor	13.67

to succeed in college" and were associated with high school and college GPA. Perhaps most importantly, high LDA profile scores were found to be predictive of having a learning disability and, if so, its severity. The authors of this study know of no other psychometrically robust and no-cost instrument that can identify college students at risk for learning disabilities.

Given that poor academic and cognitive skills are some of the leading predictors of early departure from college, identifying college students at risk for learning disabilities should be a priority. As noted above, a surprisingly large number of individuals are first diagnosed with LD or ADHD during their college years. Disability support professionals are in a unique position to identify academically at-risk college students *early* in their academic careers and connect these individuals with the resources necessary to support their success. Moreover, the LDA may be especially helpful to disability specialists to help determine *when* a student should be referred for diagnostic assessment for a possible learning or attentional disorder. For example, students with LDA profile scores higher than 3.5 are significantly more likely to have a LD or ADHD and should be referred for further diagnostic counseling, screening, and assessment. Used in concert with other data (grade point average, academic history, family history of LD, developmental history, etc.), the LDA may be also helpful to disability support professionals in determining *which* students are most at risk and who thus should be assessed first, given the often limited financial resources on most college campuses.

The LDA can also be helpful to disability support counselors who teach academic skills courses in that it essentially provides a remediation "map" indicating where a student most needs assistance and skill building to succeed. For example, individualized tutoring could be focused on those areas of greatest risk as indicated by the LDA. The LDA is already being used by several community colleges and universities in this manner.

The results of the current study also suggest that the LDA may be helpful for a variety of other higher education professionals, including counselors and academic advisors, and of course, faculty. In fact, many two- and four-year instructors are currently using the LDA to better understand the needs of their students and to identify at-risk individuals *before* they fail. Faculty can request that the LDA be completed as a course assignment and counselors/advisors can request that students complete the LDA as part of their orientation and/or advising process. Some universities have linked the LDA website to their counseling center's website, as many students suspecting a LD or ADHD often first seek help from these departments.

There are several limitations of this study that should be noted. First, while the sample size of this study is large, the sample was not randomly selected and hence might not be fully representative of the

Table 4

LDA Profile Score in Relation to Demographic Variables

Variable	Category / Levels	LDA Profile Score (SD)	*p*-value
Overall (N = 775)	Mean LDA profile score of all respondents	3.04 (0.74)	n/a
Gender (n=747)	Female	3.08 (0.75)	0.095
	Male	2.98 (0.73)	
Age* (years) (n = 755)	22 or younger	3.10 (0.68)^{a}	< 0.001
	23-28	3.07 (0.73)^{a}	
	29-35	3.14 (0.76)^{a}	
	36-49	2.95 (0.81)$^{a, b}$	
	49 or older	2.71 (0.86)^{b}	
Ethnicity* (n = 740)	Asian	3.13 (0.76)	0.065
	African American/Black	3.12 (0.77)	
	Hispanic/Latino	3.13 (0.76)	
	European American/White	2.98 (0.73)	
	Mixed heritage (includes American Indian & Pacific Islander)	3.19 (0.74)	
Highest Education Completed (n = 747)	Less than high school, no	3.23 (0.82)^{a}	< 0.001
	response	3.19 (0.66)^{a}	
	High school	3.09 (0.67)$^{a, b}$	
	Some college	2.87 (0.81)$^{b, c}$	
	College	2.70 (0.82)^{c}	
	Graduate studies		
High School GPA* (n = 697)	2.00 or less	3.22 (0.83)$^{a, b}$	0.006
	2.01-3.00	3.05 (0.82)$^{a, b}$	
	3.01-4.00	3.22 (0.74)^{a}	
	Greater than 4.00	2.97 (0.71)^{b}	
College GPA* (n = 595)	2.00 or less	3.21 (0.70)^{a}	0.001
	2.01- 3.00	3.07 (0.63)^{a}	
	3.01-4.00	3.10 (0.69)$^{a, b}$	
	Greater than 4.00	2.87 (0.79)^{b}	

Note: LDA profile scores range from 1-5; 5 = highest level of academic impairment. Means that do not share a letter are statistically significantly different, at the .05 level of significance.
*Two or more categories may have been combined to account for small sample sizes in certain categories.

Table 5

LDA Profile Score as a Predictor of (a) Attitude Toward Ability to Succeed Academically, (b) Being Diagnosed with a Learning Disability, and (c) Self-reported Severity of Learning Disability

	Pessimistic about ability to succeed academically (n = 749)	Diagnosed with learning disability? (n=749)	Self-reported severity of learning disability? (n=364)
p-value	< 0.001	< 0.001	< 0.001
Odds Ratio	3.82	2.61	3.62
95% CI for OR	(2. 90, 5.03)	(2.08, 3.27)	(2.40, 5.45)
Hosmer-Lemeshow goodness-of-fit *p*-values	0.46	0.09	0.49

general college student population of the United States. However, the results can be safely generalized to people similar in age, race/ethnicity, educational background, etc., as those in the study. Second, there is no cause-and-effect inference to be made from this study. The data were collected through an observational study, and we can infer only association between the variables of interest. The reader should exercise some caution in interpreting the results because the data were self-reported and collected anonymously via the internet. However, as noted earlier, similar data collected from a large-scale, highly controlled study testing the reliability and predictive validity of the LDA also found significant support for its use.

Research is already underway investigating which particular LDA sub-scales best predict ability to succeed in college, whether or not they have a LD, and if so, the severity of the LD. Future research will also focus on how the LDA might predict academic “at-riskness” in underrepresented student populations and in high school seniors transitioning into their first year of postsecondary education. Given the high financial and emotional toll of dropping out of college due to an undiagnosed LD, there is a critical need for widespread use of “early-alert” and screening instruments like the LDA.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders.* (4th ed.; Text Revision). Washington, DC: Author.

Agresti, A. (2007). *An introduction to categorical data analysis* (2nd Ed.). John Wiley and Sons.

Barton, P. E. (2002). *The closing of the education frontier?* Princeton, NJ: Educational Testing Service.

Bryant, B. R., Patton, J. R., & Dunn, C. (1991). *Scholastic abilities test for adults* (Examiner's manual). Austin, Texas: Pro-Ed.

DuPaul, G., Weyandt, L., O'Dell, S., Varejao, M, (2009). College students with ADHD: Current status and future directions. *Journal of Attention Disorders, 13*(3), 234-250.

Engle, J., Bermeo, A., & O'Brien, C. (2006). *Straight from the source: What works for first generation students.* Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education.

Faraone, S. V., Sergeant J., Gillberg, C., & Biederman J. (2003). The worldwide prevalence of ADHD: Is it an American condition? *Western Psychiatry, 2*, 104-113.

Fawcett, A., & Nicolson, R. I. (1997). *The dyslexia adult screening test.* London, England: Harcourt Assessment.

Fowler, S., & Stanwick, V. (2004). *Web application design handbook: Best practices for web-based software.* San Francisco: Morgan Kauffman Publishers

Kane, S. T. (2008). [Reliability and validity data analysis for the Learning Difficulties Assessment]. Unpublished raw data.

Kane, S.T. (2011). *Learning difficulties assessment* [Database record]. Retrieved from PsycTESTS. doi: 10.1037/t16154-000

Kane, S. T., Walker, J., & Schmidt, G. R. (2011). Assessing college-level learning difficulties and "at-riskness" for learning disabilities and ADHD: Development and validation of the Learning Difficulties Assessment. *Journal of Learning Disabilities, 44*(6) doi: 10.1177/0022219410392045

Kettler, R. J. (2006). Early identification of students who need academic help: Validation of the brief academic competence evaluation screening system. *Dissertation Abstracts International Section A: Humanities and Social Sciences, 66*(8-A), 2832.

Kuh, G. D., Kinzie, J., Buckley, J., Bridges, B., & Hayek, J. C. (2007). Piecing together the student success puzzle: Research, propositions, and recommendations. *ASHE Higher Education Report, 32*(5). San Francisco: Jossey-Bass.

Minitab 16 Statistical Software (2010). [Computer software]. State College, PA: Minitab, Inc.

National Center for Education Statistics (2010). *Digest of education statistics*. Retrieved from www.nces.ed.gov/programs/digest/d10/tables/dt10_341.asp.

National Center for the Study of Postsecondary Educational Supports (2002, July). *Preparation for and support of youth with disabilities in postsecondary education & employment: Implications for policy, priorities and practice. Proceedings and briefing book for the National Summit on Postsecondary Education for People with Disabilities*, presented in Washington, DC, July 8, 2002. Retrieved from http://www.ncset.hawaii.edu/summits/july2002/proceeedings/txt/SUMMIT%20PROCEEDINGS.txt

National Council on Disability (2003). *People with disabilities and postsecondary education* – Position paper. Retrieved from http://www.ncd.gov/publications/2003/Sept152003

Schmidt, G. R., & Kane, S. T. (2009). *The learning difficulties assessment: College version.* Self-published assessment instrument available at www.ldacv.com.

Schneider, M., & Yin, L. M. (2012). Completion matters: The high cost of low community college graduation rates. *Educational Outlook, 2.* Washington, DC. American Enterprise Institute for Public Policy Research.

Shifrin, J. G., Proctor, B. E., & Prevatt, F. (2009). Work performance differences between college students with and without ADHD. *Journal of Attention Disorders, 13*, 489–496. doi:10.1177/1087054709332376

Thoma, C. A., Lakin, K. C., Carlson, D., Austin, K., & Boyd. K. Participation in postsecondary education for students with intellectual disabilities: A Review of the literature 2001-2010. *Journal of Postsecondary Education and Disability, 24*(3), 175-191.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition.* (2nd ed.). Chicago: The University of Chicago Press.

Tobey, P. (1997). Cognitive and non-cognitive factors as predictors of retention among academically at-risk college students: A structural equation modeling approach. *Dissertation Abstracts International Section A: Humanities and Social Sciences, 57*(7-A), 2907.

U.S. Department of Education, National Center for Education Statistics. (2011). *The Condition of Education 2011* (NCES 2011-033), Indicator 23.

Wilens, T. E., Faraone, S. V., & Biederman, J. (2004). Attention-deficit/hyperactivity disorder in adults. [Research Support, U.S. Gov't, P.H.S.]. *JAMA, 292*(5), 619-623.

About the Authors

Dr. Steven T. Kane received his B.A. degree in Behavioral Sciences from California State Polytechnic University, Pomona and an M.A. and Ph.D. in Counseling and Educational Psychology from UCLA. Dr. Kane has extensive experience in post-secondary disability services having served as an assistant director and learning disability specialist for over a decade. He is also a licensed clinical psychologist where he has specialized in the assessment of learning disabilities and ADHD for over twenty years. Dr. Kane is currently associate professor of counseling and guidance in the School of Education at California Polytechnic State University, San Luis Obispo. His research interests include learning disabilities, ADHD, college student mental health and helping at-risk and underrepresented individuals succeed in science and technology careers. He can be reached by email at: skane@calpoly.edu.

Dr. Soma Roy received her B.Sc. degree in Statistics from Lady Shri Ram College, New Delhi, India, and her M.S. and Ph.D. in Statistics from The Ohio State University, Columbus, OH. She is currently an assistant professor in the Statistics Department at California Polytechnic State University, San Luis Obispo. Her research interests include statistics education, health statistics, and computer experiments. Dr. Roy's experience includes working on an introductory statistics textbook involving active-learning methods, as well as involvement in grading Advance Placement Statistics Exams, and working on assessment tasks to support the inclusion of the Statistics Standard in the Common Care State Standards for Mathematics. She can be reached by email at: soroy@calpoly.edu.

Steffanie Medina received her B.A. degree in psychology and M.A. in education from California Polytechnic State University, San Luis Obispo. Her experience includes working as a school counselor for San Luis Coastal Unified School District and serving as a student athlete academic coordinator at California Polytechnic State University, San Luis Obispo. She is currently a youth and family mediator and director of a non-profit community mediation center in San Luis Obispo, CA. Her research interests include adult learning disabilities and the effects of brain injury and psychological trauma on family systems. She can be reached by email at: smedina@wilshirehcs.org.

College Student Disclosure of Non-Apparent Disabilities to Receive Classroom Accommodations

Derrick Kranke
Sarah E. Jackson
University of Southern California

Debbie A. Taylor
Eileen Anderson-Fye
Case Western Reserve University

Jerry Floersch
Rutgers University

Abstract

College students with psychiatric (non-apparent) disabilities have a much higher dropout rate and tend to underperform academically when compared with peers who do not have non-apparent disabilities. These students are also vulnerable because their disability could delay the development of milestones critical to adulthood. Limited research examines students' perceptions and attitudes about disclosing their disability to university personnel to promote academic success in college. The goal of this exploratory study is to investigate factors associated with students' perceptions of faculty and peers that impact these students' disclosure of their non-apparent disabilities in order to access services for academic assistance. Seventeen college students were recruited at a competitive, urban, private Midwestern university to participate into a two-year qualitative study that examined their use of disability services. Findings indicate that students make the decision to disclose to request accommodations under three conditions: (1) fear that their disability will greatly limit functioning critical to academic achievement, (2) the stability of their non-apparent disability, and (3) stigma. Policy and practice implications concerning students' mental health issues with university faculty, administration, and campus service providers are discussed.

Keywords: Classroom accommodations, college students, stigma

There is serious concern about the academic performance of college students who live with non-apparent disabilities (Kadison & Digeronimo, 2004). Non-apparent disabilities can refer to psychiatric disabilities, learning disabilities, difficulties with attention, and hidden medical conditions, among others. For purposes of this article, the term "non-apparent disabilities" will apply to psychiatric disabilities and disabilities that pertain to attentional issues. One estimate from the 1990's reported that over 4 million students have withdrawn from postsecondary education, before graduating, because of a non-apparent disability (Kessler, Foster, Saunders, & Stang, 1995). In addition, a national report estimated that "86% of individuals who have a psychiatric disorder withdraw from college prior to completion of their degree" (Collins & Mowbray, 2005, p. 304). Indeed, coping with a non-apparent disability during college can greatly impact success and completion of a degree, which can affect skills training for a satisfying job or career.

College students with non-apparent disabilities are considered a vulnerable population because of the impact of intrinsic and extrinsic stressors associated with their impairment. First, these students may experience functional limitations as their disability could inhibit or hinder the timely attainment of developmental milestones critical to adulthood (Leavey, 2005). Particular milestones include: identity formation, intimacy, and independence (Kroger, 2007). Furthermore, students with non-apparent disabilities struggle with intrinsic stressors that apply to academic achievement. A national study of college and university students with psychiatric disabilities stated that this population tends to have lower grade point averages than their peers (Eisenberg, Golberstein, & Hunt, 2009). Certainly, intrinsic stressors intensify the vulnerability of this population and put them at risk for more negative outcomes than their peers.

College students with non-apparent disabilities experience extrinsic and intrinsic stressors in the form of stigma and discrimination by the public. The extant literature describes stigma in two forms. Public stigma refers to instances in which society discriminates against individuals because they have a disability. In contrast, self-stigma pertains to self-imposed behaviors and responses by the stigmatized individual, such as internalizing negative social responses, which lead to feelings of rejection (Corrigan & Kleinlein, 2005). Stigma can be interpreted as both an intrinsic and extrinsic stressor. Public stigma may be thought of as an external stressor as it refers to others' endorsement of stereotypes and rejection due to having a disability. Self-stigma could be considered intrinsic because individuals with disabilities have internalized rejection and public discrimination; it may limit functioning by impacting feelings of self-efficacy and self-esteem, thus potentially reducing individual's willingness to capitalize on life opportunities. Ultimately, the negative perceptions of society toward people with non-apparent disabilities can greatly minimize their social opportunities to have a meaningful career, intimate relationships and desirable housing (Corrigan & Kleinlein, 2005). Indeed, the intrinsic and extrinsic stressors of students with non-apparent disabilities can significantly affect their ability to integrate in society and function independently.

Although the process of receiving academic accommodations varies by institution, college students with a non-apparent disability can qualify to receive reasonable accommodation under federal law if their disability substantially limits major life activities such as thinking, reading, and concentrating (Belch, 2011). Whereas, teachers of K-12 students are required to receive disability and/or diversity training, it is important to note the absence of any formal policy requiring the mandatory participation of college or university faculty in disability awareness training. Consequently, such professional development is often limited (Lombardi & Murray, 2011).

The barriers that impact success among college students who have non-apparent disabilities have not been fully examined. A few studies have examined attitudes and perceptions about the impact of students' interactions with campus disability services (DS) (Becker, Martin, Wajeeh, Ward, & Shern 2002; Collins & Mowbray, 2005; Marshak, Van Wieren, Ferrell, Swiss, & Dugan, 2010). One such study, the National Survey of Campus Disability Services (Collins & Mowbray, 2005), found that DS staff perceive stigma to be the biggest barrier for college students to access DS, particularly their fear of disclosure. Respondents also reported that students' lack of knowledge pertaining to their non-apparent disability and the available resources to assist them were other barriers to the use of academic accommodations. In addition, DS staff reported that faculty, administrators, and staff, had many questions about working with students with non-apparent disabilities, including whether these students could handle the course load and if they should even be in college. Furthermore, qualitative data from this study revealed that students with non-apparent disabilities encountered stigma from peers and professors because of a lack of campus-wide education. Finally, DS staff reported that "psychiatric disabilities are difficult to accommodate" (p. 311) and that they had concerns about determining suitable accommodations for non-apparent disabilities. The present study strives to identify gaps in policies and practices that need to be addressed to further promote the academic success of college students with non-apparent disabilities.

Research about classroom accommodations is even rarer (Marshak, et al., 2010; Salzer, Wick, & Rogers, 2008). Salzer et al. found that students with non-apparent disabilities who received academic support were embarrassed and/or stigmatized when they disclosed their disability to faculty and other students. In addition, some students complained that faculty members were unreceptive or uncooperative. Furthermore, students with learning disabilities (Marshak, et al.) reported somewhat similar barriers that resulted in their underutilization of classroom accommodations in postsecondary settings. Students with learning disabilities were also concerned about negative perceptions of peers and faculty, identity issues, and how integration and acknowledgement of a disability would negatively impact their sense of self-sufficiency. Students' perspective of using accommodations is paramount, as this form of campus support can impact their ability to succeed. If students do not perceive accommodations as helpful, they will be less willing to seek them. More importantly, if accommodations are not effective, some college students with disabilities who might otherwise succeed, may drop out or fail. Further, students with non-apparent disabilities may be at greater risk for more negative outcomes than students with other disabilities because a mental illness could impair cognition and emotion regulation, or lead to student participation in risky behaviors to cope with persistent functional limitations (Kadison & Digeronimo, 2004).

Lack of knowledge regarding available services and an unsafe, potentially stigmatizing environment are two of the most common barriers for students with psychiatric disabilities to access academic accommodations (Barnard-Brak, Davis, Tate, & Sulak, 2009). There is consistency in the research on barriers that impact the utilization of classroom accommodations among college students with disabilities. Hartmann-Hall and Haaga (2002) found a correlation between students' help-seeking behavior and their impression of the climate on campus relating to disabilities. In addition, studies of college students seeking accommodations and other support services indicate that in addition to students being unfamiliar with available support services, they often lack knowledge about procedures for obtaining accommodations (Barnard-Brak, et al., 2009; Lombardi & Murray, 2011). Therefore, identifying perceptions of disclosure and accommodations among college students with non-apparent disabilities could help DS offices better customize their services to students.

Resources to Assist Students with Non-Apparent Disabilities

A supported education model was designed for adults with psychiatric disabilities to address health concerns and enrollment in postsecondary schools (Unger, 2007). This model promotes integration and success in college settings by providing DS and educational accommodations to students with psychiatric disabilities. Supported education strives to improve quality of life and independence by providing a normalizing experience and increasing self-determination for students with mental health issues (Megivern, Pellerito & Mowbray, 2003). However, this model has only been successfully implemented in a limited number of college settings.

Those students who attend universities without a supported education model can still benefit from Section 504 of the Rehabilitation Act of 1973, which guarantees equal access for students with disabilities. Students' access to accommodations, however, does not mean that all questions have been answered about the effectiveness of those supports. Measuring the outcomes of accommodation usage is complicated by the varying nature and degree of students' disabilities and their actual use of accommodations. For example, accommodations for students with physical impairments might include the implementation of sign language, audio amplification devices, Braille, or magnification devices. Accommodations for students with non-apparent disabilities typically include extended test times, permitting frequent breaks during exams, or allowing testing in a separate room. Although the aforementioned accommodations may effectively mitigate the limitations for students with certain non-apparent disabilities, such as learning disabilities, students with psychiatric disabilities and/or disabilities pertaining to attention problems may require different types of accommodations to allow them equal access under the law. Thus, literature relating to students with disabilities in general has been found to have select relevance to students with non-apparent disabilities.

Stress-Vulnerability model

The Stress-Vulnerability model (Zubin & Spring, 1977), which was originally used to explain responses to stress among individuals with schizophrenia, can explain how other vulnerable populations deal with stress. College students with non-apparent disabilities experience a variety of stressors including academics and managing the functional limitations and symptoms of their disability. The model proposes that:

> Each of us is endowed with a degree of vulnerability that under suitable circumstances will express itself in an episode . . . . The acquired component of vulnerability is due to the influence of traumas, specific diseases, perinatal complications, family experiences, adolescent peer interactions, and other life events that either enhance or inhibit the development of subsequent disorder (Zubin & Spring, 1977, p. 109).

An individual's vulnerability varies based on how he/she responds to "challengers" or triggers. Zubin and Springer (1977) classify these challengers as either endogenous or exogenous. The distinction between the two is that endogenous events pertain to neuropsychological or biological challenges, while exogenous challengers are related to life events.

If the resulting stress from a challenging life event does not exceed the threshold of vulnerability, the individual stays within the limits of normality as he/she is able to manage the stress, and will likely not experience a great deal of functional limitations. If the stress exceeds the threshold, the individual will likely experience an increase in functional limitations. When the stress subsides and returns below the vulnerability threshold, the individual returns to a similar state in his/her pre-episode level of functioning (Zubin & Spring, 1977).

Brown and Birley (1968) emphasize that the severity of an event's stressfulness is determined by the individual's own perception. Individuals can alter the stressful impact by distorting or reinterpreting the event, because the threat of the stressful life event may produce a damaging strain. In addition, coping efforts, which vary by individual, are considered defense mechanisms as they are critical to resolving or minimizing the impact of the stress. Ultimately, a person's intellectual strategies and/or social skills provide a skill set to handle life's exigencies (Zubin & Spring, 1977).

Other studies have used the Stress-Vulnerability model to explain student behavior. For instance, Koca-Atabey et al. (2011) conducted a study of Turkish university students with physical impairments, evaluating students' psychological well-being with the Stress-Vulnerability model. They examined the impact of stress-related growth and psychological distress on students' well-being, finding problem-solving coping to be the only significant variable in diminishing psychological distress and enhancing students' personal growth (p. 114). Camara (2011) sought to describe the experience and decision-making processes of college students with non-apparent disabilities in the context of seeking classroom accommodations. Pathways to seeking accommodations were identified within students' decision-making process. Either students chose not to disclose their functional limitations, forgoing the utilization of accommodations in an effort to pass as a student without a disability, or they disclosed and had the opportunity to receive accommodations if and when the need arose. Camara (2011) described the "founding moment" or precipice, whereby participants became willing to risk the consequences of being perceived as different. This process of disclosure to receive needed accommodations is termed "outing themselves."

Purpose of Study

Previous research examining classroom accommodations among college students with non-apparent disabilities (Collins & Mowbray, 2005; Marshak et al., 2010; Salzer et al., 2008) has been based on cross-sectional data. A longitudinal study could be critical to assessing what barriers or circumstances cause college students to change their perceptions about seeking accommodations for non-apparent disabilities over time. Therefore, the goal of this exploratory study is to investigate factors associated with students' functional limitations and perceptions of faculty and peers that impact these students' disclosure of their non-apparent disabilities to access services for academic assistance. Specifically, this study addresses the following research questions: (1) What factors influence students' disclosure of a non-apparent disability to receive classroom accommodations? and (2) What factors influence their decision to delay disclosure to receive classroom accommodations? We agree with Collins and Mowbray (2005) that "study findings can inform state and federal policy and postsecondary institutional practices, with the goal of better serving psychiatrically disabled students to maximize their talents and potential" (p. 306).

Methods

Sample Recruitment

The data for this qualitative analysis come from a larger mixed method, IRB-approved study of college students' use of mental health services at a competitive, urban, private Midwestern university. Students were contacted (Fall 2008) through an online survey sent to all undergraduates. Although more than 100 undergraduate students responded, a total of 86 of these undergraduate students completely finished the online survey. The online survey contained questions pertaining to college students' perceptions of mental health services (i.e. stigma, illness perceptions, and attitudes towards medication). At the end of the survey, respondents could consent to be contacted for enrollment into the qualitative portion of the study. Altogether, 17 undergraduate students were re-contacted and were qualified to take part in the study. These undergraduate students were invited to participate in the two-year exploratory study. Respondents were interviewed once per semester for four semesters. All participants were currently prescribed, and self-reported adherence to, at least one psychiatric medication. Diagnoses were self-reported by participants (see Table 1 for a list of specific diagnoses for each participant). The research participants provided written informed consent prior to study participation. The data in this study are drawn from the four interviews over the two-year period (2008-2010).

Sample Demographics

A total of 17 undergraduate college students were enrolled in the qualitative study. The average age of the college students was slightly greater than 19 years, ranging between 18-21 years. The study consisted of 76% females (n=13) and 24% males (n=4). In addition, the sample included 82% white college students (n=14) and 18% from other races (n=3). Furthermore, 88% of the sample (n=15) reported taking between one and three prescription medications for their disabling condition(s). Finally, 82% (n=14) reported a diagnosis of a mood disorder, 12% (n=2) had a diagnosis of ADHD, and 6% (n=1) reported a diagnosis of PTSD.

Instrument

The authors gathered data for the study using a modified, semi-structured interview instrument, the Subjective Experience of Medication Interview ([SEMI]; Floersch et al., 2009). The instrument was adapted from the adult SEMI, designed to obtain narrative data about medication treatment from individuals diagnosed with schizophrenia (Jenkins, 1997; Jenkins et al., 2005). The SEMI instrument in this study was adapted by eliminating or modifying questions for adults (e.g., questions that pertained to work, marriage, and recovery) and developing age-relevant questions (e.g., questions that pertained to academics, peer relationships, and career choices). The interview schedule of roughly100 questions took approximately two hours and included seven categories: (1) treatment, illness, and medication history; (2) perceptions of medication; (3) managing, monitoring, and reporting of medication experience; (4) parent and student interaction regarding medication management; (5) illness and medication stigma; (6) medication management and university interactions; and (7) peer and intimate partner interactions and medication management. See Table 2 for sample questions included in the SEMI. The authors constructed open-ended questions to elicit responses in conversational style and to minimize leading questions.

Data Collection

The intent of interviewing the students who participated in the qualitative study was to collect narrative data at four points in time (Fall 2008, Spring 2009, Fall 2009, and Spring 2010), as longitudinal data would be useful in assessing whether their attitudes toward disclosing to professors/DS for accommodations changed over time. Of the 17 participants, eight completed all four interviews, five completed three interviews, two completed two interviews, and two completed one interview. Several participants did not complete all interviews because they withdrew from the university or could not be contacted.

Data Analytic Strategy

Respondent answers to SEMI questions were recorded as audio files, transcribed, and the resulting written narratives transferred to Atlas.ti (Muhr, 1993), a software program specifically designed for qualitative data coding and management. In the first analytic step, the authors coded participants' responses to discover factors that impacted students' disclosure of their non-apparent disability. Authors coded participant narratives over the four points in time or over the length of students' involvement (for those participants who completed less than four interviews). Researchers looked for examples of a priori themes of self-stigma or public stigma, as well as new themes which emerged from the data. The significance of the themes was determined by "substantive significance" (Patton, 2002, p. 467), rather than frequency. This significance refers to increasing depth of existing knowledge about the topic of study (Floersch, Longhofer, Kranke, & Townsend, 2010).

In open coding, respondent answers were coded by attaching code names to any of the students' words that referenced: perceptions of (1) disability and mental health services and (2) accommodations. In the second step, researchers compared and contrasted coded quotations (Boeije, 2002), then grouped the codes by shared content (e.g., "I don't disclose" or "My professors don't know about my illness"). The authors compared and contrasted these latter codes and grouped them by

Table 1

List of Non-Apparent Disabilities by Participant

Participant	Diagnoses
1	Depression
2	Bipolar Disorder
3	ADHD
4	Depression; Obsessive Compulsive Disorder
5	Depression
6	ADHD
7	PTSD; Substance Abuse
8	Bipolar Disorder
9	Depression
10	Depression
11	Depression
12	Depression
13	Depression
14	Depression
15	Bipolar Disorder; ADHD
16	Depression
17	Depression

Table 2

Sample Questions from the SEMI Instrument

1. You reported receiving mental health services. Would you describe in your own words what you receive services for?
2. Have you ever been given a diagnosis or name for the concerns we have been talking about? (probe for history)
3. What are your thoughts about how things will change with your concerns/diagnosis as you grow older?
4. How long do you think you will need to take your current medication(s)?
5. While on medication, what things in your life do you think are improving?
6. At what point in your life did you take primary responsibility for appointments and managing your daily medication?
7. What do you tell people about your concerns (or diagnosis) that we have been talking about?
8. Are there things about your concerns that you prefer to keep secret from others?
9. What at the university has been helpful with any issues related to your mental health concerns (or diagnosis) [probe for accommodations at the disabilities' office]? Are there illustrations where the university has not been helpful?
10. There are many types of help for your concerns (illness or diagnosis), describe the types you currently receive?
11. What circumstances have led you to talk with a professor or instructor about your mental health concerns or use of medication? (probe for with whom, how it went)
12. What was the procedure that you went through to confide in your professors?

themes that characterized their overall perceptions of disclosing to receive classroom accommodations. In the third analytic step, the authors used the hyperlink function in Atlas.ti software to link each participant's set of interviews to changes, if any, in the student's perceptions, or disclosure to receive accommodations. This permitted the authors to make one story, per participant, about his/her experience in deciding whether to disclose his/her disability to access academic assistance, and thus, to think about sequencing. This step led to the creation of participant pathways. The authors identified three specific pathways under which students decided if they should disclose their disability to access assistance: (1) immediate disclosure, (2) delayed disclosure, and (3) no disclosure. The pathways accounted for both positive and negative experiences associated with disclosure to receive accommodations or non-disclosure.

To establish a measure of coding reliability in the thematic analysis, the first author read and coded data from seven respondents. The fourth and fifth authors reviewed the codes, discussed differences and similarities, and, as a team, created a master codebook. The first author used the master codebook to code the remaining ten cases and added new codes when an appropriate code was not available in the codebook.

To establish reliability in the creation of the pathway, the fourth and fifth authors examined each set of interviews and used the constant comparative method (Boeije, 2002) to confirm that the pathways developed by the first author were consistent across the narratives.

Results

Thematic Analysis

The following section reports factors that contribute to students' reluctance to disclose to receive accommodations: normality, professor perspectives, and autonomy; as well as factors that impact students' willingness to disclose to receive accommodations: vulnerability, supportive professors, and stress overload.

Table 3

Example of Thematic Coding

Participant Narrative	Relevant Content	Shared Content	Theme
Last semester I had to (disclose), because of everything that went on. I had to drop a whole bunch of classes.	Dropped classes due to problems with non-apparent disability	Stress from non-apparent disability greatly impaired students' academic performance	Stress overload
Everything is more of a challenge. Well, last semester, I was sick with my celiac disease. The cafeteria gave me food with gluten in it five times, so, I missed over 20 classes.	Missed many classes because of non-apparent disability	Stress from non-apparent disability greatly impaired students' academic performance	Stress overload
I emailed all my professors and said, "I am not a student that likes to give excuses. . . . I'm going to tell you right now, I'm going through a really aggressive form of treatment. . . . there are some days when I'm just not all there."	Missed numerous classes and has limited functioning because of non-apparent disability	Stress from non-apparent disability greatly impaired students' academic performance	Stress overload
Last semester, I wasn't doing very well either, so I had to go to a couple of my professors and kind of tell them what the deal was.	Having difficulty functioning because of non-apparent disability	Stress from non-apparent disability greatly impaired students' academic performance	Stress overload

Factors that Contribute to Students' Reluctance to Disclose to Receive Accommodations

Normality. This theme demonstrates how participants were concerned about being treated the same as peers who did not have a non-apparent disability and/or request accommodations. Further, students were apprehensive that this feeling of differentness or abnormality would attract special attention. As one student said, "I don't want to be treated differently or anything." Another student reported:

> Part of the accommodations thing, it makes me feel like…I want to be able to be on the level of everybody else and I don't want to be different. I want to feel…I'm getting the A's that they're getting, too, in the same ways they're getting them . . . I want to be pretty normal, as normal as possible.

Professor Perspective. Responses exemplify how professor opinions were paramount to students (Salzer et al., 2008). For instance, students expressed concern that future opportunities for professor recommendations could be compromised if they needed assistance to perform academically. As one student noted, "It's just something that they don't really necessarily need to know, and since there's a stigma associated with it, I tend to avoid talking about it." Another student stated that, "I don't want them to think of me differently. If they can see me as a normal student . . . then that would be an ideal situation." A third student expressed a future concern that influenced current behavior by saying, "I want them to write me a rec letter. I just don't want it coming into the equation at all."

Autonomy. Participants described a developing sense of autonomy and the need to be independent as reasons to avoid receiving accommodations. One student expressed a sentiment shared by others by noting, "I just feel…I should be self-sufficient and not have to get excuses or…lean on anybody or anything."

Factors that Contribute to Students' Willingness to Disclose to Receive Classroom Accommodations

Vulnerability. Students did not want their disability to detract from their academic performance. Consequently, they informed their professors about the need for accommodations before their functional limitations could possibly disrupt their ability to perform tasks. One student stated succinctly, "That kind of stuff usually doesn't come up unless it's necessary; you know if I've been sick for a week." Another student said:

> Especially this year I've been really up front about it. I thought…once I missed a couple of classes I would email them and tell them about it, just because I felt…it was relevant and they would understand…I'm going through some issues and it's not because I'm uninterested in their class.

Supportive Professors. This theme illustrates how some professors were empathic towards the needs of students with non-apparent disabilities. One student reported, "They were pretty supportive [when I told them]. They understood." Another student reported that, "Before I kind of disclosed that I had depression, and some of my professors were…really sympathetic and they offered to extend deadlines." A third student said, "They usually are very flexible when I mention that [illness disclosure]."

Stress Overload. This theme demonstrates how stress from having non-apparent disabilities greatly impaired students' academic performance. Some students eventually confided in professors, and asked for accommodations, because their grades were so negatively impacted. One student recalled, "I have (disclosed), because I was trying to explain why I wasn't able to finish an assignment on time, because I had been having trouble with a medication and dosage and switching them up and things like that." Another student reported:

> In order to switch, I had to wean off, which meant that for about four days I had no antidepressants in my system...so I basically couldn't get any work done last weekend...I told one of my professors that I was having medical problems, and he gave me an extension on my homework.

Pathways

The findings in the thematic analysis influenced the authors' development of pathways to disclosure, shedding light on students' willingness or reluctance to disclose information about their disability to access assistance. Consequently, these themes led to identifying the points in time when students made the decision to disclose. This section presents cases that exemplify three pathways that emerged from study data: (1) students disclose their disability immediately in order to raise professor awareness, (2) students delay disclosure until their disability limits their functioning, and (3) students do not disclose at all during the course of our study. The names of the students in the following case examples are pseudonyms. See Figure 1 for an illustration of how functional limitations, stability, and stigma impact students' decisions about disclosing to professors and/or DS.

Pathway 1: Students Who Disclose Disability Immediately to Raise Professor Awareness

In the first case, Mark (male, Caucasian, depression, sophomore) disclosed in the beginning of class so that his professors would not have negative views if his academic performance suddenly declined. Although Mark did not request any specific accommodations, he communicated his situation with his professors so that they would be aware that any potential decline in his academic performance would likely be associated with the functional limitations of his non-apparent disability:

> I have a professor this year and I have his class early in the morning, so I miss it sometimes, and I didn't want him to think that I'm blowing him off or anything like that, so I was just so forward with him because I wanted him to know that I was being genuine about something or putting something out on the line by saying "Yes, you know, I have depression. Yes, I have insomnia. I have trouble falling asleep and then sometimes when I can fall asleep with my medication, I can't wake up." He's pretty understanding...Yeah, I couldn't sleep on the bus, so I missed a presentation in one of my classes, and so I called my psychiatrist to say that I had to get a doctor's note to say that I have depression and insomnia, which wasn't a lie. So I guess the circumstances, I'd tell professors things when it comes down to excusing myself...it worked out last time. It worked out that one time when I was coming back on the bus, and the other professor that I have this semester, he seems very, very, very understanding. I mean he wanted to go get coffee with me some time just to like sit and talk.

Later on in the study, in an interview from semester 2, Mark discussed how a professor recognized similarities between Mark and the professor's daughter, who also has a non-apparent disability. The honest dialogue Mark was able to engage in with his professor made her empathic towards his situation and helped to create a trusting relationship.

> One of my professors I guess had…a daughter who…in college had similar problems, so my professor kind of recognized it, which was really cool. . . . [She said], "You know, at first I was thinking you just…party too much…but when you're here you're really engaged, but you're not always here, so I recognize this. What's going on?" And that was really cool. That made it really easy to just kind of tell her…"Yeah, this is what the deal is."

In the second case, Jeanie (female, Asian, bipolar disorder, sophomore) indicated in her first interview that she disclosed to her professors from the beginning because she feared that her non-apparent disability would disrupt her ability to function in school.

> Especially this year I've been really up front about it. I thought…once I missed a couple of classes I would email them and tell them about it, just because I felt like it was relevant and they would understand that…I'm going through some issues and it's not because I'm uninterested in their class…I want to make up the work and I want to get caught up, especially if I've had…late assignments or missed exams…I think it's important to provide a reason, and it helps them to see that you need help and that you're trying to do your best.

In the fourth interview, Jeanie demonstrated how disclosure with professors, from the beginning, had produced mixed results. Early disclosure had an overall benefit to her, however.

> Before I kind of disclosed that I had depression, and some of my professors were… really sympathetic and they offered to extend deadlines. Some of them, they weren't as sympathetic…I used to be an Econ major and I took classes in other departments and those professors in the Economics Department weren't very sympathetic and that kind of like turned me off to the subject that I had already been…losing interest in.…Last semester I told…one or two professors. This semester…I just said…"Oh, I have bipolar disorder. Here is a Disability Letter regarding that," and… one of my class [assignments] was to write a paper… regarding a decision you've made in your life, and mine was about whether…or not to come back to school…in the fall, and the whole thing was just

> about how I got diagnosed and…my medication regarding bipolar disorder. It was very open...I gave open disclosure...it's been working out really well.

Pathway 2: Delay of Disclosure Until Disability Limits Functioning

In the following case, Rebecca (female, Caucasian, depression, junior) illustrated fear of being stigmatized if she disclosed her disability to professors; she expressed fear about losing future opportunities and acquiring a sense of differentness from peers (interview from semester 1):

> Part of the accommodations thing...I want to be able to be on the level of everybody else and...I don't want to be different. I want to feel like I'm getting the A's that they're getting, too, in the same ways that they're getting them, because I guess that I've been able to experience life pretty normally...I want to feel pretty normal, as normal as possible...I don't want them to think of me differently, because you don't know people's reactions, and do you know there's...the recommendation, having one written from them, and I don't want them to have that in their mind about me. If they can see me as a normal student, see my work and just view that, then that would be an ideal situation. But you know...they don't want you to come to them halfway through and [say], "Oh, by the way, I have an accommodation."

In the interview from Semester 2, Rebecca's stance on accommodations had completely changed due in large part to her functional limitations. She had experienced a reduction in functioning, which ultimately depleted her ability to succeed in the classroom. Therefore, she disclosed to receive accommodations:

> I do have academic accommodations...I talked to Dean ___ a couple of weeks ago and then actually met with her yesterday to kind of really figure out [what to do], and she's the one that suggested just dropping physics and taking it next spring, 'cause she was just really helpful [and said] "You've got to take care of yourself," and...the Dean was...very confirming to what I was already thinking. So she was very understanding of that, and she [said] ..., "You know you can take physics as a grad student next year. That'll be fine…. you can be a productive member of society if you don't..." you know 'cause I wasn't planning on going to med school after four years or after this anyways. She [said] ..., "Even if you don't become a doctor, there are so many things you can do with your life. You know, just focus on yourself right now."

In the interview from Semester 3, Rebecca discussed how she continued to disclose her disability to receive extensions on assignments because of her functional limitations:

> Last semester I had to [disclose] because of everything that went on. I had to drop a whole bunch of classes, and then the two classes that I kept, I did disclose to the professors what was going on, and it was very helpful because they were very understanding 'cause I hardly did make it to class and I barely did my work...but they were understanding.

In this case, Zoe (female, Caucasian, depression, sophomore) indicated in her Semester 1 interview that she had no intentions of disclosing her non-apparent disability to professors. When asked if she had encountered a need to disclose to faculty, Zoe reported:

> Not here. I had to talk to some teachers in high school...But I haven't had to tell anyone here. I hope to not have to. I hope that it's not another year where another thing goes wrong...I think they would understand.

In the interview from Semester 3, Zoe changed her approach because of her declining health, particularly how her physical health became vulnerable to the excessive stress of her functional limitations. These health problems affected her attendance in class:

> I have to tell all my teachers about Celiac Disease. Sometimes I'll have to tell them about…my pain disorders or…fact that I'm always sick...In the past in high school I would have to tell them. My cousin was really sick, so I was having a hard time with that, and that was…emotionally upset[ting]. .Yeah, everything is more of a challenge. Well, last semester I was sick with my Celiac Disease. The cafeteria gave me food with gluten in it five times, so I missed over 20 classes and had to drop two courses.

Pathway 3: Students Who Do Not Disclose at All During Course of Study

The following case involving Beth (female, Caucasian, ADHD, sophomore) depicts how the student had no desire to disclose her non-apparent disability because her mental health was stable, as expressed in Interview 1. However, stigma did not appear to be an overriding concern:

> Really, I haven't talked… to the university or any professors about it because I feel no need to at the time. I mean, if I feel like I'm struggling in a class or something, I probably would talk to them to see if there's…anything they can do to help me, but otherwise I feel no need currently.

Beth had not changed her stance by Interview 2. She noted, "Just haven't really felt the need to. If it seemed pertinent I would, but otherwise, no." Beth's mental health remained stable. In Interview 3, she indicated that she had not yet felt a need to disclose to professors:

> Not really. No. Mainly I just feel [I] … can usually control it well enough with… meds and just trying to…control it, but I don't really see a reason… unless something…really came up where…they would benefit from the knowledge, or I would benefit from their knowing. I usually just don't bother telling them.

In her fourth interview, Beth reported the same decision-making process. She had not disclosed because she did not feel a need to do so, nor did she anticipate any benefits if she did:

> If I ever felt that…it would be helpful for me, like there was something they could do to…help me out, or…if I felt…I was really being inhibited, then I would probably [disclose]. I would tell them so that they would be more aware, but otherwise I feel like there's no…real reason to, so I just don't bother usually.

In another case, Carla (female, Caucasian, bipolar disorder, freshman) stated in her first interview that she did not inform professors about her non-apparent disability because of stigmatizing perceptions:

> Well, I don't disclose really to…acquaintances, professors. I mean it's only really close friends that I think need to know that I tell, because it's kind of this extraneous piece of information since it really doesn't affect how I interact with people…99% of the time. It's just something that they don't really necessarily need to know, and since there's a stigma associated with it, I tend to avoid talking about it altogether since I don't really need to.

In her second interview, Carla maintained her position on disclosure as she feared the impact it could have on future opportunities:

> No. I avoid that like the plague. No disclosures to professors, and especially no disclosures to any employers, 'cause I have...an internship right now working part-time as a…data entry person...But I'm pretty sure it's still professional liability, that if you say you have bipolar disorder that it might limit you in some way in your career. Maybe it's true, maybe it's not, but in my experience, if anyone can be closed-minded, it's businesspeople, so...I want them to write me a recommendation later. I just don't want it coming into the equation at all.

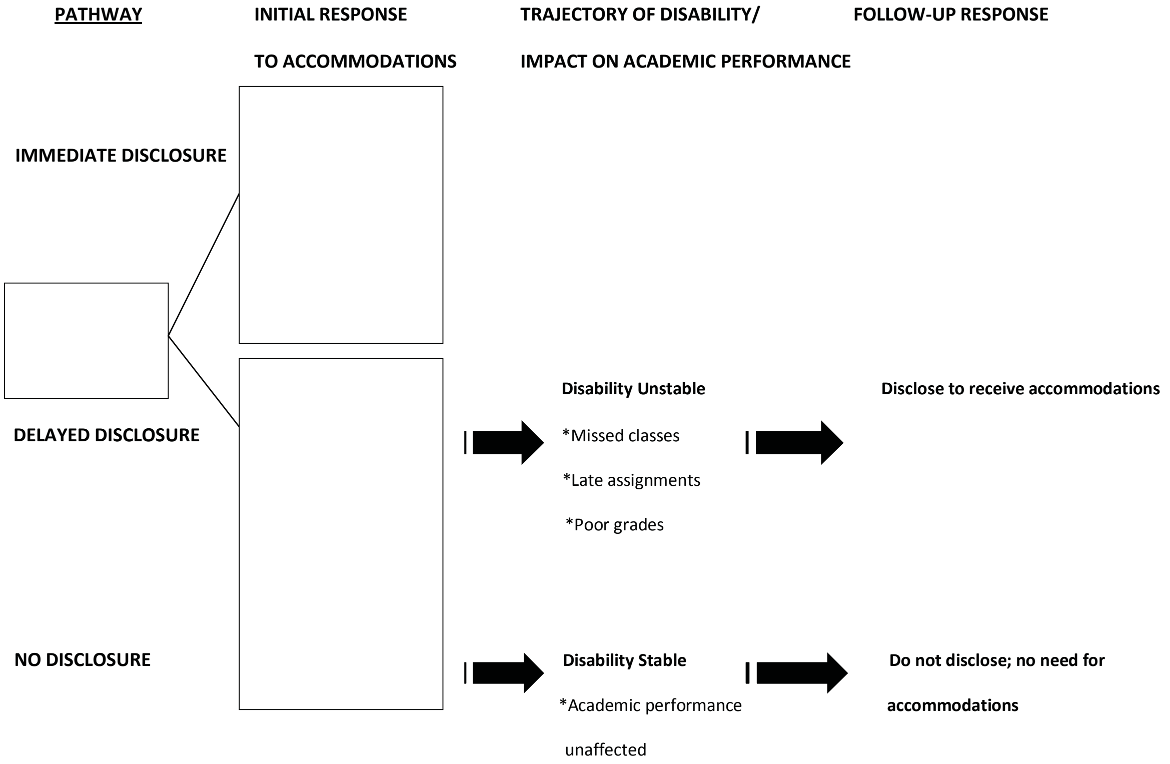
Carla indicated in her fourth interview that she did not intend to disclose her disability because it did not have an apparent effect on her performance:

> If it ever really interferes with my work, if it gets to a point where you wouldn't be able to attribute it to…personal difficulties…relationships with family, or something like that, then I'd be forced to disclose and that would be…a difficult thing to do, but…I'll cross that bridge when I come [to] it… it's not something I have to disclose just yet.

Discussion

The findings exemplify three choices that students with non-apparent disabilities make regarding disclosure of their disability to professors and DS staff, two choices which can be explained by the Stress-Vulnerability model (Zubin & Spring, 1977). First, with participants such as Mark and Jeanie, students disclose their non-apparent disability to professors and DS immediately out of fear that their disability will greatly limit their academic achievement. Participants who

Figure 1. Pathways to Disclosure.


PATHWAY
INITIAL RESPONSE TO ACCOMMODATIONS
TRAJECTORY OF DISABILITY/ IMPACT ON ACADEMIC PERFORMANCE
FOLLOW-UP RESPONSE
IMMEDIATE DISCLOSURE
DELAYED DISCLOSURE
NO DISCLOSURE
Disability Unstable
*Missed classes
*Late assignments
*Poor grades
Disclose to receive accommodations
Disability Stable
*Academic performance unaffected
Do not disclose; no need for accommodations

followed this pathway reported that they did not have to hide anything from their professors by disclosing early in the semester. Mark, in particular, felt his decision seemed to make his professors more empathic and aware that he was not "blowing them off" when there was a decline in academic achievement or class attendance. According to the Stress-Vulnerability model, students who followed this pathway were concerned that they would cross the threshold of the amount of stress they could handle if their non-apparent disability began to impact their academic performance. Overall, these students felt vulnerable about managing their non-apparent disability, its functional limitations, and their academic course load.

The second pathway for disclosure decisions was based on students' perceptions about the stability of their non-apparent disability. By applying the Stress-Vulnerability model, students such as Rebecca and Zoe, whose mental health remained stable, exemplified this pathway. They did not initially disclose because they perceived the possibility of negative perceptions by their professor as a greater potential stressor than the likelihood that their disability would become a significant impairment to their academic performance. The students were able to manage the stress of their academic load while their non-apparent disability was stable. However, when their functional limitations intensified and created stress beyond what was manageable, they were quick to inform their professors because there was a serious risk of failing or dropping out. In addition, Zoe experienced vulnerability to other illnesses because of the stress that the non-apparent disability caused. Her physical health, when combined with her mental health challenges, had a major impact on her ability to attend class.

The third pathway, which is not explained by the Stress-Vulnerability model, was the impact of self-stigma. There was some consistency with the results of previous studies (Collins & Mowbray, 2005; Marshak et al., 2010; Salzer et al., 2008), whereby stigma was internalized by students as a major barrier to disclosure. Participant Carla seemed to embody stigmatizing characteristics of two age groups. The first group, adolescence, which is the population/developmental phase she was transitioning out of, and the second group, adulthood, the population/developmental phase she was transitioning into. The stigmatizing characteristics of adolescents that Carla embodied could be explained by the Kranke, Floersch, Kranke, and Munson (2011) Adolescent Mental Health Self-Stigma Model. This model has three components. The adolescent first *stereotypes* by becoming aware of labels associated with people with mental illness and applies the label to him/herself. Next, the adolescent *differentiates* by recognizing differentness among peers because he/she has a mental illness and takes psychiatric medication. Finally, the adolescent *protects* by concealing his/her mental illness and use of psychiatric medication in order to preserve social capital and future opportunities.

As noted in the adolescent self-stigma model, individuals can stigmatize themselves because they differentiate, or compare themselves with others who are well. They may have concerns about peer perceptions, struggle with feelings of normality/differentness, and find it difficult to manage a sense of self-efficacy. Some participants, especially students like Carla and Rebecca, spoke of being perceived as normal and not wanting to be different from their peers by receiving special treatment. In this instance, disclosing their non-apparent disability could expose these students to feeling different from their peers. Furthermore, some people with mental health issues “protect” (Kranke et al., 2011) themselves by not disclosing in order to preserve social capital. In this instance, some students were quite fearful of losing future opportunities related to career and education.

The college students’ experience of stigma can be compared to the stigmatizing experience other adults with non-apparent disabilities have described (Corrigan & Kleinlein, 2005). Their primary fear was that professors would perceive them as incompetent to complete tasks, which might then impact a recommendation for graduate school and, more importantly, future career opportunities. These fears are not unfounded, especially since research (Corrigan & Kleinlein, 2005) demonstrates how adults who experience mental health stigma encounter a reduction in employment and career opportunities. Even though the fear of being stigmatized is a driving force behind students’ decision to not disclose, a paradigm shift occurs whereby the consequences of not disclosing to receive accommodations become greater than the fear of being stigmatized. This is the turning point at which students risk disclosure in exchange for access to informal or formal accommodations that could influence their academic success.

There were some new findings pertaining to the population studied. Specifically, college students with non-apparent disabilities did have contextual circumstances that promoted the willingness to disclose to receive classroom accommodations, such as vulnerability to illness/stress. As a result, some of these participants disclosed to receive accommodations because their functioning was limited so greatly, they were at risk for failing classes and being unable to live independently in the college setting. In addition, those students who continued to have difficulty stabilizing their functional limitations and who opted to not seek accommodations were at risk for increasingly poor academic performance and a potential withdrawal from college. Their vulnerability limited the amount of stress they could handle until they found ways to stabilize the impact of their disability.

Limitations

The qualitative nature of this study and sample limit the generalizability of the study’s outcomes. For instance, the small sample consisted mostly of Caucasian students and was restricted to a cohort of students who attended a competitive, private Midwestern university. Research should examine college students in more varied settings, such as public universities, private universities, community colleges, and technical colleges to make more comparisons that would enhance generalizations. Another limitation was that the diagnoses were self-reported; the participants may not have reported their diagnoses correctly. Also, some students had a primary diagnosis of Attention Deficit Hyperactive Disorder (ADHD), which some might consider a different type of disability than the majority of participants in this study who had mood disorders. However, it was important to include students with ADHD in the sample because of their lived experience with a non-apparent disability. It is reasonable to suspect that the consequences of disclosing ADHD may be similar to those with mood disorders. The inclusion of the two participants with ADHD did yield crucial findings. Although the findings of only one participant with ADHD (Beth) were actually reported in the results section, the pathway for both students with ADHD was the same. Both participants with ADHD chose never to disclose due to the stability of their non-apparent disability.

Implications

The Stress-Vulnerability model can be used to explain the conflicted feelings students experience in what has been described as the "founding moment," which is the point at which the pain of choosing to not disclose becomes greater than the fear of taking the risk. It is within this profound decision-making process that extrinsic factors have the capacity to enhance students' self-efficacy (stress-related growth) and conceivably alter the process and outcomes pertaining to perceived stigmatization. Moreover, having positive experiences with self-disclosure has the potential of strengthening students' decision to be proactive about their disability-related needs in the future.

Based on the findings, "accommodations" could be implied as both formal and informal. As it stands, in order to receive formal accommodations, students provide documentation of their impairment to the campus DS office. DS staff then draft a letter noting the need for accommodations, which the student gives to each of his/her professors. In contrast, to receive informal accommodations, they may speak directly to their professors rather than going through the formal DS office process. While privacy laws protect students from being required to disclose specific information about the nature of their non-apparent disability to their instructors, without knowledge of a tangible benefit, the process of disclosure can still feel too risky for students.

Since the collected data reflected students' perspectives, the findings do not shed much light on college professors' perceptions of accommodating students with non-apparent disabilities. More research is needed to understand this topic from faculty members' perspectives. Faculty members have different levels of expertise and awareness about students with psychiatric disabilities. Some instructors were receptive to the needs of students in this study, while other faculty members did not know how to respond. Many of those who were receptive, as with Mark, disclosed to students their own experiences with non-apparent disabilities. In addition, Rebecca's case demonstrated how those receptive to the needs of these students were very willing to accommodate. In contrast, the faculty who did not know how to respond were not as sympathetic to these students' needs, as in the case of Jeanie. In that example, faculty ended up "turn[ing] her off of the subject." Therefore, a beginning step would be to provide faculty with training sessions about the academic, social, and psychological needs of this student population. In addition, efforts should be made to encourage faculty to form relationships with administration in DS and representatives from student mental health services. These colleagues could help them work with the student population and consult on any problematic situations that may arise.

Besides faculty, DS staff can take on additional roles to make the campus environment more universally accessible and welcoming to students with non-apparent disabilities, particularly during students' first year. First, DS should present at freshman/transfer orientation about services available for students with non-apparent disabilities. Staff can explain the formal disclosure process through which students can secure accommodations. They can educate students on the benefits of seeking support through the DS office. Having knowledge about this process could minimize students' fears about the impact of their non-apparent disability on academic achievement. A presentation to all students by DS staff members could help create a climate that normalizes the experience of accessing DS and reduce stigma about doing so. Parents should also be made aware of the services so that they can encourage their sons/daughters to seek accommodations as needed. Another recommendation is for DS staff to refer students with non-apparent disabilities to such groups as Active Minds (www.activeminds.org), which is an organization that aims to reduce mental health stigma in the college environment. Organizations like this can help students expand their access to on-campus and online resources. Lastly, addressing students' self-stigma about disclosure could help them respond in a positive fashion to the intrinsic stress created by disability-related barriers.

Future Research

Future studies should be conducted in multiple and diverse university settings to determine if the findings of these college students' barriers to disclose their non-apparent disability to receive classroom accommodations are consistent. Such settings should include public and private universities; Research I, II, and III universities; as well as community colleges. In addition, these studies should include students of diverse backgrounds to facilitate a more comprehensive understanding of the college experience for students with non-apparent disabilities across multiple domains who come from different cultural backgrounds. Finally, research investigating faculty perceptions of college students who seek accommodations for a psychiatric or attentional disability is needed.

References

Barnard-Brak, L., Davis, T. N., Tate, A., & Sulak, T. (2009). Attitudes as a predictor of college students requesting accommodations. *Journal of Vocational Rehabilitation, 31*(3), 189-198.

Becker, M., Martin, L., Wajeeh, E., Ward, J., & Shern, D. (2002). Students with mental illnesses in a university setting: Faculty and student attitudes, beliefs, knowledge and experiences. *Psychiatric Rehabilitation Journal, 25*, 359-368.

Belch, H. (2011). Understanding the experience of students with psychiatric disabilities: A foundation for creating conditions of support and success. *New Directions for Student Services, 134*, 73-84.

Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality & Quantity, 36*, 391-409.

Brown, G., & Birley, J. L. T. (1968). Crises and life changes and the onset of schizophrenia. *Journal of Health & Social Behavior, 9*, 203-214.

Camara, N. J. (2011). *Life after disability diagnosis: The impact of special education labeling in higher education*. Retrieved from http://digitalarchive.gsu.edu/cgi/viewcontent.cgi?article=1080&context=eps_diss

Collins, M. E., & Mowbray, C. (2005). Higher education and psychiatric disabilities: National survey of campus disability services. *American Journal of Orthopsychiatry, 75*, 304-315.

Corrigan, P., & Kleinlein, P. (2005). The impact of mental illness stigma. In P. Corrigan (Ed.), *On the stigma of mental illness: Practical strategies for research and social change* (pp. 11-44). Washington, DC: American Psychological Association.

Eisenberg, D., Golberstein, E., & Hunt, J. (2009). Mental health and academic success in college. The B. E. *Journal of Economic Analysis & Policy, 9*(1), Article 40.

Floersch, J., Longhofer, J., Kranke, D., & Townsend, L. (2010). Integrating thematic, grounded theory and narrative analysis: A case study of adolescent psychotropic treatment. *Qualitative Social Work Journal, 9*(3) 407-425.

Floersch, J., Townsend, L., Longhofer, J., Munson, M. R., Winbush, V., Kranke, D. et al. (2009). Adolescent experience of psychotropic treatment. *Transcultural Psychiatry, 46*(1), 157-179.

Hartmann-Hall, H. M., & Haaga, D. A. F. (2002). College students' willingness to seek help for their learning disabilities. *Learning Disability Quarterly, 25*, 247-261.

Jenkins, J. (1997). Subjective experience of persistent psychiatric disorder: Schizophrenia and depression among U.S. Latinos and Euro-Americans. *British Journal of Psychiatry, 170*, 20-25.

Jenkins, J., Strauss, M., Carpenter, E., Miller, D., Floersch, J., & Sajatovic, M. (2005). Subjective experience of recovery from schizophrenia-related disorders and typical antipsychotics. *International Journal of Social Psychiatry, 51*, 211-227.

Kadison, R., & Digeronimo, T. (2004). *College of the overwhelmed. San Francisco.* CA: Jossey Bass.

Kessler, R., Foster, C., Saunders, W., & Stang, P. (1995). Social consequences of psychiatric disorders, I: Educational attainment. *The American Journal of Psychiatry, 152*(7), 1026-1032.

Koca-Atabey, M., Karanci, A. N., Dink, G., & Aydemir, D. (2011). Psychological wellbeing of Turkish university students with physical impairments: An evaluation within the stress-vulnerability paradigm. *International Journal of Psychology, 46*(2), 106-118.

Kranke, D., Floersch, J., Kranke, B., & Munson, M. R. (2011). A qualitative investigation of self-stigma among adolescents taking psychiatric medication. *Psychiatric Services, 62*(8), 893-899.

Kroger, J. (2007). *Identity development: Adolescence through adulthood*. Thousand Oaks, CA: Sage Publications.

Leavey, J. (2005). Youth experiences of living with mental health problems: Emergence, loss adaptation and recovery. *Canadian Journal of Community Mental Health, 24*(2), 109-126.

Lombardi, A., & Murray, C., (2011). Measuring university faculty attitudes toward disability: Willingness to accommodate and adopt Universal Design principles. *Journal of Vocational Rehabilitation, 34*(1), 43-56.

Marshak, L., Van Wieren, T., Ferrell, D. R., Swiss, L., & Dugan, C. (2010). Exploring barriers to college student use of disability services and accommodations. *Journal of Postsecondary Education and Disabilities, 22*(3), 156-175.

Megivern, D., Pellerito, S., & Mowbray, C. (2003). Barriers to higher education for individuals with psychiatric disabilities. *Psychiatric Rehabilitation Journal, 26*, 217-231.

Muhr, T. (1993). Atlas.ti Software Development. Berlin.

Patton, M. (2002) *Qualitative Research & Evaluation Methods*. Thousand Oaks, CA: SAGE.

Salzer, M., Wick, L., and Rogers, J. (2008). Familiarity with and use of accommodations and supports among postsecondary students with mental illnesses. *Psychiatric Services, 59*(4), 370-375.

Unger, K. (2007). *Handbook on supported education: Providing services for students with psychiatric disabilities.* Baltimore, Maryland: Paul H. Brookes Publishing Co.

Zubin, J., & Spring, B. (1977). Vulnerability-A new view of Schizophrenia. *Journal of Abnormal Psychology, 86*(2), 103-126.

About the Authors

Derrick Kranke received his B.A. in Business from Loyola Marymount University, his M.A. in Education from Loyola Marymount University, and his Ph.D. in Social Welfare from Case Western Reserve University. His experience includes working as an elementary school teacher in California. He is currently a Visiting Clinical Assistant Professor in the USC School of Social Work, San Diego. His research interests includes adolescent and young adult mental health, particularly stigma, reintegration, and utilization of classroom accommodations. He can be reached by email at kranke@usc.edu, or dakranke@gmail.com.

Debbie A. Taylor received her B.A. degree in Applied Conflict Management from Kent State University. She is currently completing her Masters of Science in Social Administration at Mandel School of Applied Social Sciences at Case Western Reserve University. Her research interests include: addiction, stigma, mental health, violence and poverty. She can be reached by email at: dat80@case.edu.

Sarah Elizabeth Jackson received her B.S. degree in biology from the University of California, San Diego and has a Master of Environmental Management degree from Duke University. She is currently completing her Master of Social Work at the University of Southern California. Her experience includes working as a research associate at Duke University exploring issues of environmental justice. She currently works for the County of San Diego's Health & Human Services Agency. Her research interests focus on the experience of meaning and achievement for those with mental health disorders. She can be reached by email at: sallyjackson1980@gmail.com

Jerry Floersch Ph.D., LCSW, received is Ph.D. from the University of Chicago and is Associate Professor at the Rutgers School of Social Work, New Brunswick, New Jersey. He is the author of Meds, Money, and Manners: The Case Management of Severe Mental Illness (2002), On Being and Having a Case Manager (2010), and Qualitative Methods Practice Research (2013). His research interests include psychiatric medication, stigma, case management, and social work practice. He can be reached by email at jfloersch@ssw.rutgers.edu

Eileen P. Anderson-Fye received her BA degree in American civilization from Brown University and Ed.D. from Harvard University. Her experience includes consulting with schools on culture and mental health in the U.S., Central America, and the Caribbean and serving on the boards of several foundations and research centers. She is currently a professor in the Department of Anthropology at Case Western Reserve University and Assistant Research Anthropologist in the Center for Culture and Health at UCLA. She has been funded by the NSF, Social Science Research Council, and Spencer Foundation among others, and has published widely on adolescent well-being and mental health in changing cultural contexts. She can be reached by email at: eileen.anderson-fye@case.edu.

Authors' Note

This study was supported in part by the Presidential Research Initiative grant program from Case Western Reserve University

Financial Barriers for Students with Non-apparent Disabilities within Canadian Postsecondary Education

Tony Chambers
Melissa Bolton
University of Toronto

Mahadeo A. Sukhai
Past President, National Educational Association of Disabled Students

Abstract

This study examined the education-related debt, sources of debt, and the process of acquiring accommodations for students with non-apparent (such as learning disabilities and mental health disabilities) and apparent disabilities in Canadian postsecondary education. A third group emerged during analyses, students with medical disabilities, which appeared unique from both apparent and non-apparent disabilities. This study involved a survey of 1,026 students with disabilities from across Canada. Students with apparent disabilities received significantly greater amounts of funding from government student grants and bursary programs. Students with medical disabilities received greater social assistance, had significantly higher projected education-related debt loads, and expressed greater concern regarding financial barriers and debt repayment. The findings regarding education-related debt and financial barriers for students with non-apparent disabilities and medical disabilities suggest a need for further investigation and potential policy implications for these specific cohorts of students.

Keywords: Disability, postsecondary students, financial barriers, Canada

Promoting fully accessible and inclusive postsecondary education (PSE) has gained momentum as a national initiative. Within Canada, distribution of funding allocated to postsecondary education is the responsibility of the provincial government, which distributes operating grants to postsecondary institutions. Consequently, access programming for students with disabilities varies significantly across provincial jurisdictions (Chambers & Deller, 2011). This creates gaps in policy and resources, leading to unequal pools of resources for students with disabilities (Dunn & Dougherty, 2005).

Written policy and guidelines regarding the accommodation of students with disabilities in Canadian higher education are divergent across provincial and institutional settings, too. Student accommodations, such as interpreters, structural modifications, exam supervision and diagnostic assessments, are largely contingent upon institutional operating budgets and policy (Cox & Walsh, 1998). Institutional policy regarding cost of accommodation varies; some institutions accommodate to the extent of “undue hardship” while other institutions base accommodation upon “reasonable cost” and still others have “no limits” with regard to providing accommodations and services to students with disabilities (Cox & Walsh, 1998). For institutions that do not subsume the total accommodation cost, students must cover the expenses through services such as Provincial government programs, the Canada student loans program, and personal contributions (Cox & Walsh, 1998). The degree of personal responsibility for accommodation cost is dependent upon whether one meets the eligibility criteria for funding, disability definition, and the institutional policy on accommodation.

Disconnects between service delivery models across provincial legislation and the individual institutions have facilitated the evolution of disjointed and conflicting definitions of what constitutes a disability. "Disability" is a subjective social construct, which is dependent upon the operational measures by which it is defined (Albrecht 1992; Jung, 2002; Oliver & Barnes, 1998; Wendell 1996). Many have raised concerns about the problematic nature of not having a unified definition. As policy makers are free to determine disability criteria, accessibility becomes contingent upon set conditions rather than individual assessment (Dunn et al., 2005; Educational Policy Institute, 2008; Jung, 2002). Across Canada, the definition of disability leads to different terminologies (e.g., "special needs," "disability," "otherwise"), as well as variation in "general" and "specific" eligibility criteria (Cox & Walsh, 1998). Some categories will identify specific types of disabilities to decide who qualifies for service provision whereas others will include a wider scope of disabling conditions (Cox & Walsh, 1998). Thus, depending upon the disability definition, access to funding for PSE may pose a significant barrier for students with disabilities. While the U.S. has national legislation, the Americans with Disabilities Act (ADA), that defines what constitutes a disability and provides guidance on issues related to persons with disabilities, it needs to be noted that Canada does not have a dedicated federal law that develops standards for addressing issues specific to persons with disabilities. Of the ten Canadian provinces, only Ontario has legislation that directly addresses issues of persons with disabilities. According to the Accessibility for Ontarians with Disabilities Act (2005), "disability" refers to:

a. any degree of physical disability, infirmity, malformation or disfigurement that is caused by bodily injury, birth defect or illness and, without limiting the generality of the foregoing, includes diabetes mellitus, epilepsy, a brain injury, any degree of paralysis, amputation, lack of physical co-ordination, blindness or visual impediment, deafness or hearing impediment, muteness or speech impediment, or physical reliance on a guide dog or other animal or on a wheelchair or other remedial appliance or device,
b. a condition of mental impairment or a developmental disability,
c. a learning disability, or a dysfunction in one or more of the processes involved in understanding or using symbols or spoken language,
d. a mental disorder, or
e. an injury or disability for which benefits were claimed or received under the insurance plan established under the Workplace Safety and Insurance Act, 1997; ("handicap")

The Council of Canadians with Disabilities (2009) recognizes that there is a class of disabling conditions that differ from traditional definitions of disability. Coined "invisible disabilities," these represent a class of disabilities that cannot be detected visually and, therefore, require disclosure to be apparent to others. According to the Federation of Invisible Disabilities (n.d.), this umbrella term (invisible disabilities) includes but is not limited to brain injuries, fetal alcohol spectrum disorders, attention deficit disorders, pervasive developmental disorders, brain injuries, learning disabilities, obsessive compulsive disorder and tourette syndrome. According to the United Nations, individuals with non-apparent disabilities are often faced with unique barriers, misunderstanding and prejudice (Cameron, Patenaude & Troniak, 2008).

Non-apparent Disabilities

Mental health disabilities. The manifestation of many mental health disabilities first emerges in young adulthood when many students undertake postsecondary education (Sharpe, Bruiniks, Blacklock, Benson, & Johnson, 2004; Statistics Canada, 2006; Unger, 1992). Although traditionally underrepresented in PSE, over the past decade there has been a significant increase in the prevalence and recognition of students with mental health disabilities (Blackorby & Wagner, 1996; Eudaly, 2002; Megivern, Pellerito, & Mobray, 2003; Sharpe et al., 2004).

To register with disability service providers at a postsecondary institution, students are required to provide documentation from a medical or mental health professional outlining a formal diagnosis. Since mental health disabilities may go undiagnosed during high school, it is not always possible to transfer documentation from the high school service provider to the postsecondary disability services office. In cases where documentation exists, transferability may not be permissible, depending on how up-to-date the diagnosis is. Based upon anecdotal evidence, practice in this area often varies based on institutional and provincial ministry requirements.

Given the shortage of family physicians, a frequent lack of interdisciplinary mental health collaboration and wait lists, accessing these services in a timely manner may prove challenging (Kates, 2002). These financial considerations may create a barrier to accessing services within higher education, particularly for students who are already coping with the impact of a mental illness.

Parallel to higher education funding models, coverage for mental health services varies significantly by province/territory (Romanow & Marchildon, 2003). Drug therapies are not fully covered by provincial programming and private insurance and up to 22% of the costs must be paid out of pocket (Romanow & Marchildon, 2003). Research has suggested that the costs of these medications are on the rise. Prescription and non-prescription drugs are the fastest-growing health care expense in Canada. According to the Canadian Centre on Health Information (2012), prescription drug purchases cost about $27 billion per year. Mental health drugs make up a good part of that. Recently, total spending on prescription anti-depressant and anti-psychotic medicines in Canada amounted to $1.791 billion for one year. That is 9.4% of total prescription drug spending. By contrast, 26.2% of total drug expenses went to cardiovascular drugs. Just over five percent went to pain medications. Spending on anti-depressant and anti-psychotic drugs varies across Canada. According to recent figures for provinces spending on anti-depressant, British Columbia is five percent below the national average for spending, and Nova Scotia is 29% above the national average. For anti-psychotic medications, British Columbia is six percent below the national average and Quebec is 30% above it (Morgan, Colette, Mooney, & Martin, 2008). These figures are age-standardized, which means they account for age differences across the provinces.

In addition, psychological treatment is not covered under the current *Canadian Health Act* (Arnett, Nicholson, & Breault, 2004; Dwight-Johnson, Sherbourne, Liao, & Wells 2000; Romanow & Marchildon, 2003). Consequently, access to psychological services within private sectors is often reserved for those who can afford to pay out of pocket (Arnett et al., 2004). Overall, students with mental health disabilities can face considerable financial cost of treatment associated with their disability.

Learning disabilities. Students with learning disabilities (LD) are the most represented of any disability type (e.g., Fitchen et al., 2003; Roessler & Kirk, 1998;), with approximately 631,000 Canadians having an LD (Statistics Canada, 2006). This student group faces unique financial considerations in the documentation, assessment, and accommodation of their disability.

When registering with disability services in post-secondary institutions, students must provide documentation demonstrating permanent disability status. For those with LD, this requires current documentation in the form of a psycho-educational assessment where the "shelf life" and expiration date of such assessments may vary depending on jurisdiction and/or institution. In some cases, acquiring this documentation can prove to be an overwhelming task. As with mental health disabilities, the use of prior documentation may not be permissible, given the need for current information about the impact of that student's disability. Within the Canadian education system there has been a decrease in the number of psychologists in the school system, leaving students with suspected LD and their family to seek psycho-educational evaluations from the private sector that requires them to finance the assessments out of their own pocket (The Roeher Institute, 2000). Depending upon the institution, the level of specific requirements documented within the assessment will vary. Often a diagnosis alone will not be sufficient to receive accommodations; additional information that may be required includes the type of learning disability, required accommodations from the postsecondary institution, and strategies to treat (Cox & Walsh, 1998). There are also considerable costs associated with learning disability assessments, with fees oftentimes exceeding $3000 in some jurisdictions. Given the demand for this service, there are considerable wait times that vary from several weeks to several months before completion of testing. Providing documentation to validate one's disability can prove burdensome to this student group and their families.

Medical disabilities. Medical disabilities are often marked by symptoms of pain, inflammation, mobility limitations, fatigue, and impediments upon daily living. Having a disability with symptoms that are frequently changing in visibility and complexity often provides accommodation challenges for students with medical disabilities (Jung, 2002). Like LD and mental health disabilities, the unidentifiable nature of medical disabilities factors into whether it is readily defined as a disability to be accommodated.

Accommodation for students with all forms of non-apparent disabilities typically requires modifications to teaching practices and evaluation. Due to financial constraints, university and college policy regarding accommodation is created to balance the ethical duty to accommodate while at the same time protecting the academic integrity of the educational process. As with the other non-apparent disabilities, students with a medical disability must provide medical documentation, negotiate procedural modifications and accommodations with their professors, and identify themselves as a student with a disability. However, students with medical disabilities often pose challenges to accommodation practice, as disease severity may fluctuate unpredictably during the course of a semester and the academic year. These unpredictable fluctuations in students' conditions may require accommodations to also change on short notice. Additionally, some faculty who are skeptical of the fluctuating nature of accommodation requirements may add to the complications of providing academic accommodations for students with medical disabilities.

Researchers have suggested that apparent disabilities are legitimized because the visible nature of the disability provides "incontrovertible proof" of existence (Jung, 2002). For those whose disabilities require disclosure in order to be evident, there are unique challenges in an effort to legitimize the disability. Individuals with non-apparent disabilities, such as those with chronic illness, constantly have to re-validate their disability to funding agencies, disability services, and faculty members prior to receiving accommodations (Jung, 2002).

The Present Study

It is estimated that 6-7% of the students in Canadian postsecondary education report having a disability (Canadian University Survey Consortium [CUSC], 2002; Prarie Research Associates, 2003), leaving roughly 94% of students without disabilities. The 6-7% of students with disabilities reflects roughly half of the total percentage of the Canadian general population designated as having a disability (12%) (Statistics Canada, 2001; Statistics Canada, 2006), whereas the 94% of students in PSE who do not have a disability reflects 106% of the Canadian general population who does not have a disability (88%).

The sizable difference between 50% and 106% suggests an underrepresentation of students with disabilities in PSE relative to people with disabilities in the general Canadian population and in relation to students in PSE and in the general Canadian population who do not have a disability.

While, based on our estimates, students with disabilities in Canadian PSE are underrepresented; the factors that contribute to the discrepancy in PSE participation between students with disabilities and those without disabilities continue to be largely unexplored.

Students with disabilities often face greater financial barriers due to accommodation considerations compared to students without disabilities. Little is known, however, about the debt load, sources of funding, and the cost of assistive technology that are unique to this student group. Given the unique issues faced by students with medical disabilities, we chose to assess the differences among these factors for three groups of students with disabilities: those with apparent disabilities, those with non-apparent disabilities (learning and mental health disabilities), and those with medical disabilities as a distinct third population.

This study aimed to explore whether students with medical and non-apparent disabilities encounter greater financial barriers or debt in comparison to those with apparent disabilities. First, we evaluated whether those with medical and non-apparent disabilities receive less funding from a variety of financial aid services than those with apparent disabilities. Secondly, we evaluated whether one's present debt load and projected debt load differ based upon whether one has a apparent, medical, or non-apparent disability. Finally, we evaluated the impact that education-related debt plays in present and future education decision-making.

Methods

Recruitment

Disability services professionals who were members of the Canadian Association of Disability Service Providers in Postsecondary Education (CADSPPE) recruited participants at each participating institution. The leadership of CADSPPE was enlisted by the principal researchers to request that each member campus inform students about participating in the survey research by connecting to a dedicated online link. Only students with disabilities who were registered with campus Disability Services Offices (DSOs) were recruited since these are the only students with disabilities who can be contacted by campus DSOs. All recruitment materials and online surveys were offered in both French and English. Many students with disabilities, particularly those with print disabilities (i.e., visual impairment/blindness and/or LD) who use screen reader/screen magnification software are not able to access most online survey tools, or follow linear time parameters. Thus, extensive universally accessible programming of the online survey was undertaken to enable all students who wanted to participate had the opportunity to do so without technical or process barriers. Our specific response was to have the entire online survey coded to be accessible to screen reader/screen magnification software (including ZoomText, JAWS, and Kurzweil) and to be compliant with W3C guidelines for web-based accessibility.

Research Participants

There were 1,026 students with disabilities from Canadian postsecondary institutions who participated in this study. While it would be highly preferred and appropriate to present a response rate for the study (number responding out of those invited to respond), it is difficult to estimate a response rate for the study given the method for recruiting students, which was to invite DSO directors and staff to communicate information about the study to students who were registered as students with disabilities with their respective offices. We do not know who and how many students were informed about the study at each institution. Forty-seven postsecondary institutions from across the country participated in the study, representing seven out of the ten provinces. There was a greater representation of females (*n*=652; 64%) than males (*n*=374; 36%). Participants ranged from 18 to 66 years of age, with the majority between the ages of 18-25 years old (*n*=482; 47%), and indicating full Canadian citizenship (*n*=1012; 99%). Approximately one-fifth of the study population indicated being a member of a visible minority[1] (*n*=199; 19%), with few identified aboriginal or native ancestry (*n*=38; 4%). The majority of respondents were single (including divorced, separated from spouse, or widowed) (*n* = 706; 69%), with no primary care-giving responsibility for dependents (*n*=897; 88%). Participants residing in Ontario were most greatly represented (*n*=583; 57%), followed by Alberta (*n*=121; 12%), and Quebec (*n*=119; 12%).

Full-time registration was defined by a 40% or greater course load. The majority of students reported full time status (*n*=850; 83%), with 13% studying part time (*n*=136; 13%); 40 students chose not to answer this question. The types of educational degrees pursued included bachelor's degree (*n*=587; 57%), certificate or diploma program (*n*=268; 26%), master's degree (*n*=82; 8%), doctorate (*n*=29; 3%), and professional degree (*n*=33; 3%).

Participants most commonly indicated the presence of one disability (*n*=689; 67%), with approximately one-third indicating more than one disability (*n*=336; 33%). Of the types of disabilities reported, students with LD were most greatly represented (*n*=466; 45%), followed by mental health disability (*n*=253; 25%), medical disability (*n*=160; 16%), chronic disability (*n*=163; 16%), mobility impaired (*n*=114; 11%), neurological disability (*n*=103; 10%), deaf/hard of hearing (*n*=105; 10%), "other" disability (*n*=53; 5%), chemical/immune system sensitivity (*n*=43; 4%), and speech impairment (*n*=13; 1%).

For the purposes of this research, disability types were further categorized by visibility. Those with an apparent disability were those with physical/sensory disabilities. Within this cohort were students with blindness or visual impairments, mobility impairments, and those who are deaf/hard of hearing (*n*=298; 29%). A second category of students was categorized as having non-apparent disabilities. Encompassed within this cohort were students who had a learning disability, speech impairment, mental health disability, and chemical sensitivity/immune system sensitivity (*n*=515; 50%). A third category emerged as a unique cohort that could not be adequately encompassed within the other fields. Due to the ambiguous nature of symptoms, participants with medical disabilities formed a unique category and included students with neurological disabilities, chronic illness, and medical disabilities (*n*=212; 21%).

Measures

The Centre for the Study of Students in Postsecondary Education (CSS) at the university of Toronto and the National Education Association of Disabled Students (NEADS) partnered with CADSPPE to design and administer a national survey of students with disabilities in Canadian postsecondary education. The survey was piloted two times with a representative sample of students with disabilities in postsecondary education in Canada and with professional staff who work with students with disabilities in Canadian postsecondary education. The survey consisted of 48 questions and took approximately 25 minutes to complete. There was a mix of response options across the different questions, from forced choice, Likert type responses, to short answer items. The survey questions were divided into seven distinct sections: participant demographics, information about participants' disability(ies), financial supports received and needed by participants, education and disability related expenditures incurred by participants, participants' educational and employment expectations, educational experiences of participants, educational and personal impact of debt load, and educational experience on participants. Examples of the type of items on the survey included:

---

[1] The Employment Equity Act defines visible minorities as "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour". The visible minority population consists mainly of the following groups: Chinese, South Asian, Black, Arab, West Asian, Filipino, Southeast Asian, Latin American, Japanese and Korean.

> *Approximately how much in the way of education related expenses do you expect to accumulate, in total, by the time you graduate or complete your program of study?*
>
> a. None
> b. Less than $5,000
> c. $5,001 to $10,000
> d. $10,001 to $15,000
> e. $15,001 to $20,000
> f. $20,001 to $30,000
> g. Over $30,000
> h. DK/Refused
>
> *How concerned are you about having sufficient funds to complete your postsecondary education?*
>
> a. Very concerned
> b. Somewhat concerned
> c. Not much concerned
> d. Not concerned at all
>
> *Have you altered, or do you plan to alter, your postsecondary education pursuits because of concerns regarding educational debt or financial barriers?*
>
> a. Yes, have altered /plan to alter my postsecondary education pursuits due to financial barriers
> b. No, have not altered my postsecondary education pursuits due to financial barriers but I am thinking about it
> c. I will not alter any of my postsecondary education pursuits at all due to financial barriers.

Data Analysis

For the purposes of this study, commonly used statistical tests (one- and two-way analysis of variance, independent samples t test, cross tabulation, and descriptive statistics) were applied. In cases where the assumption of homogeneity was violated, Dunnett`s C post hoc analyses were used to account for this discrepancy. If the assumption was met, Bonferroni post hoc analyses were conducted. Of note, the participants were not forced to answer questions for which they would feel uncomfortable providing information; thus, each of our analyses reflected the number of respondents in each group for individual questions. This is a common practice when conducting research with vulnerable populations, in order to provide an opt-out from answering a question if the respondent believes that sensitive information may be disclosed.

Findings

Funding Sources

Students with disabilities utilized a number of funding sources, including government student loans, grants and bursaries, work income, and personal savings, to facilitate the costs of their PSE (see Table 1). There were significant differences in the amount of funding received based upon the classification of one's disability type (see Table 2).

There was a significant difference in the amount of funding received from training grants/scholarships. Students with medical disabilities received a significantly greater amount of money from training grants/scholarships ($F_{(2, 63)} = 4.57$, $p=.01$) and from social income assistance (welfare; $F_{(2, 47)} = 4.07$, $p<.05$) in comparison to those with apparent and non-apparent disabilities.

There were also significant differences between groups in the amount of money received from Government Student Grant/Bursary programs ($F_{(2, 278)} =5.94$, $p<.01$). Students with apparent disabilities received a significantly greater amount (M=4569.16, SD=5548.64) than students with non-apparent disabilities (M=2938.48, SD=2942.48). Students with apparent disabilities also received a significantly greater

Table 1

Prevalence Rates of the Sources of Funding Utilized by Classification Of Disability

	Apparent Disability	Non-apparent Disability	Medical Disability
Government Student Loans	41% (n=123)	47% (n=240)	44% (n=93)
Work Income	43% (n=128)	49% (n=253	39% (n=83)
Personal Savings	45% (n=134)	47% (n=243)	39% (n=83)
Government Student Grants & Bursaries	40% (n=119)	35% (n=181)	39% (n=82)
Government Support for Students with Disabilities	36% (n=107)	28% (n=143)	33% (n=69)
Student Line of Credit	19% (n=58)	18% (n=89)	19% (n=41)

amount of money compared to students with medical disabilities (*M*=2752.96, *SD*=1976.40).

Debt Accumulation

There was a significant difference in the debt-load accumulated from the Canada Student Loans Program (*F* (2, 1022) =4.16, *p*=.02) depending on disability category. Those with medical disabilities had a significantly greater accumulated debt compared to participants with apparent and non-apparent disabilities. Further analysis revealed that 8% of student with medical disabilities reported debt between $5,000-10,000 (*n*=17), 7% reported between $10-20,000 in debt (*n*=15), and 15% reported having over $30,000 in accumulated debt from Canada Student Loan Program to date (*n*=32). By comparison, 12% of student with apparent disabilities and 13% of students with non-apparent disabilities reported debt between $5,000-10,000 (*n*=33 and 60 respectively), 12% of student with apparent disabilities and 14% of students with non-apparent disabilities reported between $10-20,000 in debt (*n*=32 and 68 respectively), and 10% of student with apparent disabilities and 12% of students with non-apparent disabilities reported having over $30,000 in accumulated debt from Canada Student Loan Program to date (*n*=26 and 56 respectively). There was also a significant difference in the debt-load accumulated from private banks (*F* (2, 1022) =3.54, *p*<.05). Students with medical disabilities had a greater accumulated debt compared to students with apparent disabilities. Further analysis revealed that, although half of the sample indicated having no debt from this funding source (*n*=121), 11% of student with medical disabilities reported debt between $5,000-10,000 (*n*=23), 6%

Table 2

Evaluating Difference Between Monetary Amounts Allotted by Disability Category

Source of Funding	MS	SS	DF	F
Work Income	5.67	1.13	365	.44
Training Grant /Scholarship	9.10	1.82	63	.01**
Social / Income Assistance	7.17	1.44	49	.02*
Government Student Loan	1.78	3.55	381	.713
Government Student Grant / Bursary	8.71	1.74	278	.00**
Student Line of Credit	1.63	3.30	139	0.19
Government Support for Persons with Disabilities	4.39	8.79	216	2.11
Personal Savings	2.16	4.32	308	0.84

Note: *$p<.05$ **$p<.001$

Table 3

Prevalence Rates of the Amount of Debt Accumulated Thus Far (Includes Tuition/Fees and Living Expenses) by Classification of Disability

	$0	<$5,000	$5,001-$10,000	$10,001-$15,000	$15,001-$20,000	$20,001-$30,000	>$30,000
Apparent Disability (*n*=266)	*n*=36 14%	*n*=34 13%	*n*=22 8%	*n*=30 11%	*n*=23 9%	*n*=38 14%	*n*=83 31%
Non-apparent Disability (*n*=463)	*n*=56 12%	*n*=40 9%	*n*=53 11%	*n*=42 9%	*n*=55 12%	*n*=72 16%	*n*=145 31%
Medical Disability (*n*=188)	*n*=25 13%	*n*=12 6%	*n*=10 5%	*n*=17 9%	*n*=19 10%	*n*=21 11%	*n*=84 45%

reported between \$10-20,000 in debt (*n*=13), and 6% reported having over \$30,000 in accumulated debt from private banks to date (*n*=13). By comparison, 7% of student with apparent disabilities and 6% of students with non-apparent disabilities reported debt between \$5,000-10,000 (*n*=19 and 30 respectively), 7% of student with apparent disabilities and 5% of students with non-apparent disabilities reported between \$10-20,000 in debt (*n*=19 and 25 respectively), and 2% of student with apparent disabilities and 2% of students with non-apparent disabilities reported having over \$30,000 in accumulated debt from private banks to date (*n*=6 and 8 respectively).

Finally, there was a significant difference in the expected overall debt of students with disabilities, based upon the category of disability ($F_{(2, 917)} = 3.22$, $p < .05$). The majority of students with medical disabilities reported that they had projected at least \$20,000 or greater of education related debt (see Table 3). This study did not ask year in school and thus academic year distinctions (i.e. first year, second year, third year, etc.) couldn't be reported. The reported figures represent a composite of all students with disabilities who participated in the survey.

Subjective Experience of Financial Barriers

There was no significant difference between students with disabilities with respect to the nature of their financial barriers ($F_{(2,661)} = 1.780$, $p > .05$), with the majority of students experiencing financial barriers within their educational pursuits (*n*=694). Students were also asked whether they presently attained sufficient amounts of money to complete their studies. The results revealed that there was not a significant difference between students based upon classification type ($F_{(2, 1022)} = 2.725$, $p = .07$), as only a quarter of students reported having sufficient funding to complete their education. There was a significant difference in concern regarding managing finances, whereby students with medical difficulties indicated greater concern ($F_{(2, 1022)} = 4.25$, $p < .05$).

Impact

To understand the impact of financial barriers on their education, students were asked hypothetical questions regarding how finances could impact their educational decision-making. Students were asked what they would do if faced with an unexpected expense of \$500. There was no significant difference between how one would respond to an unexpected expense of \$500 by disability classification ($F_{(2, 1022)} = 1.33$, $p > .05$). Overall, nearly half of respondents indicated that they would borrow the money from their family (*n*=491) followed by finding a job or increasing work hours (*n*=226). Interestingly, nearly 10% of students indicated that they would be forced to quit their current program of studies (*n*=86).

Students were also asked what they would do if faced with an unexpected expense of \$4000. In this scenario, there was a significant difference in how participants indicated they would react ($F_{(2,1022)} = 7.39$, $p < .001$). There was a significant increase in the prevalence of individuals stating that they would be required to quit their studies, with approximately 31% noting that they would have to drop out of PSE (*n*=317).

Discussion

While research about Canadian postsecondary students with disabilities has risen, less is known about the financial barriers experienced by these students. To our knowledge, this is the first Canadian study to examine the debt load and financial barriers for students with disabilities within PSE. Furthermore, previous studies about financial barriers to PSE typically have not differentiated students into cohorts by disability type. To date, there is limited published literature about the financial experiences of those with non-apparent disabilities. This study can assist policy development toward accessible programming within Canadian postsecondary education to better serve student populations with disabilities.

While the study did not attempt to compare the debt load dynamics of students with disabilities with students who do not report a disability, it is nonetheless important to briefly contextualize the debt circumstances of students with disabilities within the larger student context. While 42% of students with disabilities in our study noted having or anticipating over \$20,000 of debt at the conclusion of their studies, recent data show that students in Canadian PSE had an average of \$18,800 amount of debt upon completion of their undergraduate degrees (Statistics Canada, 2007). Comparing these two populations warrants extreme caution. First, the overall student debt amount includes those with and without disabilities. The importance of this point is that students with disabilities are counted twice (both in the overall debt figures and in the separate debt figures for students with disabilities) and thus the figures for student overall debt is inflated by the debt of those with disabilities, rendering comparisons inaccurate. Granted, the percentage of those with disabilities is relatively low, however counting them in both groups (all students and those with disabilities) nonetheless renders the comparison and the reflection of relative student debt inaccurate. Second, type of debt may differ. The overall student debt figures are either largely or exclusively Canada Student Loan debt, whereas students with disabilities in this study noted debt from a broad range of sources, which presumably reflects differing complex application processes and repayment conditions (interest rates, repayment schedules, etc.) that may impact students with disabilities disproportionately to their non-disabled peers. Finally, the intended purposes of the debt for students with disabilities are difficult to disentangle between education-related and disability-related expenses.

A final note should be considered in this discussion. Claims of between 2.5 to 3.6% of students with disabilities actually register with disability services on Canadian campuses, with variance among the 10 provinces and three territories between ½% to 6% (Fichten, Asuncion, Barile, Robillard, Fossey & Lamb, 2003). The limited number of students who register with campus-based disability services offices leaves a substantial number of students who may have a disability and may not use campus-based resource to support their disability needs. There may be a higher debt load for undeclared students with a disability, since their resources have to be stretched to accommodate both the cost of their education and the costs associated with their disability that are not being funded by governmental sources. Put another way, just because a student with a disability does not register with the DSO does not mean he/she does not have a disability that needs accommodations to create equal access to the learning environment. Indeed, many students with disabilities do not register with disability services or self disclose that they have a disability. The students and their families often cover the cost of those needed accommodations. The reasons why some students with disabilities do not register with DSOs to receive institutional services and supports are many, including the previously mentioned concern that some students may not be able to afford the necessary documentation to qualify for disability supports and resources, as well as some students may want to avoid the stigmatization often associated with being labeled as having a disability (Burgstahler & Doe, 2006; Getzel & Briel, 2006; Getzel & McManus, 2005). Still others may not believe that their condition constitutes a disability (Wagner, Newman, Cameto, Garza, & Levine, 2005). For a more elaborate discussion of the challenges associated with the disclosure of a disability for students in postsecondary education, see J. Trammell (2009).

Findings According to Disability Type

Our results indicated that the number of educational aids/services required for postsecondary pursuits is influenced by the category of disability. Students with visible disabilities use significantly more aids/services compared to those with non-apparent or medical disabilities. However, this does not translate into a greater accumulated cost of assistive aids. As such, it is interpreted that students acquire these resources through funding or accommodation through their academic institution.

This study revealed that, for many students, accessibility to resources is not readily available. For these students, there is a great discrepancy in reasons for inaccessibility based upon the visibility of one's disability. Those with visible and medical disabilities were significantly more likely to state that the main barrier was due to the aids being too costly for personal purchase. For these students, there was a perception of personal responsibility for having to cover the cost of disability related accommodations. This may act as a factor as to why students with medical disabilities indicated a higher expected debt load. If medication were perceived to be a personal expense (regardless of the need to accommodate in order to navigate PSE) then this would inevitably lead to a higher accumulation of debt.

One major finding that emerged from this study was the uniqueness of students with medical disabilities as a cohort. Since these students could not be characterized based upon the visibility of their disability, they proved an independent population. The results indicate that those with identified medical disabilities perceive their debt load to be significantly higher in comparison to those with visible and invisible disabilities. It is hypothesized that perhaps students with chronic illness or coping with disease accrue higher debt due to medication. They reported an expected debt greater than $20,000. This also translated to significantly greater concern and worry about financial barriers. The results indicated that these students were significantly more concerned about their debt load upon graduation and their ability to repay debts within a reasonable timeframe. Presently, the reasons for this discrepancy are unknown. However, this finding provides fertile grounds for future investigation.

Overall, this study illustrates that there are unique financial barriers for students with disabilities within Canadian postsecondary education. To date, funding models have failed to incorporate one's type of disability when allotting funding. The results of this study indicated that there are different financial barriers based upon the type of disability identified. Furthermore, there are unique considerations for those with non-apparent disabilities and medical disabilities. Since these categories do not typically fit into traditional notions of disability, there are different student perceptions regarding accessibility to resources and accessibility to disability related educational accommodations.

Policy Implications

Students with medical disabilities are a unique student population. The results indicated that there is a greater perception of personal responsibility among students with medical disabilities, compared to those with apparent and non-apparent disabilities in this study, towards attaining disability-related accommodations (e.g., medications). Furthermore, those with non-apparent disabilities were more likely, than the other two groups, to perceive the main barriers to accessibility were the lack or ambiguous nature of government programs to fund access. This study illustrated that students perceive that the nature of their disability fails to fit into the current definitions and funding molds of what constitutes a disability. This is important information for policy makers to ensure that equal opportunity and access to adequate financial resources are being appropriately met.

Therefore, funding policies for students with disabilities should aim toward more clarity in defining and describing the conditions for disability related supports, particularly for students with non-apparent disabilities. Further, where there are funding and accommodations policies and/or practices that restrict support to students with particular non-apparent disabilities, these policies and practices need to be revised to provide greater assistance to this significant student cohort.

Limitations of the Study

This study had several limitations. The secondary data that we used (the National Graduate Survey and the Participation and Activities Limitations Survey) to supplement our primary survey data were not complete sets of data. The secondary data were made available through the Statistics Canada "Data Liberation" initiative, which provides limited access to large-scale data sets. Although the analyses of secondary data were used as supplemental measures, a more complete set of data may have allowed for a wider variety of analyses.

Secondly, there was very limited access to students with disabilities in Canadian PSE. We only had access to those students who were registered with DSO's, which in and of themselves are limited in terms of the type of students they serve (i.e., students with approved documented disabilities and those who officially register with the DSO) and may vary by institution and/or province. Ideally, all students with disabilities, whether registered or not with DSOs, would have had the opportunity to complete the survey and participate in interviews. However there is virtually no way to identify all students with disabilities on a given campus since it is estimated that a small percentage (6 – 7%) actually register with DSOs (CUSC, 2002; Prarie Research Associates, 2003).

Finally, there is very limited research about students with disabilities in Canadian PSE regarding their experiences with educational debt and the impact of their experiences with debt on their PSE pursuits. This dearth of Canadian based literature left us with a limited national context from which to base our study.

Further Research

Further research activities need to examine the relative differences between students in Canadian PSE with disabilities and those without diagnosed disabilities relative to their educational debt load and its related impacts. According to recent figures (National Graduate Survey, 2007), the average debt Canadian PSE students owed to government loan sources was \$16,600. When those with government loans borrowed from other sources are considered, the figure increased to \$18,800. For students with disabilities in this study, the average noted total debt is closer to \$20,000 with a sizable number of students from the study (42%) expecting their total educational debt to be well over \$20,000. We agree that empirically demonstrating systematic differences in debt load between students with disabilities and those without disabilities could strengthen claims of a disproportionate and unfair debt burden on students with disabilities. However, in conducting such analyses, other complex factors may be considered to provide a broader picture of the relative differences. If we were looking at the overall long-term debt dynamics for students with disabilities versus those without disabilities, a few of the key dynamics worth examining would be the relative length of time each population took to complete their degrees and the related employment options available to graduates with and without disabilities. The longer it takes to complete a degree, the greater the cost and presumably the greater the debt incurred.

Finally, this study did not examine the provincial–level experiences of students with different types of disabilities. This study utilized a national sample. Future work in this area should look closely at the distinctions and similarities among the 10 provinces and three territories in Canada since education and related matters are considered to be a provincial responsibility, not a federal one.

References

Accessibility for Ontarians with Disabilities Act, 181999, §§ 11, Cong. (2005).

Albrecht, G. L. (1992). *The disability business: Rehabilitation in America*. London: Sage Publications.

Americans with Disabilities Act of 1990, 42 U.S.C., § 12101, Cong. (1990).

Arnett, J. L., Nicholson, I. R., & Breault, L. (2004). Psychological services and the future of health care in Canada: the debate continues. *Canadian Psychology, 45*(3), 228-232.

Blackorby, J., & Wagner, M. (1996). Longitudinal post school outcomes of youth with disabilities. Findings from the National Longitudinal Transition Study. *Exceptional Children, 62*(5), 399-413.

Burgstahler, S., & Doe, T. (2006). Improving postsecondary outcomes for students with disabilities: Designing professional development for faculty. *Journal of Postsecondary Education and Disability, 18*, 135-147.

Cameron, J., Patenaude, K., & Troniak, S. (2008) *Invisible disability and duty to accommodate in the workplace.* Presentation to Health Canada on behalf of REACH Canada.

Canadian Centre on Health Information (2012). *Drug expenditure in Canada, 1985 to 2011* (Ottawa, Ontario: Canadian Centre on Health Information).

Canadian Health Act (R.S.C., 1985, c. C-6) http://laws-lois.justice.gc.ca/eng/acts/C-6/page-1.html

Chambers, T., & Deller, F. (2011). Chances and choices of low-income students in Canada and England, pp. 49-71. In Adrianna Kezar (Ed.) *Recognizing and serving low-income students in higher education: An examination of institutional policies, practices and culture.* Routledge: New York.

Council of Canadians with Disabilities. (2009). Retrieved from http://www.ccdonline.ca/en/publications/voice/2009/10

Cox, D., & Walsh, R. M. (1998). Questions to consider in policy development for postsecondary students with disabilities. *Journal on Postsecondary Education and Disability, 13*(2).

Canadian University Survey Consortium. (2002). *Canadian university survey consortium 2002 survey of undergraduate students.* Retrieved from http://www.cusc-ccreu.ca/publications.htm.

Dwight-Johnson, M., Sherbourne, C. D., Liao, D., & Wells, K. B. (2000). Treatment preferences among depressed primary care patients. *Journal of General Internal Medicine, 15*, 527-524.

Dunn, D. S., & Dougherty, S. B. (2005). Prospective for a positive psychology of rehabilitation, *Rehabilitation Psychology, 50*(3), 305-311.

Educational Policy Institute. (2008). *Access, persistence and barriers in postsecondary education: A literature review and outline of future research.* Toronto: Higher Education Quality Council of Ontario.

Eudaly, J. (2002). *A rising tide: Students with psychiatric disabilities seek services in record numbers.* Retrieved from http://www.heath.gwu.edu/files/active/0/psychiatric_disabilities.pdf

Federation of Invisible Disabilities. (n.d.). Retrieved from http://www.fidsbc.ca/

Fichten, C. S., Asuncion, J. V., Barile, M., Fossey, M. E., Robillard, C., Judd, D., Wolforth, J., Senécal, J., Généreux, C., Guimont, J. P., Lamb, D., & Juhel, J-C. (2004). Access to information and instructional technologies in higher education I: Disability service providers' perspective. *Journal of Postsecondary Education and Disability*, *17*(2).

Fichten, C. S., Asuncion, J. V., Barile, M., Robillard, C., Fossey, M. E., & Lamb, D. (2003). Canadian postsecondary students with disabilities: Where are they? *Canadian Journal of Higher Education, 33*(3), 71–114.

Getzel, E. E., & Briel, L. W. (2006). Pursuing postsecondary education opportunities for individuals with disabilities. In P. Wehman (Ed.), *Life beyond the classroom: Transition strategies for young people with disabilities* (pp. 356-368). Baltimore: Paul H. Brookes.

Getzel, E. E., & McManus, S. (2005). Expanding support services on campus. In E.E. Getzel & P. Wehman (Eds.), *Going to college: Expanding opportunities for people with disabilities* (pp. 139 – 154). Baltimore: Paul H. Brookes.

Jung, K. E. (2002). Chronic illness and educational equity: The politics of visibility. *National Women's Studies Association Journal, 14*(3):178-200.

Kates, N. (2002). *Shared mental health care: The way ahead*. Canadian Family Physician, 48, 853-855.

Megivern, D., Pellerito, S., & Mowbray, C. (2003). Barriers to higher education for individuals with psychiatric disabilities. *Psychiatric Rehabilitation Journal, 26*(3), doi: 217-231 10.2975/26.2003.217.231.

Morgan, S., Colette, R, Mooney, D., & Martin, D. (2008). *The Canadian Rx atlas* (2nd ed.). Vancouver: Centre for Health Services and Policy Research.

Oliver, M., & Barnes, C. (1998). *Disabled people and social policy: From exclusion to inclusion.* London: Longman.

Prairie Research Associates (2003). *Canadian college student finances* (2nd ed.). Montreal, Quebec: Canada. The Canada Millennium Scholarship Foundation and the Canadian College Student Survey Consortium. http://inpathways.net/cmsf/college_2003.pdf

Roessler, R. T., & Kirk, H. M. (1998). Improving technology training services in postsecondary education: Perspectives of recent college graduates with disabilities. *Journal of Postsecondary Education and Disability, 13*(3), 48-59.

Romanow, R. J., & Marchildon, G. P. (2003). Psychological services and the future of health care in Canada. *Canadian Psychology, 44*(4), 283-295.

Sharpe, M. N., Bruininks, B. D., Blacklock, B. A., Benson, B., & Johnson, D. M. (2004). The emergence of psychiatric disabilities in postsecondary education. *Examining Current Challenges in Secondary Education and Transition, 3*(1).

Statistics Canada (2001). *Participation and activity limitation survey (PALS): Education, employment and income of adults with and without disabilities* - Tables, 2001 Catalogue no. 89-587-XIE, Ottawa: Ontario.

Statistics Canada (2006). *Participation and activity limitation survey (PALS) 2006*: Analytical Report (Ottawa: Minister of Industry, 2007) 11.

Statistics Canada (2007). National *graduate survey (ngs): Class of 2000: profile of postsecondary graduates and student debt* – Research Paper: Catalogue no. 81-595-MIE2004016, Ottawa: Ontario.

The Roeher Institute (2000). *Environmental scan: Emerging issues in learning disability in canada.* Prepared for Learning Disabilities Association of Canada.

Trammell, J. (2009). Red-shirting college students with disabilities. *The Learning Assistance Review, 14* (2), 21 - 31.

Unger, K. (1992). *Adults with psychiatric disabilities on campus: Supported education for young adults with psychiatric disabilities.* HEATH Resource Center. Washington, DC: The National Clearinghouse on Postsecondary Education for Individuals with Disabilities.

Wagner, M., Newman, L., Cameto, R., Garza, N., & Levine, P. (2005). *After high school: A first look at the post-school experiences of youth with disabilities.* A report from the National Longitudinal Transition Study – 2. Retrieved from http:/www.nlts2.org/reports/2005_04/nlts2_report_2005_04_complete.pdf

Wendell, S. (1996). *the rejected body: Feminist philosophical reflections on disability.* Rutledge: New York.

About the Authors

Tony Chambers is Associate Professor and Founding Director of the Centre for the Study of Students in Postsecondary Education at the Ontario Institute for Studies in Education (OISE)/University of Toronto. He previously served as Program Coordinator of the Higher Education Program at OISE and Associate Vice-Provost, Students at the University of Toronto. Dr. Chambers was formerly Associate Director of the National Forum on Higher Education for the Public Good and Adjunct Associate Professor at the University of Michigan. He received his doctorate degree from the University of Florida. He researches and teaches in the areas of student learning, development and success, as well as the social purposes of postsecondary education. Tony was chosen as a Fellow with the W.K Kellogg Foundation, the Woodrow Wilson Visiting Fellowship program, the Salzburg Seminars (Austria), and the James McGregor Burns Academy of Leadership. Tony has served on several domestic and international boards focusing on education and learning. He has been invited to make major presentations at conferences and meetings internationally, and has published widely in various professional journals and edited books. His publications include the co-edited book, *Higher Education for the Public Good: Emerging Voices from a National Movement* (Jossey-Bass Publishers, 2005). Tony can be reached at tony.chambers@utoronto.ca

Mahadeo Sukhai is a research fellow and team leader with the Advanced Molecular Diagnostics Laboratory at the University Health Network. Prior to assuming this role, Dr. Sukhai completed his Ph.D. in cancer biology from the University of Toronto (2007), and two post-doctoral fellowships, in genomics and drug discovery. Outside of a distinguished research and teaching career, Dr. Sukhai has been an active volunteer with the International Association of Lions Clubs (1993-2003), the Let’s Talk Science Partnership Program (2007-2012), the University of Toronto (2001-2012) and the National Educational Association of Disabled Students (NEADS; 2004-present). Dr. Sukhai has held numerous volunteer executive leadership positions at local, regional, national and international levels, and currently serves as Senior Advisor (Governance and Leadership Development) to the NEADS Board of Directors, and Vice-Chair of the Board of Directors of the National Postdoctoral Association (NPA). Mahadeo can be reached at m.sukhai@utoronto.ca.

Melissa Bolton is a PhD Candidate in Counseling Psychology for Psychology Specialists at the Ontario Institute for Studies in Education (OISE) at the University of Toronto. Her doctoral dissertation evaluates the impact of Multiple Sclerosis upon identity negotiation and relationships for women. Melissa can be reached at bolton_melissa@hotmail.com

Assessing the Impact of ADHD Coaching Services on University Students' Learning Skills, Self-Regulation, and Well-Being

Sharon Field
David R. Parker
Shlomo Sawilowsky
Laura Rolands
Wayne State University

Abstract

The effects of coaching on learning and study skills, self-regulation, and subjective well-being of students with ADHD attending 2- and 4-year colleges or universities was examined. Students were randomly assigned to participate in coaching or comparison groups. Coaching students received weekly phone-based coaching sessions and additional check-ins from the coaches. Students' learning, study, and self-regulation skills were measured by use of the Learning and Study Strategies Inventory (LASSI). The College Well-Being Scale (Field, Parker, Sawilowsky & Rolands, 2010) was used to measure participants' well-being. The coaching group had a statistically significant higher total LASSI score and statistically significant higher scores on all three LASSI clusters (i.e., Skill, Will, and Self-Regulation) than the comparison group. Well-Being scores were statistically significantly higher for students in coaching than for comparison group students, when corrected for initial differences in executive functioning. Coaching was highly effective in helping students improve their learning and executive functioning skills.

Keywords: Attention-deficit hyperactivity disorder, coaching, transition, executive functioning, subjective well-being

Difficulty with executive functioning skills is a central characteristic of Attention-Deficit/ Hyperactivity Disorder (ADHD). Executive functioning is a construct that includes self-regulatory mechanisms for organizing, directing, and managing other cognitive activities, emotional responses, and overt behaviors (Gioia, Isquith, & Guy 2001). Brown (2005) described six areas of executive function, including activation (organizing and starting one's work), focus (sustaining or shifting one's attention), effort (regulating alertness and adjusting processing speed), emotions (managing frustrations and modulating intense emotions), memory (retrieving, holding, or working with information), and action (monitoring and regulation of effort). Services that help individuals with ADHD enhance their self-management skills have been recommended in recent literature, because executive functioning impairment is now believed to be the underlying cause of ADHD symptoms (DuPaul, Weyandt, O'Dell, & Varejao, 2009; Silver, 2010).

ADHD coaching is a service that has gained increasing interest as an intervention that may help individuals improve their executive functioning skills and enhance their self-regulation. (Parker & Boutelle, 2009; Quinn, Ratey, & Maitland, 2000; Swartz, Prevatt, & Proctor, 2005). Coaches use specific types of questioning with their clients to model effective executive functioning and to elicit clients' own ideas as they increase their capacity to clarify, plan, and take action on goals. Through the use of an inquiry approach, coaches endeavor to help improve a client's ability to stop, reflect, and develop more realistic plans, based on more accurate self-awareness of how they think and act. Coaches hold clients accountable for taking action to reach their goals. During the process of working toward goals, coaches and clients learn about factors that support or restrict a client's goal attainment (Quinn et al., 2000).

Because of the growing popularity of coaching despite a lack of data to support its effectiveness, Goldstein (2005) called for additional research to measure coaching's efficacy and to identify unique components of this emerging service model. In addition, Frazier, Youngstrom, Glutting, and Watkins (2007) recommended empirical investigations of coaching's ability to help college students with ADHD minimize the impact of executive functioning impairments on their academic achievement. Other researchers have also called for further examination of coaching due to the need to find non-pharmacological treatments for college students with ADHD, given the sizable percentage of individuals who do not respond to medication (DuPaul et al., 2009) and the growing reports of the abuse of stimulant medication on college campuses (Tudisco, 2010).

Although the research base on coaching is still emerging, the studies that have been conducted point toward the promise of this service to support students with ADHD to be more successful in postsecondary education. Previous studies have reported that coaching helped college students with ADHD and/or learning disabilities (LD) attain academic goals in more self-determined ways while it also reduced non-clinical levels of daily anxiety and stress (Parker & Boutelle, 2009; Zwart & Kallemeyn, 2001). Bettinger and Baker (2011) found that students who participated in coaching were more likely to persist in their academic programs while being coached and were more likely to be attending the university one year after coaching ended. Bettinger and Baker also noted that there is a need to more closely examine the coaching process to determine how it is most effective in motivating students.

The purpose of this study was to examine the effects of coaching services on the executive functioning skills and subjective well-being of students with ADHD attending 2- and 4- year colleges or universities. Coaching services were provided to students at no cost by the Edge Foundation (for more information about the Edge Foundation, see www.edgefoundation.org).

Method

Participants

Recruitment. Ten colleges and universities across the United States made the opportunity to participate available to students on their campuses who were eligible to receive accommodations based on ADHD documentation. Participating campuses included eight 4-year institutions and two community colleges. Campus locations were geographically diverse. Both public and private institutions were included in the sample.

Students with ADHD were notified about the study by the disability services (DS) coordinator on their campus through email and personal contact, the posting of fliers, ads in student newspapers and informational meetings held on campuses. One hundred seventy students (170) from the ten participating campuses initially volunteered to participate. Because the pool of students was not known a priori, serial random assignment (Suen & Ary, 1989) was used. This permitted the focus of the study to rest on the impact of the coaching intervention. However, there was no intent to generalize study results from participants specifically back to their respective campuses.

Ten of these students either did not complete the necessary pre-test assessment instruments or chose to withdraw prior to random assignment to the coaching or comparison groups. As a result, 160 students were available to be assigned to either the treatment or comparison groups. There were slightly more males than females in the sample. The proportion of students who were from freshmen, sophomore and junior classes were quite similar. The number of students who were seniors was substantially lower than it was for the three other class levels. Specific information for gender and class level for students is provided in Tables 1 and 2.

Student Assignment to Coaching or Comparison Group. Students were randomly assigned to participate in either the coaching or the comparison group from the volunteer pool of students on a weekly basis throughout the recruitment period. Using IMSL's (2011) RNUN algorithm for random assignment, each week approximately two-thirds of the recruited students from each school were assigned to the treatment group and one-third were placed into the comparison group. Those students who were selected to participate in the coaching group were referred to the Edge Foundation to complete coaching applications and agreements and to be assigned a coach.

Of the 160 participants, 121 students were randomly assigned to the coaching group and 39 students were assigned to the comparison group. Because random assignment was used to place participants into the treatment or comparison group, it can be assumed, *ceteras paribus*, that the choice of courses (e.g., science, liberal arts), credits (e.g., 8, 10, or 12 per term), and

Table 1

Participants' Gender (Intervention and Comparison Groups Combined)

	Frequency	Percent
Female	70	43.8
Male	90	56.3
Total	160	100.0

Table 2

Participants' Year in School (Intervention and Comparison Groups Combined)

	Frequency	Percent
Freshmen	45	28.1
Sophomore	46	28.8
Junior	46	28.7
Senior	23	14.4
Total	160	100.0

level (e.g., Sophomore, Junior) have baseline equality between the two groups. This assumption was borne out by a non-significant Chi-square of primary (i.e., excluding the second of a dual major) undergraduate major designation (χ^2 =66.33, df = 63, p = .36).

Instruments

The Learning and Study Strategies Inventory ([LASSI]; Weinstein, Schulte, & Palmer, 2002) was used to assess the impact of coaching services on students' learning and study strategy skills related to executive functioning. The LASSI is a nationally normed, standardized 10-scale, 80-item assessment of students' awareness about and use of skills and beliefs related to academic success in college. Subscale reliabilities are adequate, ranging from .75 to .90. The ten LASSI subscales are grouped into three broad clusters: Skill, Will, and Self-Regulation related to strategic learning. The focus of the LASSI scales is on both covert and overt thoughts, behaviors, attitudes, and beliefs that relate to successful learning that can be altered through educational interventions (Weinstein, Schulte, & Palmer, 2002).

According to Weinstein, Schulte, and Palmer (2002), the focus of the three Skill cluster subscales (i.e., Information Processing, Selecting Main Ideas, and Test Strategies) is on students' learning strategies, skills, and thought processes related to identifying, acquiring, and constructing meaning. They add that the Will cluster (i.e., Attitude, Motivation, and Anxiety subscales) measures students' receptivity to learning new information, their attitudes and interest in college, their diligence, self-discipline, and willingness to exert the effort necessary to successfully complete academic requirements, and the degree to which they worry about their academic performance. Finally, they state that the Self-Regulation cluster (i.e., Concentration, Time Management, Self-Testing, and Study Aids subscales) assesses how students manage, or self-regulate and control, the whole learning process through using their time effectively; focusing their attention and maintaining their concentration over time; checking to see if they have met the learning demands for a class, an assignment or a test; and using study supports such as review sessions, tutors, or special features of a textbook. The scales are comprised of items to which students respond on a five point scale (i.e., Not at all typical of me, Not very typical of me, Somewhat typical of me, Fairly typical of me, or Very much typical of me). Sample items include "I feel confused and undecided as to what my educational goals should be" (Attitude scale) or "Worrying about doing poorly interferes with my concentration on tests" (Anxiety scale).

The College Well-Being Scale ([CWB]; Field, Parker, Sawilowsky, & Rolands, 2010) was used to measure participants' perceptions of factors associated with well-being for students in postsecondary education. The CWB Scale includes ten items related to well-being. Students respond to each of these items on a likert-type scale of one (never) to five (always) to indicate the degree to which the item is reflective of their experience.

Coaching Intervention

Students received coaching at no cost through the Edge Foundation for a period of approximately six months. All of the participating coaches completed life coach training through an International Coach Federation (ICF) approved program (www.coachfederation.org) and the Edge Coach training program. They also had a minimum of two years of coaching experience.

The coaching model was designed to provide a two hour intake (which could be conducted over multiple sessions) and one half-hour session per week between coach and student conducted by telephone for 24 weeks. The model also provides for email and phone check-ins by coaches and students between regular weekly sessions on an as-needed basis. An overview of the model for coaching services is provided below:

> Edge coaches work with students in seven major areas: scheduling, goal setting, confidence building, organizing, focusing, prioritizing, and persisting at tasks. They help students assess their environments, identify needs, set goals, and offer suggestions and guidance. Coaches also set structure, provide support, and help implement strategies for skill building. Edge coaches teach and foster appropriate social skills, self-discipline, self-reliance, and self-advocacy... The coach does not control the plan. The coach supports and monitors the success of the plan. (Edge Coaching Model protocol, 3/12/09).

Specific steps in the coaching process used in the study are provided below:

1. Enrollment Phase
    - Prospective client completes online enrollment form with its brief prescreening.
    - Prospective client receives additional information from Edge Foundation.
    - Prospective client may receive an enrollment/prescreening call from Edge Foundation.
    - Prospective client is given name/contact information for a coach and vice versa.

2. Prescreening Phase (initial phone contact between coach and prospective client)
    - Coach asks questions to ascertain coaching readiness, understanding of the coaching process, preparedness to engage in the coaching process, and to determine areas of concern/interest for coaching.
    - Prospective client is encouraged to ask questions of the coach regarding the coaching process, what coaching will "look" like, measures of progress, confidentiality, time, etc. This is the time for the client to make sure they feel comfortable with the coach.
    - If, after the prescreening call the client wishes to speak with additional coaches,

they simply contact Edge Foundation and ask. They then conduct a prescreening call with each coach in turn.

3. Contracting Phase
   - Coach sends the new client the coaching contract and startup forms via email.
   - Client is to return the completed contract and startup forms to the coach prior to the initial session.

4. Initial Session (one 2-hour session or two 1-hour sessions)
   - Design of Personal Coaching Agreement - this is a goal directed action plan developed with the client. The client sets the goals after discussion with the coach to determine if each goal is reasonable and attainable. The GROW model of goal setting (Whitmore, 2002), use of SMART goals (i.e., **S**pecific, **M**easurable, **A**ttainable, **R**ealistic, **T**imely), or similar processes may be used by the coach to assist the client in goal setting. Action steps are developed so that the client can see the steps needed to reach the goal. For example: The goal is to achieve a 3.0 GPA. Action steps might include: block out 2 hours of study time twice a day away from distractions.
   - Discussion of Coaching Plan – meeting weekly for 30 minutes by phone at the same time every week (coach and client will choose their time) with additional check-ins via email/voice mail/text messages/phone up to 7 days/week (mode and frequency designed with client).

5. Regular coaching sessions (30-minute phone sessions)
   - Client calls coach at agreed upon coaching time (same day/time each week).
   - Client leads the process – here is what I want to focus on in coaching today, progress report of the past week, questions for the coach, etc.
   - Coach follows the client's lead. There is an agreement between the client and the coach that if the client goes off on a tangent unrelated to the coaching goals set forth, the coach has permission to remind client of the plan set in motion during the initial session or at the last coaching call. The coach asks the client how s/he would like to proceed. Most clients appreciate the refocusing and choose to either go back to that plan or proceed on a new path. At times the new path is one of discovery, which takes the client back to the coaching goals with a clearer sense of direction and purpose.

The Edge Foundation administration and JST Coaching, the contractor for design and implementation of coaching services, had primary responsibility for overseeing delivery of the coaching intervention. Edge and JST Coaching staff worked with coaches to assure that the coaching strategy was implemented according to the model, and that training and supervision was provided to coaches.

The following procedures were developed to assure implementation of coaching services were consistent across coaches and participants. First, a detailed protocol for the coaching model was developed. In addition, a system for regular coach reporting on provision of services was developed. This included bi-weekly reporting during the first month of service provision and monthly reporting throughout the study. An electronic listserv and a regular conference call schedule were established to provide for on-going communication between the Edge Executive Director, the Edge Training Director, and the coaches. In addition, the Edge Executive Director and the Edge Training Director were available for on-call assistance as needed.

Data Collection

Pre-test Data: Treatment and Comparison Groups. Data collection plans were established for participating students and for each participating campus. All students submitted both a student information form and an informed consent form to the DS provider on their campus when they volunteered to participate. Students independently provided their responses for the pre-test of the LASSI via a secure section of the H & H Publishing website created for this study. Most students completed the LASSI on a computer in the DS office at the time they returned their informed consent and student information forms. However, some students stated that they preferred to complete the LASSI on their own at a later time. Students were not included, either in the treatment or the comparison group, if they did not complete all of the pre-test instruments (e.g., student information form, LASSI, and informed consent).

Post-test data: Comparison group. The research team maintained repeated communication with students in the comparison group throughout the duration of the study. Two weeks after the Spring break on each campus, comparison group participants were asked to complete the LASSI post-test and the CWB Survey on-line. A system of regular reminders by phone, email, and texting was established to follow-up with students who needed reminders to complete the post-test surveys.

Post-test data: Treatment group. Requests to complete the LASSI post-test and the CWB Survey were sent to all coaching group participants two weeks after their Spring breaks in the same manner described above for the comparison group. In addition, a request was made to students' coaches to remind them to complete the post-test instruments. Follow-up reminders were provided by the research team in the same manner that they were for the comparison group.

Data Analysis

Data were entered into an EXCEL file on a contemporaneous basis (i.e., data were entered upon receipt in the research office rather than a single entry at one point in time). When the data collection period was concluded, the data were then ported to SPSS v. 18 which contained test scores and descriptive data for N = 160 participants.

First, instrument reliability studies were conducted on the LASSI and CWB instruments. Next, descriptive statistics were computed for all dependent variables. Finally, in order to examine each of the research questions, statistical hypothesis tests were conducted at the 0.05 nominal alpha level. Underlying assumptions (e.g., normality and homoscedasticity) were checked prior to conducting classical parametric tests.

Results

Note: Results on several different instruments and subscales are provided within this section. The number of participating students will vary for each instrument and subscale depending on the number of students who provided usable data for each analysis. For example, if a student did not complete all of the responses for one LASSI scale, but provided complete responses for another scale, the total N for each of those measures will be different.

Fidelity of Treatment

Fidelity of treatment measures allow valid comparisons of group data by ensuring that a comparable intervention (treatment) is being provided by a number of individuals. Given the use of multiple coaches, it was important to ensure that participating students essentially received a comparable coaching intervention regardless of who coached them even though the coaching model becomes individualized in practice. Fidelity of treatment was assessed through two methods. Coaches submitted a monthly log of services for each participant to whom they provided services. Information requested from coaches for the logs included number and duration of intake sessions, number and duration of coaching sessions, and number and type of coach/client check-ins between sessions.

Eighty-eight of the 121 students referred to Edge to participate in the treatment (coaching) group completed the application process, intake sessions, and at least one coaching session. Table 3 provides a summary of data obtained through the coaching logs for these students. The breakdown of sessions/minutes, with their respective frequencies and percents, are compiled in Table 3.

The number of students who received intake and at least one coaching session was N = 88. The average number of coaching sessions completed was 16.5 (69%). This translated into an average of 527.4 minutes of coaching, which is sufficiently robust for the results to be significant.

The coaching services provided were consistent with the coaching model delineated in the protocols. Students participated in weekly sessions of about 30 minutes in length conducted by telephone or, in a few cases, Skype. Email and texting check-ins between students and coaches were provided as needed. The coaching sessions were based on goals identified by the students. Coaches provided support to students as they identified and worked toward goals that were important to them. The development of executive functioning skills within this framework was frequently emphasized.

Fidelity of treatment was also assessed through interviews with participants. A purposive sample of twenty students was selected from the ten schools.

Table 3

Coaching Services per Coaching Log Data

Percent of Planned Treatment Sessions Completed	Number of Sessions	Number of Students	Percent of Students
<25%	1-5	12	13.6
25% < 50%	6-11	10	11.4
50% < 75%	12-17	16	18.2
75% < 90%	18-21	19	21.6
>90%	22-24	31	35.2
Total		88	100.0

Percent of Planned Treatment Minutes Completed	Number of Minutes	Number of Students	Percent of Students
<25%	1-179	13	14.8
25% < 50%	180-359	9	10.2
50% < 75%	360-549	13	14.8
75% < 90%	540-657	14	15.9
>90%	648+	39	44.3
Total		88	100.0

One male and one female student from each school who scored below the median on the LASSI Self-regulation cluster (which is the at-risk threshold) were identified. One student with a cumulative grade point average (GPA) at or above 3.0 as well as one student below this criterion was identified on each campus when possible to participate. There was one no-show, so interviews were collected on 19 students. During these interviews details regarding the treatment were discussed in order to document its fidelity. For further discussion on those interviews, which also served as part of a qualitative study to enrich knowledge on coach-student interactions, see Parker, Field, Sawilowsky, and Rolands (2012).

Interviewees were asked (a) how frequently they spoke with their coaches and for what length of time; (b) the type of communication they used to communicate with their coaches (e.g., phone, email, Skype); and (c) the estimated frequency and type of check-in (e.g., email, texting, phone) between coaching sessions. Interview results indicated that coaching was provided in a manner consistent with the coaching protocol. Sessions took place approximately once per week and were approximately 30 minutes in length. They typically occurred via phone with email or text check-ins between sessions.

Instrument Reliability

It is important to assess reliability of a nationally normed instrument with the study participants (Sawilowsky, 2000, 2002). Reliability is defined as the consistency of scores, which can be obtained through repeated measures (e.g., test-retest), or in situations such as the current study, internal consistency. Cronbach alpha, a measure of internal consistency, was computed on the LASSI subscales. Internal consistency is equivalent to the correlation obtained when splitting the test into two random parts. A value of .8 is generally considered adequate. The subscale reliabilities for the LASSI were quite good (e.g., often above .9); They are compiled in Table 4.

Impact of Coaching on Students' Executive Functioning

A multivariate analysis of covariance (MANCOVA)was conducted on the LASSI total scores to determine if therewere mean differences between the Coaching andComparison students. The LASSI pretests served as the covariates.

The results depicted in Figure 1 indicate a statistically significant higher LASSI score for students who were coached as compared to those who did not receive coaching (Hotelling's Trace = .085, F = 2.73, df = 3, 96, p = .048). When taking the entire LASSI score as a single multivariate variable, the Coaching students' scores were superior to the comparison group.

The question of differences between the Coaching and Comparison students also arises on the individual LASSI cluster scores, as depicted in Figure 2. Therefore, univariate analysis of covariance (ANCOVA) breakdown tests and their estimated effect sizes are noted below. An effect size is a standardized measure of (a) impact of an intervention, or (b) difference in outcomes between two or more groups. The effect size, Partial Eta2 , is used to assess the practical significance if a hypothesis test is found to be statistically significant. It was found that students who were coached scored statistically significantly higher (p < .05) on each of the individual LASSI clusters with effect sizes that were typically moderate or large. Skill (F = 4.33, p = .04, Partial Eta2 = .04) and Will (F = 4.58, p = .04, Partial Eta2 = .05) are approximately designated as a moderate treatment outcome, whereas Self-Regulation (F = 8.35, p = .01, Partial Eta2 = .08) is a large treatment outcome of the coaching intervention.

Within Group Analyses of Executive Functioning

According to Cohen (1988), effect sizes for differences between two groups can be classified as .2 = small, .5 = moderate, and .8 = large. Sawilowsky (2009) defined effect sizes of 1.2 and 2.0 as very large and huge, respectively. The coached students' pre-test to post-test gains on the LASSI were analyzed. The mean total LASSI pre-test score was 236.93, whereas the mean post-test LASSI score increased to 419.61, as indicated in Figure 1. A dependent samples t- test was statistically significant (t = 8.51, df = 78, p < .01). The effect size for the coached students gain in total LASSI score was d = 1.02, which is large.

Figure 1 also provides a view of the pre- to post-gain of the comparison group. Their total LASSI scores improved from 304.95 to 369. However, the paired samples t-test was not statistically significant (t = 1.763, df = 36, p = .09).

The treatment group also demonstrated gains on all three clusters of the LASSI. As noted in Figure 2, the mean scores improved for Skill from 75.98 to 133, Will from 79.12 to 130.5, and Self-Regulation from 81.8 to 156.08. A series of two dependent samples t-tests were conducted on the pre-test to post-test gain for each of these LASSI cluster scores. The results were as follows: Skill (t = 7.63, df = 78, p < .01), Will (t = 6.11, df = 78, p < .01), and Self-Regulation (t = 9.13, df = 78, p < .01). The effect sizes were: Skill, d = .88, which is large; Will, d = .65, which is moderate-large, and Self-Regulation, d = 1.10, which is large. (Because the pretest to posttest total gain was not statistically significant for the Comparison group, breakdown pretest to posttest analyses based on the three LASSI cluster scores are not presented for the Comparison group.)

In addition to the quantitative results obtained on growth pre- to post- in executive functioning skills for students who were coached, the improvement in these skill areas was a major qualitative theme that emerged from interviews with a purposive sample of students in the coaching group. See Parker, Field, Sawilowsky, and Rolands (2012) for a comprehensive review of the qualitative aspects of this study.

Impact of Coaching on Subjective Well-Being

The CWB Scale was developed by project staff to assess specific factors associated with the subjective well-being of college students. Subjective well-being refers to how people evaluate their lives and what is important to them. An individual's subjective well-

Table 4

Cronbach Alpha Reliability for LASSI Total Scale and Ten Subscales; Coaching n = 79, Comparison n = 38

	Coached		Comparison		Combined	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Total Scale	.94	.95	.94	.94	.94	.95
Subscales:						
Anxiety	.84	.87	.86	.76	.84	.84
Attitude	.67	.75	.53	.69	.64	.73
Concentration	.84	.86	.90	.88	.87	.87
Information Processing	.82	.81	.78	.78	.81	.80
Motivation	.83	.84	.74	.77	.82	.82
Self Testing	.84	.84	.76	.86	.88	.89
Selecting Main Ideas	.87	.91	.89	.86	.88	.89
Study Aids	.72	.73	.62	.65	.70	.70
Time Management	.81	.85	.75	.85	.80	.85
Tests Strategies	.71	.75	.80	.76	.74	.75

Figure 1. LASSI Pre- and Post-test Results Total Scores

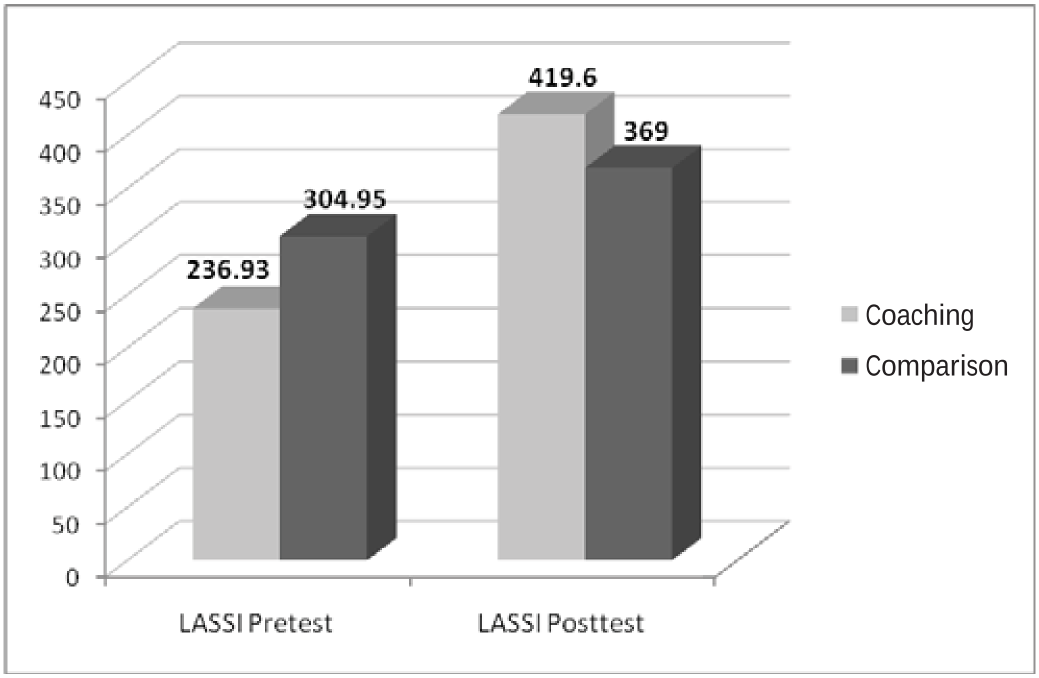


Figure 2. LASSI Pre- and Post-test Results Cluster Scores

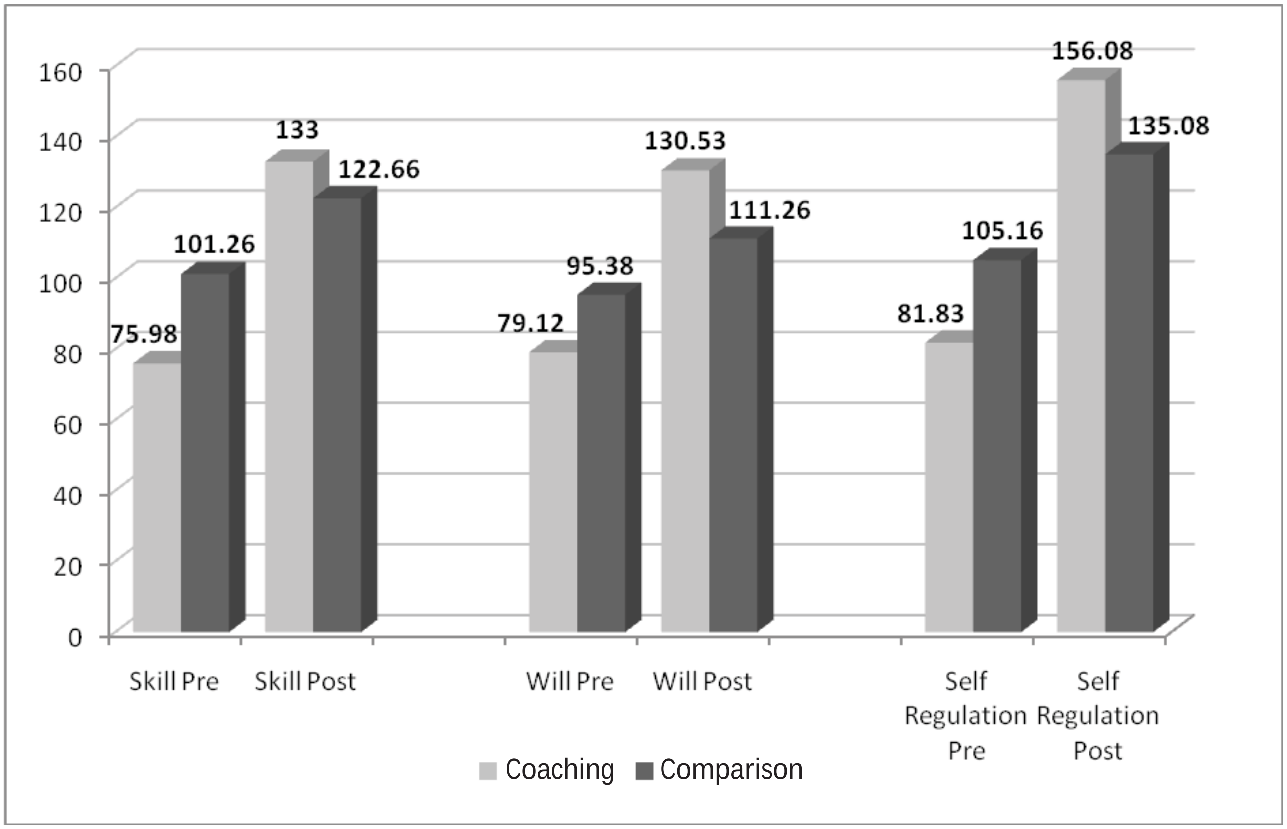


Table 5

College Well-Being Rotated Component Matrix

	Component	
	Well-Being	Life Direction
CWBS Q8	.780	
CWBS Q5	.759	
CWBS Q1	.635	
CWBS Q4	.589	
CWBS Q7	.571	
CWBS Q2	.537	
CWBS Q6	.527	
CWBS Q10		.873
CWBS Q9		.803
CWBS Q3		.557

Notes: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

being is often related to some degree to their objective circumstances, but it also depends on how people think and feel about these conditions. Subjective well-being encompasses people's life satisfaction and their evaluation of important domains of life such as work, health, and relationships. It also includes their emotions such as joy and engagement, and the relatively rare experience of unpleasant emotions such as anger, sadness, and fear (Diener & Biswas-Diener, 2008, p. 4).

Items were written based on literature links to well-being as a construct and then tailored to college-age students. The literature links to well-being as a construct that provided the foundation for item development included positive feelings (Fredrickson & Losada, 2005; Seligman, 2002), ability to identify and access resources (Field & Hoffman, 1994), life balance (Baker, 2003), time management (Field & Hoffman, 1994), and purpose (Baker, 2003).

The CWB Scale was administered post-test only to the coaching and comparison groups. Cronbach alpha, a measure of internal consistency reliability, was .84 for the coaching group and .83 for the comparison group. Exploratory factor analysis was conducted to assess CWB validity via internal factor structure. Principal components extraction with varimax rotation produced two factors as indicated in Table 5. The total variance explained was 52.9%. The two factor solution included all of the general well-being items, which are therefore named "well-being," and three items that pertain to life direction.

To determine the difference in college well-being between students who were coached and comparison group students, an ANCOVA was conducted. The total LASSI score served as a covariate to statistically create baseline equivalence on executive functioning. The ANCOVA results are compiled in Table 6. The result ($p = .05$) is statistically significant. Coached students' mean well-being score was statistically significantly higher than comparison students' mean well-being score, when corrected for initial differences in executive functioning.

The practical significance is depicted by the R^2 effect size. The value of .11 indicates that approximately 1/10th of the reason students' well-being score differs can be explained by the executive functioning (i.e., LASSI score).

Impact of Co-Occurring Conditions on Study Results

Many students with ADHD also have one or more co-occurring conditions (Weyandt & DuPaul, 2006; Wolf, 2001). Therefore, it is important to examine whether the existence of co-occurring conditions had an impact on any of the results. At the beginning of the study, students provided information about the existence of any co-occurring conditions on a self-report basis on their enrollment forms. An analysis was conducted on a variety of dependent variables in a one-way ANOVA where the independent variable was condition. "Condition" was defined as being diagnosed with ADHD only (Condition 1) or with ADHD and at least one other condition (Condition 2). The second condition included depression, anxiety, learning disability, Obsessive Compulsive Disorder, Oppositional Defiant Disorder, Tourette's Syndrome, Aspergers/Autism, or Bi-polar Disorder. There were no statistically significant differences found based on ADHD only (Condition 1) vs. ADHD with an additional diagnosis (Condition 2), except for the LASSI Self-Regulation cluster post-test scores ($p = .046$), as noted in Table 7. Hence, the existence of co-occurring conditions did not appear to have a major influence on the efficacy of the coaching services.

Discussion

Students who participated in coaching demonstrated statistically significant higher executive functioning, as measured by the LASSI cluster scores (i.e., Will, Skill, and Self-Regulation), compared to the comparison students ($p < .05$). Further, an inspection of effect sizes indicated moderate to large treatment outcomes. Analysis of the interviews conducted with students who participated in the coaching model corroborated the LASSI findings (Parker, Field, Sawilowsky, & Rolands, 2012). Students expressed that coaching helped them think about and work toward their goals more productively. A major theme throughout the interviews was the impact that coaching had on students' perceptions of their self-regulated behaviors. A majority of students noted that coaching had helped them manage their time and tasks more efficiently and that it had resulted in more positive self-talk. They stated that the improved self-talk led to better management of time and tasks, more effective problem solving, and the lessening of self-doubts and worries. Clearly, the students' perceptions indicated that the coaching intervention improved their ability to self-manage the learning process. As students participated in coaching, they noted improved executive functioning skills, es-

Table 6

ANCOVA on College Well-being with LASSI as a Covariate, Coaching n = 78, Comparison n = 35

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	396.12[a]	2	198.06	6.48	.00
Intercept	29553.98	1	29553.98	966.59	.00
LASSI Pretest	349.73	1	349.73	11.44	.00
Group	109.24	1	109.24	3.57	.05
Error	3363.31	110	30.58		
Total	167540.00	113			
Corrected Total	3759.43	112			

Notes: R2 = .11, Adjusted R2 = .09.

Table 7

Impact of Co-occurring Conditions by LASSI Cluster Posttest Score

		Sum of Squares	*df*	Mean Square	*F*	Sig.
Skill	Between Groups	24491.548	5	4898.310	1.186	.328
	Within Groups	231367.936	56	4131.570		
	Total	255859.484	61			
Will	Between Groups	49455.585	5	9891.117	1.898	.109
	Within Groups	291882.609	56	5212.189		
	Total	341338.194	61			
Self-Regulation	Between Groups	68593.629	5	13718.726	2.431	.046
	Within Groups	316016.064	56	5643.144		
	Total	384609.694	61			

pecially their self-regulation, including organizational and time management skills.

Given the importance of executive functioning skills (especially self-regulation) to success in academic and vocational pursuits, the implications of these findings are substantial. This is especially pertinent given the centrality of difficulty related to executive function and self-regulation for persons with ADHD.

It was also demonstrated that coaching enhanced students' sense of well-being when self-regulation was used as a control. As indicated above, student interviews revealed participants in the intervention group experienced a greater sense of well-being after having received the coaching services. See Parker, Field, Sawilowsky, and Rolands (2012) for further discussion of the student interviews.

Given the dramatic increase in perceived self-regulation demonstrated as a result of coaching, the relationship found between enhanced well-being and increased self-regulation is an important finding. Not only is enhanced subjective well-being important for quality of life; research has also demonstrated positive emotional states are linked to more effective and efficient learning (Fredrickson & Branigan, 2005). For persons with ADHD this finding takes on added importance in light of Gudjonsson, Sigurdson, Eyjolfsdottir, Smari, and Young (2009) who found an association between ADHD symptoms and reduced global life satisfaction. Although the research in this area is not conclusive, it appears that persons with ADHD may be at higher risk for diminished life satisfaction. Wilmshurst, Peele, and Wilmshurst (2011) found that environmental mastery (i.e., competence in managing the environment, making effective use of available opportunities) was predictive of positive self-concept in persons with ADHD. By assisting students with ADHD in the improvement of their self-regulation, coaching may also help students experience more positive emotions and, subsequently, the ability to learn more effectively.

Coaching appears to successfully address the very difficulties that college students with ADHD report in the literature, specifically difficulty in the area of executive functioning, including such areas as time management, task organization, self-regulation, and stress management. The finding that a phone-based, weekly service made such a difference in students' perceptions about their functioning is likely to be very meaningful to college campuses, where typically staff must explore effective services for academically at-risk students in an era of diminished budgets. While some colleges and universities train DS providers or other campus professionals in coaching techniques, other campuses find it more useful to refer students to off-campus coaching services that appear to be efficacious (Parker & Boutelle, 2009). In addition, a phone/email/text-based service with such measurable benefits has a potentially high appeal to a wide range of college students in this era of ubiquitous personal technology usage.

There are several limitations to this study. Information was not collected on students' ADHD subtype or medication usage. In addition, although all students in both treatment and comparison groups had access to the disability support services available on their campuses, information was not collected on the types of services they chose to access. More detailed information about students' ADHD subtype and medication usage, as well as types of support services used in addition to coaching, may help to identify the circumstances under which coaching is most beneficial for college students with ADHD. Another potential limitation is that, despite an impressive number of students in the sample, a sizeable group of initial participants did not complete the study. There is a need for further research to examine the factors that are linked to students' inability to complete coaching programs. This would provide valuable information on the factors that contribute or hinder adherence to coaching and may also lead to increased understanding of conditions that make coaching most useful.

This study demonstrated that participation in coaching made significant improvements for students with ADHD in their perceptions of will, skill, self-regulation, and well-being. This investigation has established a foundation for further research, such as an analysis of the incremental improvements per unit of coaching (e.g., sessions, minutes), to determine the most cost- and time-efficient method to deliver coaching services. Furthermore, there is a need to identify readiness factors that make some students more likely to benefit from coaching services. It would be valuable to compare different methods of coaching services delivery (e.g., phone vs. in-person, individual vs. group). Finally, with larger samples, a breakdown analysis by co-morbidity may be helpful in maximizing the effects of coaching outcomes to meet the needs students with additional, specific disabilities.

References

Baker, D. (2003). *What happy people know*. New York: Rodale.

Brown, T. E. (2005). *Attention deficit disorder: The unfocused mind in children and adults*. New Haven, CT: Yale University Press.

Bettinger, E., & Baker, R. (2011). *The effects of student coaching in college: An evaluation of a randomized experiment in student mentoring (working paper 16881)*. Cambridge, MA: National Bureau of Economic Research.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hilldale, NJ: Lawrence Erlbaum Associates.

Diener, E., & Biswas-Diener, R. (2008). *Happiness: Unlocking the mysteries of psychological wealth*. Malden, MA: Blackwell Publishing.

DuPaul, G. J., Weyandt, L. L., O'Dell, S. M., & Varejao, M. (2009). College students with ADHD: Current status and future directions. *Journal of Attention Disorders, 13*, 234-250.

Field, S., & Hoffman, A. (1994). Development of a model for self-determination. *Career Development for Exceptional Individuals, 17*(2), 159-169.

Field, S., Parker, D., Sawilowsky, S., & Rolands, L. (2010). *College well-being scale*. Detroit, MI: Wayne State University College of Education.

Frazier, T. W., Youngstrom, E. A., Glutting, J. J., & Watkins, M. W. (2007). ADHD and achievement: Meta-analysis of the child, adolescent, and adult literatures and a concomitant study with college students. *Journal of Learning Disabilities, 40*, 49-65.

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion, 19*, 313-332.

Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist, 60*, 678-86.

Gioa, G. A., Isquith, P. K., & Guy, S. C. (2001). Assessment of executive function in children with neurological impairments. In R. Simeonsson & S. Rosenthal (Eds.). *Psychological and developmental assessment* (pp. 317-356). New York: Guilford Press.

Goldstein, S. (2005). Coaching and ADHD: Myths, realities and controversies. *Journal of Attention Disorders, 9,* 379-381.

Gudjonsson, G. H., Sigurdsson, J. F., Smari, J., & Young, S. (2008). The relationship between satisfaction with life, ADHD symptoms, and associated problems among university students. *Journal of Attention Disorders, 12*, 507-515.

IMSL (2011). Visual Numbers, v. 70. Retrieved from http://www.roguewave.com/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=517&PortalId=0&TabId=607 (p. 99).

Parker, D. R., & Boutelle, K. (2009). Executive function coaching for college students with LD and ADHD: A new approach for fostering self-determination. *Learning Disabilities Research & Practice, 24*(4), 204-215.

Parker D., Field, S., Sawilowsky, S., & Rolands, L. (2012). Self-control in postsecondary settings: Students' perceptions of ADHD college coaching. *Journal of Attention Disorders*, doi:10.1177/1087054711427561.

Quinn, P. O., Ratey, N. A., & Maitland, T. L. (2000). *Coaching college students with AD/HD: Issues and answers.* Silver Spring, MD: Advantage Books.

Sawilowsky, S. (2000). Psychometrics vs. datametrics. *Educational and Psychological Measurement, 60*, 157-173.

Sawilowsky, S. (2002). Reliability. In (B. Thompson, Ed.) *Score reliability: Contemporary thinking on reliability issues.* Thousand Oak: Sage.

Sawilowsky, S. (2009). New effect size rules of thumb. *Journal of Modern Applied Statistical Methods, 8*(2), 597-599.

Seligman, M. E. P. (2002). *Authentic happiness*. New York: Free Press.

Silver, L. B. (January/February 2010). The concept of ADHD is changing. How does this impact on you or your child? *LDA Newsbriefs, 45*(1), 17-20.

Suen, H. K., & Ary, D. (1989). *Analyzing quantitative behavioral observation data.* Hillsdale, NJ: Erlbaum.

Swartz, S. L., Prevatt, F., & Proctor, B. E. (2005). A coaching intervention for college students with attention deficit/hyperactivity disorder. *Psychology in the Schools, 42,* 647-656.

Tudisco, R. M. (2010, June). The diversion of ADHD medication: What you need to know. *Attention, 17*(30), 16-19.

Weinstein, C. E., Schulte, A. C. & Palmer, D. R. (2002). Learning and Study Strategies Inventory. Clearwater, FL: H and H Publishing.

Weyandt, L. L., & DuPaul, G. (2006). ADHD in college students. *Journal of Attention Disorders, 10*(1), 9-19.

Wolf, L. E. (2001). College students with ADHD and other hidden disabilities: Outcomes and interventions. *Annals of The New York Academy of Sciences, 931*, 385-395.

Whitmore, J. (2002). *Coaching for performance*. London: Nicholas Brealey Publishing.

Wilmshurst, L., Peele, M., & Wilmshurst, L. (2011). Resilience and well-being in college students with and without a diagnosis of ADHD. *Journal of Attention Disorders, 15*(1), 11-15.

Zwart, L. M., & Kallemeyn, L. M. (2001). Peer-based coaching for college students with ADHD and learning disabilities. *Journal of Postsecondary Education and Disability, 15*, 1-15.

About the Authors

Sharon Field received her BA degree in Sociology from University of Washington, her M.S. degree from University of Wisconsin-Whitewater and Ed.D. from University of Washington. Her experience includes working as a special education teacher and coordinator for Bellevue School School District (Bellevue, WA) and as a professor of Educational Leadership and Associate Dean for Research for the College of Education at Wayne State University (Detroit, MI). She is currently Co-Director of the Initiative for Self-Determination, College of Education, Wayne State University. Her research interests focus on self-determination across the lifespan and application of positive psychology practices. She can be reached by email at: sharon.field@wayne.edu.

David R. Parker received his BS degree in special education and MS in counseling from Indiana University and his Ph.D. in special education (postsecondary programming) from the University of Connecticut. He has been a high school special education teacher, LD specialist/ADHD coach and administrator at UNC Chapel Hill, director of the UPLD program and special education faculty member at the University of Connecticut, and program manager of an NSF STEM grant at Washington University in St. Louis. His research interests include ADD coaching, self-determination theory and practice, and applications of Universal Design for Instruction (UDI). He can be reached by email at: drdparker@gmail.com.

Shlomo S. Sawilowsky received a Ph. D. from the University of South Florida in Educational Statistics, Measurement, Research, and Evaluation. He is a Wayne State University Distinguished Faculty Fellow and Professor of Evaluation and Research in the College of Education. His research interests are in the development of robust and powerful social and behavioral science statistics; including nonparametric and computer-intensive Monte Carlo methods. His email address is shlomo@wayne.edu.

Laura Rolands received her BA degree in business administration from Michigan State University and Masters in Industrial and Labor Relations from Cornell University. Her experience includes working as a human resources executive with Chrysler Corporation and as a research assistant at Wayne State University. She is currently an ADHD Coach and a Director with Ulliance, Inc. Her research interests focus on ADHD and coaching. She can be reached by email at: Laura@MyAttentionCoach.com

Authors' Note

This research was supported in part by a grant from the Edge Foundation. We would like to acknowledge the assistance of Julie Smith in the preparation of this manuscript.

PRACTICE BRIEF
b-Learning in a Distance Learning Graduate Program for Deaf Students

José Reis Lagarto
Ana Mineiro
Joana Pereira
Universidade Católica Portuguesa

Abstract

This article results from a case study with exploratory traits where the implementation of a graduate degree in Portuguese Sign Language at the Portuguese Catholic University is analysed. With this study we intend to determine whether distance learning models using blended learning strategies are adequate for deaf students at the university level. The teaching practice using a learning management system and some Web 2.0 tools show us that is possible to provide education and training to disabled people that are not able to attend regular face-to-face courses at University. The option for technology-enhanced learning environments allows new solutions for old problems; issues that somehow limited the development of different skills in groups of individuals with specific traits.

Keywords: distance learning; blended learning; deaf education; Portuguese sign language

In 2008, the Portuguese Catholic University (UCP) launched the Portuguese Sign Language Graduate Program (Pro_LGP) specially designed for the deaf community. In such preparative work we were faced with two different realities: (1) by institutional option, a population made entirely of deaf students and (2) the fact that this population was mainly composed of working students. Consequently, it would be extremely difficult for students to attend regular classes at the University campus, fulfilling the frequency of attendance usually required by a face-to-face course graduation.

Bearing this in mind, and considering a previously successful experience at a master's program in educational computer science at UCP, the team decided to devise an educational design that would create the necessary conditions for significant learning[1]. Therefore we opted for a mixed training methodology, commonly designated as *blended* learning (b-learning). The academic results obtained so far and the students' perceptions about the technology environment used for learning have been encouraging and seem to indicate that our methodology choice was accurate.

This article intends to describe the operative procedures in this pioneer graduate program in Portugal, designed exclusively for the deaf community. It is currently running with two groups of students totalling 46 learners and taught in a distance learning system. All the students wrote their final high-school examination in Portuguese.

The Model For Developing the Program

Our target population fits into the expected framework for distance learning structures, according to some authors who have dedicated themselves to the study of these models such as Trindade (1992), Bates (1995), Keegan (1996), Holmberg (1997) or Lagarto (2002). The framework mentioned above identifies as potential distance learners those individuals with the following characteristics: maturity; being full time workers; and having achieved an adequate academic level, namely conclusion of high school (12th grade).

---

[1] After the program began we have had contact with one similar experience running at Universidade Federal de Santa Catarina – degree in LIBRAS (Brazilian Sign Language)

A common definition for b-learning says that classroom activity should be followed by distance study, where students can interact online with course content, colleagues, and tutors in each Curricular Unit (CU). This study plan runs around three main scientific areas that support the knowledge and skills that students who finish the Pro_LGP graduate degree must acquire. Such areas are language science (90 ECTS[2]), neuroscience (36 ECTS), and educational science (54 ECTS). The area concerning language science is the one that weights more on the curriculum because our target public needs to acquire good linguistic and metalinguistic skills with their own language.

On the other hand, existing knowledge about how to teach working students shows that there is great difficulty in balancing professional activity and studies. Consequently, it is recommended that there should be no more than two or three CUs running simultaneously. Therefore we opted for a program with two CUs running in parallel during 12 weeks and having a weekly workload of around 10 hours each. This workload consists of individual assignments, readings, and participation in forums.

Students must attend classroom sessions every two weeks, where new content is introduced and activities are created that students must work on until the following face-to-face session. The language used in these sessions is Portuguese Sign Language (LGP), whether directly used by a fluent teacher in this language or through sign language interpretation. During the period between face-to-face sessions, students must work using the Learning Management System (LMS), where they can read content materials and participate in forums. Students' online participation is mandatory.

Each CU has a specific handbook, deliberately produced and published for the graduate program, which contains written information in Portuguese and also a DVD containing the CU's contents adapted to LGP. There are 26 handbooks that correspond to the 26 CUs of the program. To complement the handbooks, the LMS includes areas that allow teachers and students to upload and download additional content that builds upon the existing information, areas for posting relevant information, and areas for asynchronous communication.

Given the program's specificity and taking into account that it is designed exclusively for deaf students living among the hearing people majority, and that daily communication between hearing and deaf people is related to deaf individuals' fluency and proficiency in the Portuguese language, we elected bilingualism (LGP as their first language and written Portuguese as second language [L2]) as a methodological approach. Thus all course content is available in both languages. Based on observations by the teaching team, it is interesting to realise that, during the three years of the graduate program, students have been demonstrating increasing writing skills and many have chosen to do their assignments in written Portuguese. Such a development of their L2 was from the start a main objective because it provides the future graduates with better access to scientific documents and a wider integration in the academic community. Making the materials available in the typical distance learning formats (scripto and video, according to the categories established by Trindade in 1990), and in two languages, we were giving the students an opportunity to feel more confident and not feel lost while studying during autonomous learning periods.

The Technology Enhanced Learning Environment

Generally, a b-learning program should base its "distance" component on an LMS, a communication meeting point for students, teachers, and tutors. For the sake of simplicity, and because it provided us with the required pedagogical functions, we chose to use the existing software at the UCP - the Blackboard course management system. Due to the target population's specific traits, relevance was given to written and video languages, either through the video content available as part of the handbook or the content put together by the students themselves. Students were asked to create their own video productions for various course activities. We needed to have technology that allowed us to store and disseminate students' work and activities both in LGP and in written Portuguese since we had previously decided to ask students to communicate in both forms of written expression.

For this reason, it was decided that each student should create a digital portfolio, using a private blog, and therein store and exhibit all the assignments carried out during the course. Such blogs are of a reserved and confidential nature, and only the students, their teachers and the tutors/interpreters have access to them. It therefore became practical and easy for the teaching team to evaluate the students' work, eliminating the need to store files on disks, pen drives, or memory cards. The convenience of this procedure is clear, which facilitated students' language expression and learning.

---

[2] European Credit Transfer and Accumulation System

In these personal blogs the students collected all the produced work, either in written texts in Portuguese or in LGP, with short video recordings using the webcam and placing the file in the appropriate space. In this way, the tutor had clear access to the student's work. Some students chose to create such videos using YouTube. Other documents became part of the students' blogs, namely texts and presentations, the latter installed using online sharing software. The blogs became complete repositories of activities; a true personal e-portfolio.

The Tutorial Model

In an e-learning model, it is often fundamental for an active tutorial system to be set in place where the tutor has many functions, but whose tasks must be oriented in order to focus the learning process on the student's activities[3]. An active tutoring strategy implies an explicit commitment by the tutor to motivate the students; counsel; manage forums (placing questions, reading the students' interventions, posting corrections, raising new questions/issues, motivating the less participative students); evaluate students' learning; grade exams; and ccoordinate face-to-face sessions.

Active tutoring is by definition an extremely demanding process, although we acknowledge that all learning interactions do not occur exclusively between student and tutor. Anderson (2004) explains that the student can (and should) interact not only with the tutor but also with other students and learning materials. Only through this assumption it is possible to design financially sustainable training programs.

It is important to note that the developed activities and the interactions these practices generate have produced some user generated contents. This new tendency can modify the students' relation with the content and promote new and interesting ways of learning and building knowledge. Various products resulted from our graduate program, such as the massive construction of personal blogs and community spaces hosting communities of practice related to the specific themes and issues of the deaf population.

The tutors who are part of this graduate program's staff present an appropriate and complete professional profile, given that besides the specific functions concerning *online* support/tutoring, they also organize classroom sessions. The tutoring staff at PRO_LGP is composed of highly fluent signers. They are both certified sign language interpreters who developed pedagogical skills during the preparation period prior to the beginning of the program and experienced deaf teachers.

For purposes of answering any questions about the content covered in lectures, we favour public communication because it allows students to have visual access to their colleagues' questions. This practice also encourages other students to ask any questions that they might have. On more personal issues, where students might eventually feel less comfortable with public exposure, the tutor should use alternative and more private means of communication, namely email.

In the period of time in between face-to-face sessions, students are invited to take part in collaborative activities that are focused on small groups, where they interact among themselves, with their tutors and with learning materials. These collaborative actions are undertaken using the existing forums on the LMS. Forums are built around themes and allow students to post questions. All forums coexist in parallel and in some curricular units there are also social forums. This approach is facilitated by the existence, at the onset of the 3-year program, of a CU specially designed to train the students not only on how to use the LMS but also some common Web 2.0 tools that ease communication processes. Among those tools are blogs (blogger and Wordpress), Google sites, YouTube, Instant Messaging, and several others such as ooVoo software, highly used in LGP signing communications.

Written participation created in the students a need to perfect their writing skills, which resulted in an important asset in the global learning process and a positive factor for social inclusion. Marschark, Lang and Albertini (2002) found that deaf students face many difficulties when acquiring various skills and also in their professional lives due to an inadequate literacy in reading and writing in the majority's oral language. It is crucial to promote L2 in deaf students so they can achieve success in their professional performances.

The Evaluation Process

The learning output assessment in b-learning environments is usually based on several components. It is predictable that students will hand in a certain amount of work or perform tasks that are evaluated both qualitatively and quantitatively. These assignments constitute formative evaluation but also have some impact on final grades. At the end of each CU, students attend a classroom session in order to take an exam that is divided into two parts – one in written Portuguese and the other in LGP recorded in video. The sign language recording process works in a rather simple way, with students answering some questions available to them on paper. The answers are recorded with laptop webcams and the final result is given to tutors via portable hard drives.

---

[3] We must consider, indeed, that in some situations, e-learning strategies may lead to learning without there being any tutorial support.

Assessing satisfaction levels

To evaluate students' satisfaction level concerning the program methodology, a short evaluation survey was administered. Its structure fits the categories defined by specialised literature as the one that best evaluates effectiveness in distance learning training systems (Lagarto, 2002, 2009): biographical questions such as occupation, address, gender and age; satisfaction concerning proficiency in the usage of the online platform as a communication tool; approval and satisfaction concerning the quality of pedagogical materials; perceptions about the utility of classroom sessions and the role of tutors and interpreters; level of satisfaction concerning the methodologies and evaluation guidelines used throughout the program; and satisfaction concerning general support issues (administrative and logistical features). The questionnaire's most significant results are described below.

Age. The majority (21 out of 30) of students attending this graduate program are between 26 and 45 years old. Their maturity makes them an appropriate target public for distance learning programs.

Ownership of a laptop computer prior to entering the program. Almost 25% of the candidates to the program did not own a laptop prior to the beginning of the program. After the program was initiated, all students either acquired or obtained their own adequate equipment in order to fit the course requirements.

Evolution of knowledge about computer science during the graduate program (see Table 1). It was important to realise that most students in this program learned for the first time in their lives how to use a forum or how to build and edit their own blogs at the onset of the graduate program. Our program has clearly contributed to the improvement of the students' digital competence.

Level of satisfaction towards the program (see Table 2). In this second group of questions we show the students' positive levels of satisfaction concerning the printed and video materials containing the contents (in Portuguese and in LGP). Results also emphasize that deaf students feel more comfortable using their mother language (LGP) as opposed to their L2, as Lang and Steely (2003) also found. It is important to point out that, during the program, students have been gradually adapting to written Portuguese, which became for them a stronger L2. This will allow them to use more efficient communication skills both professionally and academically in the hearing world. Our initial investment in the bilingual approach was effective. Besides having led to an improvement in L2 competence (the majority's language in Portugal), it also added value to the deaf students' natural language through the pioneering creation of materials and a terminological dictionary in LGP[4] (Mineiro, Lagarto, Nunes, & Caldas, 2010).

In addition, the enormous appreciation students have for the tutoring/ interpreting team is pointed out in our results. They are fundamental elements in creating emotional relationships that promote learning development.

Conclusions

To study in a distance learning system does not constitute an easy process. In the case of PRO_LGP, difficulties are identified. Individuals with a professional occupation, living far away from campus, with enough maturity to learn in an autonomous fashion demonstrated the ability to achieve successful outcomes while participating in distance learning pathways. The fact that the population in study has an auditory limitation merely implied the adaptation of communication strategies to their needs in the existing context.

From the results of observation and those collected by a survey of students' experiences, we can conclude that this innovative experience has fully lived up to the initial expectations. The commitment and effort of students, teachers, tutor/interpreters; the results of the assessments/evaluations and survey feedback; and indicators taken from the online learning platform allow us to look ahead in optimism concerning the future development of this program and other programs that might follow, based on this pioneering experience. We

---

[4] http://pro-lgp.com/dicionario/

Table 1

Knowledge Evolution in Computer Science During the Graduate Program

	Participating in Forums	Blog Creation and Editing
Cannot do	2	1
I know how to do it but I have not improved during the graduate program	5	6
I know how to do it and have improved during the graduate program	12	9
I know how to do it and learned it for the first time in the graduate program	11	14

Table 2

Level of Satisfaction Towards the Graduate Program

	CD	**D**	**AD**	**A**	**CA**	**NA**
The printed handbook's format is appealing and a motivating factor	0	1	6	**13**	**9**	1
The pedagogical material in LGP/DVD is a useful resource for learning	0	1	5	**12**	**12**	0
The tutor stimulates and motivates students in an adequate way	0	2	**7**	**13**	**8**	0
The tutor provides me with the adequate feedback whenever it is necessary	1	2	**8**	**8**	**10**	1
The LGP interpreter has always displayed a very useful and positive action	0	0	2	**15**	**13**	0

Note: Legend: CD – I completely disagree; D – I disagree; AD – I neither agree nor disagree; A – I agree; CA – I completely agree; NA – No answer

can therefore focus our explanation of the program's success on a few central factors: a pedagogical and structural model appropriate for the graduate degree, academic instruction delivered in paper and video formats, the use of adequate and stimulating LMS and Web 2.0 tools, bilingualism, and constant tutorial support. These have been the most important dimensions in this training program.

References

Anderson, T. (2004). Toward a theory of online learning. *Theory and Practice of Online Learning*, 33-60, Athabasca University

Bates, A. W. (1995). *Technology, open learning and distance education.* London: Routledge.

Holmberg, B. (1977). *Distance education – a survey and bibliography*. London: Kogan Page.

Keegan, D. (1996). *Foundations of distance education.* London: Routledge.

Lagarto, J. (2002). *Ensino a distância e formação contínua – uma análise prospectiva sobre a utilização do ensino a distância na formação profissional contínua de activos em Portugal*. Lisbon: INOFOR.

Lagarto, J. (2009) Avaliação em eLearning. Em *Educação, Formação & Tecnologias, 2*(1), 19-29. Available at http://eft.educom.pt/index.php/eft/index

Lang, H. & Steely, D. (2003). Web-based science instruction for deaf students: What research says to the teacher. *In Instructional Science, 31*. Netherlands: Kluwer Academic Publishers.

Marschark, M. Lang, H. G. & Albertini, J. A. (2002). *Educating deaf students: From research to practice*. New York: Oxford University Press.

Mineiro, A, Lagarto, J. R. Nunes, & Castro Caldas, A. (2010, June/July). Enseñanza y aprendizaje a distancia para sordos: Bases metodológicas del desarrollo curricular de la licenciatura em Lengua de señas Portuguesa. In minutes of *Systemics, cybernetics and informatics: WMSCI 2010*, Orlando, FL.

Trindade, A. (1990), *Introdução à comunicação educacional.* Lisbon: Universidade Aberta.

About the Authors

José Reis Lagarto received his BA degree in engineering from High Technical Institute of Lisbon (IST) , Technical University of Lisbon, his Master and Ph.D. in Education Sciences from Open University of Lisbon. His experience includes teaching and implementing e-learning programs. He is the head of the E-lab center at Catholic University of Portugal where he is associate professor. His research interests include e-learning, new technologies in learning programs and educational sciences. He can be reached by email at: jlagarto@ucp.pt. *In this paper José Lagarto contribution was planning and writing the paper with Ana Mineiro. He was also responsible for the revision of the paper. José Lagarto and Ana Mineiro are both responsible for the design, implementation and coordination of the BA in e-learning for Deaf signers.*

Ana Mineiro received her BA degree in languages and literatures from Faculty of Humanities, University of Lisbon, her Master and Ph.D. in Linguistics from University of Lisbon. She has a post-doc in Neurolinguistics and Sign Language Linguistics by Catholic University of Portugal. Her experience includes mainly research and academic teaching. She is currently professor in the Institute of Health Science at Catholic University of Portugal and is the Head of Sign Language Lab Research. Her research interests include sign language, language evolution, brain and language, cognition and deafness. She can be reached by email at: amineiro@ics.lisboa.ucp.pt *In this paper Ana Mineiro contribution was planning and writing the paper with José Lagarto. Ana Mineiro and José Lagarto are both responsible for the design, implementation and coordination of the BA in e-learning for Deaf signers.*

Joana Pereira received her BA degree in Sign Language Interpreting from Polytechnic School of Setubal, Portugal, her Master in Sign Language and Deaf Education at Catholic University of Portugal. Her experience includes mainly research and academic teaching. She is currently tutor and invited assistant professor in the Institute of Health Science at Catholic University of Portugal. Her research interests includes Deaf Culture and Sign Language interpretation. She can be reached by email at: joanapereira.lgp@gmail.com *In this paper, Joana Pereira contribution was adapting the first version in Portuguese to English.*

PRACTICE BRIEF
Assessing Compensatory Strategies and Motivational Factors in High-Achieving Postsecondary Students with Attention Deficit/Hyperactivity Disorder

Gary Schaffer
Lansing School District

Abstract

Research speculates that high-achieving college students with attention deficit/hyperactivity disorder (ADHD) may demonstrate a set of compensatory strategies and experience areas of difficulty and motivational factors that differ from the general ADHD populace. This Practice Brief used informal surveys with seven undergraduates with ADHD who had achieved a cumulative GPA of 3.0 or higher. Their feedback provides insight into factors related to their challenges and successes. This article creates opportunities for more formal investigations of these factors in follow-up studies and informs suggestions for professional practice.

Keywords: College students, Attention Deficit/Hyperactivity Disorder, high achievement, compensatory strategies

Literature Review

Prior to the 1970s, attention deficit/hyperactivity disorder (ADHD) was thought to be a disability that primarily existed in childhood (Barkley, Murphy, & Fischer, 2008). However, research now estimates that approximately 50% to 70% of children who have the disorder maintain symptoms into adulthood (Ramsay & Rostain, 2006). Although students with ADHD are less likely than their peers to graduate from high school and attend college, the number of postsecondary students with the disorder has risen considerably since the 1960s with approximately 2% to 8% of postsecondary students self-reporting ADHD (Weyandt & DuPaul, 2006).

Despite the continued influx of students with ADHD into postsecondary education, research on college students with the disorder suggests a bleak academic future. Barkley et al. (2008) reports that only 21% of children with ADHD ever enroll in postsecondary education as opposed to 78% without the disorder and only 5% of those with the disorder actually graduate (Barkley, 2002). Overall, research has found that postsecondary students with ADHD have decreased functioning in adapting to the unique demands of college life. As a result, they are more likely to report academic problems, study skill deficits, organizational difficulties, lower levels of self-esteem, and decreased social functioning than their non-disabled peers (Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999; Shaw-Zirt, Popali-Lehane, Chaplin, & Bergman, 2005).

Even though college students with ADHD are more likely to report having academic difficulties, few studies have examined academic achievement in postsecondary students with the disorder (Blase et al., 2009; Heiligenstein et al., 1999). From the studies that have been conducted, results suggest that college students with ADHD earn poorer grades, have lower GPA's, and are five times more likely to be placed on academic probation than those without the disorder (Green & Rabiner, 2007; Heiligenstein et al., 1999; Schwanz, Palm, & Brallier, 2007; Weyandt & DuPaul, 2006). Although precise figures are not available, studies have found that college students with ADHD have GPA's approximately 0.5 to

1 standard deviation below that of students without the disorder (Blase et al., 2009; Heiligenstein et al., 1999; Weyandt & DuPaul, 2006).

Despite these findings, it would be a substantial oversight to assume that all postsecondary students with ADHD fail to succeed in college and have low GPA's. Students with ADHD who are successful at maintaining a high GPA may represent a unique subset of the college ADHD populace and diverge from lower achieving students with the disorder. Previous literature has speculated that college students with ADHD who maintain a high GPA possess higher levels of motivation and ability, better compensatory strategies, are more knowledgeable about study strategies, performed better in elementary and secondary school, have fewer learning disabilities, and have more social and parental support than less academically successful college students with the disorder (Glutting, Monaghan, Adams, & Sheslow, 2002; Heiligenstein et al., 1999; Kaminski, Turncock, Rosen, & Laster, 2006; Reaser, Prevatt, Petscher, & Proctor, 2007; Smith, Cole, Ingram, & Bogle, 2004).

To date, only Kaminski et al.'s (2006) study has addressed academically high-achieving college students with ADHD as a unique subpopulation and identified differences between high-achieving and lower achieving students with the disorder in regards to coping mechanisms utilized, sources of motivation, and obstacles to success. Kaminski et al. differentiated between academically high-achieving and low-achieving students with ADHD by separating 82 college students with ADHD into two groups based on their mean GPA falling above or below the combined group's mean GPA of 2.61. Students whose mean GPA fell above 2.61 were placed in the high success group and students whose GPA fell below 2.61 were placed into the low success group (Kaminski et al., 2006). They assessed the coping strategies, obstacles to success, and sources of motivation in both groups utilizing an open-forum questionnaire in which students were asked to write about each of the aforementioned areas. Furthermore, Kaminski et al. assessed the coping resources available to both high and low achieving students with ADHD using the Coping Resources Inventory for Stress (CRIS).

Surprisingly, results revealed that less successful college students with ADHD reported utilizing more coping strategies than highly successful college students with the disorder. However, no statistically significant themes emerged that differentiated the high success group from the low success group in regards to coping mechanisms utilized, sources of motivation, and obstacles to success. Results did reveal general themes between both groups in that the most commonly cited coping methods were working longer and harder than non-disabled peers, followed by having social support, and lastly possessing specific study, time management, and organizational skills (Kaminski et al., 2006).

Kaminski et al. (2006) also studied factors that influenced the intrinsic motivation of postsecondary students with ADHD. Students' most frequently-reported motivational influences were "making others proud" and "not letting others down," followed by succeeding in college being a "long term career goal" (Kaminski et al.). Finally, the most commonly cited obstacle to academic success was procrastination, followed by an inability to use organization, time management, and study skills. Ultimately, the authors speculated that highly successful college students with ADHD may have reported using fewer coping mechanisms than their lower achieving peers due to their quality and quantity of time studying, consistency of using study skills, and personality traits such as determination.

The Problem

Given the rise in numbers of students with ADHD attending college, there is a need to learn more about the compensatory strategies and motivational factors that help some postsecondary students with ADHD succeed academically in light of the everyday hindrances of the disorder.

Students and Location Information

Seven Caucasian undergraduate students from a small, private university in the northeastern United States provided information used in this Practice Brief. Six (85.7%) students were female and one (14.3%) was male. Two (28.6%) of the students were freshman, one (14.3%) was a sophomore, two (28.6%) were juniors, and two (28.6%) were seniors. All students self-reported having ADHD. Three (42.9%) students indicated they were currently registered with the Disability Services (DS) office and four (57.1%) reported not being registered with the DS office. Students' academic success was reflected by their cumulative grade point average (GPA), which ranged from 3.05 to 4.09 with a mean of GPA of 3.62 (SD = .392). One student was able to obtain a 4.09 GPA as the university utilized a 4.3 grading scale as opposed to the standard 4.0 grading metric.

Strategy

Students were recruited for this pilot study via flyers posted across campus along with an email being sent out by the DS office describing the study. Interested students contacted the author and submitted their most recent college transcript. Students with a self-reported diagnosis of ADHD along with a cumulative GPA of 3.0 or higher were eligible to participate. A self-reported diagnosis of ADHD was used as a criterion for participation as opposed to asking students to furnish proof of their disorder because many students with ADHD may not make use of the disability services office (Wagner, Newman, Cameto, Garza, & Levine, 2005). Additionally, a cumulative GPA of 3.0 or higher was used to differentiate high-achieving college students with ADHD from lower achieving students with the disorder as it is the minimum GPA required for students' inclusion on honor rolls and is also the minimum GPA for students wishing to apply to graduate programs at the university.

Five informal paper-based surveys and a student demographic form were developed by the author following a review of the literature on the coping strategies and hindrances faced by college students with ADHD. Particular emphasis was placed on Kamineski et al.'s (2006) study. Interested students met with the researcher on an individual basis for one meeting and were asked to complete the five surveys and student demographic form in the order they are presented.

Methods to ensure success survey. The Methods to Ensure Success Survey asked students to identify ways in which they maintained their GPA. The survey began with one general statement that read, "In order to maintain my grade point average I…." After reading the introductory statement, 40 compensatory strategies were listed to complete the initial general statement. Students were asked to place "X's" next to each compensatory strategy they used to maintain their GPA. For example, a student may have placed an "X" next to the compensatory strategy of "use post-it notes" making the whole statement read, "In order to maintain my grade point average, I use post-it notes" (See Appendix A).

Obstacles to success scale. The Obstacles to Success Scale asked students to identify ways in which obstacles hindered their success in college. After reading the introductory statement, "Some obstacles that hinder my success in college include…," students were asked to place "X's" next to as many of the 26 obstacles to success items they identified with to complete the initial statement. For example, a student may have placed an "X" next to the obstacle of success of "procrastinating on assignments" making the whole statement read, "Some obstacles that hinder my success in college include procrastinating on assignments" (See Appendix B).

Sources of motivation scale. The Sources of Motivation Scale asked students to rate the top three personal reasons they maintained their current high GPA. Fourteen personal reasons were listed and included statements such as "to prove to myself that I can succeed" and "because my fraternity/sorority requires a certain GPA." Students were asked to rank order their top three reasons for maintaining their high GPA by writing the numbers 1 through 3 next to the statements provided. If students did not find that one of the 14 statements listed applied to them, an "other" personal reason section for maintaining a high GPA was provided. In the "other" section, a space was provided for students write in a personal reason for maintaining their high GPA and rank order the reason by writing the number 1 through 3 next to it (See Appendix C).

Factors that decrease motivation scale. The Factors that Decrease Motivation Scale asked students to identify factors that decrease their motivation in maintaining their current GPA. After reading the introductory general statement, "Factors that decrease my motivation to maintain my current GPA include…," students were asked to place "X's" next to as many of the 30 items that they identified with to complete the initial statement. For example, a student may have placed an "X" next to the factor of "having a poor memory," making the whole statement read, "Factors that decrease my motivation to maintain my current GPA include having a poor memory" (See Appendix D).

Social support survey. The Social Support Survey consists of two components. The first component asked students to identify avenues of social support they have when experiencing difficulty coping with their ADHD. After reading the introductory statement, "When I have difficulty coping with my disability, I use the following social resources for support on a daily basis...," students were asked to place "X's" next to as many of the 24 items they identified with. For example, a student may have placed an "X" next to the social support of their "friends" or "father" to identify avenues for social support. If students did not find a social support mentioned in the 24 items listed, an "other" social support section was included in which students could write down a social support that was not listed. The second component of the Social Support Survey consisted of having students write down the social support they turn to most when having difficulty coping with their ADHD (See Appendix E).

Demographic form. A demographic form was developed to obtain basic personal information about students who completed the surveys. On the demographic form, students were asked to identify the following information: gender, date of birth, enrollment status (full- or part-time student), major area of study, GPA, year in school (i.e. freshmen, sophomore etc.), ethnicity, and whether they were registered with the campus disability office.

Observed Outcomes

Participant responses to survey items were numerically coded in order to perform a univariate analysis on each survey item using the Statistical Package for Social Sciences (SPSS) version 16.0. Responses were coded "1" if a student endorsed a survey item and "0" if a student did not endorse a survey item. Based on student responses, a relative frequency distribution was created in SPSS yielding a percentage of endorsements for each survey item.

Results revealed that these seven high-achieving college students with ADHD used an array of compensatory strategies to assist them in maintaining their GPA. All seven students (100%) reported using to-do lists and 85.7% indicated they studied in a quiet location, worked on assignments in short spurts, and set up short-term goals concerning schoolwork to ensure academic success. In regards to obstacles to success, 85.7% students indicated that "zoning out" in class hindered their success and 71.4% revealed that an irregular sleep schedule, poor memory, and difficulty concentrating while reading course material negatively impacted their academic performance.

Students answered a number of survey questions about motivation. The most frequently-reported reason students wanted to maintain a high GPA was to prove to themselves that they could succeed (71.4%), followed by 42.9% citing that they wanted to maintain a high GPA to make their parents proud. The most frequently-reported factor for decreasing a student's motivation was boredom with coursework (85.7%), followed by having a poor memory and feelings of uncertainty over their academic performance (71.4%). All students (100%) indicated that they used their friends as a means of social support when they were having difficulty coping with their disability and 71.4% indicated they used their mother for this support.

Implications

Research suggests that an increasing number of young adults with ADHD are pursuing a postsecondary education, but this growing population of undergraduates continues to report significant difficulty with retention and graduation compared to peers without disabilities. With the exception of the current study, only Kaminski et al. (2006) sought to assess the coping mechanisms, sources of motivation, and obstacles to success faced by academically high-achieving college students with ADHD as defined in this article.

Results from this small pilot study support speculation that high-achieving college students with ADHD utilize a number of compensatory strategies and motivational factors to maintain their high GPA. The seven students who provided information for this exploration frequently used "to-do" lists, worked on assignments in short spurts, and set up short-term goals to assist them in being academically successful. Each of these strategies support existing literature's claims that academically successful college students with ADHD possess specific study, time management, and organizational skills that assist them in maintaining their high GPA (Kaminski et al., 2006; Reaser et al., 2007). Additionally, these students reported a desire to maintain their GPA in order to prove to themselves that they could succeed. This finding supports speculation by existing literature that high-achieving college students with ADHD may possess higher levels of motivation and personality traits, such as determination, that promote their academic success (Kaminski et al., 2006). Furthermore, these students utilized social support as a means of coping with their disability. All seven students revealed that they turned to their friends most often when dealing with the everyday hindrances of the disorder.

Although Kaminski et al.'s (2006) study found that the most commonly cited obstacle to success was procrastination, these students reported that "zoning out" in class was their greatest hindrance to academic success. Differences found between Kaminski et al.'s (2006) study and the current exploration may be due to the different measures used to assess obstacles to academic success. This investigation adds to the literature by exploring factors that decrease motivation in high-achieving college students with ADHD. Seven students reported that boredom with coursework, poor memory, and feelings of uncertainty over academic performance were the most frequent causes of decreased motivation.

Practitioners in the university setting can utilize these insights to encourage lower achieving students with ADHD to develop specific study, time management, and organizational strategies and to pursue interventions to assist them in becoming academically successful. Additionally, these students' survey responses emphasize the importance of utilizing friends as a critical social support when having difficulty coping with ADHD. Professionals at the postsecondary level should encourage students with ADHD to develop and recognize the importance of social supports as a vital coping resource. Moreover, college practitioners may want to assist postsecondary students with ADHD in balancing social activities with academic demands through forming social support groups and time management workshops. Lastly, professionals in the university setting should help students with ADHD internalize their motivation to succeed through training sessions that assist them in setting up short and long term goals paired with rewards for achieving those goals.

The areas explored in this practice brief could be studied in a more rigorous manner by utilizing a larger and more diverse sample size of college students with ADHD from multiple institutions. Moreover, future research should include comparison groups of high- and low-achieving students with ADHD along with a control group to further evaluate the compensatory strategies, motivational factors, and areas of difficulty that each utilizes or encounters. Additional research should assess whether there are differences between the quality and quantity of time spent studying and consistency of using study skills between high and low-achieving students with ADHD.

Furthermore, future research should utilize more rigorous methods for identifying students diagnosed with ADHD beyond self-report. In addition, researchers should investigate to what extent co-morbid psychiatric conditions influence the academic success of college students with ADHD (Green & Rabiner, 2012). Perhaps McGough and Barkley's (2004) suggestions of reducing the number of symptoms required for ADHD diagnosis in young adults may be better suited for identifying college students with ADHD, as current *Diagnostic and Statistical Manual of Mental Disorders*' ([DSM–IV–TR]; American Psychiatric Association [APA], 2000) criteria may be too stringent for adults with the ADHD (Green & Rabiner, 2012). Ultimately, more methodologically sound research involving high-achieving college students with ADHD is needed to promote the success and retention of postsecondary students with this disorder.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

Barkley, R. A. (2002). Major life activity and health outcomes associated with Attention- Deficit/ Hyperactivity Disorder. *Journal of Clinical Psychology, 63*, 10 – 15. Retrieved from http://www.psychiatrist.com/

Barkley, R. A., Murphy, K. R., & Fischer, M. (2008). *ADHD in adults: What the science says*. New York: The Guilford Press.

Blase, S. L., Gilbert, A. N., Anastopoulos, A. D., Costello, E. J., Hoyle, R. H., Swartzwelder, S. H., & Rabiner, D. L. (2009). Self-reported ADHD and adjustment to college: Cross-sectional and longitudinal findings. *Journal of Attention Disorders, 13*(3), 297 – 309. doi: 10.1177/1087054709334446

Glutting, J. J., Monaghan, M. C., Adams, W., Sheslow, D. (2002). Some psychometric properties of a system to measure ADHD among college students: factor pattern, reliability, and one-year predictive validity. *Measurement and Evaluation in Counseling and Development, 34*, 194 – 209. Retrieved from http://mec.sagepub.com/

Green, A. L., & Rabiner, D. L. (2012). What do we really know about ADHD in college students?. *Neurotherapeutics*. doi: 10.1007/s13311-012-0127-8

Heiligenstein, E., Guenther, G., Levy, A., Savino, F., & Fulwiler, J. (1999). Psychological and academic functioning in college students with attention deficit hyperactivity disorder. *Journal of American College Health, 47*(4), 181 – 185. Retrieved from http://www.acha.org/Publications/JACH.cfm

Kaminski, P. L., Turnock, P. M., Rosen, L. A., & Laster, S. A. (2006). Predictors of academic success among college students with attention disorders. *Journal of College Counseling, 9*, 60 – 71. Retrieved from http://www.collegecounseling.org/resources/journal

McGough J. J. & Barkley, R. A. (2004). Diagnostic controversies in adult attention deficit hyperactivity disorder. *American Journal of Psychiatry, 161*(11), 1948 – 1956. doi: 10.1176/appi.ajp.161.11.1948

Ramsay, R. J., & Rostain, A. L. (2006). Cognitive behavior therapy for college student with Attention Deficit/Hyperactivity Disorder. *Journal of College Student Psychotherapy, 21*(1), 3 – 20. doi: 10.1037/0735-7028.38.4.338

Reaser, A., Prevatt, F., Petscher, Y., Proctor, B. (2007). The learning and study strategies of college students with ADHD. *Psychology in the Schools, 44*(6), 627 – 638. doi: 10.1002/pits.20252

Shaw-Zirt, B., Popali-Lehane, L., Chaplin, W., & Bergman, A. (2005). Adjustment, social skills, and self-esteem in college students with symptoms of ADHD. *Journal of Attention Disorders, 8*(3), 109 –119. doi: 10.1177/1087054705277775

Smith, B. H., Cole, W. R., Ingram, A. H., & Bogle, K. E. (2004). Screening for ADHD among first-year college students. *The ADHD Report, 6 – 10*. doi: 10.1521/adhd.12.2.6.30976

Wagner, M., Newman, L., Cameto, R., Garza, N.,& Levine, P. (2005). *After high school: A first look at the postschool experiences of youth with disabilities.* A report from the National Longitudinal Transition Study-2 (NTLS-2). Menlo Park, CA: SRI International

Weyandt, L. L., & DuPaul, G. (2006). ADHD in college students. *Journal of Attention Disorders, 10*(1), 9 – 19. doi: 10.1177/1087054705286061

About the Author

Gary Schaffer received his B.A. degree in Special Education and English and M.S./C.A.S. degree in School Psychology from Niagara University. His previous experience includes assisting inner city youth find employment as a case manager for Niagara University and working as a school psychologist intern for the Dysart Unified School District in Surprise, Arizona. He is currently a school psychologist for the Lansing School District in Lansing, Michigan and serves students kindergarten through twelfth grade. His research interests include response to intervention, school-wide positive behavior support, autism and the family dynamic, and post-secondary transition for students with disabilities. He can be reached by email at geschaffer@gmail.com.

Appendix A

Methods to Ensure Success Survey

Directions: Place an "X" next to any of the statements below that apply.
"In order to maintain my grade point average I:"

1. ___ Have the professor provide me with a printed summary of the lecture
2. ___ Use highlighters
3. ___ Maintain an everyday routine
4. ___ Feel like I have to work longer and harder than my peers
5. ___ Use a planner
6. ___ Have a "to-do" list
7. ___ Use a ruler or flat object to help me keep my place while I read
8. ___ Study with a peer
9. ___ Use index cards
10. ___ See my diagnosis of ADHD as my responsibility
11. ___ Study in a quiet location
12. ___ Take my exams in a quiet location through campus disability services
13. ___ Listen to music to help me focus while completing an assignment
14. ___Have a consistent sound in the background (i.e. the humming of a fan) while completing an assignment
15. ___ Use post-it notes
16. ___ Have a close friend keep me on task each school year
17. ___ Have a family member keep me on task each school year
18. ___ Use a tutor
19. ___ Summarize reading assignments
20. ___ Summarize class-notes
21. ___ Have read and learned about ADHD
22. ___ Make use of my professors office hours
23. ___ Have my professor explain assignments to me
24. ___ Use a tape recorder in class
25. ___ Read assigned chapters more than once
26. ___ Work on assignments in short spurts
27. ___ Receive extended time on tests
28. ___ Receive extended time on assignments
29. ___ Set short-term goals concerning schoolwork
30. ___ Create charts/diagrams of class notes
31. ___ Sit in the front of the classroom
32. ___ Exercise often
33. ___ Read along to the recording of my textbooks
34. ___ Have made use of Niagara University's mental health counseling center to obtain support related to my diagnosis of ADHD
35. ___ Color code class materials
36. ___ Have a filing system
37. ___ Embrace educational challenges
38. ___ Set deadlines
39. ___ Have a designated location to complete my schoolwork
40. ___ Take medication for my diagnosis of ADHD

Appendix B

Obstacles to Success Scale

Directions: Place an "X" next to any of the statements below that apply.
"Some obstacles that hinder my success in college include:"

1. ___ An irregular sleep schedule
2. ___ Procrastinating on assignments
3. ___ Being a perfectionist
4. ___ Having a poor memory
5. ___ Abusing alcohol
6. ___ Being depressed
7. ___ Abusing prescription drugs
8. ___ Abusing non-prescription drugs
9. ___ Poor organizational skills
10. ___ "Zoning out" in class
11. ___ Having poor time management skills
12. ___ Feeling constantly anxious
13. ___ Feeling bored with course work
14. ___ Spending too much time with friends
15. ___ Feeling constantly tired
16. ___ Becoming easily confused by directions on assignments
17. ___ Having anger management difficulty
18. ___ Experiencing mood swings
19. ___ Being tardy to class
20. ___ Difficulty concentrating while reading course material
21. ___ Missing assignment deadlines
22. ___ Difficulty in copying down class notes
23. ___ Feeling alone
24. ___ Forgetting materials necessary for coursework (I.E. pen, pencil, misplacing textbook)
25. ___ Dwelling on irrelevant issues instead of completing course work
26. ___ Having difficulty prioritizing schoolwork

Appendix C

Sources of Motivation Scale

Directions: Rate the top three personal reasons for maintaining your current GPA. Rate the reasons as 1 being the best reason for you maintaining your current GPA and 3 being the least.

1. ___ To prove to others (who said I would fail) that I can succeed
2. ___ To prove to myself that I can succeed
3. ___ To make my parents proud
4. ___ To make my grandparents proud
5. ___ To please my professors
6. ___ To obtain scholarship money
7. ___ Because all my friends have a high grade point average
8. ___ Because future employers may look at my GPA
9. ___ Because I want to get into graduate school
10. ___ Because I fear failure
11. ___ Because I want to stand out from my peers with the same major as me
12. ___ Because having a high GPA is a goal of mine
13. ___ Because my athletic team requires me to maintain a certain GPA
14. ___ Because my fraternity/sorority requires a certain GPA
15. ___ Other (*If you checked Other, please state and rate your reason below):

    ____

Appendix D

Factors that Decrease Motivation Scale

Directions: Place an “X” next to any of the statements below that apply.

“Factors that decrease my motivation to maintain my current GPA include:”

1. ___ Boredom with the course work
2. ___ Feeling that I can’t get anything out of attending class because I can’t pay attention to the material being taught
3. ___ Feeling like I have to work longer and harder than my peers
4. ___ Lack of understanding for my disability among professors
5. ___ Lack of understanding for my disability among my peers
6. ___ Lack of understanding for my disability among my parents
7. ___ Feeling like I have no control my diagnosis of ADHD
8. ___ Always having to rush to complete assignments
9. ___ Having some people in the general population not believing that ADHD is a real diagnosis
10. ___ Receiving a lesser than expected grade on an assignment I worked really hard on
11. ___ Having a professor that treats my disability as an inconvenience
12. ___ Experiencing feelings of embarrassment over my disability
13. ___ Feeling like a “genius” one moment and “stupid” the next
14. ___ Having a poor memory
15. ___ Having a low self-esteem
16. ___ Not being able to socialize with my friends as much as I would like b/c it takes me longer to complete schoolwork
17. ___ Feeling depressed
18. ___ Feeling anxious
19. ___ Feeling overwhelmed by coursework
20. ___ Feeling exhausted
21. ___ Feeling uncertain over my academic performance
22. ___ Feeling as if “my best is never good enough”
23. ___ Believing that my diagnosis of ADHD hinders me from living a “normal lifestyle”
24. ___ Watching my peers effortlessly obtain good marks on class work
25. ___ Being labeled “attention deficit/hyperactivity disorder”
26. ___ Having people tell me that I am “lazy”
27. ___ Having people tell me that I am “stupid”
28. ___ Having people tell me that “I can concentrate if I want to”
29. ___ Feeling alone
30. ___ Feeling like I have to inconvenience my professors for help with coursework

Appendix E

Social Support Survey

Directions: Place an “X” next to any of the statements below that apply.
“When I have difficulty coping with my disability, I use the following social resources for support on a daily basis” (check all that apply).

1. ___My father
2. ___My mother
3. ___My brother
4. ___My sister
5. ___My grandfather
6. ___My grandmother
7. ___My uncle
8. ___My aunt
9. ___My best friend(s)
10. ___My girlfriend
11. ___My boyfriend
12. ___A former professor
13. ___A current professor
14. ___A psychologist or counselor on campus
15. ___A psychologist or counselor off campus
16. ___Campus disability service coordinator
17. ___My athletics coach
18. ___A former high school teacher
19. ___A former middle school teacher
20. ___My tutor
21. ___My dog
22. ___My cat
23. ___A pet other than a dog or cat (please specify the animal here: _____________.)
24. ___I don’t have anyone to turn to
25. ___Other (*If you checked other please state who that person(s) is in relation to you in the space provided here ______________________________________.)
26. Out of all the resources listed above, I turn to my __________ most often for support.

Journal of Postsecondary Education and Disability

Author Guidelines

The *Journal of Postsecondary Education and Disability* welcomes submissions of innovative and scholarly manuscripts relevant to the issues and practices of educating students with disabilities in postsecondary educational programs. Manuscripts must be submitted electronically via email to jped@ahead.org

Guidelines for authors:

Content
Manuscripts should demonstrate scholarly excellence in at least one of the following categories:

- Research: Reports original quantitative, qualitative, or mixed-method research
- Integration: Integrates research of others in a meaningful way; compares or contrasts theories; critiques results; and/or provides context for future exploration.
- Innovation: Proposes innovation of theory, approach, or process of service delivery based on reviews of the literature and research
- Policy Analysis: Provides analysis, critique and implications of public policy, statutes, regulation, and litigation.

Format
All manuscripts must be prepared according to APA format as described in The Publication Manual (6th ed.), American Psychological Association, 2010. For responses to frequently asked questions about APA style, consult the APA web site at http://www.apastyle.org/faqs.html

- Manuscript length typically ranges between 25 and 35 pages including figures, tables, and references. Exceptions may be made depending upon topic and content.
- Include 3-5 keywords.
- Write sentences using active voice.
- Authors should use terminology that emphasizes the individual first and the disability second (see pages 71-76 of the APA Manual). Authors should also avoid the use of sexist language and the generic masculine pronoun.
- Manuscripts should have a title page that provides the names and affiliations of all authors and the address of the principal author.
- Include an abstract that does not exceed 250 words. Abstracts must be double spaced on a separate page of the manuscript, between the cover page and the first page of the body of the manuscript. List 3-5 key terms immediately beneath the text of the abstract.
- Provide a cover letter asking that the manuscript be reviewed for publication consideration and that it has not been published or is being reviewed for publication elsewhere.
- Tables and figures must conform to APA standards, and must be in black and white only. All tables and figures should be vertical and fit on the page, no landscape format.

Manuscripts must be submitted as email attachments in Microsoft Word format to: jped@ahead.org

Upon acceptance for publication
For manuscripts that are accepted for publication, the following items must be provided to the Executive Editor:

- An electronic copy of the final manuscript as an email attachment.
- A 40-50 word bibliographic description for each author.
- A signed and completed Copyright Transfer form.

Manuscript submissions by AHEAD members are especially welcome. The JPED reserves the right to edit all material for space and style. Authors will be notified of changes.

Practice Brief Manuscripts

JPED invites practitioners and/or researchers to submit Practice Briefs that can inform readers of innovative practices that could, in time, become the basis of an empirical study. Practice Briefs will describe new or expanded programs, services, or practices that support postsecondary students with disabilities.

The overall length of a Practice Brief will be limited to 12 double-spaced pages, which includes separate title page, abstract, and references pages. Tables and/or figures may be submitted, too, above and beyond the 12 page limit. Practice Briefs should be organized using the headers/sections listed below. For a fuller description of each header/section, please refer to the complete Practice Brief Author Guidelines at http://www.ahead.org/publications/jped-guide.

- Title Page
- Abstract
- Summary of Relevant Literature
- Depiction of the Problem
- Participant Demographics and Institutional Partners/Resources
- Description of Practice
- Evaluation of observed outcomes
- Implications and Portability
- References

If you have any questions, contact the JPED Editor David Parker at 317-730-0463 or email: editor@ahead.org
Submit all manuscripts (research and practice briefs) to JPED at this email address: jped@ahead.org. Manuscripts must be submitted as email attachments in Microsoft Word format. Include a brief cover note addressed to Dr. David Parker, Executive Editor of JPED. Please confirm that the manuscript has not been published elsewhere and that it is not being reviewed at this time by another publication source. The abstract should be included in the manuscript and not attached separately. Finally, please ensure that all tables or figures are included as well. These can be included in the manuscript or attached as separate documents. You will receive an email reply from Richard Allegra, Managing Editor of JPED, to confirm receipt of your submission.