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**Author Guidelines** [Inside Back Cover]
Equal access. The Americans with Disabilities Act Amendments Act (ADAAA, 2008) and similar legislation in other countries exist to ensure that otherwise-qualified individuals with disabilities have equal access to postsecondary environments and experiences. Such a simple term; such a complex practice. This issue of JPED presents six research articles and one Practice Brief that investigate the experiences of various campus constituents who are invested in achieving equal access to higher education. The global mission of transforming learning environments to make them more universally accessible entails the knowledge, skills, and beliefs of students, staff members, faculty, administrators, and website designers, to name just a few. Read more to learn about access issues that can affect students prior to, during, and after their enrollment in higher education.

Like other aspects of society, postsecondary education is being transformed rapidly by the ubiquity of digital information. Two studies explore equal access in online environments. Soloveiva and Bock used two widely accepted standards to evaluate the accessibility of a large public university’s websites. Half or more of these pages failed to meet common standards for access. The authors describe a process for conducting this type of evaluation and make cogent recommendations for other campuses to consider.

In a related article, Jackson and Jones examined the accessibility of Disability Services websites at 40 community colleges. The authors were centrally interested in the question of how accessible such information would be to prospective students with disabilities. The study’s findings are linked to timely recommendations for the creation or revision of such websites to enhance their usability.

In a qualitative study of undergraduates with ADHD, Stamp, Banerjee, and Brown studied the experiences of 12 students whose initial forays into higher education were not successful. This article primarily addresses internal barriers that students confronted as they learned more about effective self-advocacy. Their resilience and insights speak to the relationship between accurate self-awareness and successful college adjustment.

Given the central role of language in higher education, it is important to understand the vocabularies of deaf and hard-of-hearing (DHH) college students and how vocabulary knowledge influences their academic success. Sarchet, Marschark, Boragna, Convertino, Sapere, and Dirmyer found significant differences between the vocabularies of hearing college students and DHH students with or without cochlear implants. The authors use their findings to discuss potential barriers to students’ academic achievement, which raises important implications for faculty and service providers.

Much has been written about professional development efforts for faculty to enhance their efforts to promote equal access in learning situations. Murray, Lombardi, Seeley, and Gerdes report the successful outcomes of a four-day training institute delivered to 102 faculty members. This research-based educational experience enhanced participants’ understanding and support of university students with disabilities. The authors have much to say about instructional self-efficacy and provide access to the project’s training materials, including student-created marketing tools.

Despite the important advances campuses have made to promote equal access, many students with disabilities continue to experience greater difficulty and need more time to complete their degrees compared to peers without disabilities. This metric emphasizes the importance of learning – and doing – more to remove barriers to full and equal participation in higher education. Thompson-Ebanks contributes this issue with a qualitative study about personal factors that influenced the voluntary withdrawal of undergraduates with disabilities. Many of the nine factors related to students’ difficulties with campus engagement. Findings are linked to recommendations for a multifaceted approach to retention efforts.

Beck, del Castillo, Fovet, Mole, and Noga contribute a thought-provoking Practice Brief. They describe a research-based audit of the disability services office at a major Canadian university. Utilizing the tenets of Universal Design (UD), the authors identified office procedures and belief systems that created unintentional access barriers for students with disabilities. This article reflects the growing embrace
of the social model of disability, which focuses on barrier access in the environment rather than impairment in the individual.


As the academic year gives way to summer, may this issue of JPED provide you with meaningful insights about current efforts to promote equal access.
Monitoring for Accessibility and University Websites: Meeting the Needs of People with Disabilities

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Abstract
Under the Americans with Disabilities Act (ADA), people with disabilities are guaranteed access to all postsecondary programs and services. The purpose of this study, conducted by the Center for Excellence in Disabilities, was to evaluate the current status of a major university’s web accessibility. The results indicated that in 2011 only 51% of 509 web pages (sample) at a large public university in the northeastern United States passed automated web accessibility tests with Cynthia Says for Section 508 compliance (WCAG 1.0). Only 35% passed using the WAVE Accessibility Tool for the Web Content Accessibility Guidelines (WCAG 2.0 Level A) Priority 1 compliance, which is a more rigorous evaluation level. The stricter the level of testing, the more university web pages failed. Stricter web accessibility requirements may be legally imposed instead of Section 508 in the future. Universities will succeed in meeting an important mandate of the ADA by making institutional websites accessible to current and future students and employees with disabilities.

Keywords: Web accessibility, web usability, equal access, disability, higher education

People with disabilities (i.e., physical or mental conditions that cause functional limitations that substantially limit one or more major life activity, including mobility, seeing, hearing, speaking, and learning) may have difficulties browsing the Internet because they use assistive technology such as screen readers (software that reads text aloud), refreshable Braille displays (devices that convert the text to Braille), and screen magnifiers needed to interpret website content. Users who are blind or have low vision use keyboards to navigate, sort through lists, and select links. These types of disabilities impact the ability to use the web.

The 1990 Americans with Disabilities Act (ADA) requires federally funded institutions to provide accommodations, and thus equal access, for students with disabilities. Since the ADA, additional legislation has been passed concerning accommodations for students with disabilities. In 1998, the U.S. Congress amended the Rehabilitation Act of 1973. According to Section 508 of the Rehabilitation Act of 1973. According to Section 508 of the Rehabilitation Act of 1973, federal agencies are required to make their electronic and information technology accessible to all people including those with disabilities (Section 508, n.d.).

Section 508 of the Rehabilitation Act is relevant for federally funded organizations; however, the matter of website inaccessibility has resulted in lawsuits against some private agencies and businesses. Such companies as America Online (AOL), Barnes and Noble, Inc., Claire’s stores, Metropolitan Atlanta Rapid Transport Authority (MARTA), Priceline.com, Ramada.com, Southwest Airlines, and Target Corporation have been sued for failing to make their websites accessible to those with disabilities (Parmanto & Hackett, 2011). The 2006 Target vs. the National Federation of the Blind (NFB) litigation about the corporate social responsibility and website accessibility may have prompted other companies and organizations to improve the accessibility of their websites (Frank, 2008; Ogden & Menter, 2009).

“One organization that seeks to move Internet technology beyond basic Section 508 compliance is the Web Accessibility Initiative (WAI) of the World Wide Web Consortium.” (Vandenbark, 2010, p. 25). The World Wide Web Consortium (W3C) does not have any legal jurisdiction over higher education institutions. Rather, the W3C is the international oversight body for protocols and operations of the Internet. According to
the W3C (2007), web accessibility means that people with disabilities can perceive, understand, navigate, interact with and contribute to the Web. W3C released the Web Content Accessibility Guidelines (WCAG) or recommendations for making Web content more accessible (W3C, 2008). Web Content Accessibility Guidelines (WCAG) 1.0 version was developed in 1999. “Section 508’s web standards comply with W3C’s Web Content Accessibility Guidelines (WCAG) 1.0; stricter compliance is optional” (Fulton, 2011, p. 35).

There are three levels of web accessibility, according to WCAG 2.0 version; each level has a set of checkpoints. The three levels for conforming for WCAG 2.0 are Level A, Level AA, and Level AAA. In this article, the levels are labeled “priorities.” The word “priority” is not listed on WCAG specifications. Therefore, in this article, what is listed as Priority 1 is WCAG 2.0 A, and Priority 2 is WCAG 2.0 AA, and Priority 3 is WCAG 2.0 AAA (http://www.w3.org/TR/UNDERSTANDING-WCAG20/conformance.html). The W3C provides that Priority 1 guidelines must be satisfied; Priority 2 guidelines should be satisfied; and Priority 3 guidelines may be satisfied. To be considered minimally accessible, a web page must satisfy all Priority 1 checkpoints. Verifying a site’s accessibility can be a time-consuming task. However, there are a number of free accessibility tools such as the automated accessibility evaluators for scanning a set of web pages and automatically evaluating their compliance with WCAG.

WebXACT was once referred to as “Bobby.” This free online service tests single pages of web content for accessibility based on WCAG Priority 1, 2, 3 and also Section 508 compliance standards. Research conducted by Floyd and Santiago (2007) using WebXACT showed that higher education institutions were more likely to be compliant at the Priority 1 level, yet only reaching closer to 50%.

**Purpose Statement**

The authors’ university was selected for this study because the Center for Excellence in Disabilities was selected to conduct a research project that was grant-funded by the Higher Education Access: A Universal Design Demonstration Project, Office of Postsecondary Education, U.S. Department of Education. The purpose of this study was to evaluate a large public university’s websites accessibility for students and other users with disabilities. The research will be used as a guide for future improvement in website accessibility. The intent was to start offering university-wide trainings on making web pages and online materials accessible and providing instructors and administrators with current information about ADA requirements. By assessing the accessibility of online materials now, universities may avoid legal problems in the future and possibly recruit more students with disabilities.

**Research Questions**

This study investigated three research questions. The first research question (RQ 1) was: What percentage of the sample of this university’s websites would pass automated web accessibility tests with web-based evaluation tools such as Cynthia Says for Section 508 compliance and WA VE for WCAG Priority 1? The second research question (RQ 2) was: What accessibility issues do university websites currently face? The third research question (RQ 3) was: What recommendations can be offered in order to improve accessibility?

**Literature Review**

**Legal Requirement and Laws**

Access to the web is important to students and university employees. Equal access to public information resources such as the Internet is a central precept of American democracy (Davis, 2003). People with disabilities are locked out of full participation in their educational experiences due to numerous inaccessibility issues (Parry & Brainard, 2010).

Section 255 of the Telecommunications Act (February 8, 1996) established accessibility requirements and services applying to the design and manufacture of telecommunications equipment (e.g., the telephone and the television). It also concerns delivery of telecommunications services (47 U.S.C.A. § 225).

Section 504 of the Rehabilitation Act (1973) applied to the federal government and all entities receiv-
Section 508 of the Rehabilitation Act Amendments, originally passed as part of the Workforce Investment Act of 1998, addressed the accessibility problems of federal employees and other individuals with disabilities (Center for Excellence in Disabilities, 2011; Jaeger, 2003; Ogden & Menter, 2009). Accordingly, “…government agencies procuring electronic and information technology products and services are required under federal law to award contracts to those companies who develop products and services that comply with government accessibility standards” (Thomas & Bhargava, 2011, p. 5). If a state gives money to private schools, it can require compliance with Section 508 to receive such funds. Section 508 applies to state universities and colleges in those states that passed Section 508-type statutes (Golden, 2008).

The ADA (1990) was passed to mandate equal access for individuals with disabilities in situations not covered by Section 504 of the Rehabilitation Act, such as state governments, local governments, and private businesses. The ADA prohibits discrimination against persons with disabilities by various private and public institutions, stating that “no qualified individual with a disability shall . . . be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity” (42 U.S.C.A. § 12132). When it was passed in 1990, the ADA did not directly address issues related to the World Wide Web, as cyberspace is not a physical place. The ADA, nonetheless, has applications to websites maintained by federal, state, and local governments that are required to equally include individuals with disabilities in all services, programs, or activities of public nature.

What constitutes a “place of public accommodation” needs to be mentioned in the context of website accessibility litigation. The term “public accommodation” could be extended to virtual spaces. This same concept of a public accommodation not having to be a physical location was also at issue in litigations stating that a website could qualify as a public accommodation.

**Lawsuits.** Some website accessibility-relevant lawsuits have involved higher education institutions. Key examples begin with a lawsuit against San Jose State in the mid 1990s. San Jose State University faced a lawsuit in September of 1995 (Krach, 2007). It was filed with the United States Department of Education, Office for Civil Rights (OCR). A student who had a vision impairment complained of difficulty with converting images into speech. The case was closed after the university agreed to implement a voluntary resolution plan (Clayton, 1998).

In September of 1997, California State University in Los Angeles dealt with a similar complaint (Krach, 2007). The complaint was filed with the OCR. California State University made voluntary agreements to resolve the accessibility issue (Krach, 2007). The OCR stated that websites should be accessible to all students, including those with disabilities.

In February of 2009, the NFB, with more than 50,000 members joined with a blind law applicant to sue the Law School Admissions Council (LSAC) over its website inaccessibility. The defendant chose to litigate (Qualters, 2009). Additional law schools were added to the defendant’s side because they hosted their application materials on the LSAC website: The University of California Hastings College of the Law, Thomas Jefferson School of Law, Whittier Law School, and Chapman University School of Law (County of Alameda’s Superior Court of California, 2010, case number RG09436691). According to Disability Rights Advocates (2013):

> As a result of a settlement reached in 2011, LSAC has made its entire website fully accessible to blind law school applicants who use screen reader software. In addition, law school applicants with learning and mobility disabilities who rely on screen reader software will also benefit from LSAC’s agreement to add accessibility to its website.

In November 2010, the NFB filed a complaint with the United States Department of Education, OCR, accusing Pennsylvania State University of violating the civil rights of blind students, employees, and faculty members. The university’s course management software and websites, with the library catalog, the banking site, an ATM, and the website for the Office of Disability Services, were found to be inaccessible (NFB, 2010). In October of 2011, the NFB and Penn State reached an
agreement to resolve this complaint in the future. There was no admission of any wrongdoing (NFB, 2011).

In July 2013, the U.S. Department of Justice published an announcement that it had reached a settlement with Louisiana Tech University and the University of Louisiana System vis-à-vis violations of the ADA. This lawsuit was successfully won against higher education institutions concerning web accessibility. The University violated the ADA by using online learning course materials inaccessible to a blind student. Under the settlement agreement, the university agreed to pay a blind student $23,500 in damages. The university agreed to make university web pages and course content accessible to individuals with disabilities following the WCAG 2.0 Level AA standard. The university also agreed to make existing web pages and materials created since 2010 accessible and train its instructors and administrators on the requirements of the ADA (U.S. Department of Justice, 2013).

Current Accessibility Need in Society

People who have physical, cognitive, and/or sensory disabilities benefit from using accessible websites. Other groups of peoples need accessible websites as well, including aging populations and special populations such as returning veterans. The most common disabilities affecting website accessibility are visual and hearing impairments. In addition, difficulty grasping objects affects the use of a mouse, which creates additional access issues related to using computer hardware.

Numerous statistics present large numbers for the rate of disability in the United States. According to the U.S. Census Bureau (2012), 57 million individuals (18.7% of all U.S. residents in 2010) were individuals with disabilities; an estimated 38.3 million (12.6%) of these individuals had a severe disability. The estimates of people with specific impairments that impact website accessibility are as follows: 8% had difficulty lifting or grasping, 6% had a cognitive, mental, or emotional impairment, 3% had vision impairments, and 3% had a hearing impairment. It should be noted that the magnitude of the disability can be overstated because the Census relies on self-selection or self-identification.

According to the U.S. Department of Education, 88% of the estimated 4,170 degree-granting postsecondary institutions (2-year and 4-year, public, private not-for-profit, and private for-profit) participating in Title IV federal student financial aid programs reported enrolling students with disabilities in the 2008-2009 academic year (see Raue & Lewis, 2011). In the 2007-2008 academic year, there were 20,928,000 undergraduate students enrolled in the U.S. postsecondary institutions. Of this group, 2,266,000 (10.8%) had disabilities and of the 3,456,000 graduate students counted that year, 261,000 (7.6%) had disabilities (U.S. Department of Education, National Center for Education Statistics, 2009). How many have disabilities that impact their use of the web? According to Rowland, Mariger, Siegel, and Whiting (2010), “for the 8.5 percent of the U.S. population who have at least one disability that affects computer and Internet use, inaccessible websites can inhibit or severely restrict their participation in higher education” (p. 20).

Accessible Web as an Accommodation for People with Disabilities

For various types of disabilities, audio and/or visual information should be presented in an alternative format. Complex language presents serious difficulty for people with cognitive disabilities or limited language skills. Websites that use sudden, flashing images could trigger symptoms for those with seizure disorders (Golden, 2008). The following examples may help to clarify the types of obstacles that can be encountered by an individual with a disability.

Audio material. An instructor has recorded lesson information in his voice and made this recording available to students on the web as an audio file. This is an example of an obstacle for any student who is hard of hearing or deaf, as the audio file cannot be heard.

Visual material. The same teacher also placed photographs or images on the web page. The high quality photographs visually convey new information for the lesson. These photographs are an example of an obstacle for students who are blind or visually impaired. They are unable to see the image and, therefore, unable to interpret its meaning.

Language complexity. If the content displayed on the web page is written in unnecessarily complicated language – including the use of technical terms, special phrases and rare words -- comprehension obstacles can be faced by all users, including people with learning disabilities or limited language skills. Language complexity is also frequently an issue for the deaf and hard of hearing population.

Material navigated with/without a mouse. When a webmaster designed an aesthetically pleasing image map in a form of a graphic, a visual user can see that...
this graphic has five distinct regions that are each entitled with the name of a territory. When the user places the mouse on a region of the graphic, text is displayed to the right of the graphic that provides details of this area. Likewise, when the mouse is moved to a different region of the graphic, the text changes to represent the territory to which the mouse has been moved. These distinctly different regions are not described anywhere else on the web page and the descriptions can be accessed only through correct placement of the mouse. This graphic represents an obstacle for a user who cannot use the mouse but relies on the use of a mouth wand to press keys on the keyboard.

**Accessibility Empirical Research Studies**

The general purpose of testing websites is to address their usability. Usability is a combination of factors that impacts the quality of a user’s experience when interacting with a website. Such factors include: (a) ease of learning (i.e., how fast a user who has never seen the user interface before can learn it to accomplish basic tasks); (b) efficiency of use (i.e., how fast a user can accomplish tasks, having experienced the system); (c) memorability (i.e., how easy a website is to remember in order to use effectively for a user who returned after a time-lapse between visits); (d) error frequency and severity (i.e., how often users make errors while using the system, how serious these errors are, and recovery mechanism from these errors); and (e) subjective satisfaction (i.e., the extent to which the user likes using the system).

Making a website accessible is believed to be a design practice rather than an application of highly developed technologies. A decade ago, it was estimated that only 1% of web developers took into account accessibility for uses with disabilities when designing web pages (Carter & Markel, 2001).

Hackett, Parmanto, and Zeng (2005) compared a random sample of general websites with a convenience sample of U.S. government websites over a five-year period (1997-2002). They reported that, despite increasing complexity, U.S. government websites remained accessible, which was not the case for other websites.

Loiacono (2004) tested the accessibility of the home pages of 96 nonprofit organizations. The results showed that more than 87% of those home pages had severe barriers. After examining 50 websites and making comparison of the results obtained for the same 50 in 2002 and 2003, Lazar and Greenidge (2006) pointed out the decreasing accessibility tendency over time.

A number of empirical studies examined school websites for accessibility issues. These studies were conducted in order to test accessibility of web pages in postsecondary institutions such as colleges and/or universities (e.g., Erickson, Trerise, VanLooy, Lee, & Bruyere, 2009; Floyd, & Santiago, 2007; Flowers, Bray, & Algozzine, 2001; Krach, 2007; Rowland & Smith, 1999; Thompson, Burgstahler, & Moore, 2010) and secondary schools (e.g., Bray, Pugalee, Flowers, & Algozzine, 2007; Klein, Myhill, Hansen, Asby, Michaelson, & Blanck, 2003).

Rowland and Smith (1999) analyzed a random sample of the home pages of 400 higher education institutions within the Unites States. Only 22% of these sites were free from accessibility errors. Having conducted a longitudinal investigation of higher education websites over a 5-year timeframe, researchers concluded that the websites of postsecondary institutions had a tendency to become increasingly complex and inaccessible over time (Hackett & Parmento, 2005).

Kane, Shulman, Shockley, and Ladner (2007) used a multi-method design to evaluate the accessibility of 100 top international university web pages. They used automated evaluation tools (e.g., Bobby and Cynthia Says) and manual tests to measure compliance with accessibility standards and image accessibility. Of the 100 sites tested, 36 had no Priority 1 errors in evaluation tool and only 2 passed Priority 1, 2, and 3. Bobby found 2.65 more errors per site than Cynthia Says (Kane, et al., 2007).

Floyd and Santiago (2007) used a random sample of 60 U.S. public institutions of higher education from Alaska/Hawaii, Southwest, West, Midwest, Northeast, and Southeast. The researchers did not find a significant statistical relationship between the size of an institution and its level of compliance, although they initially thought that the larger institutions would be more likely to be compliant than smaller schools. Overall, the majority of the sample failed to provide even minimal accessibility requirements outlined by Section 508 and the WCAG standards.

Similarly, Kane et al. (2007) did not find a strong link between university reputation and website accessibility, nor did they establish any statistically significant difference in the number of accessibility errors between the U.S. private and public universities. Thompson, Burgstahler, and Moore (2010) analyzed the accessibility of home pages of 127 higher education websites. The testing was done three times within 6 months in
Table 1

Type of Potential Accessibility Errors, Priority of Error, and Ease of Fixing Error

<table>
<thead>
<tr>
<th>Type of accessibility error</th>
<th>Priority</th>
<th>Ease of fixing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt text is not used for each region of an image map</td>
<td>1</td>
<td>Easy</td>
</tr>
<tr>
<td>For tables not used for layout (e.g., spreadsheet), identify headers for table rows and columns</td>
<td>1</td>
<td>Easy</td>
</tr>
<tr>
<td>If color is used to convey information, ensure information is also provided in another way</td>
<td>1</td>
<td>Moderate</td>
</tr>
<tr>
<td>Did not provide alt text for images that convey content</td>
<td>1</td>
<td>Easy</td>
</tr>
<tr>
<td>Did not provide label tags for form fields</td>
<td>1</td>
<td>Moderate</td>
</tr>
<tr>
<td>Live regions are not specified with appropriate WAI-ARIA attributes</td>
<td>3</td>
<td>Hard</td>
</tr>
<tr>
<td>Page does not have logical heading structure</td>
<td>1</td>
<td>Moderate</td>
</tr>
<tr>
<td>Programmatic objects should not cause screen to flicker</td>
<td>1</td>
<td>Hard</td>
</tr>
<tr>
<td>Did not ensure that background and foreground colors contrast sufficiently</td>
<td>2</td>
<td>Easy</td>
</tr>
<tr>
<td>Did not provide descriptive titles for links</td>
<td>2</td>
<td>Easy</td>
</tr>
<tr>
<td>Did not provide abbreviations for long row or column labels</td>
<td>3</td>
<td>Easy</td>
</tr>
<tr>
<td>Used absolute (pixels) rather than relative sizing and positioning (% values).</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>When scripts created pop-up windows or changed the active window, page did not ensure that user was aware that this was happening</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>Used deprecated language features</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>Did not identify language of text</td>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>Did not specify logical tab order among form controls, links, and objects</td>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>Did not provide keyboard shortcuts to frequently used links</td>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>Did not provide summary and caption for tables</td>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>Did not group related links</td>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>Used tables to format text documents in columns</td>
<td>2</td>
<td>Hard</td>
</tr>
<tr>
<td>Did not provide linear text alternative for tables that laid out content in parallel word-wrapped columns</td>
<td>3</td>
<td>Hard</td>
</tr>
</tbody>
</table>

The authors found that the keyboard accessibility was the area of decline.

Table 1 shows the complexity levels of some accessibility errors. It also shows how easy it is to address their repairs.

The review of literature demonstrates a growing need for addressing the current problem of web accessibility. Many university websites are not designed with equal access for all users in mind (Bradbard & Peters, 2010; Bradbard, Peters, & Caneva, 2010). It is highly desirable that institutions of higher learning make greater efforts to ensure that the students with disabilities have equal access to its websites.

Method

Sample Selection

The most useful method for measuring website accessibility is content analysis. The unit of measure for this research were the web page links provided on the university A-Z index. It is an alphabetical listing of sites housed within the university domain. Many are official sites of the university; others are related. In order to avoid potential sample selection bias, a sample of convenience was chosen that consisted of the entire A to Z list at the outset. This list consists of web pages with links described with different key words. Because the same webpage can be described with different key words or a combination of key words depending on their first word in alphabetical order, the list represents not-mutually exclusive items. For example, one and the same link can be listed under Numbers such as “20/20 plan” in the beginning of the list and under the letter P, such as “plan, 20/20” closer to the end of the A to Z list. Therefore, repetitions can be identified and eliminated after clicking on every hot text linked to web pages and entering the URL addresses of the entire A to Z list into Excel spreadsheets.

The original list consisted of 1,130 working links. After deletion of irrelevant links (i.e., commercial sites with .com or other organizations such as sports. net), the sample included 520 mutually exclusive URLs. After elimination of irrelevant links that were initially overlooked (i.e., non-affiliated with the university), our ultimate sample for further analysis was finalized (N=509).

Instrument

Automated analyses were performed using web-based evaluation tools, which validate one page at a time (i.e., HiSoftware’s Cynthia Says used in testing for Section 508 compliance and WAVE developed by WebAIM in testing for WCAG Priority 1). The URL for each web page (e.g., http://www.w.edu) was entered into a required field and submitted for validation.

WAVE is a free web accessibility checker that examines a page for accessibility errors and provides feedback by color coded “flags” as triage for accessibility problems found on a web page. The HiSoftware’s Cynthia Says is a free web accessibility checker that performs testing about one page per minute/per site. It is possible to select the level of content testing related to Section 508 standards and/or the WCAG guidelines Priority 1, Priority 1, 2, and Priority 1, 2, 3, for example. Priority 2 and 3 are relevant for dynamic web content and applications.

Procedures

Data collection and analysis took place in September, 2011. The hyperlinks were placed into an Excel spreadsheet. In one column there were hyperlinks and in the next column there were web addresses corresponding to hyperlinks. All web addresses were checked against duplicates, which were deleted consequently.

Using free online automated checking is a first step in the process of accessibility evaluation in order to gain insight into what issues web page(s) might contain. Online automated evaluation tool WAVE developed by WebAIM was used for testing the sample of 509 university web pages on September 13, 2011. If there were no violations (errors), the webpage passed the test. If the page had errors, it failed automated testing. The list then was sorted into three sections: one represented “P” (i.e., passed), the second and the third sections represented those web pages that got “F” (i.e., failed) because they had accessibility violations (errors). Depending on the type of errors and their number, those failed pages were placed either into a section signifying one specific common type and single number of errors or into a section representing a variety of errors that were ranging from two to 28. The URLs were sorted from lowest number of errors to highest number of errors. The failed pages were reviewed again in order to identify and document the commonalities and differences in types of errors.

The same process was used for testing all 509 web
pages on the list again with Cynthia Says for Section 508 compliance check on September 27, 2011. This time, the three sections of the entire list of 509 entries were sorted out and split into six sections (for those web pages that passed Section 508 compliance and for those that failed Section 508 compliance, depending on whether “p” for passed or “f” for failed occurred in each of the original three sections).

Random manual evaluation by a professional technologist was performed for those web pages that failed automated evaluation. This professional technologist reported the severity of the issues and how much expertise would be required to correct the problems. Testing for Section 508 compliance was done because it is a legal federal requirement and testing with WAVE by WebAIM was performed at the level of WCAG Priority 1 because it is the level designers must assure.

**Results**

Our first research question was, “What percentage of the sample of university websites would pass automated web accessibility tests with web-based evaluation tools such as Cynthia Says for Section 508 compliance and WAVE for WCAG Priority 1?” The results indicated that 51% of 509 university webpages (sample) passed automated web accessibility tests with Cynthia Says for Section 508 compliance and 35% passed using WAVE for WCAG Priority 1 compliance, which is a more rigorous evaluation level (Table 2). So, the stricter the level of testing applied, the greater the number of university pages that failed. This note is of particular importance given that stricter web accessibility requirements may be legally imposed instead of Section 508 in the future. As Nakata (2012) noted:

The first change is that the United States Access Board has started updating the Federal version of Section 508 standards. While these standards are unlikely to be finalized until late 2013 or even 2014, current drafts clearly show that the Federal Government is moving toward WCAG 2.0 level AA as the basic standard to Web accessibility (p. 5).

The second research question was, “What accessibility issues do the university websites currently face?” The most common errors were “Form label missing,” “Alt-tag” missing, empty links, improper heading structure, and issues with the footer. Many websites with high traffic were found to be accessible. The examples included the following: Admissions Portal, Admissions, Administration and Finance Business Office, Biometric Systems, Building Key for University Buildings, Department for University Events, Employment Portal, Payroll, Tax and Employee Data Services, Scholarship Portal, Faculty Senate, Grievance Procedure, Student Organization Services, and President. Some university centers and academic departments were included into the list of organizations with accessible websites. The examples were the Center for Excellence in Disabilities, Job Accommodation Network, and Department of Statistics.

The third research question was, “What recommendations can be offered in order to improve accessibility?” The university established a web accessibility group in the spring of 2011. Different levels of developer can check the institutional web pages

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Table 2

*The Percent of 509 University Web Pages (Sample) Passed Automated Web Accessibility Tests*

<table>
<thead>
<tr>
<th></th>
<th>WAVE for WCAG Priority 1 compliance</th>
<th>Cynthia Says for Section 508 compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passed</td>
<td>35%</td>
<td>51%</td>
</tr>
<tr>
<td>Failed</td>
<td>65%</td>
<td>49%</td>
</tr>
</tbody>
</table>
for accessibility. There are “Content Managers” who have little to no web development experience and “Developers” who have programming expertise. The issues involving alternate text and color can be solved by a Content Manager. The label, heading, and issues solved with Cascading Style Sheets (CSS) require a developer’s attention. The amount of money needed for fixing these problems can be calculated on the basis of actual time involved. The amount of time a developer takes to solve a problem is dependent on his or her skill set. Heading structure may be difficult to solve because new CSS and possibly a new page structure must be written to preserve the page design.

We recommend further testing to be done by the professional technologists beyond the testing that we have done. This can be done using the automated web validators we used (Cynthia Says and WAVE) or other validators.

Discussion

Study Limitations

Web pages used in the manual tests were not downloaded by the research team and analyzed offline in order to eliminate the possibility of pages changing during analysis. It was not possible for practical reasons. WAVE and Cynthia may underestimate or overestimate the number of accessibility errors on a web page. Bobby was found to overstate 2.6 percent of the problems and did not detect 0.05 percent of errors (cited in Krach, 2007, p. 33). We did not have this type of information for WAVE and Cynthia Says. Priority 2 and 3 are great contributions to a “must comply” set of rules. Additional testing for Priority 2 and 3 was not attempted because those priorities are relevant for dynamic web content applications.

Evaluating Website Accessibility

Accessibility testing involving persons with disabilities is a desirable way to determine whether websites are accessible. However, relying only on those evaluations are not quite advisable. The reason is that not all problems can be detected only by those users because if something is inaccessible, users with disabilities may not discover it because it is inaccessible. Manual testing by a group of professionals (e.g., web developers, webmasters, and content managers) is necessary in combination with using multiple automated validation tools for accessibility. For example, there are such online tools as WAVE (http://wave.webaim.org/), TAW (http://tawdis.net/index.html), or Cynthia Says (http://www.cynthiasays.com/).

Yet, there are some limitations of these automated accessibility-check tools. Tools such as the two used in this study will pick out, with a fair degree of accuracy, the defined accessibility flaws in a web page. However, there is a great deal about accessibility that has not yet been fully captured in the definitions that these tools use. Even a web page that scores relatively high with one of these tools may nonetheless have significant usability flaws from the perspective of, for example, a blind user (i.e., a page may be technically accessible but poorly organized for a blind person who cannot view the gestalt of a page and spot what he or she is looking for). For an overview such as this study, the automated tools are a reasonable place to start; just bear in mind what such tools cannot do.

Automated testing tools are designed to test the logical order of HTML elements and the inclusion of accessibility technologies such as WAI-ARIA roles and alt attributes in images. However, they cannot check for the usability of the layout or the simplicity in which the material is presented. They also cannot check for proper use of WAI-ARIA roles or the clarity of alternate text. For example, a developer can use an “alert” WAI-ARIA role to interrupt a screen reader to notify a state change of a web application, but it may or may not make sense to cue the interruption at the time. Similarly, the developer may add alternate text to an image that is repetitive to a heading or annotation directly below the image. This is improper use of alternate text. A human accessibility specialist can examine the layout of the web pages, use a screen reader and a keyboard to test for appropriate WAI-ARIA roles, and read through the values of alt attributes in images for clarity. Manual Checklists are presented by WebAIM (http://webaim.org/standards/wcag/checklist).

It is recommended to first review the most important or frequently viewed web pages including the home page, admissions page, college directory of offices and departments, course registration process, class schedule, and disability services pages (Cornell University, the Employment and Disability Institute, 2011).

Brajnik, Yesilada, and Harper (2011) studied the effect of expertise in web accessibility evaluation methods with 19 expert and 57 non-expert judges. A Barrier Walkthrough (BW) evaluation method was used
to manually assess the accessibility of web pages for different users with disabilities (e.g., motor-impaired, low vision, blind, and mobile). They discovered that when pages were evaluated with non-experts, a drop in validity and reliability occurred. After five experts evaluated the web pages, reproducibility stabilized, but this was not true for non-experts. "The ability to detect all the problems increases with the number of judges: With 3 experts all problems can be found, but for such a level 14 non-experts are needed" (p. 242). Although the experts in this study rated pages differently, the difference was small. Less time was needed for the experts to find problems and the variability among them was smaller. Their self-ratings were more productive and more confident. Thus, the level of expertise in web accessibility evaluation matters a great deal.

**Consider someone with vision problems.** Web accessibility is especially important since blind people have much more difficulty browsing the web in comparison to sighted people (Brunsman-Johnson, Narayanan, Shebilske, Alakke, & Narakesari, 2011) and people with other types of disabilities (Federici, et al., 2005; Lazar & Jeagar, 2011). Important images should not be used as backgrounds because screen readers cannot read backgrounds. Screen readers can only read text typically from top-left to bottom-right corner. They cannot interpret images, animations, movies, navigational buttons, as well as some portable document formats (PDF) and may have difficulties with reading layout tables and charts (Crow, 2008). Therefore, images should be described indicating their purpose and not appearance (ALT-tags). Non-textual elements on the web page should be with text-only alternatives. A significant image is intended to convey content, while an insignificant image is used for page decoration or spacing. To allow screen readers to skip the image if that image has no meaning (e.g., bullet), a null ALT attribute should be assigned as ATL="" (quote quote without any space between the quotes). If the alternative text is omitted, the file name of the image could become for the screen reader what to read, continuing to be confusing the user. The ALT-tag of an image should not be repeated in the adjacent text.

At times, an image is too complex to be described in a few words in an alt attribute (e.g., charts and graphs). Perhaps the description is more than 125 characters, for example. In that case a long description is needed. A long description for images can be provided with (1) a long description in the context of the document itself, (2) a link to a long description via a normal text link, (3) a link to a long description via the longdesc attribute, and (4) a link to a long description via a “d” link (http://webaim.org/techniques/images/longdesc).

The longdesc attribute is deprecated as of HTML5 against the recommendation of the Web Accessibility Initiative. In time, the use of this attribute may fail automated tests and may become entirely unusable as modern browsers cease to support its use. Moving forward, a paragraph or accessible pop up with text conveying the function of the image with relative placement is recommended in lieu of using the longdesc attribute.

Screen readers are dependent on proper heading levels (heading 1, heading 2, heading 3, body text, etc.) for navigation. Each page should have some option to pass over the navigation section using a “skip navigation” link (Crow, 2008).

The best way to ensure keyboard navigation is to have a logical and consistent navigation and page structure consisting of semantic mark-up. If design calls for the user to step outside of the page structure with a pop up window or dynamic content change, the screen reader user needs to be notified prior to the change with a text note or another method. If screen reader only content is needed, and screen space is a concern, it should be rendered off screen and not hidden with CSS.

Some Portable Document Format (PDF) files have to be edited in order to be accessible (Fichten et al., 2009). PDFs can be made accessible in Adobe Acrobat Pro.™ Similar to a web page, you can specify the language the document, (e.g., English, Spanish, Chinese), alternate text for images, heading structure, and reading order (e.g., first column followed by the second column). PDFs of scanned documents, however, cannot be made accessible as each page scanned is designated as an image with no text recognition.

People with low vision can use screen readers such as Job Access with Speech (JAWS), available from http://www.freedomscientific.com/products/fs/jaws-product-page.asp or Window Eyes (i.e., a screen reader for Microsoft Windows). In order to learn how a screen reader for a person with vision loss would orally present the text of a website, developers can use a Firefox plug-ins such as Fangs Screen Reader Emulator (https://addons.mozilla.org/en-US/firefox/addon/fangs-screen-reader-emulator/).

**Consider someone with color blindness and low vision.** For individuals who have color blindness or color vision deficiency (CVD), known as “Daltonism,” it is difficult to differentiate between some colors and
shades (e.g., reds, greens, blues, and yellows). Very few individuals with this type of vision problems are able to name the colors of a weather radar display correctly (Mertens & Milburn, 1996). About 8% of men and 1% of women are affected (eyePilot, 2006). There should be other ways to convey information without reliance on color alone to signify meaning. The Section 508 states, “Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element” (U.S. Patent and Trademark Office, Section 508 Reference Guide, 2007, 1194.25(g)). Some programs (e.g., eyePilot or Visolve) can increase the contrast between confusing colors. To see colors on screen as people with color vision impairments see them, Color Oracle software can be used by designers freely from http://colororacle.org (Bernhard & Kelso, 2007). The color contrast between the background and the foreground with text should be sharp and distinct.

Individuals with low vision use screen magnifiers, which enlarge areas of the screen to make text and images bigger and easier to see. Screen readers are also commonly used. Text on web pages should also be resizable without breaking the page’s template.

Avoid italics and serif font because they are difficult to read on computer screens with limited resolution (Crow, 2008). Sans-serif fonts are recommended.

The W3C recommends a standard of 125 brightness or greater, ((Red value X 299) + (Green value X 587) + (Blue value X 114)) / 1000. Regarding color contrast, the W3C recommends a standard of 500 or greater, (maximum (Red value 1, Red value 2) - minimum (Red value 1, Red value 2)) + (maximum (Green value 1, Green value 2) - minimum (Green value 1, Green value 2)) + (maximum (Blue value 1, Blue value 2) - minimum (Blue value 1, Blue value 2)). Color combinations can be checked online with a new tool: http://www.etre.com/tools/colourcheck/. The Color Blindness Simulator is also available online: http://www.colblindor.com/coblis-color-blindness-simulator

Consider someone who is deaf. Users with hearing impairments should be provided with text captioning for all content featuring audio or offered printed text transcripts of audio content, provided copyright protections are preserved. Closed Captioning (CC) should use at least 16 point font, high contrast, and should indicate whether the narrator is male or female. Non-speaking elements (e.g., if music is playing) are recommended. Crow (2008) pointed out that, under Section 508, a printed version of the text does not replace real-time captioning.

MAGpie 2 is a tool for creating closed captions and audio (video) descriptions. Authors can add captions and audio descriptions to various multimedia presentations. MAGpie Version 2.5.0 for Windows adds the creation and integration of closed captions into MP4 and 3GP source files, which can be played with captions decoded on BlackBerry® smartphones.

Docsoft:AVS is a software solution designed to audio mine (capture) the spoken content in digital audio and video (AV) files. This online service can be used to automatically generate text transcripts and closed captioning formats and can be configured to output virtually any text based format. The result can be converted to formats such as Quicktime Text, ReText, SAMI or plain text. It is important to note that the accuracy of the transcript is dependent on audio quality and volume. It is recommended to have high quality audio. The DocSoft software can be overly sensitive to any discrepancy in audio presentation. If transcribing a video, additional technical knowledge is needed to interface the transcript with the video file. Additional settings on video playing software may also need to be configured.

YouTube also offers closed captioning services for videos uploaded to their site. Once a video is uploaded to YouTube, you may submit a request to have a transcript created for you. You can then download this transcript, correct any mistakes and upload it back to the YouTube site. YouTube will then inject the captions into the videos at the appropriate time intervals.

Consider someone with learning disabilities, having distractibility, inability to remember or focus on large amounts of information. Individuals may have difficulty with memory, perception, and attention. Web sites should be created to minimize effort for reading comprehension, complexity, slower learning, limited motor control and spatial perception.

One must consider orientation, distractibility, perception, consistency, and predictability in web design from page to page. Friedman and Bryen (2007) published four top recommendations to be used: (1) pictures, graphics, icons, symbols along with text, (2) clear and simple text, (3) consistent navigation and design on every page, and (4) headings, titles, and prompts.

To further minimize distractibility, avoid background noise, automatically playing videos or music and scrolling or blinking text. Eliminate clutter on the
Consider someone with motor disabilities. One must consider if a high degree of motor complexity is required for site interactions such as chatting, playing a game, or simulation. People with various forms of motor impairments may have increased difficulty using a keyboard or mouse. Specifically, rollovers and drop-down menus are difficult to use without a mouse.

An individual with a motor disability may be using an assistive technology such as a mouth stick or a puff and sip device. These assistive devices are dependent on the web page structure for navigation. Heading order, page layout, and logical navigation with skip links will help the user with a motor disability engage with the content. Avoid phrases for a link such as “click here,” which fails to tell users any details about the destination of the link. Include visual cues when a user has focused on a link or other selectable content so that the user understands his or her peripheral’s location on the page.

Disability, Web, and Future Projections

The U.S. population is projected to increase by 19.6% by 2030 (Rehabilitation Research and Training Center on Disability Statistics and Demographics, 2010). As population increases, so does the proportion of people with disabilities. The disabilities number is expected to double by 2030 due to an aging population, military personnel with disabilities returning from wars in Iraq and Afghanistan, and high obesity rates (Zwillich, 2007).

Since the creation of the world’s first web server, web browser, and website in 1991, the numbers of Internet users have skyrocketed. In 1995, the number of users amounted to 16,000,000. In 2007, there were 1,319,000,000 World Wide Web users (Abrar & Dingle, 2009). The proliferation of technologies makes the issues of web accessibility for people with disabilities ongoing and acute.

Barriers to Making Websites Accessible

The examples in this section represent only a few potential barriers that an individual with a disability may encounter on the web. Faculty members are also encouraged to become familiar with potential barriers to meet the needs of people with disabilities. It is highly desirable to increase the awareness of web designers and university community toward access barriers. Doing so will promote consistent monitoring and repairing efforts that result in web pages free of such obstruction.

Universities as a whole are having difficulty keeping up with web accessibility efforts. Any third party who is trying to monitor, check, and compare websites and web pages for research purposes faces barriers that spring from the dynamic nature of websites. Individual faculty members have shown concern about their ability to keep up with technological advances and ways to address web accessibility. Wisdom et al. (2006) conducted a phone interview concerning web accessibility needs of the 17 Oregon community colleges. They found that inadequate funding and staff time, as well as limited confidence in accurately interpreting legal requirements, were barriers.

Erickson et al. (2009) surveyed nearly 700 American community colleges (a 79% response rate) about their web accessibility policies and practices. Among the barriers to creating accessible websites were: (1) lack of knowledge about what is required to make websites accessible (54%), (2) costs and time involved (53%), and (3) lack of awareness about need for web accessibility (48%). About half of the survey participants indicated that all three barriers were an issue for their campus.

Conclusion

According to Krach (2007), Priority 1 accessibility requirements were met by (a) 30 of the 51 colleges top-ranked by the 2006 U.S. News and World Report, (b) 12 of the 25 top-ranked special education programs, and (c) only seven of the 23 top-ranked educational psychology departments.

Thus, the findings of this study are not unique to one university. Other researchers also found that missing alternate text for images was one of the most common website accessibility errors (Flowers et al., 2007; Schmetzke, 2001). Missing alternate text is also one of the easiest accessibility problems to fix (Kane et al., 2007). It would be beneficial to universities to ensure accessibility of the institutions’ websites for current and future students with disabilities.
References


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**About the Authors**

Dr. Tatiana I. Solovieva received her B. A. and M.A. degrees in Roman-Germanic Philology and World History from Orel State Pedagogical University, Russia; her M.A. in Linguistics and Foreign Languages/TESOL from West Virginia University, USA; and her Ed.D. in Technology Education/Instructional Design from West Virginia University, USA. In the rank of Research Assistant Professor at West Virginia University (WVU), she published research outcomes in several fields and presented nationally and internationally. Dr. Solovieva has had the privilege of presenting at various conferences, many of which involve education, multimedia, and technology. At WVU, she has been involved in research and training programs dealing with people with disabilities at the Center on Aging, Rehabilitation Research and Training Center, the International Center for Disability Information, and the Center for Excellence in Disabilities. Dr. Solovieva received honorable mention for Excellence in Research on Aging and Rural Health from the American Public Health Association (APHA). Her research interests include disability and assistive technology, rehabilitation technology including Personal Assistance Services (PAS), workplace accommodations and disability in business culture, aging, rural health, health care access, rehabilitation, and independent living. She can be reached by email at: tatiana.solovieva@hotmail.com

Jeremy Bock received his B.S. degree in computer engineering technology from DeVry University in Columbus, OH. He has been working in web technology for the last 7 years and he is currently a web developer at the Center for Excellence in Disabilities (CED) at West Virginia University. Trained as a web accessibility expert, Jeremy develops the CED website and CED program websites. He consults for WVU as part of the WVU Web Accessibility Board to help make all University sites accessible to everyone including those with disabilities. Previously he has worked as a software engineer and consultant in the private sector. He can be reached by email at: jmbock@hsc.wvu.edu.

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**Authors’ Note**

The authors do not endorse specific brands or products. Product names are included only for reference information. The authors do not have any actual or potential, financial or personal conflicts of interest.
A Virtual Commitment: Disability Services Information on Public Community College Websites

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Abstract
The research on students with disabilities has focused primarily on transition programs and the accessibility of information in the classroom environment. There is a dearth of studies that examine the accessibility of disability services information on community college websites for prospective students with disabilities. A researcher-developed content analysis instrument was used to collect data on 40 community college websites throughout the United States. The community college websites were analyzed on three dimensions including: (1) the accessibility of disability services information on community college websites, (2) the distance of information regarding disability services from the homepage, and (3) the accessibility and availability of disability services information that might be provided to students with disabilities via the website. The findings of this quantitative content-focused synthesis study suggest variations in the accessibility of disability services information on community colleges websites. The authors conclude the article by addressing implications for practice, policy and future research.

Keywords: Disability services, community colleges, websites, quantitative, students with disabilities

Postsecondary education is vital to individuals with disabilities. According to the National Council on Disability (2003), the earnings, quality of life, and employability of students with disabilities increase significantly due to their college attendance and degree attainment. Even with the aforementioned positive outcomes, individuals with disabilities have been underrepresented in postsecondary education. The U.S Census Bureau (2000) indicated that overall, as compared to K-12 students and the general population, students with disabilities remain underrepresented in all postsecondary institutional types. Low enrollment, in some cases, is the result of the shift of the responsibility of disclosing disability information from the school to the individual (Richard, 1995). Prior to coming to college, high school students are protected by the Individuals with Disabilities Education Improvement Act (IDEA) of 2004, which indicates that secondary school districts are required to develop and provide programs and services in a least restrictive environment. Students in this environment are protected by multidisciplinary groups (Hadley, 2011). The collegiate environment, however, does not provide the same amount of support that exists in the secondary educational environment. In fact, college students are protected under Section 504 of the Rehabilitation Act of 1973 and under the Americans with Disabilities Act (ADA) of 1990. In postsecondary environments, the responsibility lies on the student to initiate requests for certain services and resources. Students must self-identify themselves to the disability office, provide documentation of their disability and request accommodations needed, as well as be an advocate for themselves (Hadley, 2011). The literature also highlights stigmas associated with disclosing information regarding their disability as being a factor in the low representation (Kurth & Mellard, 2006).

According to the National Center for Education Statistics (NCES) (U.S. Department of Education, 2012), the number of individuals with disabilities enrolled in postsecondary education was 11% in both 2003-2004 and 2007-2008. The numbers of students with disabilities seeking and attending higher education is quickly rising. Burke, Friedl, and Rigler (2010) identified the 2008 reauthorization of the Americans
with Disabilities Act, the 2008 Higher Education Opportunity Act, and the Post-9/11 Veterans Educational Assistance Act of 2008 as having the potential to increase the number of students with disabilities in postsecondary education. In addition, the increase of students with disabilities on college campuses can be attributed to factors such as enhanced assistive and instructional technologies, expanded disability support services programs, increased public awareness of the capabilities of individuals with disabilities, and greater self-determination among students with disabilities (Prentice, 2002).

The largest portion of students with disabilities can be found in the community college environment. National data collected from degree-granting postsecondary institutions revealed that in 2008-2009, 707,000 students with disabilities were enrolled in postsecondary education with approximately half of these students in two-year institutions (Raue & Lewis, 2011). This may be in part to the ability of community colleges to offer “students from diverse stations in life the opportunity to begin careers in their chosen fields by helping them identify and achieve their individual goals and in making a difference in their lives” (Hart, Mele-McCarty, Pasternack, Zimbrich, & Parker, 2004, p. 54). This percentage of students with disabilities enrolling in community colleges is anticipated to only increase. Consequently, community colleges face greater challenges in providing appropriate accommodations for students with disabilities (Quick, Lehmann, & Deniston, 2003), as they continue to serve a broad and diverse student population with limited resources.

As the number of individuals with disabilities attending community colleges increases, the number of prospective students using the world-wide web to locate information about particular colleges will increase as well. According to Irwin and Gerke (2004), “more than 65 percent of college-bound students reported that using the Web is more valuable than print resources to determine where they would like to go for postsecondary education” (p. 51). In fact, a recent study indicated that 85% of students with disabilities use computers (Irwin & Gerke, 2004). If we can assume from the aforementioned information that a large number of students with disabilities use institutional websites to search for colleges, then it is critical that more colleges attend to the accessibility of disability services information on their website. This increase in students with disabilities accessing higher education, coupled with their possible utilization of institutional websites as an introduction into the community college environment, begs a closer examination of the accessibility component of information and resources for students with disabilities via community college websites.

The majority of the literature on students with disabilities focuses on the visibility and usability of content on websites and the role of transition programs for students with disabilities (Cummings, Maddux, & Casey, 2000). The role of technology and assistive technology in classrooms for students with disabilities is also discussed, indicating that the use of technology for students with disabilities is effective both academically and socio-emotionally (Heiman & Shemesh, 2012). Comparably, little attention is focused on what prospective students with disabilities see when exploring community college websites prior to enrolling. Due to the differences in the laws as it pertains to secondary and postsecondary education; students may be unaware of the services that are available to them and/or the process for obtaining certain services. Ensuring that this information is provided to them early in their search for an institution is vital in assisting in their overall adjustment to the postsecondary institution. In an article on preparing students with disabilities for the postsecondary experience, Gil (2007) stated that, “The more preparation they [students with disabilities] have prior to beginning their journey to postsecondary education, the greater the likelihood of a smooth transition” (p. 12). There is a dearth of research that focuses on the accessibility of information for prospective students with disabilities on community college websites and the type of information that students with disabilities will find on the respective websites.

This study explored an area that has not received much attention in higher education literature -- the accessibility and type of information on community college disability services websites for prospective community college students with disabilities. The findings of this study are essential to higher education organizations, specifically administrators, policy makers, student support professionals, website designers, and all individuals who are involved in the overall student experience. While there are varying definitions of accessibility, this study uses the definition as defined by the Job Accommodation Network ADA Glossary of Terms. Accessibility “refers to a site, facility, work environment, service, or program that is easy to approach, enter, operate, participate in, and/or use safely
and with dignity by a person with a disability” (Office of Disability Employment Policy [DEP], 2013, p. 1), and is conceptualized by the three areas as outlined in the methodology section of this study.

To gain insight into the accessibility component of information regarding disability services on 40 of our nation’s community college websites, this study responded to the following two research questions:

1. How accessible is information about disability services on public community college websites?
2. What information will prospective students with disabilities find if they view the websites of public community colleges?

Methodology

Study Design

This quantitative research study is best categorized as descriptive of disability services websites within community colleges. The dearth of research literature on this topic means there is little basis for making predictions of the analysis. A content-focused synthesis can be used to develop answers to specific questions or add to our understanding of an issue (Majchrzak, 1984). A content-focused synthesis study focuses on a synthesis of information across data types, in this case disability service websites and information regarding disability services and resources on community college websites. The utilization of content-focused synthesis was used to focus on information, services, and resources of interest to students with disabilities through community college websites. The underlying framework for this study focuses on the information available on disability services on public community college websites. The analysis of the information available on these websites will serve as an attempt to understand the experiences that prospective students with disabilities will have when searching for information on disability services on the websites of 40 of public community colleges analyzed in this study.

Participant Selection

The goal of the selection process of participant sites for this study was to ensure representation from all states and regions as well as a variety of institutional sizes. Utilizing the virtual face sampling technique developed by Meyer and utilized in her studies (e.g., Meyer (2008a, 2008b) on the usefulness of college and university websites and the information they contain, a purposeful selection process was used, using three types of information. First, public community colleges were identified and grouped through The Carnegie Classification of Institutions of Higher Education™ website (http://classifications.carnegiefoundation.org/lookup_listings/institution.php). Second, the states of the community colleges were grouped by the four official regions of the United States used by the U. S. Census Bureau (n.d.): Northeast; Midwest; South; and West. From these groupings, a recursive process was followed to develop the sample of 40 institutions, to represent 40 different states (10 public community colleges from each of the four regions). The choice of 40 institutions was based on the desire of the researchers to have an equal number of institutions per region. Some states have a statewide community college system (versus independent institutions); these system institutions were not included in this study. Last, as the sample took shape, an effort was made to ensure that a variety of institution sizes were included. Therefore, the sample of 10 community colleges selected per region was purposefully drawn to maximize representation of different sizes of public community colleges based on the Carnegie Classification of Institutions (two very small, two small, two medium, two large, and two very large).

It is essential to note that the overall purpose of this study was to determine what prospective students with disabilities would find when exploring the websites of public community colleges across the United States; not to identify specific community colleges. Therefore, the name and identity of the community colleges were not included in the findings of this study. It is also important to mention that the purpose of this study was not to highlight specific disabilities but to rather provide a general picture of what students with disabilities would find on community college websites. Essential information may vary depending on the disclosed disability.

It was not the intent of this research to identify individual home pages of disability services offices within individual institutions, so the remainder of the study will focus on the collective characteristics of the community college sample as a whole. The name of an individual institution will not be associated with any result.
Instrumentation

The research team, which consisted of two faculty members with a large amount of knowledge on website usage and development, analyzed the website of all 40 community colleges within each of the four regions. The team was limited to two team members to ensure validity and reliability of the information obtained. The team members completed a written researcher-developed content analysis instrument individually. The instrument included information regarding the access and location of the disability services homepage and information provided regarding disability services and accommodations. More specifically, the researcher-developed content analysis instrument, which was used by both team members, was divided into three sections. The first section focused on the accessibility of disability services websites. This section included locating the website via following the links from the institution’s homepage as well as using the search feature. The second section focused on the location and distance of disability services from the homepage. More specifically, this section focused on the number of clicks from the homepage of each community college. The third and final section focused on disability services information. This section explored the type of information that was available and provided on the website for prospective students. In short, each community college’s homepage was examined to determine the following:

1. The ease of accessing the disability services website:
   a. from the institution’s homepage; and
   b. from the search feature (if available).
2. The distance of the disability services website from the homepage.
3. The accessibility and availability of information on services that might be provided to students with disabilities.

After the content analysis instruments were completed, the findings among the team members were shared and compared. Any discrepancies that emerged as a result of the comparisons were further explored through the reexamination of the websites. Using Cohen’s Kappa, interrater reliability of $k = 1$ was reached on the findings.

Because this study is exploratory, the analysis was largely descriptive and used frequencies and percentages. The purpose of the analysis was to understand what prospective students with disabilities would find if they explored the website of 40 public community colleges across the United States.

Findings

This study examined 40 community college websites across the U.S. to determine the accessibility of disability services information for prospective and current students. As previously mentioned, the community colleges examined in this study represent community colleges from each of the four regions of the U.S. (Northeast, Midwest, South, and West).

Accessibility of Information about Disability Services

In response to the first research question, the community colleges websites were examined on multiple levels. The first level consisted of the ease of locating the disability services website from the main college site. The research team explored links from the community college homepages and followed each link to identify disability services websites and disability services information. Of the 40 community colleges analyzed, the majority (40%, $n = 16$) of landing pages for the disability services websites were accessible via two clicks from the institution’s homepage. About 1/3 or 30% ($n = 12$) were accessible via three clicks, and 10% ($n = 4$) were accessible via four clicks from the institution’s homepage. One community college’s (2.5%) disability services landing page was accessible via five clicks from the institution’s homepage. Only 10% ($n=4$) of the community colleges represented in this study had direct links to the landing page of the disability services website via the college’s homepage. With this said, in instances where the disability services’ link to the website was accessible from the homepage, three of the links were located at the bottom of the homepage and were not visible from the landing page. An individual would have to scroll down to the very bottom of the page to see the link. Only one community college had a direct link to the disability services website located visibly on the left hand side of the homepage. The remaining three did not have a disability services website.

The study also examined the accessibility of information on disability services on the community college websites via the search feature using key words that students would possibly use to identify disability service resources were used in the search feature of the
websites. The key words included: disability services, students with disabilities, student support services, current students, prospective students, resources, and campuses services. Based on the key word search, a small percentage (7.5%, n = 3) of the community colleges in this study did not have a disability services landing page. Of the 37 community colleges with a disability services landing page, the site could be accessed via the search feature from all of the community colleges’ websites with the exception of one college. One community college did not have a search feature but did have an A-Z option where information on disability services could be found. After locating information on disability services, the breadcrumb navigation information provided at the top of the web page was examined. Interestingly, whether following the links from the community college homepages or using the search feature, only 10% (n=4) of information on disability resources could be located from multiple paths.

Distance of disability services website. The distance of information regarding disability services from the homepage of the community colleges websites was also examined. The location of information on disability services from the homepage varied. Of the 37 community colleges with disability services landing pages, the majority were listed under the categories of Current students (27%, n = 9) and Students (15%, n = 6). There were a variety of other categories also used. See Table 2 for a breakdown of the various headings among the community colleges that did not have a direct link via the college’s homepage. Four community colleges had a disability services’ link directly from the homepage, and three did not have disability services websites but did have information in other locations on the website (e.g., TRiO student support services website, special support services website, and in the student handbook).

<table>
<thead>
<tr>
<th>Number of Clicks to Access the Disability Website</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Click from the homepage (Disability services link on the home page)</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>2 Clicks from the homepage</td>
<td>16</td>
<td>40%</td>
</tr>
<tr>
<td>3 Clicks from the homepage</td>
<td>12</td>
<td>30%</td>
</tr>
<tr>
<td>4 Clicks from the homepage</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>5 Clicks from the homepage</td>
<td>1</td>
<td>2.5%</td>
</tr>
<tr>
<td>No Disability website</td>
<td>3</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

Disability Services Information Provided
In response to the second research question, an exploration of disability services landing pages as well as sites with information on disability services were examined. Among the community colleges with disability services websites, the websites had varying titles. The titles included Disabled Student Programs and Services; Disability Resource Center; Student Disability Services; Disability Services; Students with Disabilities; Disability Support Services; and Services for Students with Disabilities. Out of the 40 community colleges examined, 17.5% (n = 7) provided forms, including accommodation request forms, medical release forms, note taking forms, testing forms, alternative learning forms, student assistance forms, housing forms, and parking forms. Of the 40 community
Table 2

*Location of Disability Services Website from the Community College Home Page*

<table>
<thead>
<tr>
<th>Location of Disability Services Website from the Community College Homepage</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Services</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Students</td>
<td>6</td>
<td>18%</td>
</tr>
<tr>
<td>College resources</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>Student life</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>Academic</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Current students</td>
<td>9</td>
<td>27%</td>
</tr>
<tr>
<td>On campus services</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Academic and career services</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Resources for students</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Offices</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Student services</td>
<td>3</td>
<td>9%</td>
</tr>
<tr>
<td>University center</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Services</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>Campus Services</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Student experience</td>
<td>1</td>
<td>3%</td>
</tr>
</tbody>
</table>

*Note.* Four institutions had direct links to disability services via the community college’s homepage. Three institutions had no disability services website.
colleges, 92.5% (n = 37) had some level of information regarding the services offered for students with disabilities and contact information. Out of the remaining three community colleges, one community college only listed information and resources for faculty teaching students with disabilities; one stated that information would be provided and accommodations would be made on an individual basis; and the last community college only stated that students with disabilities were to visit with their instructors about needed accommodations.

Discussion

The findings of this study aligned with previous studies, such as Irwin and Gerke (2004) and Quick et al. (2003). In their examination of Liberal Arts Colleges, Irwin and Gerke found that information regarding disability services was “difficult or impossible to locate from several of the websites” (para. 5). The homepages of the community college websites explored in this study were plentiful regarding information for current students, prospective students, and for faculty and staff. This information ranged from varying student success programs, academic services, registration information, and housing information. However, only 4 of the 40 (10%) community college websites had direct links to the disability services website from the institution’s homepage. Among the four community colleges with direct disability services links from the homepage, only one of the links was visible without having to scroll down the page to see the link. The remaining three had links at the bottom of the homepage. Most prospective or current students could possibly overlook the disability services link at the bottom of the community college’s homepage.

As previously mentioned, the majority of the community colleges did not have a direct link to the disability services website from the college’s homepage. Without a direct link, students are forced to locate the information by either guessing which link to click from the college’s homepage that would lead to information on disability services, or by using the search feature if available, hoping to choose the correct key words to find the needed information. A considerable amount of time was spent when trying to guess which link to click on to begin locating disability services information within this study’s 40 community colleges. Of the 40 community college websites analyzed, at least 15 different named links were identified that lead to the disability services websites/information. The named links were identified via information obtained from the two processes as noted above: 1) exploring and following the links from the community college homepages, and 2) using key words, as identified above, in the search feature. As a result, a frequent challenge in conducting this study was determining which link to click on from the community college’s homepage to find the desired information. As individuals that are familiar with higher education terminology, it was still very challenging to locate the information. Taking into consideration that potential students may not be native higher education speakers, it is possible that potential students with disabilities will give up on the hunt to find the information they need.

Once accurately selecting the link from the homepage, the disability services websites were between two and five clicks away from the community college’s homepage (see Table 1), with the majority of the disability services websites being two to three clicks away. Additionally, when utilizing the search feature, multiple sites were generated, each leading to different information. It is essential to note that when the disability services websites were located, the majority of the sites had useful information for students.

Within a few community colleges, the information provided on the websites for students with disabilities, was limited to information regarding 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. Of the 40 community colleges, 42.5% (n = 17) of disability services sites included additional information such as forms, accommodation request information and information regarding the specific disabilities served, and resources available for students with disabilities.

Limitations

There are three identified limitations of this study. The first is the small sample size. While 40 community college websites were used in this study, a future study should be conducted that includes a larger sample size and a wider representation and inclusion of community college websites. Second, the findings of this study are limited to the information on disability services that is available on the 40 community college websites. Only the checkpoints of web accessibility that can be examined by a computer were studied. Many other checkpoints may require accessibility that is granted after enrolling in the respective institution. In other words,
additional information may be accessible to students who have an institutional username and password or those who have identified themselves to the community college as a student with a disability. Third, individuals with no disclosed disability viewed the community college websites. Perhaps additional information, as it relates to the accessibility of disability services information, would have emerged with the assistance of students who are members of this population.

Conclusions and Implications

The results and implications of this study are significant for higher education institutions. The results highlighted the need to understand the essential role of institutional websites in providing information that supports the educational pursuits of all students, more specifically students with disabilities. With the possibility of a large portion of students with disabilities using computers (Friedman, 2004) and seeking information from institutional websites as an introduction to the community college, this is a critical point in which prospective students with disabilities may decide whether the institution is a comfortable choice for them.

According to Milsom and Hartley (2005), when students are preparing for college, it is imperative that students with disabilities feel a sense of commitment from the institution and that support services are available to them. The results of this study indicate that, overall, community colleges could do a better job of ensuring that the structure of their institutional website is user friendly for all students. Ensuring that the disability services website, information and resources are easily accessible via the institution’s homepage is beneficial not only to students with disabilities, but to all students as well as to the community colleges themselves. When information for students with disabilities is available and accessible to all students, students with no identified or disclosed disability are able to become knowledgeable regarding the resources that are available, in the event that they may believe they have a disability. Additionally, this knowledge also implies a greater commitment to the success of students with disabilities. When information is accessible for students with disabilities and they are able to locate this information independently, it allows them to develop and increase their independence and self-determination skills, which are essential for students with disabilities (Brinckerhoff, McGuire, & Shaw, 2002). This could be accomplished by adding a direct link to information on disability services from the institution’s homepage in a prominent place that is easily visible and accessible. In instances where the link cannot be accessible via the homepage, perhaps an identifiable consistent message or link among community colleges could be made available. For example, the disability services link could always be found under the “current student” or “prospective student” category to allow for consistency among community colleges. This type of consistency will assist in alleviating feelings of isolation and withdrawal (Hadley, 2011) that may occur even before the student enrolls in the community college.

While all institutional websites are designed to reflect the unique, distinct personalities of each community college, universal design should be the key focus when structuring websites. According to Irwin and Gerke (2004), “most prospective students have a limited understanding of the hierarchy of the campus; therefore the website should include the use of links to disability services from multiple paths” (p. 58). The findings of this study indicated that a small number of community colleges had direct links to information on disability services. In fact, while following links from the homepage and using the search feature, the majority of the information on disability services could only be found via one path. A small percentage (n = 4, 10%) of the community college websites had multiple paths that lead to information on disability services. With information on disability services only being available via one or a minimum number of paths, the opportunity for students with disabilities to easily locate information via terms that may be familiar to them is limited.

Additionally, when information is available via multiple paths, students are able to have a holistic experience. In other words, their disability is incorporated into the structure of the website and not one that sets them apart from the student experience. The students are then able to gain knowledge and information regarding disability services while locating information that is specific to the academic and social life of a student. Universal design allows for the structure of websites to be more accessible to a greater number of students, thus minimizing the need of individuals with disabilities to advocate for access and essential resources (McGuire, Scott, & Shaw, 2004). The commitment to all students becomes an institutional commitment in all aspects of the learning environment (McGuire et al., 2004). It is also essential that information that is provided on institutional websites is consistent. In
our examination of the 40 community college websites, inconsistent information was identified among specific community college websites. These inconsistencies can possibility cause students to become confused and view the institution as not having a commitment to the success of students with disabilities.

The results of this study are also essential for policy makers. While this study represents a small number of our nation’s community colleges, the implications are essential in the efforts to ensure the success of students with disabilities. It is paramount that community colleges develop universal web development policies that ensure accessibility of the content among all students-prospective and current. Irwin and Gerke (2004) suggest a six-step process of ensuring the websites are accessible:

1. Adopt a Web accessibility policy;
2. Develop a plan to implement that policy;
3. Broadly disseminate the policy and plan to anyone developing Web pages, including faculty and students;
4. Include a reasonable timeline in the plan for implementation of Web accessibility;
5. Include measures for enforcement in the plan; and
6. Make training and resources on accessible Web design available to Webmasters (pp. 57-58).

The results of this study also yield essential information for future research. There is no doubt that the representation of students with disabilities is increasing on our college campuses. With community colleges being at the forefront of this increase, further research needs to be conducted that focuses specifically on the experiences of students with disabilities while exploring community college websites. For example, how do students with disabilities feel when exploring the community college’s website? How well do community college websites convey a commitment to students with disabilities? Additionally, research that seeks to understand exactly what students with disabilities are looking for when exploring community college websites is helpful in gaining a reference point and an essential direction when structuring institutional websites for usability and accessibility. Higher education administrators and policy makers, student support professionals, and website designers are encouraged to conduct research on their institutional websites as important information dissemination centers, but also to contribute to the growing literature and implications on ways to not only increase the representation of students with disabilities at our nation’s community colleges, but also ways to ensure that our institutional websites convey the commitment that is held in educating our students with disabilities.

References


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Self-Advocacy and Perceptions of College Readiness Among Students with ADHD

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Manju Banerjee
Landmark College

Franklin C. Brown
Yale University

Abstract
This study examined issues related to college adjustment and self-advocacy from the perspective of students diagnosed with a primarily inattentive presentation of Attention Deficit Hyperactive Disorder (ADHD) who were unable to meet minimum academic expectations in their first attempt at college. Data were gathered from 12 students with ADHD who, in spite of above average intelligence, had difficulties accessing appropriate sources of support and/or meeting the demands of the traditional colleges/universities they attended prior to enrolling in a small, private college for students with specific learning disabilities and/or ADHD. During semi-structured interviews, students were asked to share their perceptions of (1) the impact of ADHD on their experiences interacting with others and advocating for themselves in educational, work, and social settings; (2) how other people in society view ADHD and methods the students had used to cope with this disorder; and (3) interventions that had helped or hindered their efforts to adjust to the demands of college and advocate for themselves effectively. Their comments suggested several areas of difficulty including shame, avoidance to cope with distress, lack of understanding regarding the impact of ADHD, and poor awareness of available support for related difficulties. Implications for service providers and faculty are discussed.

Keywords: College adjustment, ADHD, inattentive, perception, self-advocacy

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common psychiatric disorders in adulthood (Faraone & Biederman, 2005; Kessler, Adler, Barkley, & Biederman, 2006). According to the United States Government Accountability Office ([GAO], 2009), the number of undergraduate students with disabilities who reported having ADHD rose from 11.6% in 2004 to 19.1% in 2008. Kessler et al. (2006) estimated the prevalence of adult ADHD at 4.4% and found it to be highly comorbid with a number of other disorders, including specific learning disorders and other psychiatric disorders. Data suggest that “as many as 15% to 45% of those diagnosed with adult ADHD have been diagnosed with comorbid mood, anxiety, or substance use disorder” (Biederman & Bilkey, 2008, p. 3). This rapid increase in numbers has drawn attention to the fact that many qualified and college-ready students with ADHD drop out before completing their college degree (Murphy, Barkley, & Bush, 2002; Wolf, 2001). It is clear that more information is needed to understand the complexities of college success for this population of seemingly college-able students with ADHD.

Many studies have documented the challenges faced by students with ADHD in their transition to postsecondary education (Denhart, 2008; Getzel & Thoma, 2006; Madaus, Faggella-Luby, & Dukes, 2011; May & Stone, 2010), and it is clear from this research that ADHD poses unique and complex challenges related to college adjustment. Studies have shown that functional challenges related to ADHD can negatively affect classroom performance, self-management of school work outside of the classroom, social interactions, and life skills such as money and time management (Barkley & Fischer, 2011; Biederman et al., 2006; Brown, 2005; Kessler et al., 2006). The research base for ADHD is extensive, but our understanding of the role of self-perceived barriers and self-sabotaging behaviors among college students with ADHD is still
limited. This study adds to prior, similar investigations through its in-depth examination of individual perceptions of young adults with an inattentive presentation of ADHD and the elements they believe either “facilitate” or “impede” successful transition to college.

The current study is based on extensive, semi-structured interviews with 12 young adults with documented ADHD who were unsuccessful in their first attempt at college. The students either dropped out of the first college they attended or transferred to another postsecondary institution before enrolling in a small private college for students with learning disabilities and ADHD. Their insights into what factors allow for successful transition to college is informative for college faculty, disability service providers, and parents of young adults with ADHD.

**College Adjustment Challenges**

The transition to college is particularly difficult for many students with ADHD (Blasé et al., 2009; Meaux, Green, & Broussard, 2009; Reaser, Prevatt, Petscher, & Proctor, 2007). Students’ own perceptions of what is helpful and what is not suggest that multiple elements must be present for a positive postsecondary experience. A review of the literature on ADHD validates many of the elements suggested by students themselves.

**Executive function.** Executive dysfunction is the cornerstone of ADHD. As indicated by Vohs and Baumeister (2004), the term “executive function” (EF) can be “used to refer to brain circuits that prioritize, integrate, and regulate other cognitive functions: they provide the mechanism for ‘self-regulation’;’” (as cited in Brown, 2005, p. 10). Barkley (2011) further suggests that “each component of EF is a type of self-regulation” or a “self-directed action intended to alter a later consequence, such as achieving a goal” (p. 10). Barkley identifies five self-regulatory mechanisms in his theory of executive function and describes them as “self-directed actions” that are designed to “alter future consequences” (p. 11). Barkley (2012a) also comments on the importance of self-awareness in the management of issues related to self-regulation/executive function. Given EF dysfunction, students with ADHD experience difficulty estimating time, self-monitoring, setting realistic goals, and using information about past successes and failures to influence goal directed behavior in the present.

In a study of 103 adults with ADHD and high IQ scores (Full Scale IQ > 120), Brown (2005) found that most of his subjects dropped out or were dismissed from college because of problems with attendance, study skills, time management, and meeting assignment deadlines. Despite high cognitive abilities, many of these students experienced difficulty shifting their attention between multiple tasks, sustaining their focus in completing school work, and minimizing distractions such as friends and extra-curricular activities. They also seemed to lose sight of their long-term goals and the extent to which their daily activities related to these goals.

Studies by Reaser et al. (2007) and Blasé et al., (2009) provide support for Brown’s (2005) findings. Reaser et al. (2007) compared the learning and study strategies of college students with ADHD to a second group of students with learning disabilities and a third group of students without disabilities. Those with ADHD were found to have lower performance than the other groups in selecting main ideas, test-taking strategies, concentration, self-regulation, and time management. They also reported lower scores on motivation, anxiety, information-processing, and self-testing. Investigating the connection between college adjustment and self-reported ADHD, Blasé et al. (2009) found that students with ADHD had lower GPAs, greater risk of substance abuse, and more emotional and social concerns than their peers without disabilities.

**Self-esteem.** Additional research suggests self-esteem issues may have a negative effect on college adjustment for many students with ADHD. In a study conducted by Shaw-Zirt, Popali-Lehane, Chaplin, and Bergman (2005), college students with symptoms of ADHD reported lower self-esteem and social skills compared to peers matched according to age, gender, and Grade Point Average (GPA) who did not have significant symptoms of ADHD. Dooling-Liftin and Rosen (1997) also found that college students with stronger social skills and fewer symptoms of ADHD reported higher levels of self-esteem.

Self-esteem issues can be further complicated by the negative perceptions of ADHD held by some professors and peers without disabilities. Vance and Weyandt (2008) and Chew, Jensen, and Rosen (2009) reported on the potential impact of students’ and professors’ attitudes regarding ADHD on college adjustment for students with ADHD. Vance and Weyandt found that some faculty members are reluctant to provide reasonable accommodations allowed under the Americans with Disabilities Act (ADA) to students with ADHD. Chew et al. (2009) found that more negative than positive adjec-
tives were used by students without disabilities when they described peers with ADHD. They also found that students with ADHD themselves had a tendency to use more negative adjectives in reference to ADHD.

Meaux et al., (2009) conducted a qualitative study to examine factors that may assist or hinder students with ADHD as they make the transition to college. Based on interviews conducted with 15 college students with diagnosed ADHD, they found that those students who had an understanding of their ADHD were able to manage their daily lives, use available support services, and experience more successful postsecondary outcomes compared to others with ADHD who were less self-aware and self-determined in these respects. They also found that students with ADHD and their families often had a tendency to hide the disorder to avoid perceived stigma. While some students interviewed by Meaux et al. made adequate use of the support services on their college campuses, many others “did not take advantage of these services because they ‘did not want to be thought of as different’” (p. 254).

Coping strategies. Additional evidence suggests students with ADHD may use unique methods to cope with their difficulties (Chew et al., 2009; Waite & Tran, 2010). A study conducted by Toner, O’Donoghue, and Houghton (2006) aimed to determine how adults who were first diagnosed with ADHD in adulthood coped with difficulties related to the disorder. The study found that the experiences of individuals diagnosed with ADHD later in their lives vacillated between periods of chaos and control. Participants reported a greater sense of control in their lives when they became more aware of the impact of the disorder on their daily functioning, sought and benefited from medical treatment, engaged in more physical activity, pursued more appropriate forms of employment, and established supportive relationships with significant others. Participants reported less control when they engaged in risk-taking behaviors, self-medicated, or pretended that their ADHD symptoms had no negative impact on their behavior.

In another study, Young (2005) found that adults with ADHD were not readily able to draw upon a number of “contextually appropriate” strategies for dealing with difficult situations. When they encountered stressful events in their lives, adults with ADHD self-reported a greater tendency towards aggressive confrontation and/or avoidance compared to their peers without disabilities. Wait and Tran (2010) studied an ethnically diverse group of 27 postsecondary students diagnosed with ADHD. Each student conceptualized his/her condition somewhat differently, at least in part due to family influences and/or immediate family members’ perceptions regarding the validity of the disorder. In cases where the validity or seriousness of ADHD was questioned by family members, the students themselves seemed more skeptical and less inclined to seek care or help. Fleischmann and Miller (2013) examined the online narratives of 40 adults with ADHD who had been diagnosed for the first time in adulthood. They found that once these individuals were able to move beyond the guilt associated with behaviors related to ADHD, they were more likely to believe they could overcome their challenges, take a more positive view of themselves, and acknowledge some of the positive aspects of ADHD.

Individual profile of ADHD. The idea that individuals with an inattentive presentation of ADHD may be uniquely affected by issues of executive function, particularly working memory and/or processing speed, has been noted in a growing body of literature (Barkley, 2012b; Diamond, 2005; Goth-Owens, Martinez-Torteya, Martel, & Nigg, 2010). Working memory deficits can have a significant impact on one’s ability to read, write, and make decisions/perform daily tasks requiring the linkage of old and new information. This may explain the apparent ahistoria of students with ADHD, who seem to have difficulty using information about past successes and failures to affect goal oriented behavior in the present. Barkley (1997) suggests that working memory deficits may also at least partly explain students’ difficulty with time management: “The capacity for holding events in mind in a correct temporal sequence may give rise to the psychological sense of time. If so, time perception would be directly dependent on the integrity of working memory” (p. 71). This suggests that individuals with ADHD who have impaired working memory function may be significantly more dependent on external representations of time.

Navigating the transition to college requires many of the skills that students with executive function difficulties lack: novel problem solving; persistence in the face of obstacles; the ability to manage one’s time; prioritize and organize effectively enough to manage multiple classes, tasks, and deadlines; remember important appointments and meetings; attend to the details of tedious paper work; and tolerate a high level of frustration.
Evidence suggests students who primarily exhibit symptoms of inattention may experience greater difficulty adjusting to college demands compared to those with predominantly hyperactive-impulsive symptomology (Norwalk, Norvilitis, & MacLean, 2008; Rabiner, Anastopolous, Costello, & Swartzwelder, 2008). Norwalk et al. (2008) found that only symptoms of inattention were clearly related to academic adjustment, study skills, career decision-making, and self-efficacy. Rabiner et al. (2008) surveyed 1,648 first-semester freshmen using a web-based survey. When they compared 200 randomly selected students with 68 students diagnosed with ADHD, the students with ADHD reported greater academic concerns and symptoms of depression. Rabiner et al. (2008) also found that the impact of inattention on the students’ reported symptoms of depression and academic concerns was significant.

Although studies have attempted to differentiate between the three predominant presentations of ADHD and their impact on college success, the results are inconclusive. Some have even suggested there is no difference between the presentations in terms of executive functioning or other cognitive variables (Geurts, Vert’, Oosterlaan, Roeyers, & Sergeant, 2005). While the DSM-5 (American Psychiatric Association, 2013) has retained the subtype designations used in the DSM-IV (combined type, predominantly inattentive type, and predominantly hyperactive-impulsive type), these categories are now referred to as combined presentation, predominantly inattentive presentation, and predominantly hyperactive-impulsive presentation. According to the DSM-5, individuals above the age of 17 must now exhibit at least five out of nine symptoms of hyperactivity and/or inattention (compared to six under DSM-IV criteria) for six months or more in order to receive a diagnosis of either predominantly inattentive or predominantly hyperactive-impulsive type ADHD. Individuals exhibiting five out of nine symptoms in both categories are now designated as combined type.

Although there is no empirical evidence to suggest that subtypes or presentations of the disorder differ in their cognitive or academic presentation, it is possible that distinct presentations of the disorder have a unique impact on an individual’s experience and interactions in different social contexts. Symptoms of hyperactivity-impulsivity (excessive talking, interrupting, and inability to engage in leisure activities quietly) versus symptoms of inattention (difficulty attending to details, filtering out distractions, and remembering appointments/tasks) may result in markedly different experiences/interactions for individuals exhibiting these symptoms in diverse social contexts. Although this study does not aim to compare the experiences of individuals exhibiting distinct presentations of the disorder, it was designed with the intention of learning more about the college adjustment and self-advocacy experiences of students with a predominantly inattentive presentation of ADHD symptoms.

**Purpose of the current study**

The current study examines the perceptions of college students with ADHD who were unable to pass an adequate number of classes, access appropriate sources of support, and/or advocate for themselves effectively in their first attempt at college. For the purpose of this study, self-advocacy is defined as an individual’s ability to “communicate, convey, negotiate or assert his or her own interests, desires, needs, and rights” (VanReusen, Schumaker, & Deschler, 1994, p. 1). Since each of the study participants had encountered difficulty accessing appropriate support services and/or adjusting to the demands of college at a traditional postsecondary institution, they then enrolled in a specialized college program for students with specific learning disabilities and/or ADHD. The current study examines this transition phenomena by exploring students’ perceptions of (1) the impact of ADHD on their experiences interacting with others and advocating for themselves in educational, work, and social settings; (2) how other people in society view ADHD as well as methods students used to cope with ADHD; and (3) interventions they perceive to have either helped or hindered their efforts to adjust to the demands of college and advocate for themselves effectively.

**Methodology**

**Sample Recruitment**

Participants for this study were recruited from a small, private, four-year undergraduate college serving students with documented LD and/or ADHD. The majority of the study participants had transferred after struggling to meet academic requirements at their previous colleges/universities. Only those transfer students who had spent at least one semester at another private or public institution were included in the study (See Table 1). Furthermore, all participants had to have...
successfully completed at least one semester at their current college to be included in the study. At the time of the interviews, all but one of the participants had met this criterion. Only one participant was interviewed towards the end of his first semester. His responses are included in the results because he did successfully complete the semester with a GPA above 2.0. All students had a prior diagnosis of ADHD, predominantly inattentive type (according to DSM-IV criteria), based on a neuropsychological evaluation. The neuropsychological evaluation included measures of intellectual functioning, working memory, processing speed, attention, and academic achievement. Students without a comprehensive neuropsychological evaluation and performance data were not included in the study. Students were also excluded if they had other neurological conditions that may have affected executive functioning (e.g., Traumatic Brain Injury, seizure disorder). Other diagnoses such as a learning disability or a psychiatric disorder were not explicitly mentioned in the documentation of any of the participants. Of the 27 students interested in participation, 23 students met all the criteria for inclusion. Of the original sample, 12 students actually completed all elements of this study. There did not appear to be any significant demographic differences between those who completed the study and those who did not. The primary investigator asked all academic advisors on campus to share a description of the study with their advisees and/or former advisees, including the purpose, criteria for participation, and

Table 1

Demographic Characteristics–Including Type of Postsecondary Institution Attended Prior to Transfer

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>College Students with AD/HD–Inattentive (DSM-IV) (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>8</td>
</tr>
<tr>
<td>Women</td>
<td>4</td>
</tr>
<tr>
<td>Number of Semesters Completed at Previous College(s)</td>
<td></td>
</tr>
<tr>
<td>1-2 semesters</td>
<td>3</td>
</tr>
<tr>
<td>3-4 semesters</td>
<td>7</td>
</tr>
<tr>
<td>More than 4 semesters</td>
<td>2</td>
</tr>
<tr>
<td>Type of Postsecondary Institution(s) Attended</td>
<td></td>
</tr>
<tr>
<td>Community College</td>
<td>1</td>
</tr>
<tr>
<td>State University</td>
<td>5</td>
</tr>
<tr>
<td>Private College</td>
<td>6</td>
</tr>
<tr>
<td>Education Level at Time of Interview</td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>12</td>
</tr>
<tr>
<td>Freshman</td>
<td>0</td>
</tr>
<tr>
<td>Sophomore</td>
<td>10</td>
</tr>
<tr>
<td>Junior</td>
<td>0</td>
</tr>
<tr>
<td>Senior</td>
<td>2</td>
</tr>
</tbody>
</table>


potential benefits and risks. Students were informed they would receive a gift card in the amount of $25 for participating in the study.

**Sample Demographics**

The study sample consisted of eight males and four females with ages ranging from 20 years to 27 years (M = 22; SD = 2). The majority of the students were between the ages of 20 – 22 years, with two who were 26 and one who was 27 years old at the time when the interviews took place. The students’ ages ranged from 19 to 24 when they initially transferred to their current college.

The students who participated in this study transferred from their first postsecondary institution for a variety of reasons: they were unable to meet or sustain the GPA requirements of that college; they were completely overwhelmed and made a personal decision to leave their previous college; or because they decided to transfer to a less rigorous college such as a 2-year or a community college. The majority of these students (n=10) had attempted to complete between two and four semesters at a prior college/university before entering their current institution. Two of the twelve students had attempted more than four semesters of prior college work. Of the ten students who completed between two and four semesters of prior college work, two had decided to take a year off before enrolling in a specialized program at their current college. In total, three of the twelve students took time off from postsecondary education between their first attempt(s) at college and their enrollment in the current college. Of the two students who had attempted more than four semesters of prior college work, one had been unable to maintain the minimum GPA requirements at his previous college for three consecutive semesters before taking a leave of absence. He subsequently attended a community college for two semesters before enrolling at the current college. The second of these two students had succeeded in achieving the minimum GPA requirements at a large university until reaching her junior year. This participant reported that the increase in the number of independent projects and reduced structure provided to her in her junior year made it difficult for her to keep up with course demands; she was unable to meet the minimum GPA requirement for two consecutive semesters before being dismissed from the university. This particular student decided to take a year off from school before enrolling in the college from which she was recruited for this study.

Most of the students (n=9) reported that they took medication consistently to treat symptoms related to ADHD. Most of the students had intelligence scores in the high average range or above, whereas their various measures of processing speed and working memory were often significantly lower (See Table 2). At the time of the interviews, all but two of the students were enrolled in a general studies program at their current institution. The remaining two students had previously been enrolled in the same general studies program for students with LD and/or ADHD. One of these two students graduated from the program with an AA degree and then transferred into a Bachelor’s program at another 4-year school. The second of these students transferred back to his/her previous college in order to complete a Bachelor’s program without first earning an AA degree. Phone interviews were conducted with these two students, who were unable to make the trip to campus.

**Interview Protocol**

With the exception of the two phone interviews referenced above, in-depth, face-to-face interviews were used to collect data for the study. The 10 interview questions (see Appendix) were designed to elicit detailed information about students’ perceptions regarding obstacles to self-advocacy and college adjustment. A semi-structured interview format was chosen to ensure that a predefined set of areas was addressed and that participants had an opportunity to add additional information they deemed necessary after the interviews (Hendricks, 2009). Interview questions were piloted in two mock interviews with students who were not included in the study and questions were modified based upon their feedback. Modifications included the clarification of terms; deletion of repetitious words, phrases, or prompts; and the rewording of some sentences/phrases to prevent misinterpretation or confusion.

The 12 participants were asked to review the interview questions immediately prior to reading and signing a consent form. Students were given the opportunity to remove themselves from the study at this point if they did not feel comfortable with the interview questions. All 12 participants expressed a desire to continue with the study. Each of the students answered all 10 of the interview protocol questions. Each interview was conducted by the lead investigator and took between one to two hours. In line with best practices for ensuring validity when conducting
 qualitative research (Hendricks, 2009; Merriam, 2002), interviews were recorded and transcribed verbatim. After the transcription was complete, students reviewed printed copies of their transcripts and clarified any statements they felt were unclear. One student declined the opportunity to review his transcript because he felt he did not have the time.

**Data analysis**

The transcripts were read independently by two of the authors of this study. Data were analyzed using an inductive analysis process (Patton, 1987). Broad categories were allowed to emerge from the data rather than as a result of reviewing the data with an a priori list. When using an inductive analytic approach, research questions or objectives “provide a focus or domain of relevance for conducting the analysis” rather than a set of expectations for interpreting the data (Thomas, 2006, p. 239). Thomas notes that inductive analysis “refers to approaches that primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher” (p. 238). After completing the process of data collection, selected members of the research team read the transcribed interviews in detail and created categories from the raw data generated in response to each of the interview questions. Two researchers worked independently to identify words, phrases, and sentences within segments of the interview transcripts which were associated with common themes and topics. These relevant text excerpts were coded into categories as they emerged. Using the process outlined by Thomas (2006), investigators worked independently to further refine categories and reduce overlap and redundancy between them. Categories were revised and refined by linking them under a superordinate category when the meaning of thoughts/ideas communicated by participants within more than one category was viewed to be similar. For example, one superordinate category/theme that

<table>
<thead>
<tr>
<th>Participants</th>
<th>FSIQ</th>
<th>VCI</th>
<th>PRI</th>
<th>WMI</th>
<th>PSI</th>
</tr>
</thead>
<tbody>
<tr>
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<td>128</td>
<td>142</td>
<td>118</td>
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<td>-</td>
<td>120</td>
<td>97</td>
<td>109</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* FSIQ = Full Scale Intelligence Quotient; VCI = Verbal Comprehension Index; PRI = Perceptual Reasoning Index; WMI = Working Memory Index; PSI = Processing Speed Index

*a*FSIQ was not reported and not considered a meaningful representation of subject’s overall ability due to a significant scatter among subtest scores. Although the subject’s documentation suggests a slow processing speed, the processing speed index score was not reported.
emerged across subjects and interview questions was labeled “shame and stigma.” Each investigator noted frequent references to feelings of embarrassment, guilt, shame, or fear of judgment in many participant responses to more than one of the interview questions; therefore, quotations referencing such feelings were coded into the shame and stigma category. This process continued and resulted in a set of six key themes that emerged from the data.

Results

The results section addresses the participants’ description of the challenges they encountered in college, the efforts they made to cope with and manage symptoms related to their ADHD, and the words and actions of others that either positively or negatively impacted their attempts to advocate for themselves effectively. Six broad themes emerged: (1) interaction with others; (2) seeking help; (3) societal perceptions; (4) disclosure; (5) coping with ADHD; and (6) interventions and supports.

Interaction with Others

Participants commented on their experiences in social, educational, and work related settings. While some perceived ADHD had benefitted them in certain interactions, the results indicate that students’ past experiences strongly influenced their behaviors and often resulted in actions that were not conducive to success in college.

Social settings. Six of the twelve students perceived there were some social benefits to having ADHD. They attributed their “energy,” “passion,” and “likeability” to their ADHD and perceived that having ADHD had helped them in social situations. As one student put it, “people like the outgoing characteristics that are a lot of times associated with ADHD.” Another student said, “everybody seems to like me…and I would attribute a lot of that to my ADHD.”

In spite of some of these perceived benefits, an equal number of students (50%) described negative repercussions in social situations. Many of the key descriptors related to social interactions included anxiety; feelings of being overwhelmed by social norms and expectations; not knowing how to react and what to expect; perceiving oneself as being different; and being afraid of being misinterpreted. Students noted being anxious about missing important details during conversations, feeling overwhelmed when attempting to communicate in groups, and making negative comparisons between themselves and peers who seemed to be able to process information more quickly. One student said that she had become so accustomed to “spacing out” during conversations that she had “learned how to pretend that I can really focus.” Another student said he found it difficult to navigate social interactions because of “not knowing what’s expected of me and what to do.” He indicated that “my mind in a situation like that will be off analyzing every little piece of information coming in on overload, and it’s really stressful and exhausting to do.” Another student commented on the sense of shame and discomfort that was present for him during certain social interactions with peers. He reported feeling “ashamed” in the presence of his peers because he could not understand why he would “struggle through [work] much harder than they would.”

Educational settings. Commenting on interactions in academic and classroom settings, nine students (75%) specifically noted feeling different from their peers but not really understanding the nature of these differences. They reported that their classroom behavior was often misinterpreted and they generally did not cope well when they encountered difficulty in school. Although these students had difficulty articulating why they were unable to meet expectations, they were aware that other people misinterpreted their behavior and intentions:

If you sat me alone to do work, it wouldn’t get done. And I was always being told that I was capable of doing it because if you sat down with me, I could do it, but left alone it wouldn’t get done. So—I was always being asked why I wasn’t doing my work, and I didn’t know why…I just felt like I was letting everyone down…and really ashamed.

One student said that he was “naturally quiet in classes” in high school and his teachers generally perceived him as “obedient.” Another student commented, “All I really knew was that I would sit in class and not pay attention, so I would get lost easily…didn’t do well on the tests—bad memory.” Other students reported feeling perplexed by their difficulty with getting started on tasks or following them through to completion compared to peers. In spite of the fact that some students reported “zoning out a lot” in school, they never felt
comfortable raising their hands to ask a teacher to repeat something. Two of the students reported they were not prepared to ask for help in college because they had been able to “get by” with strong test scores in high school. One of these students reported he “rarely ever did work outside the classroom” and the other indicated that, “when I got to college, I was used to not doing work…I could still pass tests.” The same student reported that she struggled more each semester in college as the demands for independent work increased “and it got to a point where I was just having trouble getting anything done on time at all.”

**Employment settings.** In employment settings, three students (25%) reported positive effects of ADHD on their interactions with others and three (25%) reported negative effects. Positive effects were attributed to jobs that relied upon social skills or involved physical activity, as well as those that allowed for “constant change” or required thinking on one’s feet and responding to immediate demands from others. For example, one student reported on the success she experienced working at a planetarium where she was required to run tours and field multiple questions from visitors about topics she understood quite well. Another student explained that he experienced success teaching music to a group of children who required that he use several different instructional approaches simultaneously. Negative effects were attributed to extensive amounts of paperwork; a requirement to complete tasks quickly and/or initiate and follow through on long-term, multi-step projects without adequate guidance or supervision; and tasks requiring sustained focus. One student, who described having a job in which he was required to operate a forklift truck for extended periods of time, reported, “I had to force and train myself to be aware.” Seven of the 12 students (58%) said they had to find creative ways to keep themselves engaged and active in college and two reported that they would not disclose a diagnosis of ADHD in a work environment. Another student commented how much of a struggle it was for him to get through tasks and how long it took him to produce the work required of him in college compared to his peers. Even though he recognized this, he said he did not feel right asking for help because:

I thought it was me just being very lazy…being too lazy to put in the work…I knew when I would attempt to write papers and do those things—study for exams—it would breed such an awful feeling… I really had a really averse feeling to doing all of it…I really think about it as physical pain—going through writing papers—or studying.

Another student said he “never felt good about having ADHD” or “thinking about that as a real problem … something I should be asking for help for. I was always like, ‘Get over yourself.’”

Many of the students reported feeling ashamed and embarrassed about advocating for themselves when they initially entered college because they “didn’t feel right asking for help or extensions or anything.” They reported feeling defective or flawed, which contributed to the sense of shame they felt. As one student commented, “I felt that I was entirely responsible for my failure at school…my lack of motivation and my lack of a desire to make things better for myself.” After approaching a professor to request an accommodation, another student recalled, “I felt like there’s something wrong with me…my problems were just creating more problems for… all those professors.” This student’s sense that there was something “wrong” with him and that he was a burden to others created a desire to “hide” his difficulties. As he said, “I had this inside feeling that…it was definitely a negative thing to have ADHD. Like, I was almost ashamed…didn’t want to
tell my friends. I didn’t want to tell teachers… I was always trying to hide it.” Some students reported that the need to appear equal to their peers was one reason for their reluctance to seek assistance for issues related to ADHD. Although students perceived they were “just as smart if not smarter” than their college friends who earned high grades in their classes, the sense of shame they felt as a result of not measuring up to the perceived standards set by others seemed to have an impact on students’ tendency to hide their difficulties as well as on their willingness to ask for help. This pattern occurred in spite of students’ possessing an intellectual ability comparable to that of their peers.

**Lack of understanding.** One more reason cited for not seeking help was a belief that others would not understand the request for help. Nine out of 12 students reported they had encountered what they perceived to be a general lack of understanding and appropriate support for their specific needs. These experiences made them more reluctant to request assistance for issues related to ADHD in college. One student commented on her frustration with the process involved in requesting an appointment with a staff member in disability services at a large university:

> They made it really difficult to make an appointment. They’d be like, okay, you have to call this office, and then you have to come down here at this time tomorrow and meet with this person to make an appointment with this person and…all the different steps involved… I’m like, really? You’re going to take somebody with an executive function problem and give them a series of steps to get one appointment…I feel like it should have been more organized…there should have been someone who you said you needed an appointment, and they returned your call with an appointment.

This student’s perception was that the services made available to her, and the steps required to access them, were not sensitive to the needs of students with executive function challenges. This point was reiterated by four other students who reported they were often required to bring drafts of their writing to meetings with college support staff and instructors or produce a substantial body of work independently, in spite of the fact that some of their greatest challenges were related to getting started on or activating to tasks. One student remarked, “If I had a draft, I wouldn’t need help.” Another student commented, “Points in my life when I’m most successful aren’t when I’m getting help… I never got more work done when I was getting help.” This student explained that he often spent more time talking about and explaining the work to tutors and related support personnel than actually doing it. He reported that this type of interaction had made him reluctant to seek assistance with future projects.

**Learned helplessness.** Several students (n=4) reported that the experience of “getting by in high school” and having parents or others initiate and manage tasks for them also made it more difficult for them to ask for help in college. One student commented on his mother’s involvement in his work in high school by noting, “She’d take care of all of all those things for me. Talking to teachers about things that I struggled with, talking to teachers about my disability, talking to the school, all of that stuff.” A second student explained that his parents’ involvement sometimes resulted in him getting the work done in high school but did not help him learn how to work independently. Another student reported that he hardly did any work in high school and was able to “get by” with teachers being “impressed with [his] intellectual ability.” Some students commented that they “made excuses” when they did not complete homework and just “got lucky” with some of their teachers.

**Societal Perceptions**

Students also commented on their impressions and experiences related to societal perceptions of the disorder.

**Trivializing ADHD.** In response to a question about what they perceived to be other people’s thoughts and feelings about ADHD, seven of the 12 students (58%) reported that most people trivialized ADHD or did not see it as a real disorder. As one student put it, ADHD is:

> …so much more complicated than what the average person thinks. A lot of people… don’t even really think that it exists because, “Oh; ADHD, everybody has that; everybody has a little bit of trouble paying attention to stuff they don’t like.”

Students reported ADHD was trivialized or not perceived as a real disorder because it was often misunderstood as a will power problem. A number of students commented on hearing characterizations of ADHD as a “lazy
person’s excuse.” The students indicated there was a general societal misconception that “…people with ADHD just don’t try hard enough. Why can’t you be more organized? Or, Why can’t you just pay attention?” These and similar responses were referenced by some students when explaining how others had responded to them and their needs. As one student remarked, “They don’t realize that sometimes you really, really, really want to pay attention and you still can’t.”

**ADHD as character flaw.** When compared with other difficulties related to learning, students reported that ADHD is viewed as “sort of a disability light,” or more of a character issue and “not as severe as something like dyslexia or Autism Spectrum Disorder (ASD).” As one student reported,

> There’s a thin line between what you are calling your character and who you are and then like ‘disability’ kind of thing. It’s abstract…and invisible. So, just to say that I need to change that about myself is like questioning yourself.

Students explained that they often evaluated their actions and behaviors according to societal misconceptions regarding the disorder. One student explained that he questioned his ADHD a lot because it was a “negative thing that was not really provable.”

The idea that a person should be able to overcome ADHD or “just try harder” was a familiar refrain in student responses about how they felt ADHD was perceived by others. Another student commented on the pressure of being compared to the high school dropout who was assumed to have had ADHD and went on to become a great success:

> I think that the worst part is when people are trying to give me, like, pep talks about that stuff. When I was younger, the story’s always about either the guy who has ADD and works really hard in school and they can get over it or they talk about the guy that dropped out of high school when he was in 9th grade and went on to become a billionaire.

In many cases, the students themselves seemed to agree with the idea of ADHD as an excuse for lack of will or motivation. As one student observed:

> I still have trouble sometimes when I’ll be in a situation when I’m having trouble focusing and activating, and it’s like… I mean ADHD, and; but there’s a big mental resistance of like, “No, don’t make excuses, like, just (laughs) do it.”

Students reported feeling confused, defeated and at a loss for how to articulate any kind of defense for their behavior given their perception that “everybody just thinks that it’s a motivation issue.” Students seemed unclear, at least in part because society seemed unclear, about how much of their behavior was within their
control. Many of these students had or continued to attribute their lack of performance to laziness. One student reported that he still wondered how much of his behavior was congenital vs. learned:

I’m still in the process of coming to terms with my own disability—or with ADHD… I think I’ve gotten past the idea that I’m lazy…I do have ADHD, but how much is the ADHD contributing to my issues, or is it a behavior that I learned when I was very young…acknowledging that it’s real, but it’s learned rather than born with.

Equated with low intelligence. Three of the students (25%) reported that either they or others had questioned their intelligence because of their ADHD diagnosis. One student seemed unsure how to characterize his own view of the disorder and what it suggested about his intelligence. He explained that he did not know whether to describe ADHD as a “personality flaw” or an “intellectual capability flaw.” Another student expressed his frustration at those who believed that ADHD didn’t really exist by saying,

Once I got to college I could feel that I learned differently…I was aware that my brain works differently and that I just function differently, and that was really frustrating, that other people were functioning differently than me and they didn’t really believe that any of this was going on.

One student explained that she had initially talked herself out of the idea she had ADHD, in spite of what now appear to have been obvious symptoms and repeated failure in school, because she did not understand the disorder. At that time, both she and those with whom she interacted felt her particular challenges were not severe enough to warrant intervention because she was intelligent, not “hyper,” and “could pay attention to some things.”

Disclosure

When asked how they decided whether or not to disclose their disability, five of the 12 students (42%) reported they generally only felt comfortable disclosing to close friends. Six students (50%) reported that shame and/or a fear of judgment or stigmatization made them reluctant to disclose in educational or work environments and nine students (75%) commented that it was difficult for them to disclose or explain ADHD because of societal misconceptions regarding the disorder. One student remarked, “If you’re at a very…a very competitive school environment…people will just look at it as an excuse…the biggest reason I never liked explaining was because it sounded like an excuse to me, and to others.” A student who reported he had requested extended time in college remarked, “I’m able to do the exam in regular time, but I’m able to do much better with the extended time. And I’m worried about how that’ll translate into the real world.” Another student explained that she felt uncomfortable disclosing she had ADHD because so many adults associated it with laziness or not wanting to do work rather than seeing it as a legitimate disorder. She felt that disclosing ADHD would change teachers’ expectations and have a negative impact on her performance.

Coping with ADHD

Students described a number of ways in which they had attempted to cope with ADHD as well as manage feelings and thoughts associated with the disorder.

Feelings of frustration. Students reported feeling frustrated and discouraged by other people’s failure to understand the extent to which ADHD impacted their lives. These feelings were exacerbated by the invisible nature of the disorder and the societal misconception that the disorder was “not real” or at least not real enough to be considered a significant problem. Several students reported an awareness that they were expected to perform at a high level because other people perceived them to be so capable, which made them more inclined to avoid when they were unable to follow through on the completion of assigned tasks:

I had problems all my life…I knew I wasn’t dumb, but when I would try and apply myself, it was like banging my head against a wall. It was so frustrating, and I wasn’t getting anywhere…If I was applying myself, I wasn’t being lazy…So half the time I wouldn’t even apply myself because when I did it was so frustrating because I wouldn’t get anywhere…I was always being told how capable I was, and then I wasn’t fulfilling people’s expectations all the time…letting people down.

Avoidance. The primary method of coping with ADHD reported by nine out of 12 of the students (75%) was avoidance. Students reported avoiding classes, teach-
ers, learning specialists, tutors, and disability support staff primarily because they felt “embarrassed” about their failure to initiate or follow through on assigned work. Students indicated they generally did not take action to correct the situation until it was too late. Conversely, they also reported they were more likely to shift patterns of avoidance when they felt their attempts to address their executive function challenges were acknowledged by those with whom they interacted.

One student described the act of avoidance as akin to an addiction; behavior he would look to every time he had difficulty initiating and following through on assigned tasks. He admitted that when he was in “deep avoidance,” he would look for “any type of help to continue that avoidance…to pull the shade over my eyes.” Seven of the 12 students (58%) also reported that they had at some point in their school careers avoided or escaped through recreational drug use and/or through video games. Although several students reported avoidance had been a coping mechanism they had used throughout high school, they acknowledged their tendency to avoid escalated in college where there was significantly less structure and accountability.

Feelings of depression. A number of students (58%) reported they had experienced feelings of depression or severe discouragement related to their efforts to cope with ADHD. Close to half of the students indicated that becoming more aware of the specific challenges related to ADHD and learning to accept their strengths and limitations had helped them cope more effectively.

Self-education about ADHD. Students discussed the extent to which ADHD had changed their perception of themselves, the way they interacted with others who did not share an ADHD diagnosis, and the level of success and independence they felt they could achieve in the future as students/employees. Eleven of the 12 students (90%) indicated that learning more about ADHD and its impact on their performance had helped them accept their strengths and limitations had helped them cope more effectively.

Difficulty setting limits with peers. Ten of the 12 students (83%) reported they had encountered difficulty setting limits with their peers in college. Although several students indicated they had often convinced themselves they could afford to put off assignments to spend time with friends in college, one student reported it was his awareness of his work completion difficulties and his desire to “be liked” that made him more inclined to escape through time with friends. He said,

…because I know I have issues with getting my work done. If anything I push myself into those events way too readily because I’m trying to be liked…I wouldn’t want people to think that I’m less than great at doing everything all the time.

Several students reported that it took them a while to learn how to say “no” to people. They often felt confused by the behavior of some of their peers who seemed to be able to “party all the time” but did not appear to be doing any of the work. Some students shared a perception of life as being a lot easier for people who do not have ADHD. They expressed some resentment and frustration at the fact that their peers could “do more with less time.”

Career selection. When asked about how they envisioned coping with issues related to ADHD in the future, half of the students (50%) believed they could achieve a high level of independence and success provided they selected a career that highlighted their strengths and minimized some of their weaknesses. They expressed a firm belief that they could overcome and/or compensate for many of the challenges they faced. Three students (25%) expressed concern about their ability to achieve success in the future and two students felt that their challenges were primarily related to their academic performance. One student said, “If I manage to graduate college, I’m not worried about what will happen. It’s just getting through college.”

Interventions and Supports

Students described a number of supports and interventions that they perceived had either helped or hindered their efforts to adjust to the demands of college and advocate for themselves effectively.

Medication. The extent to which students reported medication-related interventions had proven to be helpful varied across participants. Six out of the 12 students interviewed (50%) reported they consistently used medication to treat their ADHD and that it had a positive impact on their performance. One of these six students reported a trial and error approach to pharmacological treatment options that had eventually produced results. Three additional students reported they had stopped using medication several years prior
to the time of the interview due to negative side effects and inconsistent results. Of these three students, two were achieving grades of ‘C’ or better in their college courses. One of these three students, a former graduate of a two-year general studies program at the current college, was getting ready to graduate with a BA from a university in New York at the time of the interviews; another of the three students was about to graduate from the small, private college he was currently attending with a cumulative GPA above a 3.5. The remaining three students reported mixed results from their use of medication to treat symptoms related to ADHD even though they reported using medication consistently.

**Building self-awareness.** When asked what adults should do to prepare students with ADHD to communicate their needs more assertively in postsecondary educational environments, seven of the 12 students (58%) talked about the importance of building awareness/educating students regarding the impact of ADHD on performance. Some students talked about the importance of learning about their neuropsychological testing and working with understanding teachers. One student indicated that if he had known the exact nature of his difficulties, he would have had a better understanding of the extent to which some issues were in fact within his control and possible for him to modify:

If…I was able to change my habits back then… worked through them…like “I can sort of change things about me. It’s some stigma that, Oh, I’ve a terrible work ethic… I have trouble focusing. I need to help create structures for myself.” I… would have been helped by doing that.

A second student remarked, “Learning what’s going on in my brain and why I am inclined to do certain things that I didn’t understand before…allows me to adapt.” Another student commented on the importance of learning about her strengths and limitations in an environment that did not assume students’ executive function skills were intact:

Learning what did help and what I could do… and exploring it in a safe place… allowed me to find… what am I good at? What can I fall back on? … What is still going to be a wall for me and that I need to get around a different way? I think it was really good to figure out my limitations and… accept “that’s a limitation. How can I get around it”?

... I can’t remember appointments. I need to have them in a planner that I can see all the time.

**Self-advocacy.** Eight of the 12 students (67%) interviewed commented on the importance of learning why and how to ask for help. Although most students were aware they were expected to approach faculty and staff for assistance in college, they reported not knowing how to ask for help because they had never needed to ask for help in high school. One student explained what he perceived to be the impact of students’ tendency to “get by” in high school on their sense of self-worth:

...most people that have ADHD have like continuously diminishing self-value…especially if they were bright when they were younger. They could pull off good grades, they don’t realize they have the same issues their whole life just building up and building up and building up. They see it as they just keep getting worse at things…they just already feel they have failed, and a lot of those people need a lot of guidance.

Students talked about the need for more proactive, consistent support and “guidance” for the development of self-advocacy skills due to their general lack of experience with asking for help, the ahistoric nature of ADHD (i.e., difficulty remembering details of one’s past), and the tendency to lose track of key information related to their performance. The importance of proactive support and structures to help students address the ahistoria of ADHD is illustrated by one student’s response to questions about intervention:

You’re prone to make the same mistake over and over and over again and not really learn from it; and that’s just something that people with ADHD…have to learn to realize… you really have to look at how things have went down in the past and how things have worked out well or haven’t… and really think about how that’s going to impact the task at hand.

Some students reported they did not ask for help in college because they were not always aware they needed it until they had already missed a crucial deadline or assignment. Other students reported they needed help with learning how to do work consistently and getting started on assignments but had trouble asking for this type of support. As one student put it,
Some of my professors...wanted to see drafts before I could sit down and work with them....and that’s what closed the door for me because I couldn’t produce what they wanted, and they’d set the bar too high, and I knew I couldn’t meet it....that’s where I stopped.

Constructive feedback. Several students (58%) talked about the importance of receiving objective feedback from instructors in college. Students generally stated it was important for people with whom they interacted to report calmly, candidly and without judgment what they were observing and not interpret the student’s failure to comply as an affront. One student reported that, when he checked in with a teacher about making up an assignment, the teacher took his request as a personal insult. “They were just like, ‘I can’t believe you’...they had the whole attitude, like, ‘I can’t believe you missed one of my assignments and how dare you insult me’ sort of thing.” When teachers interacted with him in this way, the student reported he would “slump into avoidance a lot.”

The students reported they appreciated college instructors who made their expectations and the consequences for not meeting them clear, but they also reported being more inclined to avoid teachers who adopted a judgmental tone, shamed/blamed them for issues related to ADHD, or who seemed to take it personally if they missed an assignment. Another student described an attempt he had made to approach an instructor at a prestigious college about a challenge he had encountered with an assignment. The instructor responded, “No, just, you do it or you don’t do it, I don’t believe in this whole ADHD nonsense,” a response that made the student far less inclined to approach his instructors in the future.

Parents. Although five of the 12 students interviewed (42%) reported they had sometimes benefitted from attempts made by parents or others to advocate on their behalf, they also explained that parents or tutors who attempted to take over the management of issues related to ADHD had a negative impact on their willingness to seek assistance in college. Students talked about parents who had advocated for them throughout high school and then expected them to be their own advocates in college; well-intentioned tutors who did a lot of the work for them, even to the point of writing out responses to some of their assignments; parents who advocated so strongly that students became reluctant to seek out accommodations at all, perceiving such requests for assistance to be “all about cheating the system;” or parents who hovered and/or were overly controlling, seizing on every opportunity to point out an assignment that needed attention or an appointment that needed to be made. Students explained how these approaches had led them to believe any help they sought in college was not likely to be particularly helpful.

Nine of 12 of the students (75%) reported an ambivalent attitude towards the support they had received from parents and others. On the one hand, students expressed appreciation for the somewhat intrusive support they had received from the people in their lives, which had helped to mediate some of their executive function challenges. They described parents who “worked very hard” on their behalf, and some attributed what they had learned about self-advocacy to behaviors their parents had modeled for them. On the other hand, in spite of recognizing “their [parents’] intentions were really good,” they also acknowledged that some of the intrusive support they had received had been “enabling,” had “hindered [their] assertiveness,” or resulted in them “not learning to do” things for themselves or “shutting down.”

The importance of providing support without being overly controlling, evaluative, or undermining the autonomy of others has been well established in research related to self-determination (Field, Sarver, & Shaw, 2003; Ryan & Deci, 2000). Students seemed aware of the availability and benefits of supportive interventions that promoted their autonomy compared to those that were more evaluative or controlling. However, students also seemed perplexed about how to navigate a clear path towards these supportive interventions in light of challenges related to executive function/self-regulation. The support these students described as most helpful requires striking a somewhat delicate balance between intrusive intervention and forms of assistance that promote autonomy by providing students with many opportunities for choice. It is likely that the sustainability of such a balance may be exacerbated by the nature of students’ executive function challenges and the shame related to these challenges.
Discussion

The students who participated in this study dropped out of postsecondary education despite possessing many of the competencies typically expected of college students. Through in-depth interviews, six broad themes emerged in students’ comments that relate to this study’s research questions. Within these six themes, several elements were highlighted by students. One recurring construct that emerged was a sense of shame, which students perceived to have deterred them from seeking support. A second construct that emerged was the extent to which students reported feeling better able to develop self-advocacy skills and an awareness of their strengths and limitations in an environment that supported their autonomy, alongside other students who shared a similar history of strengths and challenges. A final construct of note that surfaced in students’ responses was the importance of failure experiences to their overall sense of self-awareness, their willingness to change counterproductive behaviors, and their development of healthier coping strategies.

Shame and Stigma

An awareness and understanding of the complex interplay between shame, symptoms of ADHD, and student behavior is important for faculty and staff who may be in a position to facilitate the process of college transition for students with ADHD. A sense of shame was reported by a significant number of the students interviewed for this study. Many expressed uncertainty about the nature of ADHD and its impact on their behavior as well as a tendency towards avoidance as their primary method of coping. The sense of shame and uncertainty reported by these students may provide some insight into the difficulties some students with ADHD encounter as they attempt to advocate for themselves in college. How can one self-advocate from a place of uncertainty? How can one communicate assertively about needs that are so poorly defined and understood? How can one self-advocate without a belief in oneself as a person worthy of positive regard, respect, and a promising future?

According to Lewis (1992), shame can be defined as “the feeling we have when we evaluate our actions, feelings, or behavior, and conclude that we have done wrong” (p. 2). He further states that “to be in a state of shame I must compare my action against some standard, either my own or someone else’s. My failure, relative to the standard, results in a state of shame” (p. 29). In comparing shame and guilt, Lewis suggests that shame is much more severe than guilt. According to Lewis, guilt signals to the individual that he/she may have done something objectionable; shame signals to the individual, “You are no good” (p. 35). Unlike guilt, shame is about self, not about action; thus, rather than resetting the machine toward action, it stops the machine…That the violation involves the machine itself means, functionally, that all behavior ceases. The function, then, is to signal the avoidance of behaviors likely to cause it (Lewis, 1992, p. 35).

The connection between shame and action may be important to consider given the confusion regarding the nature of the disorder, specific challenges related to executive function, students’ self-reported tendency towards avoidance as a method of coping with ADHD, and Barkley’s (1997) contention that “ADHD is not a disorder of knowing what to do, but of doing what one knows” (p. 314).

Although some research examining the connection between shame and ADHD already exists (Heatherton, Heck, Klebl, & Hull, 2000; Kellison, Bussing, Bell, & Garvan, 2010; Weiner, 1993), additional research regarding the impact of society’s conceptualization of ADHD on shame and shame-related behaviors may be warranted in light of the aforementioned issues. As Barkley (1997) noted, society “finds it hard to accept the fact that such under controlled, poorly regulated, and impulsive patterns of behavior are anything but willful misconduct” (p. 320). The extent to which misunderstanding exists regarding the origins and progression of ADHD may be important to consider. This is particularly true given the finding that more negative reactions may be elicited by disorders believed to be within the control of afflicted individuals and the extent to which an ADHD diagnosis may adversely affect students’ efforts to establish an identity for themselves as they work towards understanding and accepting the disorder. The number of specific references to shame that emerged in participants’ responses raises questions about the psychological and emotional effects of the strategies these students employed to manage symptoms related to ADHD and the extent to which they may have internalized responsibility for symptomatic behaviors.
Inclusion and Autonomy Supportive Guidance

Several participants reported that after encountering failure at their previous college(s), being around other people with ADHD “helped to take some of the shame away” for them. They reported that seeing the same behaviors exhibited by others “took away a lot of the stigma” and convinced them that ADHD was in fact a real disorder. Disability support staff and related personnel are encouraged to help students with ADHD meet peers to minimize the stigmatizing effects of ADHD, particularly during their first year.

This study also reinforces the importance of students with ADHD being held accountable in non-judgmental ways. The participants reported experiencing this form of feedback at their current college. It facilitated their growing autonomy, helped them to become more aware of the impact of ADHD on their performance; allowed them to realistically assess their strengths and limitations; and encouraged them to develop more appropriate self-advocacy skills.

Failure Experiences

Due to the ahistoric nature of the disorder and the success some of these students were able to achieve in high school, it is possible that failure in college may have been a necessary first step towards their improved self-management of ADHD symptoms. Some students reported they “needed the hit” of failure in order to change behaviors and unproductive coping strategies. The tendency to “get by” in high school has been noted in prior accounts of the disorder, which suggest that ADHD symptoms (particularly symptoms of inattention) may not present problems for some higher functioning individuals until “the structure in their life decreases and the demands for concentration, focus, self-control, judgment, planning, and organization increase” (Nadeau, 1995, “DSM-IV Criteria for ADHD Primarily Inattentive Type,” para. 2). This phenomenon perhaps speaks to the importance of transition programs designed to assist these students in their second semester or second year of college when they may be more receptive to intervention.

The interventions that participants claimed had been most useful in helping them manage their ADHD and self-advocate underscore the importance of timely interventions and scaffolded support to facilitate the development of executive function skills:

Failure experiences are only learning experiences if they are mitigated. That is, students only learn from failure when they have the opportunity to try the experience again with a different strategy or level of intensity and succeed…It is quite possible that the school experiences of students with cognitive disabilities contain a unique mix of over-protection and failure experiences that contribute to external perceptions of control (Wehmeyer & Kelchner, 1996, p. 26).

As the present study reveals, when well-meaning family members, educators and related personnel work with students with ADHD, they often attempt to protect these students from failure. However, it may be the case that these students need to experience some failure in order to develop resilience and become effective self-advocates. Excessive failure may result in demotivation or complete disengagement, so it may be important to establish a balance between opportunities for risk taking in this regard and opportunities for constructive feedback and structured support.

Limitations

While the findings of this study are informative, they must be considered in light of some of the limitations of field research. Only 12 students were interviewed for this study, which represents a very small sample of college students. Although the present study included both genders, only four of the 12 students interviewed for the study were women. Several women who expressed interest in participating were excluded because they did not meet the inclusion criteria. Also, it must be noted that there was a lack of ethnic and socioeconomic diversity among the subjects.

Another limitation of the current study is that the findings are entirely based on student responses to interview questions. Additional information from parents and instructors might have provided a more complete picture of the obstacles to college adjustment and self-advocacy that exist for students in this particular sub-group. It is important to note, however, that the primary purpose of this study was to gain insight into what the students themselves perceived to be the obstacles to college adjustment and self-advocacy as they navigated the transition from high school and college. Findings can enrich our understanding of the most viable methods of intervention for college
students with an inattentive presentation of ADHD. It is possible that symptoms such as difficulty sustaining attention, attending to details, remembering daily tasks/appointments, and organizing tasks and activities have a unique impact on how these students perceive themselves and are perceived by others. Such knowledge is particularly important given students’ need to voluntarily self-advocate in college.

Although the consideration of multiple perspectives may have provided additional insight regarding the effects of the disorder, understanding the nature of ADHD and its effects from the perspective of students who must learn to manage its symptoms will help disability support service providers design more appropriate interventions for college students who fit this profile. As the current study suggests, a student’s perception regarding the extent to which support services are sensitive to the needs of individuals with executive function challenges can have a significant impact on his/her persistence and willingness to access resources. Student perspectives suggest that relatively minor adjustments to systems and procedures, such as minimizing the number of steps required to secure an appointment with a staff member, and offering more proactive vs. reactive assistance with task initiation and self-advocacy, are likely to be beneficial.

**Conclusion**

This study examined students’ perceptions of the impact of ADHD on their experiences interacting with others and advocating for themselves in social, educational, and employment settings; how other people in society view the disorder; methods that students have used to cope with ADHD; and interventions that have either helped or hindered their efforts to adjust to college and advocate for themselves effectively. Unable to meet college level expectations in at least one traditional postsecondary educational environment prior to attending their current college, participants provide a unique perspective on obstacles to successful college transition.

Perhaps one of the most important findings of this study is what students’ perceptions reveal about the complex interplay between shame, symptoms of ADHD, and behavior. It is possible that this interplay is more pronounced for students with an inattentive presentation of ADHD, who may be more inclined to internalize responsibility for ineffective behaviors associated with the disorder. Another important finding is what students’ perceptions reveal about the significance of accountability and autonomy support in facilitating self-determination, which has been noted in prior studies (Field & Hoffman, 2002; Parker & Boutelle, 2009). Many of the students reported that adults in their earlier school experiences had set them up for failure by providing too much or too little support for the development of their own executive function and self-advocacy skills. Several students indicated they were assumed to be intelligent and were not disruptive in class; consequently, they were not always held accountable for initiating tasks and following them through to completion. They also reported that well-intentioned parents or tutors had a tendency to take over tasks requiring executive function and self-advocacy skills. This tendency for well-meaning adults to “take over” may be exacerbated for students whose presenting symptoms are more severe. Even when these students are able to initiate tasks, following through on them may take more time than expected. As research related to self-determination and motivation suggests, when the adults in these students’ lives respond to their executive function challenges by becoming controlling or evaluative, the students may react by becoming “defensive” or “evasive.” They may blame others or become “highly self-deprecatory,” but under such circumstances they are unlikely to react in a way that results in “productive problem solving and effective performance” (Deci & Flaste, 1995, pp. 72-73).

The findings of the current study can inform interventions designed to improve the experiences of students with ADHD in college. The perceptions shared by the participants of this study speak to the importance of creating a culture of awareness on college campuses regarding the potentially debilitating effects of ADHD and other hidden disabilities. To lessen the disorder’s stigmatizing effects, myths and assumptions regarding the nature and origins of ADHD should be exposed and discussed—along with what is now understood about the mechanisms underlying the various presentations of the disorder and symptomatic behaviors. Information about ADHD and executive function; medication management; the rationale for seeking reasonable accommodations; and the theory behind services designed to enhance self-regulation and promote self-determination, such as ADHD coaching, should be explained and made readily available to students, teachers, staff, and parents. This information
could be disseminated through a variety of presentations, demonstrations, and/or professional development activities. Finally, this study suggests the importance of creating a college climate that serves to validate instead of trivialize the effects of ADHD; an environment in which students are encouraged to appreciate their strengths and accept their limitations. In order to construct an environment that students with ADHD perceive to be authentic in this regard, it’s crucial that the steps and procedures required for students to access appropriate support services are streamlined and implemented by individuals mindful of the self-regulatory strategies required to follow them.

References


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Appendix

Interview Questions:

1. How would you describe the impact that ADHD has on the way you interact with others in social, educational, and/or work settings?

2. Can you describe situations in which you have asked for help with issues related to ADHD?

3. How have you coped with having an ADHD diagnosis? Can you describe specific interactions with others in educational, work, or social situations that have had an impact on the way in which you cope with ADHD?

4. What is your perception about how people in society think and feel about ADHD?

5. How do you decide whether or not to disclose that you have a diagnosis of ADHD? When you do decide to disclose, how do you explain ADHD to others?

6. To what extent do you feel that society perceives ADHD in a different light from other learning difficulties (like dyslexia or Asperger's)?

7. What do you think is the most important thing for adults to know and do to prepare students with ADHD to communicate their needs assertively in postsecondary educational environments?

8. To what extent has ADHD changed the way you perceive your strengths and weaknesses as a student, the way in which you interact with other students who do not share an ADHD diagnosis, and the level of success and independence you feel you can achieve as a student/future employee?

9. Can you describe specific things people (parents, teachers, students, administrators, other staff members etc.) have said or done that have either helped or hindered your efforts to communicate more assertively in educational, occupational, and/or social situations?

10. What medication/ non medication interventions have helped you address/manage some of the symptoms associated with ADHD?
Vocabulary Knowledge of Deaf and Hearing Postsecondary Students

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Abstract
Deaf children generally are found to have smaller English vocabularies than hearing peers, although studies involving children with cochlear implants have suggested that the gap may decrease or disappear with age. Less is known about the vocabularies of deaf and hard-of-hearing (DHH) postsecondary students or how their vocabulary knowledge relates to other aspects of academic achievement. This study used the Peabody Picture Vocabulary Test to examine the vocabulary knowledge of DHH and hearing postsecondary students as well as their awareness (predictions) of that knowledge. Relationships between vocabulary knowledge and print exposure, communication backgrounds, and reading and verbal abilities also were examined. Consistent with studies of children, hearing college students demonstrated significantly larger vocabularies than DHH students both with and without cochlear implants. DHH students were more likely to overestimate their vocabulary knowledge. Vocabulary scores were positively related to reading and verbal abilities but negatively related to sign language abilities. Among DHH students they also were positively related to measures of spoken language ability. Results are discussed in terms of related cognitive abilities, language fluency, and academic achievement of DHH students and implications for postsecondary education.

Keywords: Hearing loss, achievement, vocabulary, language, metacognition

This paper concerns the English vocabulary knowledge of postsecondary deaf and hard-of-hearing (DHH) students and their relative awareness of that knowledge as a function of several factors related to language and learning. According to the U.S. Department of Education, there are over 135,000 DHH students enrolled in postsecondary institutions in the United States, 54.5% of them in two-year programs and 43.4% of them in four-year programs, more than ever before (National Center for Education Statistics, 2008). Their persistence and graduation rates, however, are far below those of hearing students, due at least in part to their relatively poor English1 language abilities. Qi and Mitchell (2012), for example, reported that the median reading level for 18-year-old DHH high school students was about the same as hearing 9- to 10-year-olds (4th grade), a situation that has changed little over the last

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1 Although most of the relevant research in this area has involved “English,” the term is used generically here to refer to any written/spoken language.
40 years. While they and others have provided detailed information concerning reading subskills of students in primary and secondary education (see Marschark & Spencer, 2011, chapters 7-10), much less is known about those subskills among DHH students in postsecondary education settings. The study described here focused on lexical knowledge in that population and its relation to reading and other academic skills.

The existing literature with regard to DHH students’ lexical knowledge is bifurcated, with a number of studies demonstrating quantitative differences in the English lexicons of younger DHH and hearing students (see below), and others demonstrating qualitative differences in the lexical knowledge of postsecondary DHH students. McEvoy, Marschark, and Nelson (1999) and Marschark, Convertino, McEvoy, and Masteller (2004) used single word association tasks to examine the organization of English lexical knowledge in DHH and hearing college students, finding both between-group differences and greater variability among their DHH students than the hearing students. Words in DHH students’ English lexicons were found to be less strongly interconnected (e.g., as indicated by primary associate strengths) and more idiosyncratic than those of hearing peers. Such findings have not yet been connected directly to learning outcomes or achievement, but they are associated with the well-documented reading challenges observed among DHH students at all levels (Spencer & Marschark, 2010; Chapter 6). The causes of such differences, as well as of the academic challenges to which they are related, are more complex.

Educating DHH Students

An in-depth history of deaf education is beyond the scope of the present paper (see Lang, 2011). It is important to note, however, that the history is a controversial one, particularly with regard to the language(s) of instruction, which might affect DHH students’ vocabulary knowledge. In the United States, prior to passage of the Education for All Handicapped Children Act of 1975 (P.L. 94-142), 80% of DHH children were educated in special settings where instruction was most often offered through some form of signed communication. Today, more than 85% spend all or part of the school day in regular schools (Data Accountability Center, 2008). These classrooms may be bilingual with sign language support provided by a sign language interpreter or via co-enrollment program-
abilities (e.g., Padden & Ramsey, 2000; cf. Holzinger & Fellinger, 2014). They also suggest that the provision of sign language interpreting in postsecondary settings may not be sufficient to provide DHH students with full access to communication in the classroom.

One factor that might help to explain DHH students’ difficulties in comprehending and learning from text relative to hearing peers is their vocabulary knowledge (Hanson, Shankweiler, & Fischer, 1983; Hermans, Knoors, Ormel, & Verhoeven, 2008). A number of investigators have noted that because of their hearing losses and related barriers to language and social interaction, DHH youth have fewer opportunities for vocabulary learning than their hearing age-mates, a situation that has long-term academic consequences (Easterbrooks & Estes, 2007; Trezek, Wang, & Paul, 2010). LaSasso and Davey (1987) and Paul and Gustafson (1991) demonstrated significant relations between vocabulary knowledge and reading achievement among DHH students in middle school and high school. But the importance of vocabulary knowledge in text comprehension goes beyond the individual word, also supporting higher-level aspects of processing including relational and inferential processing (Cain & Oakhill, 1999; Sénéchal, Ouellette, & Rodney, 2006), areas in which DHH students have been documented to have particular difficulty. Thus, even when they are provided with vocabulary support (e.g., contextually-relevant definitions), postsecondary DHH students have been found not to have sufficient facility with English vocabulary to benefit fully from age-appropriate reading materials (Borgna et al., 2011).

Intertwined with the findings described above are others from recent investigations demonstrating lesser accuracy (i.e., overestimation) among DHH than hearing postsecondary students in judging how much they understand and learn from reading and classroom instruction (e.g., Borgna et al., 2011; Marschark, Sapere, Convertino, & Seewagen, 2005). Results in this regard have been consistent across studies involving a variety of content presented via sign language, spoken language, real-time text, and printed materials. That phenomenon appears tied to underutilization of metacognitive resources for comprehension monitoring rather than indicating any generalized overestimate of their abilities or “self-aggrandizement” (see Kruger & Dunning, 1999; Stanovich & Cunningham, 1992, with regard to hearing students; and Marschark, Sarchet et al., 2012, with regard to DHH students). All of the relevant studies, however, have involved connected discourse. Beyond one study involving high school students (Krinsky, 1990), we are not aware of any investigations that have examined DHH students’ metacognitive or metacomprehension accuracy at the level of individual words. The present study therefore was designed to examine postsecondary DHH and hearing students’ (English) vocabulary knowledge as well as their accuracy in assessing that knowledge.

The Peabody Picture Vocabulary Test (PPVT) was the vocabulary measure of interest here, both because of its frequent use in previous studies involving DHH learners and because of its suitability for use across a wide age range. The PPVT is a well-documented receptive vocabulary test that has been normed for individuals across a wide age range and has proven extremely valid and reliable (coefficients > .90). Scoring provides age- and grade-based standard scores and percentiles as well as age and grade equivalents. With items at a broad range of difficulty level, the PPVT has been used with diverse populations including DHH children and young adults varying along dimensions such as early language experience, primary mode of communication (signed or spoken language), use of cochlear implants, and cognitive ability.

PPVT as a Measure of Vocabulary Knowledge Among DHH Students

Lesser vocabulary knowledge among DHH children than hearing children has long been acknowledged, at least for those with hearing parents (e.g., Griswold & Commins, 1974; Meadow-Orlans, 1987; see Spencer & Harris, 2006, for a review). Longitudinal studies of young deaf children of deaf parents also have revealed smaller sign language vocabularies in those children by age 3 (Anderson & Reilly, 2002; Woolfe, Herman, Roy, & Woll, 2010). Further, although it is frequently claimed that deaf children of deaf parents demonstrate greater literacy skills than deaf children of hearing parents, the research actually demonstrates only a correlation between the sign language skills of those children and their reading abilities; similar correlations are obtained between the spoken language skills of deaf children and their reading abilities (see Marschark & Lee, 2014). For the present purposes, we consider only DHH students’ vocabulary knowledge in the written/spoken vernacular (i.e., English). Recent research, however, has suggested that some forms of bilingual deaf education may provide those students...
with total, signed and spoken vocabularies quantitatively comparable to the vocabularies of monolingual or bilingual hearing peers (Rinaldi, Caselli, Onofrio, & Volterra, 2014). Qualitative aspects of such vocabulary knowledge have not yet been explored.

Geers (2006) noted that DHH children who rely on spoken language and “conventional amplification” (e.g., hearing aids, FM systems) typically develop language at about half of the rate of hearing children, averaging language delays of four to five years by the time they enter high school. Although evidence concerning the vocabulary knowledge of DHH students at the postsecondary level is scarce (Auer, Bernstein, & Tucker, 2000), the PPVT has been used in a variety of studies to evaluate that knowledge in younger DHH students (e.g., Eisenberg, Kirk, Martinez, Ying, & Miyamoto, 2004; Moeller, 2000; Moeller, Osberger, McConkey, & Eccarius, 1981). In general, those studies have indicated, somewhat surprisingly, that English vocabulary knowledge is independent of whether DHH students rely primarily on sign language or spoken language. This finding presumably reflects the emphasis on reading English in school regardless of a student’s primary mode of interpersonal communication.

Similar results have been obtained from studies involving DHH children with cochlear implants. Although benefits decrease with age (see Spencer, Marschark, & Spencer, 2011), cochlear implants improve hearing and speech for most deaf children with profound hearing losses and, partly as a result, they often demonstrate higher levels of reading achievement, at least in lower grades (e.g., Archbold et al., 2008; Geers, Tobey, Moog, & Brenner, 2008). Because in the United States implants were approved for use with children as young as 2 years only in 1990 and those as young as 18 months in 2002, studies addressing achievement among early-implanted high school and postsecondary students are not yet available. In a study involving a nationally-representative sample of more than 450 DHH students aged 13-16 years, however, Marschark, Nagle, Shaver, and Newman (in press) found that achievement in reading, mathematics, social science, and science was unrelated to whether or not students used cochlear implants when other variables were controlled. Convertino, Marschark, Sapere, Sarchet, and Zupan (2009) similarly found that implant use was not a significant predictor of classroom learning in a sample of over 750 DHH postsecondary students when other factors were controlled.

Fagan, Pisoni, Horn, and Dillon (2007) found PPVT scores among 6- to 14-year-old deaf children with cochlear implants to be well below those of hearing age-mates. However, when Fagan and Pisoni (2010) reanalyzed their earlier data utilizing hearing age, the length of time the children had used their cochlear implants, rather than chronological age, they found the children’s PPVT scores to fall within the average range. Stelmachowicz, Pittman, Hoover, and Lewis (2004) found lower PPVT scores in deaf children with cochlear implants than their hearing peers, but a steeper slope in the regression line relating PPVT scores to age led them to hypothesize that lags in vocabulary growth among children with implants might disappear as they get older. A similar hypothesis was put forward by Hayes, Geers, Treiman, and Moog (2009), given the rapid growth in PPVT scores they observed in children following cochlear implantation. Conner, Craig, Raudenbush, Heavner, and Zwolan (2006), however, found that earlier implantation was associated with greater rates of PPVT vocabulary growth only up to four years after implantation, after which vocabulary growth rates were the same regardless of the age of implantation.

Although the Stelmachowicz et al. (2004) and Hayes et al. (2009) proposal does not appear to match the experiences of most teachers of DHH children or the available data (see Luckner & Cooke, 2010), there is a methodological difficulty involved in the above studies. Standard administration of the PPVT involves the examiner saying a stimulus word and the examinee pointing to the appropriate picture, clearly creating a bias against DHH individuals, even if they use cochlear implants. Some of the studies above presented the PPVT stimulus words in both speech and sign (“simultaneous communication”), but most children who use cochlear implants depend on spoken language, and it is unclear how much they would benefit from the additional signs (but see Giezen, Baker, & Escudero, 2014). Most of the research described above simply did not address the language modality issue, assuming that children who relied on spoken language had sufficient skills for purposes of the PPVT.

In order to avoid a bias against children who used sign language, Forde (1977) and Bunch and Forde (1987) created print forms of the PPVT. Although the results were not compared to the hearing norms, Forde found consistent increases in vocabulary growth in his DHH students until the sixth grade, followed by a slight decrease among his oldest group of 13- to
Bunch and Forde obtained similar results with a greater decline in the oldest group (13-14 years). Radić, Bradarić-Jončić, and Farago (2008) also created a print version of the PPVT for use with DHH students, with the stimulus words printed in Croatian. Thirty-five percent of the 15- to 21-year-olds had cochlear implants, although the average age of implantation was 13 years. Overall, mean scores were at the level of 10-year-old hearing children according to American norms, and there was no difference between students with and without cochlear implants.

In summary, the above studies are consistent in documenting DHH children’s smaller vocabularies in the written/spoken vernacular than hearing age-mates across a wide age range (and using various editions of the PPVT). English vocabulary differences are not found between those students who rely on spoken language and those who rely on sign language or between those who use cochlear implants and those who do not. Still to be determined is whether the vocabulary gap between DHH children with cochlear implants and their hearing peers really does disappear with age, as suggested by Stelmachowicz et al. (2004) and Hayes et al. (2009), and whether language skills in spoken versus sign language emerge as predictors of vocabulary at some later point. These issues were addressed in the present study together with questions concerning postsecondary DHH and hearing students’ awareness of their vocabulary knowledge.

The Present Study

There were two primary motivations for the present study, both alluded to above. First is a general interest in understanding qualitative and quantitative aspects of postsecondary DHH students’ lexical knowledge as it relates to their reading experience and to learning more generally. Marschark and Knoors (2012) described the importance of understanding differences between the ways that DHH and hearing students organize and use their lexical and world knowledge, a matter of particular importance as increasing numbers of DHH students find their way into mainstream postsecondary classrooms. Although such differences have not previously been examined in the context of academic achievement, McEvoy et al. (1999) and Marschark et al. (2004) showed that hearing college students have stronger associations between words and their primary associates and that DHH students are more heterogeneous in their associations among lexical concepts, both factors assumed to affect reading. Those findings led us to expect that in the present study hearing students would demonstrate greater vocabulary knowledge than DHH students, even though all of them were college students and thus a more selective sample than those in studies involving younger students.

Consistent findings indicating that DHH college students overestimate their world and academic knowledge to a greater extent than hearing peers (e.g., Borgna et al., 2011; Marschark et al., 2005) led us to expect a similar finding with regard to vocabulary knowledge. Toward this end, prior to administration of the PPVT, each student in the present study was given a list of all of the stimulus words and was asked to identify those for which they knew the meanings.

The issue of DHH and hearing college students’ accuracy in predicting their vocabulary knowledge, and the second motivation for this investigation, relate to a study by Auer et al. (2000). That study is apparently the only other one that has utilized the PPVT with postsecondary students. Auer et al. were interested in DHH and hearing individuals’ recognition of printed words as a function of word frequency and familiarity, expecting that because of their lesser exposure to English, DHH individuals would give lower familiarity ratings. A print version of the PPVT was administered to provide an independent index of vocabulary knowledge. DHH participants in the Auer et al. study were all university undergraduates who utilized spoken or signed English but self-reported English as their first language. The hearing participants were either graduate students, university employees, or employees of the investigators’ clinical/research center. Consistent with their expectations, the investigators found that the DHH students rated words as less familiar than the hearing participants. Given the lack of language-related differences in the studies described earlier, however, it is unclear whether those results were the result of the English skills of the DHH and hearing participants or differences in their educational levels. The present study therefore involved samples of hearing and DHH students attending the same university, including examination of their academic credentials, communication histories, and print exposure.
Method

Participants

A total of 93 DHH students and 97 hearing university students at Rochester Institute of Technology (RIT) volunteered to participate in the study for $10 each. RIT includes the National Technical Institute for the Deaf (NTID) as one of its nine colleges, but DHH and hearing students were drawn from programs across the university. Participation involved completing the PPVT and the corresponding pretest vocabulary checklist, a Title Recognition Test tapping students’ reading backgrounds (i.e., print exposure; Stanovich & Cunningham, 1992), and a communication questionnaire. Students also gave the investigators permission to access university entrance scores from institutional records. Hearing thresholds (pure tone averages in the better ear or PTA) were available for 86 of the DHH participants. The mean PTA was 87.2 dB (SD = 30, range = 37-120). Twenty-nine deaf students indicated that they used cochlear implants (mean age of implantation = 8.6 years).

Materials and Procedure

The following tasks were administered by one of two researchers, both of whom were also highly skilled sign language interpreters with more than a decade of experience in the RIT setting. As students appeared at the laboratory, they were given the pencil-and-paper tasks and the PPVT in the order below. Instructions and explanations were provided to students in sign language, spoken language, or both, depending on student hearing status and preference. None of the tasks was timed.

PPVT Pretest. The first task involved a list of the 120 stimulus words to be used in administration of the PPVT (see below). Students were told: “If you know the meaning of the word, please put a check in the box next to it.”

Title Recognition Test. The Title Recognition Test (TRT) was developed by Marschark, Sarchet et al. (2012) in their examination of relations among print exposure, academic achievement, and reading habits of DHH college students. That TRT is patterned on TRTs used by Stanovich and colleagues (e.g., Stanovich & Cunningham, 1992) and includes 80 real book titles and 80 invented foils. Within the list of real titles, 20 correspond to reading materials appropriate for kindergarten through third grade, 20 for fourth to sixth grade, 20 for seventh to eighth grade, and 20 for ninth to 12th grade. The foils were created so as to similarly parallel the same grade levels, 20 in each. In the present study, only the 120 titles appropriate for fourth to 12th grade were used, parallel to the PPVT stimulus range. Students saw a randomly-ordered list of the titles and simply checked a box next to each of the titles that they recognized, whether or not they had read them.

PPVT. Each stimulus set in the PPVT-4 (Dunn & Dunn, 2007) contains 12 words and a corresponding stimulus card containing four pictures. The task normally is administered (to hearing individuals) by the examiner saying an English word and having the examinee point to the corresponding target picture. Because many of the PPVT pictures are not simple referents of words/signs and because the study involved a sample of university students, the task was modified to allow presentation of a printed word followed by an appropriate pointing response. This study utilized PPVT-4 item Sets 9 (age 10) through 18 (adult), for a total of 120 items being presented to each student. Each of the 120 stimulus cards was scanned (black-and-white) and placed on a PowerPoint slide, completely filling the slide, with an item number (1-120) and the appropriate stimulus word printed in the center in 24-point Calibri font. Students worked through the 120 items in the prescribed order either on a laptop computer or a Barnes & Noble Nook™. With the former, they indicated their response on an answer sheet; with the latter, they pressed the appropriate response picture on the screen, which was recorded by the Nook.

Communication Questionnaire. The language and communication skills of DHH students entering RIT are evaluated for the purposes of service provision through the Language and Communication Background Questionnaire (LCBQ). RIT utilizes this pencil-and-paper self-report measure instead of face-to-face communication interviews because it is faster than interview assessments, can be administered online, and correlates around .80 with interview assessments (McKee, Stinson, & Blake, 1984). The version of the LCBQ used here asked DHH students the age at which they learned to sign and had them rate their skills in understanding and producing ASL, signed English (without voice), simultaneous communication (speech and sign together), and their skill in understanding spoken language (without sign), all rated along five-point scales. In addition, they were asked to indicate their preferences for using ASL versus signed English and sign language versus spoken language as well as their
use of hearing aids and cochlear implants. The communication questionnaire given to the hearing students asked, among other things, “How much American Sign Language do you know?” Response choices were “I don’t know any,” “I know a little,” “I am able to have a conversation,” and “I’m fluent,” which were scored as 0 to 3, respectively.

Scoring

For each student, several PPVT measures were calculated. Using the standard scoring method for the PPVT-4 (Dunn & Dunn, 2007), Set 9 was considered the **basal set** and the **ceiling item** was the last item in the **ceiling set**, that is, the last item in the set in which the individual had eight or more errors (normally, testing would end when eight errors were made in a set). This allows calculation of a standard score and, using the student’s birthdate, an age-adjusted percentile score. In addition, for each student, the number of PPVT overestimates (items that students indicated on the pretest that they knew but which they got wrong), the number correct in each set, and the total number correct were obtained for the analyses described below.

TRT scores are obtained by subtracting the number of foils incorrectly identified from the number of real titles checked by each student. This provides a corrected estimate of students’ print exposure (Stanovich & Cunningham, 1992). In addition to a total TRT, separate TRTs were calculated for each of the three (age) levels of book titles.

College entrance scores were available for 176 of the students (86 DHH, 90 hearing). RIT permits prospective students to take either the American College Test (ACT) or the SAT. Most DHH students take the ACT, most hearing students take the SAT, and some students take both. In order to have a single verbal score for the purposes of this study, we utilized the ACT/SAT conversion recommended by the College Board (Dorans, 1999, p. 13) which converts SAT Verbal scores to a composite verbal score corresponding to ACT Reading + English scores.

Results

In the following, unless indicated otherwise, all and only those effects reported were significant at the .05 level.

PPVT

Because the addition of stimulus words to the PPVT cards was non-standard, the reliability of the scores was evaluated using Cronbach alpha analyses for all 120 items. Scores proved highly reliable for both DHH (alpha = .92) and hearing (alpha = .81) students. Consistent with previous studies involving children, the hearing college students obtained higher PPVT scores than the DHH college students using both PPVT standard scores, $F(1, 189) = 197.78$, MSE = 141.95, and percentiles, $F(1, 189) = 260.84$, MSE = 379.48, as dependent variables in a one-way ANOVAs.

In order to examine possible differences between DHH and hearing students in the vocabulary intended for individuals of different ages, the number of items correct in each of the 10 vocabulary sets administered, Sets 9 (age 10) through 18 (adult), was examined using a 2 (hearing status) by 10 (vocabulary sets) ANOVA in which the second factor was within subjects. In addition to a main effect of hearing status, $F(1, 188) = 192.38$, MSE = 13.70, reflecting the better performance of the hearing students, and a main effect of set, $F(1, 18) = 481.70$, MSE = 1.87, reflecting the greater difficulty (lower scores) of sets intended for older individuals, there was also a significant interaction of hearing status and set, $F(1, 189) = 38.82$. As can be seen in Figure 1, hearing students scored near the maximum of 12 correct in Sets 9 through 14 (age 16) before their scores showed a large drop, whereas a comparable drop in the DHH students’ scores occurred with Set 11 (age 13). The largest drop for the hearing students (from Set 16 to Set 17) occurred two sets later than it did for DHH students (from Set 14 to Set 15), although both were in the range of stimuli for ages 19 to adult. Independent sample t-tests indicated that all of the differences between the two groups were significant, all $t$s(188)>4.58. The DHH and hearing students’ mean PPVT standard scores of 82.06 and 106.34, respectively, were very close to the 89.9 and 109.5, respectively, reported for DHH students by Auer et al. (2000).

Students’ beliefs about their vocabulary knowledge, that is, words they had indicated they knew prior to completing the PPVT, were analyzed using a similar
2 (hearing status) by 10 (vocabulary sets) ANOVA with overestimates as the dependent variable. Within each set, overestimates were the number of items that students indicated they knew but on which they subsequently were incorrect. The analysis yielded a significant main effect of hearing status, $F(1, 188) = 271.84, \text{MSE} = 9.35$, as DHH students overestimated their vocabulary knowledge to a greater extent than hearing students, a significant main effect of set, $F(1, 188) = 1.69, \text{MSE} = 1.53$, as overestimates generally increased with set difficulty, and a significant hearing status by set interaction, $F(1, 188) = 14.67$. As can be seen in Figure 2, overestimates largely tracked the total correct in each set (and hence the number of errors). Independent sample a priori $t$-tests indicated that DHH students overestimated their performance significantly more than hearing students in Sets 9 through 16, all $t$s(188) > 2.98, but the two groups did not differ in the most difficult Sets 17 and 18, $t$s(188) < 1. A similar set of within-subjects analyses examined students’ estimates relative to the actual number correct in each set (essentially, the difference in the data points in Figures 1 and 2). DHH students significantly overestimated their scores in each set, all $t$s(92) > 5.45. Hearing students did so only on Set 17, $t$(96) = 2.54, while they underestimated their performance on Set 14, $t$(96) = -3.81 and Set 16, $t$(96) = -2.22.

**Print Exposure**

Consistent with the findings of Marschark, Sarchet, et al. (2012), the hearing students had significantly higher TRT scores than the DHH students, $F(1, 189) = 11.27, \text{MSE} = 156.50$, indicating greater print exposure. Examination of TRT scores at the three different reading levels utilized a 2 (hearing status) by 3 (reading level: grades 4-6, 7-8, 9-12) ANOVA in which the second factor was within subjects. Hearing students’ TRT scores were considerably higher than those of the DHH students, $F(1, 175) = 245.11, \text{MSE} = 80.03$. The relations among students’ verbal composite scores, their PPVT scores (standard, percentile, overestimates), and their TRT scores first were examined using Pearson correlations. Table 2 provides the correlation coefficients for DHH and hearing students (in the top half and bottom half, respectively), where it can be seen that the two groups demonstrated essentially the same pattern of relations among those variables. Beyond composite verbal scores, ACT Reading Comprehension scores were available for 81 of the DHH students and 44 of the hearing students (see Table 2). Among the DHH students, those scores were significantly related to both PPVT standard scores, $r$ (80) = .59, and PPVT percentiles, $r$ (80) = .60. In the smaller group of hearing students, ACT those scores were significantly related to both PPVT standard scores, $r$ (43) = .50, and PPVT percentiles, $r$ (43) = .54.

DHH students who reported that they had a cochlear implant (29) were not significantly different in their TRT, PPVT, or verbal scores from the students who did not (61), all $t$s(88) < .96 (3 of the 93 DHH students did not answer the relevant question). Relations among the DHH students’ communication skills and their TRT, PPVT, and verbal scores were evaluated using Pearson correlations. As can be seen in Table 3, DHH students’ self-rated spoken language comprehension skills and their preferences for spoken language over sign language were positively related to both their PPVT scores and their verbal composite scores. DHH students’ ASL comprehension and production skills were negatively related to their PPVT scores, and ASL production skills were negatively related to their composite verbal scores. Better ASL comprehension skills were associated with more PPVT errors.

While the above pattern of results might be interpreted to indicate that DHH students who use spoken language have an academic advantage, at least with regard to their English vocabularies, one puzzling finding suggests caution in that regard. Although just over 37% of the hearing students indicated that they knew no ASL and less than 15% indicated that they knew enough to carry on a conversation, self-ratings of their ASL skills were significantly related to both their PPVT percentile scores, $r$ (89) = -.25, and their verbal scores,
Figure 1. Deaf and hearing students’ PPVT mean scores per set (maximum=12)

Figure 2. Deaf and hearing students’ overestimates of PPVT word knowledge (maximum=12)
Table 1

Means (standard deviations) for Title Recognition Test (TRT), Peabody Picture Vocabulary Test (PPVT), Composite Verbal Scores, and ACT Reading Comprehension Scores

<table>
<thead>
<tr>
<th></th>
<th>Deaf</th>
<th>Hearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRT Total</td>
<td>.08 (6.14)</td>
<td>6.36 (17.03)</td>
</tr>
<tr>
<td>TRT Grades 4-6</td>
<td>-.22 (2.32)</td>
<td>2.14 (4.98)</td>
</tr>
<tr>
<td>TRT Grades 7-8</td>
<td>1.17 (2.49)</td>
<td>3.19 (6.52)</td>
</tr>
<tr>
<td>TRT Grades 9-12</td>
<td>-.88 (2.88)</td>
<td>1.03 (.36)</td>
</tr>
<tr>
<td>PPVT Standard Score</td>
<td>82.06 (14.47)</td>
<td>106.34 (8.79)</td>
</tr>
<tr>
<td>PPVT Percentile</td>
<td>19.43 (19.60)</td>
<td>65.09 (19.37)</td>
</tr>
<tr>
<td>PPVT Overestimates</td>
<td>15.46 (12.92)</td>
<td>7.67 (4.80)</td>
</tr>
<tr>
<td>Composite Verbal Score</td>
<td>33.55 (8.58)</td>
<td>54.67 (9.28)</td>
</tr>
<tr>
<td>ACT Reading Comprehension</td>
<td>18.35 (4.70) [n=81]</td>
<td>27.52 (5.20) [n=44]</td>
</tr>
</tbody>
</table>

Table 2

Correlation Coefficients for Title Recognition Test (TRT), Peabody Picture Vocabulary Test (PPVT), and Composite Verbal Scores for Deaf Students (upper half) and Hearing (lower half) Students.

<table>
<thead>
<tr>
<th></th>
<th>PPVT Standard Score</th>
<th>PPVT Percentile</th>
<th>PPVT Overestimates</th>
<th>Composite Verbal Score</th>
<th>TRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPVT Standard Score</td>
<td>–</td>
<td>.89**</td>
<td>-.49**</td>
<td>.61**</td>
<td>-.07</td>
</tr>
<tr>
<td>PPVT Percentile</td>
<td>.98**</td>
<td>–</td>
<td>-.40**</td>
<td>.62**</td>
<td>-.04</td>
</tr>
<tr>
<td>PPVT Overestimates</td>
<td>-.56**</td>
<td>-.57**</td>
<td>–</td>
<td>-.22*</td>
<td>.03</td>
</tr>
<tr>
<td>Composite Verbal Score</td>
<td>.65**</td>
<td>.68**</td>
<td>-.27*</td>
<td>–</td>
<td>.13</td>
</tr>
<tr>
<td>TRT</td>
<td>.06</td>
<td>.03</td>
<td>-.14</td>
<td>.07</td>
<td>–</td>
</tr>
</tbody>
</table>

Note. * p < .05   ** p < .01
Table 3

Correlation coefficients for TRT, PPVT, composite verbal scores, and deaf students’ communication

<table>
<thead>
<tr>
<th></th>
<th>PPVT Standard Score</th>
<th>PPVT Percentile</th>
<th>PPVT Verbal Score</th>
<th>Age Learn to Sign</th>
<th>Receptive Skill</th>
<th>Expressive Skill</th>
<th>Prefer ASL vs. English Sign</th>
<th>Prefer Sign vs. Speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRT</td>
<td>-0.07</td>
<td>-0.04</td>
<td>0.03</td>
<td>0.13</td>
<td>0.01</td>
<td>0.04</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>PPVT Standard Score</td>
<td>-0.07</td>
<td>-0.04</td>
<td>0.03</td>
<td>0.13</td>
<td>0.01</td>
<td>0.04</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>PPVT Percentile</td>
<td>-0.07</td>
<td>-0.04</td>
<td>0.03</td>
<td>0.13</td>
<td>0.01</td>
<td>0.04</td>
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<td>0.03</td>
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<td>-0.04</td>
<td>0.03</td>
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<td>0.01</td>
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<td>0.06</td>
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<tr>
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<td>0.03</td>
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<td>0.04</td>
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<td>English Signing</td>
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<td>0.03</td>
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<td>Preference for Sign vs. Speech</td>
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Note. * p < .05    ** p < .01
In an effort to determine whether the negative relations between ASL skills and vocabulary scores among older hearing students were specific to sign language or a more general effect of second language skill, follow-up queries were sent to all 97 of the hearing students. They were asked to rate their second (spoken) language skills using the same scale as they had rated their ASL skills: “I don’t know any,” “I know a little,” “I am able to have a conversation,” and “I’m fluent,” which again were scored as 0 to 3 respectively. Sixty (62%) of the students responded. Correlations among their second spoken language skill, ASL skills, PPVT scores, TRT, and composite verbal scores indicated no significant relations, all $r$s ($59) < .16.

A final set of analyses sought to predict composite verbal scores separately for the DHH and hearing students. The stepwise multiple regression analysis for hearing students, including PPVT scores (standard, percentile, overestimates) and TRT scores as the predictor variables, yielded only the PPVT percentile score as a significant predictor, accounting for 46% of the variance ($\beta = .68$). The analysis of the DHH students’ data also included self-ratings of their communication skills and their hearing thresholds. Their PPVT percentile scores accounted for 39% of the variance ($\beta = .62$), with an additional 4% accounted for by their rated comprehension of signed English (total model $\beta = 1.46$).

**Discussion**

The present study examined DHH and hearing postsecondary students’ vocabulary knowledge and their awareness of that knowledge as a function of several factors related to language and learning. Carver (1994) suggested that comprehension will be significantly impeded if a reader does not understand at least 90% of the words in a text. Consistent with previous studies primarily involving younger students, the large sample of DHH college students in the present study scored lower on the PPVT than did their hearing peers, correctly identifying words at that 90% criterion only in sets intended for 9- to 10-year-olds. Earlier studies by Forde (1997), Bunch and Forde (1987), and Moeller et al. (1981), however, had observed plateaus in PPVT scores among DHH students during their teenage years, even though Moeller et al. saw significant vocabulary growth in high school students. Whatever the locus of the observed plateau, the present results indicated that DHH students’ vocabulary knowledge continues to lag behind hearing peers into the postsecondary years. For both DHH and hearing students, PPVT scores were significantly related to reading ability and general verbal ability as indexed by college entrance scores. Indeed, the PPVT was the most potent predictor of students’ composite verbal scores.

Stelmachowicz et al. (2004) and Hayes et al. (2009) had found rapid growth in vocabulary after children had received cochlear implants, leading both sets of investigators to suggest that DHH children are likely to catch up with their hearing peers if they used implants. As in previous studies involving children (Conner et al., 2006; Fagan et al., 2007), cochlear implants and hearing thresholds were not related to vocabulary scores among the DHH college students in the present study, although the late mean age at implantation in the present sample, like that of Radić et al. (2008), makes any strong conclusion in that regard tenuous. Pediatric cochlear implantation clearly has a significant positive impact on the hearing, speech, and academic abilities of DHH children even if they still generally lag behind hearing peers in all of these domains (see Spencer et al., 2011). Whether or not those gaps will close for individuals receiving their devices at “the new early” age of 12 months and younger remains to be seen.

Beyond having smaller vocabularies than hearing peers, the postsecondary DHH students in this study were less accurate in predicting which words they did know. As a group, the DHH college students significantly overestimated their vocabulary knowledge in all 10 of the vocabulary sets and did so to a significantly greater extent than the hearing students. Those findings extend earlier findings in which postsecondary DHH students were found to overestimate their language comprehension and learning in the classroom to a greater extent than hearing students regardless of whether information was presented through spoken language, sign language, or text (e.g., Marschark, Saper, et al., 2005). Borgna et al. (2011) suggested that the locus of such metacognitive inaccuracy might lie in the unskilled and unaware effect (Kruger & Dunning, 1999), as lesser content knowledge and language fluencies may leave DHH students with the “double burden” of poor comprehension and less awareness of it. In the case of vocabulary, weaker associations among lexical concepts also reflect more diffuse associative structures and lesser automaticity in meaning activation (McEvoy et al., 1999).
Looking Ahead: Implications for Research and Practice

Further research will be needed to elaborate how lesser vocabulary knowledge and differing organization of lexical knowledge might be related to the observed metacognitive overestimates and the relative ineffectiveness of vocabulary-related manipulations intended to improve DHH students’ learning (Borgna et al., 2011; Krinsky, 1990). The Borgna et al. finding that providing vocabulary and context-relevant definitions were insufficient to improve DHH students’ learning suggests that interventions that lead to stronger and/or more cohesive relations are necessary in order for them to provide support for ongoing comprehension (Davis, 1944; Rawson & Kintsch, 2002). Together with the present findings, these findings also suggest that many DHH college students do not have sufficient English word knowledge to support ongoing text comprehension, a situation only compounded by the lesser likelihood of ongoing comprehension monitoring.

Two additional results from the present study are in need of further investigation. First, the relation of PPVT and verbal scores observed here and by Auer et al. (2002) appears to emphasize the importance of vocabulary in postsecondary DHH students’ overall functioning in English. Alternatively, that relation simply may be a reflection of the emphasis on vocabulary in college entrance tests like the ACT and SAT. Findings indicating that PPVT scores were significantly related to ACT Reading Comprehension scores but not TRT scores suggests that students’ print exposure does not directly affect their vocabulary knowledge as much as might be expected. That finding would argue for recognition of the importance of incidental learning of vocabulary and knowledge of the world, and thus perhaps the need for explicit teaching of vocabulary to DHH learners throughout childhood and the school years, with continuing emphasis during postsecondary education.

Finally, the inverse relation observed here between DHH students’ ASL skills and their PPVT scores, together with positive relations of their spoken language skills and English signing receptive skill with PPVT scores suggests a “natural” link between spoken English and English vocabulary. A similar inverse relation between the ASL skills of hearing students and their PPVT scores, however, indicated that the explanation was not so simple. Children who are bilingual in two spoken languages have been found to have smaller vocabulary skills within each language than monolinguals (e.g., Ben-Zeev, 1977), although their vocabularies in the two languages combined may be comparable. Rinaldi et al. (2014) recently obtained similar findings in research involving bilingual DHH students who demonstrated total, signed and spoken vocabularies comparable to hearing monolingual peers. Findings from the PPVT studies described above, however, suggest that neither sign language nor spoken language leads to an advantage in DHH students’ vocabulary development discernible by the time they reach postsecondary education. Further, longitudinal studies of DHH children acquiring ASL and BSL from their DHH parents have indicated that even children acquiring sign language from birth often exhibit vocabulary delays (Anderson & Reilly, 2002; Woolfe et al., 2010).

Taken together, results from the existing literature and those obtained here all point to relatively poor vocabulary skills among postsecondary DHH students, regardless of their primary mode of communication, whether or not they use cochlear implants, or the mode in which vocabulary is assessed. It seems likely that this situation derives in large part from the lesser availability of incidental learning via language of in school and out (Dunn & Dunn, 2007, p. 4). Less clear at this point are specific consequences of this quantitative difference as well as qualitative differences in the organization of lexical knowledge that have been documented among postsecondary DHH students relative to hearing peers. Both factors likely are related to the reading and classroom learning challenges typically observed among DHH learners, also reflecting somewhat less and somewhat different knowledge of the world. Similar, if more limited findings with regard to children who are blind (e.g., McConachie, 1990; McConachie & Moore, 1994) suggest that limited access to the world through sight or hearing – and experience with the correlation between them – can have some similar consequences. Theoretical, physiological, and practical implications of such situations remain to be elaborated.

Over half of the two-year and four-year postsecondary institutions in the United States report enrolling one or more students who self-identify as deaf or hard of hearing (NCES, 2008). Perhaps the most important implication to be drawn from the present study for those institutions is that deaf students are not simply hearing students who cannot hear. DHH students are far more heterogeneous than their hearing peers, and just because they do well enough in high school and on en-
trance examinations to get into postsecondary programs does not mean that their qualifications necessarily are quantitatively or qualitatively the same as hearing classmates. A variety of studies has demonstrated cognitive differences between DHH and hearing students, during the school years and in postsecondary settings, that are likely to affect classroom learning (Marschark & Knoors, 2012). If postsecondary institutions are going to admit DHH students with diverse special educational needs, they must recognize that modifications of materials and instructional methods may be necessary in order to take advantage of those students’ strengths as well as to accommodate their needs.

The large individual differences found among DHH students, as well as others with special education needs, points to three limitations on the present study. First, students’ language skills were assessed indirectly, through-self ratings. Although the instrument used to obtain those ratings has been found to be valid and reliable in the past, this population is changing rapidly, and more direct assessments of signed and spoken language skills would provide a more precise understanding of relations among those skills, vocabulary knowledge, and learning. Not unrelated is the rapidly increasing prevalence of cochlear implant use among deaf postsecondary students. As noted earlier, the average age of implantation in the present sample was relatively late, and further study involving students who received their implants earlier would be useful for understanding future student cohorts. Future studies also would benefit from considering students’ vocabulary knowledge in the context of their broader knowledge of the world. Vocabulary knowledge is neither a unitary construct nor divorced from other knowledge of the world. Given the acknowledged heterogeneity of the DHH student population and demonstrations of differences in organization of their semantic memories relative to hearing peers, examination of the breadth and depth of their conceptual knowledge would be of both theoretical and practical value.

More than a century of efforts to ameliorate the academic underachievement of DHH students has clearly demonstrated that “one size does not fit all.” As their numbers in postsecondary education continue to increase, it is essential that programs recognize that childhood hearing losses have lifelong implications for learning. Differences between DHH and hearing students do not necessarily reflect insurmountable challenges, but they do need to be acknowledged by students, instructors, and institutions if all are to succeed in the educational endeavor.

References


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Authors’ Note

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Effects of an Intensive Disability-Focused Training Experience on University Faculty Self-Efficacy

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University of Oregon

Allison Lombardi
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John R. Seely
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Hilary Gerdes
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Abstract
The current study evaluates the short-term effects of a disability-focused training on the disability-related self-efficacy of university faculty. Three consecutive cohorts of faculty (N = 102) participated in an intensive four-day training institute focused on understanding and supporting university students with disabilities. Self-efficacy for understanding and working with students with disabilities was measured prior to and following training and faculty satisfaction with the training experience was assessed at post-test only. Participation in training had strong positive effects on faculty self-efficacy for understanding and supporting students with disabilities and faculty reported high levels of satisfaction with the experience. Implications of the study for similar efforts in postsecondary settings are discussed and free access to our training materials is provided.

Keywords: Faculty training, postsecondary education, disabilities, disability awareness

Recent data from the National Longitudinal Transition Study-2 (NLTS-2) indicate that participation in four-year postsecondary programs among students with disabilities grew from just over 1% in 1987 to just under 10% by 2003 (Wagner, Newman, Cameto, & Levine, 2005). Later data from the same study indicate that up to eight years after high school, nearly 20% of youth with disabilities report having attended a four-year college or university at some point since high school (Newman et al., 2011). These findings regarding participation in postsecondary school among students with disabilities are promising and continuing to expand such opportunities will continue to be important in an increasingly competitive, knowledge-based economy. Unfortunately, these promising trends pertaining to participation in postsecondary school are tempered somewhat by corollary research showing that college students with disabilities experience higher course failure rates, lower retention rates, and have significantly lower rates of graduation than do their nondisabled peers (Adams & Proctor, 2010; Hurst & Smerdon, 2000; Sanford et al., 2011; Wessel, Jones, Markle, & Westfall, 2009). Moreover, NLTS-2 findings indicate that approximately two-thirds of students with disabilities who enroll in four-year programs fail to successfully complete these experiences (Newman et al., 2011).

Efforts to understand postsecondary performance among students with disabilities have focused on a wide range of potential predictors including background educational experiences (Halpern, Yovanoff,
Doren, & Benz, 1995), individual skills (Murray & Wren, 2003), family supports (Murray, Lombardi, Bender, & Gerdes, 2013), and supports provided within postsecondary environments such as accommodations and services offered through campus Disability Services Offices (Allsopp, Minskoff, & Bolt, 2005). Although this research is still evolving, one consistent finding from this work is that university faculty play a critical role in promoting – or inhibiting – positive postsecondary experiences among students with disabilities (Hartman-Hall & Haaga, 2002; Wilson, Getzel, & Brown, 2000).

College and university faculty can affect the postsecondary educational experiences of students with disabilities in at least five important ways: (a) through the design and delivery of instruction in their own courses, (b) through their direct interactions with students with disabilities around issues pertaining to student disclosure and accommodation requests; (c) through their mentoring and relationships with individual students, (d) through their knowledge of campus services and supports available for students with disabilities, and (e) through their influence on the overall climate of the institution (Harrison, 2003; Mytkowiz & Goss, 2012; Scott & Gregg, 2000; Wilson, Getzel, & Brown, 2000). According to college students with disabilities in one study, “…instructional faculty, more so than any other campus entity, can impact their success” and “…without the support of faculty, they would have had little chance of success” (Wilson et al., 2000, p. 41). Mytkowiz and Goss (2012) interviewed students with disabilities at one college and found that supportive student-professor relationships was one of three key themes identified by students as contributing to their success and persistence in postsecondary school. Similar findings were reported by Dowrick et al. (2005), who found that faculty-student mentor relationships were among the most valuable types of support students reported receiving during postsecondary education.

Despite these positive characterizations of faculty, a consistent finding in prior research has been that many students with disabilities report having negative experiences with faculty (Cawthon & Cole, 2010; Houck, Asselin, Troutman, & Arrington, 1992; Kurth & Mellard, 2006). Farone, Hall, and Costello (1998) conducted interviews with 32 students with disabilities and found that students perceived that faculty lacked information about disability issues, had poor attitudes towards students with disabilities, and were not receptive to student accommodation requests. Similar findings were reported by Cawthon and Cole (2010) who found that students were hesitant to report their disability to university faculty because they anticipated that professors would be unwilling to provide accommodations. Dowrick et al. (2005) found that students with disabilities experienced difficulty obtaining basic accommodations and supports due to faculty members’ unwillingness to accommodate and their lack of understanding about disability law. Other findings suggest that faculty may have lower academic expectations for students with disabilities than for students without disabilities (Houck, Asselin, Troutman, & Arrington, 1992; Mathews, Anderson, & Skolnick, 1987). Several researchers have reported that, although college and university faculty are generally willing to provide students with minor accommodations such as tape recorded lectures or additional time during exams, they are less willing to provide major accommodations such as reductions in work load or alterations of major course assignments (Lombardi, Murray, & Gerdes, 2011; Matthews, Anderson, & Skolnick, 1987; Nelson, Dodd & Smith, 1990; Vogel, Leyser, Wyland & Brulle, 1999). Still other researchers have observed that students and faculty often have differing views about campus environments, with faculty generally endorsing more positive views about the supportiveness and responsiveness of campus settings than students (Baker, Boland, & Nowik, 2012).

Given the important role faculty appear to play in promoting or inhibiting success among students with disabilities, it is unfortunate that there have been limited published reports regarding the effectiveness of efforts to improve the disability-related knowledge and skills of faculty. Although several descriptions of faculty training efforts exist in the literature (Krampe & Berdine, 2003; McGuire, Scott, & Shaw, 2003; Park, Roberts, & Stoddard, 2012), systematic evaluations of the effects of such efforts are far less common. Two exceptions include the research conducted by Rohland et al. (2003) and a study conducted by Sowers and Smith (2004).

Roland and colleagues recruited 103 faculty from 45 departments at seven different colleges and universities in Rhode Island to participate in a four-day training that was designed to promote disability awareness, an understanding of legal issues, and an understanding of supports for students with hearing, vision, learning, attention, and emotional disabilities. The training participants also discussed and developed
strategies for serving as disability mentors in their home academic units. Thus, the goal of this project was to develop institutional resources and supports by training individuals who would then serve as trainers of other faculty. Findings from an analysis of trainee perceptions prior to and following the training activities indicated that trainees had greater confidence in meeting training objectives and were satisfied with the training materials at the end of the training sessions.

In a second example, Sowers and Smith (2004) trained nursing faculty on disability issues using a brief two-hour training curriculum that focused on (a) enhancing the perceptions of faculty regarding the capabilities of students with disabilities, (b) providing strategies for accommodating students with disabilities during instruction and supervision, (c) information pertaining to laws (Section 504 & ADA), and (d) information regarding the costs associated with providing accommodations. Evaluations of nursing faculty perceptions prior to and following training indicated that this brief training experience led to improvements in faculty participants’ perceptions of the capabilities of students with disabilities and decreased concerns about having students with disabilities in nursing programs.

In addition to this work, the results of several correlational investigations suggest that disability-focused training is associated with faculty attitudes and skills. Bigaj, Shaw, and McGuire (1999) examined the relationship between prior disability-focused training and faculty attitudes and found that faculty participation in some form of prior disability-related training was predictive of faculty members’ willingness to provide, and report use of, teaching and exam accommodations. These findings were replicated and extended by Murray, Lombardi, Wren, and Keys (2009), who found that university faculty who participated in some form of prior disability-focused training had greater willingness to provide exam accommodations, greater fairness and sensitivity towards students with disabilities, greater willingness to personally invest in students with disabilities, and greater personal actions in support of students with disabilities (i.e., inviting disclosure and providing accommodations) than did faculty who had not participated in prior training. Moreover, Murray et al. (2009) studied different types of prior training and found that prior participation in disability-related coursework or workshops had stronger effects on faculty attitudes and skills than did less direct forms of training (i.e., read books or visited websites).

Current Study

The goal of the current investigation was to evaluate the short-term effects of a summer training experience on university faculty members’ self-efficacy for understanding and supporting college students with disabilities. Self-efficacy reflects an individual’s beliefs or “confidence” that they can successfully engage in and complete a task (Bandura, 1997). A growing body of research suggests that teacher self-efficacy beliefs are associated with teaching behavior and job satisfaction (Betoret, 2006; Skaalvik & Skaalvik, 2007). Although we know of no investigations that have targeted disability-related self-efficacy among university faculty, such beliefs are a natural target for disability-focused intervention efforts because they may be indicative of future behavior. According to Bandura (1977, 1982), self-efficacy beliefs are developed through personal achievements/performance accomplishments, vicarious learning experiences, and verbal persuasion. Given that faculty may sometimes feel uncomfortable about their understanding of and ability to work with college students with disabilities, finding ways to improve their self-efficacy for supporting this population within the context of postsecondary settings is important. We anticipated that faculty training participants would show improvements in their self-efficacy for understanding and supporting postsecondary students with disabilities following the training experience. We also anticipated that participants would indicate a high degree of satisfaction with the experience.

Methods

Participants

The current study focuses on faculty who participated in a summer training workshop during one of three consecutive summer training opportunities: Year 1 \( (n = 39) \), Year 2 \( (n = 25) \), and Year 3 \( (n = 38) \). Training participants were selected based on four criteria. First, we limited this opportunity to full-time faculty (.5 FTE or greater) based on the assumption that these individuals would have more secure positions in the institution and would thus be more likely to remain in the university after the training. Second, non-tenure track research faculty were excluded from participation because the vast majority of these individuals at the study site do not teach. Third, as shown in Table 1, we attempted to recruit faculty from schools and colleges within the university in proportions that were...
approximately equal to their overall representation within the university. Overrepresentation of faculty from the majority of colleges was due mainly to the fact that 13% of faculty at the institution were research faculty and thus were not recruited for training. Although we do not know exactly why College of Education faculty participated in low rates, it is possible that faculty in this unit believed that they already had knowledge about the needs of college students with disabilities (Lombardi & Murray, 2011; Murray et al., 2008; Skinner, 2007). The College of Law had their own highly specific policies and procedures for working with students with disabilities, so faculty within this college asked not to be included in the project. Our fourth criterion was to make every possible effort to follow the criteria above while also accepting applicants for training on a first-come/first-serve basis. Using these general criteria, every full-time faculty member who expressed an interest in participating in the training over the three-year period was offered an opportunity to do so. Participating faculty represented approximately 43 different departments and programs in the university.

Measures

Disability self-efficacy. To evaluate changes in faculty members’ disability-related self-efficacy, we created an 18-item measure specifically for this study. Consistent with prior research on teacher-self-efficacy, items on the instrument were constructed to reflect domain specific rather than global functioning among faculty (Klassen & Chiu, 2010). These items contained the same question prompt: “How confident are you that you could……” and item stems focused on specific

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Note. Institution column sums to 96% due to 4% with unknown affiliations.
disability-focused domains relevant to postsecondary faculty including universal design (e.g., “identify ways to implement universal design principles in planning for your courses”), general disability knowledge (e.g., “describe the basic defning characteristics of different types of disabilities”), and accessing disability-related supports (e.g., “describe the basic process used for students to access Disability Services”) (Scott & Gregg, 2000; Sowers & Smith, 2004; Stodden, Whelley, Chang, & Harding, 2001). For the specifc purposes of the current effort, items were also developed to reflect a fourth domain pertaining to providing information and training to other faculty and staff about the characteristics and needs of postsecondary students with disabilities (e.g., “Improve awareness of disability-related topics among other faculty in your department”). Items were rated on a fve-point scale ranging from 1 = “no confdence at all” to 5 = “complete confdence.”

Using pre-test data from all three cohorts, faculty responses to the 18 items were subjected to a principal components analysis with a varimax rotation. Examination of the scree plot and resulting Eigenvalues (i.e., greater than 1.0) indicated that four factors accounted for approximately 66% of the variance in responses. The frst factor, Universal Design, contained four items related to faculty understanding of universal design principles (e.g., “How confdent are you that you could use implement universal design principles in delivering instruction in your courses”). Cronbach’s alpha on this factor was .91. The second factor, Knowledge of Disability, contained eight items pertaining to faculty confdence in understanding disability. Sample items on this factor included, “How confdent are you that you could describe the basic defning characteristics of different types of disabilities” and “How confdent are you that you could identify the range of disabilities that exist on college campuses” (α = .87). The third factor, Knowledge of Services, contained three items related to faculty confdence pertaining to their understanding of disability services within the university context (e.g., “How confdent are you that you could describe the basic process used by students to access Disability Services,” α = .77). The fourth factor, Sharing Information, contained three items pertaining to faculty members’ ability to share disability-specifc information within the university context (e.g., “How confdent are you that you could improve awareness of disability-related topics among other faculty in your academic department,” α = .68).

**Participant Satisfaction.** In addition to the self-efficacy measure, we also administered a brief nine item training satisfaction measure. This instrument was administered directly following the training experience and included six items rated on a fve-point scale ranging from 1 = “Strongly Disagree” to 5 = “Strongly Agree.” Items focused on participants’ satisfaction with the workshop materials (e.g., “Presentation of material was appropriately balanced with application activities, discussion, and lecture”) and the workshop content (e.g., “The workshop sessions were clear and easy to follow”).

**Procedures**

Training participants were recruited by sending letters to department and unit heads. These recruitment letters included a description of the project, training dates, and a description of the training stipend ($1,500 per participant). This stipend was based on the amount typically offered to faculty for participating in summer workshops offered through the teaching effectiveness program within the institution. Department and unit administrators sent recruitment letters via email directly to faculty within their units and interested faculty responded directly to project staff. The training, *Expanding Cultural Awareness of Exceptional Learners*, was developed through a collaborative effort between the Director of the Disability Services Ofce, a faculty member in special education, a project coordinator who was an advanced doctoral student in special education, and a doctoral student in educational leadership.

Training consisted of four 7-hour sessions held at the beginning of summer (June), approximately one week after the end of the academic school year. The institute was designed to improve faculty self-efficacy for understanding, working with, and advocating for students with disabilities but also included a section designed to motivate faculty to promote disability awareness among their colleagues. The manualized curriculum was based on available resources in the professional literature (Burgstahler & Doe, 2006; Cook et al., 2006; Debrand & Salzberg, 2004; Kurth & Mellard, 2006; Rohland et al., 2003; Sowers & Smith, 2004). In Table 2 we provide an overview of the training topics. All training materials are available on the following website: aec.uoregon.edu/faculty/reference.html#institute.

Day 1 activities focused on building faculty awareness about disability and included an overview of definitions of disability categories, prevalence rates
among school-age and college-age populations, and general academic, emotional, behavioral, and social characteristics college students with disabilities by category. This information was presented by a faculty member in special education, the director of disability services, and a doctoral student with a disability who is an expert in hearing impairments. At the end of Day 1, a panel of six college students with disabilities (i.e., ADHD, LD, hearing impairment, visual impairment, physical disability, and mental health) presented a student panel. Students each spoke for approximately 15 minutes and provided a brief overview of their educational experiences historically and during postsecondary school, challenges they had experienced as college students, and strategies or resources that they believed had a positive impact on their ability to access and succeed in postsecondary school.

Day 2 activities began with an historical overview of special education including a review of research pertaining to the post-school outcomes of students with disabilities, with a specific focus on outcomes pertaining to postsecondary attendance and graduation. Following this segment, participants were provided an overview of federal legislation (Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act) along with the implications of these laws for admissions (e.g., qualifying), enrollment (e.g., reasonable accommodations), and academic standards. A faculty member from the College of Law with a disability who teaches disability law presented this legal overview. Following this presentation, approximately 1.5 hours was devoted to an in-depth discussion of accommodations including types of accommodations, the process for requesting accommodations, the process.

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Table 2

Overview of Summer Institute Training Sessions

<table>
<thead>
<tr>
<th>Day 1: Awareness</th>
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<tr>
<td>Definitions</td>
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<td>Prevalence</td>
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<td>Learning Characteristics</td>
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<td>Social, Emotional, Psych</td>
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<td>Student Speakers</td>
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<th>Day 2: Laws, Accommodations, University Supports</th>
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<tr>
<td>Brief History &amp; Post-School Outcomes</td>
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<tr>
<td>Federal Legislation</td>
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<tr>
<td>Defining Accommodations</td>
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<tr>
<td>University Supports &amp; Disability Services</td>
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<tr>
<th>Day 3: Practice</th>
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<tr>
<td>Universal Design</td>
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<td>Adaptive Technology</td>
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<tr>
<td>Planning for Instruction</td>
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<tr>
<td>Delivering Instruction</td>
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<tr>
<td>Evaluating Instruction &amp; Assessment</td>
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<tr>
<th>Day 4: Institutionalizing</th>
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<tbody>
<tr>
<td>Overview of faculty &amp; student surveys</td>
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<tr>
<td>Developing Training Ideas</td>
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<tr>
<td>Developing Personal &amp; Training Goals</td>
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</table>
for determining student eligibility to receive accommodations, and specific case examples to provide faculty with numerous examples of how the process for requesting and receiving accommodations looks in practice. These materials were presented by the Director of Disability Services.

Day 3 activities began with an overview of universal design and included definitions from leading organizations (www.cast.org) as well as specific examples of universal design in practice. This information was presented by a counselor from the disability services office at the university. This segment was followed by a presentation about using technology to create alternative text formats, accessible pdf’s for syllabi and course readings, and a presentation about using universal design principles when developing and delivering course materials through Blackboard. Technology information was presented by staff from the teaching effectiveness program within the university who were experts in using technology for teaching. Day 3 concluded with a series of discussions and group activities related to delivering and evaluating instruction using universal design principles.

The final day of training, Day 4, was devoted primarily to providing faculty with the tools and motivation to disseminate information from the training to other faculty and staff within their respective departments and programs. This session began with an overview of the results of an annual campus-wide survey of students with disabilities (Lombardi, Murray, & Gerdes, 2011) along with results of a second survey focused on faculty attitudes, knowledge, and skills pertaining to understanding and supporting students with disabilities in the university (Lombardi & Murray, 2011). This provided participants with an overview of campus-wide attitudes and beliefs among faculty and students. We then provided each participant with all of the project training materials by adding them to a Blackboard course site that contained all training materials as well as access to over 150 journal articles focused on postsecondary education and disability, a list of over 100 video links pertaining to postsecondary education and disability, contact information for all of the individuals who had presented during their training experience, a list of university and community organizations that could potentially support college students with disabilities, and six informational newsletters developed specifically for this particular institution. These materials were provided in a format that could be modified by the user (e.g., MS Word, PowerPoint) to provide participants with the ability to tailor materials to their specific needs. The vast majority of these resources are freely available for public or institutional use (acc.uoregon.edu/faculty/reference.html#institute) or can be requested from the first author.

By the end of Day 4, participants had experienced the training, had access to all of the training materials, and could access additional resources that could facilitate further professional development. We then asked faculty to work in small groups to develop their own training ideas for faculty and staff within their home academic units. For this task, participants created three training formats: (a) a brief 15-20 minute training, (b) a 30-40 minute training, and (c) a 90 minute training experience. All participants’ training ideas were transcribed and all participants were provided copies of all training strategies.

Our final activity involved asking each faculty member to develop specific individualized goals for the consequent academic year. For this activity, faculty created specific goals pertaining to training other faculty (e.g., deliver brief training on characteristics of college students with disabilities at department meeting), making changes to their own instruction (e.g., change instructional approach in one course by incorporating UDI principles), and/or initiating broader campus-wide disability initiatives (e.g., creating a campus-wide Universal Design Committee).

Results

Our primary interest in the current investigation was to examine the effects of the training experience on participants’ disability-related self-efficacy. To evaluate the baseline equivalence of the three cohorts at pretest, we conducted a multivariate analysis of variance (MANOVA). For this analysis, cohort was entered as the between-subjects variable and pre-test scores on the four factors served as criterion variables. The overall multivariate results were not significant Wilks’ Lambda = .887, $F = 1.48$ (8, 192) ns, nor were any of the between-subjects univariate tests. Since the three cohorts did not differ on self-efficacy constructs at baseline, all three groups were combined for subsequent analyses.

To evaluate the effects of the faculty training program, pre-post paired t-tests were conducted on the four self-efficacy domains of universal design, knowledge of disability, knowledge of services, and sharing information. In Table 3 we provide the pre-test and post-test
Table 3

Pretest-Posttest Descriptive Statistics and Paired t-test Results on Self-Efficacy Domains

<table>
<thead>
<tr>
<th>Self-efficacy Domain</th>
<th>Pretest</th>
<th>Posttest</th>
<th>t</th>
<th>p-value</th>
<th>Effect Size</th>
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</thead>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Universal Design</td>
<td>1.82</td>
<td>0.86</td>
<td>4.15</td>
<td>0.53</td>
<td>25.55</td>
</tr>
<tr>
<td>Knowledge of Disability</td>
<td>2.35</td>
<td>0.59</td>
<td>4.12</td>
<td>0.44</td>
<td>28.61</td>
</tr>
<tr>
<td>Knowledge of Services</td>
<td>2.34</td>
<td>0.75</td>
<td>4.27</td>
<td>0.50</td>
<td>26.14</td>
</tr>
<tr>
<td>Sharing Information</td>
<td>2.44</td>
<td>0.68</td>
<td>4.24</td>
<td>0.54</td>
<td>23.54</td>
</tr>
</tbody>
</table>


means and standard deviations as well as paired t-test results and effect sizes for the outcome measures. As shown in the table, significant and large effects were obtained on all four self-efficacy factors in the predicted directions. On average, faculty reported low self-efficacy in their understanding and knowledge regarding issues related to disability within a higher education environment at pre-training but high levels of self-efficacy in dealing with these issues following training.

We also evaluated participants’ overall satisfaction with the training experience using data gathered from a brief measure of satisfaction administered directly following the training. These ratings were provided on a five-point scale ranging from “1 = Strongly Disagree” to 5 = Strongly Agree.” The overall average of participants’ ratings on the six quantitative items was $M = 4.37$ ($SD = .416$), indicating a high degree of satisfaction. Faculty provided the strongest endorsement on an item that asked, “I will make changes or accommodations in my teaching as a result of what I learned,” $M = 4.71$ ($SD = .536$) and the lowest average ratings on “Presentation of material was appropriately balanced with application activities, discussion, and lecture” $M = 3.94$ ($SD = .775$). On average, all ratings were in the “agree” to “strongly agree” range indicating a high degree of satisfaction.

Discussion

Finding ways to improve the postsecondary experience of college students with disabilities will continue to be important as a greater number of students with disabilities seek access to postsecondary education (Park et al., 2012). Prior research indicates that university faculty can play a positive or negative role in the educational experiences of college students with disabilities but much of this work suggests that faculty often lack an understanding of the specific needs of this population (Cawthon & Cole, 2010; Houck et al., 1992). In an effort to address this need, we designed and implemented an intensive four-day training experience designed to improve university faculty members’ self-efficacy for understanding, working with, and supporting students with disabilities in postsecondary environments. Results of pre-post analyses of participants’ self-efficacy for understanding and working with postsecondary students with disabilities indicated that the training had beneficial effects on participants. Similarly, participants demonstrated significant improvements in their self-efficacy pertaining to training other university faculty within their home academic units. Moreover, findings from faculty ratings of their satisfaction with the training experience were overwhelmingly positive.
This finding is important because it provides some social validity for the training experience and suggests that university faculty can have positive views of disability-related training experiences.

Our findings are promising because they highlight the potential benefits of providing university faculty with specific disability-focused training experiences. Unfortunately, the findings from several investigations suggest that college and university faculty members are rarely provided opportunities to receive disability-focused training (Baker, Boland, & Nowik, 2012). Therefore, one implication of our findings is that similar efforts should be implemented whenever possible. The current project was funded through the U.S. Department of Education, Office of Postsecondary Education’s Demonstration Projects to Ensure Quality Higher Education for Students with Disabilities. Between 2000 and 2010 approximately 90 universities received these three-year demonstration projects and Congress appropriated approximately $7 million per year to fund this program. Unfortunately, this program was discontinued in 2011. This is problematic because these funds provided direct support for faculty training and technological innovations designed to enhance supports for students with disabilities in postsecondary settings.

A recent national survey of 29 public four-year institutions found that the greatest barrier (70% of respondents) hindering the implementation of universal design was limited staff resources to provide such training (Raue & Lewis, 2011). Thus, declining federal funds to support training initiatives and a lack of sufficient resources among colleges and universities to deliver training opportunities without external support is occurring during a time when a growing number of students with disabilities are gaining access to postsecondary settings (Newman et al., 2011). Therefore, at least in the immediate future, finding creative ways to promote disability awareness among faculty in a climate of reduced federal and institutional supports will require disability support services personnel, university administrators, and other concerned individuals (e.g., faculty) to initiate and implement innovative, cost effective strategies for promoting faculty awareness without external supports.

The current study offers several promising directions for such efforts. First, all of the assessments and training materials created by this project are available at no cost upon request. These materials were developed over the course of three years in collaboration with faculty from special education and law, the director and staff of the Disability Services Office, graduate students in the College of Education, staff from the Teaching Effectiveness Program, and undergraduate and graduate students with disabilities who attended this particular university. The materials include faculty and student surveys that can be administered to the entire university, PowerPoint materials used to deliver trainings, a bibliography and access to over 150 journal articles focused on postsecondary education and disability, a list of over 100 video links pertaining to postsecondary education and disability, and six informational newsletters on the following topics: (a) accommodations, (b) universal design, (c) planning instruction, (d) delivering instruction, (e) evaluating instruction, and (f) technology. All of these materials are available in modifiable formats so that they can be tailored to address specific institutional goals and initiatives.

Second, although the current study was funded, a promising approach for providing training opportunities without extensive funds is to utilize preexisting institutional resources and events. For example, preexisting events such as new faculty orientations and college or departmental meetings are ideal forums for brief disability-awareness activities and presentations. Although disability support service personnel are the obvious choice for facilitating such opportunities, most campus disability services offices are understaffed and are often attempting to provide direct supports to a large and growing population of students with disabilities. Therefore, training efforts will be most successful if faculty can be recruited to provide information and training to other faculty whenever possible. Throughout the current project we were struck by the large number of faculty across the university who were invested in learning about and advocating for students with disabilities regardless of the funds available to support them. Many of these individuals had personal investments in disability awareness because they had family member with a disability or because they had disabilities themselves. These individuals can be natural allies within postsecondary environments and can facilitate training within their own departments and units. In our experience, faculty and staff who are personally invested in supporting students with disabilities are often willing to deliver information to other faculty without compensation. Thus, such approaches provide opportunities to reach broader audiences through small scale train-the-trainer models.
A third strategy for promoting disability awareness is to elicit support from students by designing course assignments to facilitate disability awareness. One faculty participant in our training from the College of Journalism created the following goal during the final day of training: “Use a wide variety of media to establish an awareness campaign involving materials that would vary from doc videos to logos, etc. Should be student-oriented and campus wide.” During the consequent year, this faculty member designed a course project for undergraduate students to develop a branding and advertising campaign for the Disability Services Office at the university where the project took place. As part of the assignment, students in the course interviewed students with disabilities, staff from the disability services office, and conducted research to learn more about the needs of college students with disabilities. Students in the course then created a series of materials that included informational booklets, posters, videos, and a strategy for building awareness among students and faculty. In this example, one faculty member’s idea to teach advertising skills through the lens of disability awareness resulted in innovative ideas and extensive awareness building materials. Students in the course created six new promotional logos, six informational brochures, 15 different posters, and six videos. Sample materials created by students in the course are provided in the Appendix and two sample videos also created by students in the course can be viewed at the following links youtube.com/watch?v=SJgMliXz_S8 and youtube.com/watch?v=rFxBcfTC7zA&feature=channel_video_title.

Limitations

Although the findings from this study are promising, this study suffers from several important limitations that should be considered. First, this study did not include a no-treatment control group. Future efforts such as the one described here that incorporate experimental designs would allow researchers to draw causal conclusions about the effects of training efforts. A second limitation is that the outcome variables studied in this investigation were gathered from faculty self-reports; we did not include direct assessments of faculty behaviors. Future efforts that incorporate observations of teaching practices following training are important as such data would help to validate self-reports. Third, post-test data were gathered directly following training and no follow-up data were gathered to assess maintenance effects. Evaluating the long-term effects of training is important because such information could be useful for determining the need for booster sessions or ongoing training opportunities. A fourth important limitation is that we did not gather demographic information from training participants such as gender, age, or academic rank. Future efforts that incorporate such information would allow researchers to study questions pertaining to the potential differential benefits of training for certain groups. Given these important limitations, the data presented here should be interpreted as having potential importance. The magnitude of the effects are promising and continuing to explore strategies for providing university faculty with opportunities to learn more about the needs of students with disabilities in postsecondary settings is certainly needed.

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Appendix

Sample Materials Developed by Undergraduate Students in a 10-week Journalism Course

Sample Poster 1

Life can get distracting,

we can help find a way out

Created by: Renee Alvarado, Corey Haugen, Emily Papp, Jake Matthews, & Holly Schnackenberg
To you it’s a step, to them it’s a stop

Created by: Renee Alvarado, Corey Haugen, Emily Papp, Jake Matthews, & Holly Schnackenberg
Personal Factors that Influence the Voluntary Withdrawal of Undergraduates with Disabilities

Valerie Thompson-Ebanks
University of Wyoming

Abstract
This qualitative study explored personal factors students with invisible disabilities (SWIDs) associate with their voluntary withdrawal from a mid-western state land grant university (LGU) after completing 60 or more college credits. In-depth, semi-structured interviews were used to gather data from the five participants, all former students with invisible disabilities. The data were coded and contrastive thematic analysis was conducted across all the cases. Nine common factors were identified within participants’ descriptions of their college withdrawal experience. These factors included: disability characteristics, medical reasons, feelings of inadequacy, little sense of belonging, small college desire, self-advocacy, disclosure to faculty and staff, involvement in campus social life, and finances. The complex interconnectedness of a number of the factors is central to many of the participant’s experiences, emphasizing the need for a multifaceted approach to retention strategies for SWIDs.

Keywords: Disabilities, college withdrawal, qualitative, retention

The United States Department of Education concluded there were more than 1,400,000 students with documented disabilities in postsecondary education (National Center for Education Statistics [NCES], 2006), representing an exponential increase since 1978. The increase can be primarily attributed to federal legislation: Section 504 of the Rehabilitation Act of 1973; the Americans with Disabilities Act (ADA) of 1990 and its 2008 Amendments: the Higher Education Act (HEA); and the post-9/11 Veterans Educational Assistance Act. Scant information exists regarding completion and non-completion rates for students with disabilities (SWDs) in postsecondary education (Wessel, Jones, Markle, & Westfall, 2009). The research question to be addressed in this paper is: “What do students with disabilities perceive as the personal factors that influenced their voluntary withdrawal from college after successfully completing 60 or more credit hours at a land grant university?” Sixty credits typically represent half of the academic requirements needed for a degree.

Literature Review
Although deFur, Getzel, and Trossi (1996) state that “the likelihood of earning a degree is decreased by the presence of a disability,” (p. 232) other researchers found that retention rates for students with and without disabilities were basically the same, except for variations during years four and five (Wessel et al., 2009). Some SWDs, namely those with learning disabilities, may take longer to graduate as they take the lowest number of credits possible to maintain their status as a full-time student (Wessel et al., 2009), a finding supported by a 12-year longitudinal study at a large college in Quebec, Canada. Jorgensen et al. (2005) found that students with disabilities (n=653) realized similar grades and graduation outcomes as students without disabilities (n=41,357), but would typically take lighter course loads and one additional semester to graduate.
Characteristics and academically related issues that inform any discussion of students with disabilities enrolled in higher education include institutional factors, off-campus characteristics, the type and severity of a disability, access, availability to services and accommodations, grades, and graduation rates.

**Retention and Persistence Issues for College Students with Disabilities**

University and college administrators are interested in the retention and persistence of all students, including those with disabilities. Some scholars use the terms “persistence” and “retention” interchangeably. Others differentiate the constructs by using retention as an institutional measure and persistence as a student measure (Hagedorn, 2005). Retention refers to the ability of an institution to retain a student from admission through graduation, while persistence is defined as a student’s ability to remain enrolled through to degree completion. The term “withdrawal” in this paper refers to SWDs who voluntarily discontinue enrollment, which reflects both a lack of retention and persistence.

The majority of related research focuses on the retention and persistence of students with disabilities during their first- to-second year of college (Baggot, 2005; Corcoran, 2010; Mamiseishvili & Koch, 2011). The focus stems from seminal research indicating that the largest number of students withdrew from college during their first year or before entry into the second year (Iffert, 1956; Pantages & Creedon, 1978; Tinto, 1993). However, examination of national data in the U.S. revealed that 44% of all withdrawals occur after the second year (Bowen, Chingos, & McPherson, 2009). This withdrawal pattern was supported by Stuart (2008) who reported that, over a 10-year period, an average of 350 students left the University of New Mexico annually after successfully completing 98 credits or more.

A distinction is rarely made in the literature between voluntary and involuntary withdrawal (often referred to as “academic dismissal”). College withdrawal is defined as a student’s departure from an institution before completing all the requirements to obtain a degree. Such students can be categorized into two groups: voluntary and involuntary withdrawals. For the purposes of this study, students who decided to leave their institution were recognized as voluntary withdrawals, while students who were dismissed by the college were classified as involuntary withdrawals (Brunsden, Davies, Shevlin, & Bracken, 2000).

**Characteristics of Undergraduate SWDs who Withdraw from College Prior to Graduation**

Certain personal factors associated with college withdrawal are reportedly unique to SWDs. These factors include illness, medication concerns and side effects, and students’ ability to manage their disability while navigating the academic environment (Adler, 1999; Greenbaum, Graham, & Scales, 1995; Hill, 1996; Janiga & Costenbader, 2002; Weiner & Weiner, 1997). Additional personal factors such as lack of social integration, dissatisfaction with course/faculty/institution, academic stressors, and financial problems are also associated with withdrawal of undergraduate SWDs (Barnard-Brak, Lechtenberger, & Williams, 2010; Blacklock, Benson, & Johnson, 2003; Getzel & Thoma, 2008; Lehman, Davies, & Laurin, 2000). Belch (2004-2005) suggested that self-determination, sense of purpose, and belonging are also associated with the retention of SWDs. For example, feelings of non-belonging may inhibit students from disclosing and requesting accommodations (Burgstahler & Doe, 2004; Getzel & McManus, 2005; Getzel & Thoma, 2008).

Factors associated with the voluntarily withdrawal of SWDs from college after successfully completing two or more years have not been studied extensively. While studies have focused on retention issues pertaining to SWDs, the views of the students are typically unavailable. This gap in the research is primarily due to the difficulty in locating students who left an institution prior to completion. To the researcher’s knowledge, no research has been published that reports the views, perspectives, or lived experiences of SWDs who voluntarily withdraw from college after successfully completing 60 credits of coursework. The voices of the students themselves need to be included in research to best inform programs designed to facilitate their success.

**Methods**

This exploratory qualitative study offers a lens to explore this substantive area about which little is known (Corbin & Strauss, 2008) and “gives voice to people who have been historically silenced or marginalized” (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005, p. 199). To conduct this exploration, qualitative methods of data collection, primarily semi-structured interviews, were employed allowing the participants to tell their stories and thereby construct knowledge within the context under exploration. The
data presented are part of a larger research study that explored additional experiences (including systemic, family, and institutional factors) of undergraduate students who withdrew from college.

Recruitment

The research site was a land-grant university (LGU) in a midwestern U.S. state; the total number of SWDs at LGU was unknown. The data collected and reported on SWDs represented only those students who self-identified their disability, be it permanent or temporary, either to the university or the Resources for Disabled Students Office (RDS).

The RDS at LGU provided a list of students registered with the office; this list was used as the primary means to identify students who had documented disabilities and had disclosed their disability status. The target population was SWDs (having completed 60 credits or more) who voluntarily left the university without completing their undergraduate degree. Permission was sought from the director of RDS to contact SWDs (via email and or by any other preferred means) who had not enrolled for the last two years. In total, five participants were identified; each participant was a Student with an Invisible Disability (SWID).

Interview Process

At least one week before the scheduled interview, participants were sent a copy of the interview schedule either electronically or by mail as per their preference. Providing the questions in advance of the interview gave participants the opportunity to become familiar with the questions and to reflect on their planned responses. Interviews were conducted between August 2011 and December 2011. Two participants opted for face-to-face interviews, one chose interviewing via Skype, and the remaining two preferred telephone interviews. All participants granted permission to have their interviews audio-recorded. This provided the researcher an opportunity to revisit an interview and review it in its totality, then transcribe and check for accuracy by replaying and comparing transcripts with recordings. A semi-structured focused interview technique (Bogdan & Biklen, 2003) was utilized to systematically obtain first-hand data about participants’ experiences as SWDs in higher education.

Participants

The intent of the study was to report the voices of students with a wide range of disabilities (SWDs); however, only five students, all with invisible disabilities (SWIDs) responded. This sample represents only a subgroup of the disability population. During the initial phase of the interview general demographics were collected: gender, race, age, and type of disability (see Table 1). The participants were given the following pseudonyms: Abby, Mali, Adrian, Beck, and Carter.

Qualitative Data Analysis: Thematic Analysis

Thematic analysis was used to analyze the interview data in order to identify common thematic elements across research participants and the events they reported (Riesman, 2004). To illuminate themes, both data-driven (inductive) analysis and theory-driven (deductive) analysis were used, with a greater degree of dependency on inductive analysis to illuminate factors from the raw information that SWIDs associate with leaving college prematurely (Boyatzis, 1998).

The inductive analysis phase involved four steps: partializing transcripts to focus on information salient to the study (Riesman, 2002); open coding to determine constraining factors; contrastive analysis and identifying themes; and revising and applying key themes across cases. Before the process of detailed analysis began, the two participants who selected to review their transcripts were sent a copy of their partial transcripts for member checking (Doyle, 2007). Member checking is an important aspect of qualitative inquiry used for increasing trustworthiness (Carlson, 2010). The participants were free to enhance, elaborate, or alter their transcript, which was done via telephone conversation with the researcher. Participants made negligible adjustments to their transcripts.

Transcripts were read and re-read so that narratives became clearer. Codes that closely reflected constructs from participants’ points of view were constructed inductively from the raw material (Boyatzis, 1998), enhancing the reliability of the research. Summary sheets were created for each participant each time so as not to have multilevel analysis on the same summary sheet.

Following the iterative process of inductive open coding to identify constructs from the participants’ experiences, contrastive analysis was conducted to illuminate patterns and themes within and across participants’ experiences. Contrastive analysis of each participant’s summary sheet, involving the discovery
Table 1

Summary of Participant Demographics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total Participants (N=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female (Abby &amp; Mali)</td>
<td>2</td>
</tr>
<tr>
<td>Male (Adrian, Beck, &amp; Carter)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>4</td>
</tr>
<tr>
<td>Asian-American</td>
<td>1</td>
</tr>
<tr>
<td><strong>Disability Diagnosis</strong></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>2</td>
</tr>
<tr>
<td>Dual</td>
<td>1</td>
</tr>
<tr>
<td>Multiple</td>
<td>2</td>
</tr>
<tr>
<td><strong>Disability Type</strong></td>
<td></td>
</tr>
<tr>
<td>Learning disability/ies (4 congenital &amp; 1 acquired due to brain injury)</td>
<td>5</td>
</tr>
<tr>
<td>Psychiatric illness/es</td>
<td>2</td>
</tr>
<tr>
<td><strong>Enrollment Category</strong></td>
<td></td>
</tr>
<tr>
<td>Traditional (1st enrolled under age 25)</td>
<td>4</td>
</tr>
<tr>
<td>Nontraditional (1st enrolled over age 25)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Degree Completion at Other Institution</strong></td>
<td>2</td>
</tr>
</tbody>
</table>

and creation of preliminary themes emanating within and among the samples, was conducted (Boyatzis, 1998). The process created subcategories and then indexed information into the categories, revealing a data linking process of encoding the raw information (Mason, 1996). As the preliminary themes were compared across samples, a distinct effort not to begin the interpretation process was made to prevent an early imposition of the researcher’s interpretation of the data (Boyatzis, 1998). Further examination of the raw information determined the presence or absence of each of the preliminary themes.

In the final step, themes were revised as necessary, with the remaining themes recognized as salient or key themes. Excerpts and quotations made by participants were used to illustrate and substantiate the findings. The deductive data analysis phase involved examining each participant’s case summary for personal factors or individual characteristics that contributed to withdrawal. The personal factors that SWDs reported to have influenced their decision to withdraw from college are reported.

**Findings**

Participants identified personal factors or individual characteristics that influenced their decision to withdraw from the institution. A total of nine individual/personal factors were identified by one or more participant: disability characteristics, medical reasons, feelings of inadequacy, limited sense of belonging, small college desire, self-advocacy, disclosure to faculty and staff, involvement in campus social life, and finances (see Table 2).

To provide a detailed contextualization of the participants’ experiences, only the responses of the three
Table 2

*Personal Factors Contributing to Participants’ Withdrawal*

<table>
<thead>
<tr>
<th>Personal Factors</th>
<th>Abby</th>
<th>Adrian</th>
<th>Beck</th>
<th>Carter</th>
<th>Mali</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disability Characteristics</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Medical Reasons</td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Feelings of Adequacy</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Sense of Belonging</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small College Desire</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Advocacy</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Disclosure to Faculty &amp; Staff</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involvement in Campus Social Life</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finances</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Factors identified by all five participants are highlighted in the report of findings: characteristics of the disability, feelings of inadequacy, and finances.

**Disability Characteristics**

Disability characteristics address challenges encountered and adjustments made by the SWID participants in order to navigate the university environment. Abby is a 23-year old White female who was enrolled at the university for almost three and a half years. She decided to leave prematurely to attend a smaller college in her home town. She thought a smaller college would be more conducive to her personal goals and needs. Within three semesters of attending the smaller college, she completed her undergraduate degree. Subsequently, Abby gained full time employment and was admitted to graduate school for the 2012 fall semester.

Abby spoke of efforts to adapt to her learning disability (Not Otherwise Specified-NOS), which was diagnosed when she was 9-years old. She explained, “I read and write more slowly than my peers and I am allowed double the allotted time to complete tests, as well as I go to separate room for testing.” In college, Abby chose only to disclose that she had a learning disability because she needed academic accommodations. She decided not to reveal that she had other invisible disabilities, namely generalized anxiety disorder and bipolar disorder, as she wanted to adopt a new persona and “be recognized for my strengths rather than my limitations.” She said, “I always detested the stares, whispers, and questions from my peers as I was pulled away from classes to take quizzes and tests … I hated to be regarded as a ‘special student’ as I was often ridiculed.” Abby felt that she did not need academic accommodations to cope with a generalized anxiety and bipolar disorder. But she noted:

Darn was I wrong! It probably would have helped if I received some form of accommodation with my psychiatric disability … Maybe, flexibility with class attendance, I don’t know. Anything that would prevent the stares when I showed up late for
my early morning classes sometimes. Any form of accommodation to let my professors know that I did not take my classes for granted.

Efforts to compensate for some of the difficulties she encountered as a result of having multiple disabilities compromised her health.

Adrian is a 25-year old White male who transferred to the university during his third year of university enrollment, having completed the first two years of his undergraduate degree at separate small colleges. Shortly after enrollment at the university his worst fears were realized; a large campus environment and its dynamics were not conducive to his learning needs. Immediately following that insight, Adrian began discussions with the small college he was first enrolled in to initiate re-enrollment procedures. Adrian completed only one semester at LGU where he took five courses.

Adrian recognized that he had two learning disabilities, visual perceptual disability and dyslexia, when he was six years old. Like Abby, he required an Individual Educational Plan (IEP) throughout elementary and high school. The primary challenges he experienced, which were associated with his disabilities, included transferring information from the board to a notebook; trying to listen to an instructor talk and take notes at the same time, which he says was a confusing process; and copying accurately, which took him much longer than his peers. He struggles to recognize, organize, and interpret images that he has viewed. This challenge of transferring information also impeded the time within which he could complete an exam and required extended testing time. Adrian had larger classes at LGU with less individualized attention, which further fueled his desire to leave LGU for an institution that offered smaller class sizes. “My learning needs are best satisfied in small classes. LGU would have had to make structural changes for me to even consider it again,” he stressed.

Beck is a 40-year old White male, considered a nontraditional aged student, who developed a learning disability resulting from a traumatic brain injury after brain surgery. Of the five participants, he was the only individual who pursued an online undergraduate degree with LGU. After acquiring cognitive impairments that involved both short term and long term memory loss, he found the flexibility of the online program conducive to his learning needs. He related that, because of his shortened attention span, it took him multiple attempts to process information. Up to a year prior to his enrollment, he noted, “simple little things about memory, I would have to write down. For example, I just couldn’t remember how to get to a location I was quite familiar with over the years.” By the time Beck enrolled at LGU he had regained both some long term and short memory capabilities. Yet, he stated, “my attention span was short and it took me multiple attempts to understand new information.” He particularly struggled with navigating the online environment, which demanded responding to multiple commands, for instance, when replying to his peers in threaded discussions. With assistance from a rehabilitation support team, he subsequently devised strategies to adapt to his cognitive impairment and had successfully fulfilled partial requirements for the undergraduate degree up to the time of his withdrawal. He was keen on pointing out that the limitations that resulted from his memory loss were impediments in his educational attainment.

Carter is a 28-year old White male. During his tenure at LGU he withdrew from the institution on two different occasions. In the first instance he decided to pursue other career interests after the first two years of enrollment. After recognizing that the other option could not be his lifetime career path, he re-enrolled at the university the following academic year. On his return he declared his major and remained enrolled for five years. Carter persisted at LGU for more than seven years and was close to completing his undergraduate degree. Still, he withdrew a second time because he reportedly lost interest in his major and failed to follow through with some course requirements.

Carter attributed much of the problem he encountered in school to symptoms related to his disability, Attention Deficit Hyperactivity Disorder (ADHD). He insisted that he constantly struggled with being focused and remaining on task through completion, planning and prioritizing, indecisive and impulsive decision making, and managing his responsibilities. These challenges ultimately led to his departure. Carter stated:

I constantly compete with my disability … it affects me a lot in school … if I get bored my mind begins to wander … school has always been hassle, ‘cause if it doesn’t keep me enthralled … I just lose focus.

Carter related that he was once taken to an assessment center where his brain waves were measured. The as-
assessment revealed that his brain waves were charged for the first few minutes of an activity and then lost energy, hence the inability to stay engaged. He concluded that he learned differently:

My brain waves use a lot of energy real fast. Primarily for test purposes, for the first half of a test I’d have enough energy to get by, yet I would fade for the last half. I compensated by eating a high protein bar which provided me with source of energy to be able to complete the test.

Mali is a 23-year old first generation, Asian-American female. She was enrolled for three years at LGU but left the institution during the fourth year. Up to the time of the interview, Mali was employed in the hospitality industry, enrolled in a community college, and hoped to return to LGU to complete her undergraduate degree.

Mali only became aware of her learning disability, Irlen’s Syndrome, after completing almost two years at the university. Irlen’s syndrome is a type of visual perceptual problem that affects how the nervous system encodes and decodes visual information. Mali explained that her impaired perception contributed to her slower reading rate, other problems with reading, and problems with concentration and attention. She expressed aspects of the struggles she experienced:

I felt like I just couldn’t study … I couldn’t read as long as I should have been able to. I thought I was … not trying hard enough and questioned myself; you know, am I being lazy? How come I can’t read and study as long as other kids did?

During her tenure at the university, Mali also discovered she suffered from mood disorders, namely generalized anxiety disorder and clinical depression. Mali added that she had an appointment to also be tested for ADHD as she thought all her learning needs were not yet unearthed. The inability to cope academically also contributed to Mali’s feelings of inadequacy and low self-esteem issues.

Feelings of Inadequacy

The desire to feel adequate was a common theme among the participants. “Feeling adequate” took on different meanings for individuals and was triggered by a number of factors unique to students’ backgrounds and experiences. Like Abby, Adrian reported low self-esteem pertaining to his capabilities and limitations. Although he self-disclosed his disability status to the university, he felt inadequate to advocate his immediate learning needs to his professors. He felt he should be capable of managing his academic responsibilities. When asked if he would take the same approach now as he did then, he said, “I probably would have been more vocal about my leaning needs if I were to do this again. I would advocate on my own behalf.” He further clarified that his inhibition to advocate for a learning environment that best suited his learning abilities was based on his belief that he was just passing through [the university]. “I didn’t want to inconvenience people because of my disability and seem too needy. I was totally embarrassed. I guess it was personal pride. I kept telling myself I should be able to do this.”

Some of the participants chose not to discuss their concerns with faculty or health care staff because of feelings of inferiority and embarrassment and the desire to be noted for their capabilities rather than their limitations. Abby, for example, chose not to utilize health care on the campus as she feared her peers and faculty would become aware of her psychiatric disability and think less of her, “I guess I felt inferior just with having a learning disability that I feared if others knew about the psychiatric disability, they may feel that I am worthless and incapable of earning a college degree.”

Abby further emphasized her desire to be perceived as adequate by her peers and professors. This also inhibited her from fully articulating her learning needs to her professors. She required flexibility with class attendance, which was a discretion her professors could consider only if they were made aware of her learning needs. Abby’s feelings of inadequacy were connected to feelings of not belonging to the university, which she noted were associated with discrimination and marginalization by a faculty member. Most participants blamed themselves for their inability to manage the learning environment without seeking support from faculty and staff. Some felt embarrassed about their differences in learning, which also prevented them from seeking help.

Several participants felt inadequate in their ability to meet expectations of their family members, peers, instructors, and LGU. Carter stated that his parents promised to pay for his college education if he could consistently maintain a grade point average above 3.0. He explained, “My grades were always below 3.0 averages. Don’t get me wrong, I still managed to earn
an occasional A and few Bs, but I was always trailing a 3.0 average by close margin.” When he was unable to satisfy this expectation, a cycle of self-blame and feelings of failure and inadequacy were perpetuated.

Mali highlighted that being a minority student meant a lot to her, which also contributed to her desire to be successful. She emphasized that her ethnicity had significant meaning regarding how she deemed herself. Her family placed great emphasis on academic excellence and she felt compelled to meet this expectation. “That all contributed to how I wanted to see myself. I wanted to go to college and support myself and to, you know, be something more than just part of the workforce.” Mali explained that after the first few months at college she was constantly bombarded with feelings of inadequacy. She attributed a number of the challenges she encountered at college to her feelings of inferiority and worthlessness. First, she mentioned that she had struggled to live up to her own academic expectations since enrolling in college. Second, she spoke about her inability to attain the “understood” academic standards set by her parents. Third, she noted that the university had academic standards that she had struggled to fulfill, which also made her feel like an underachiever. Interestingly, she noted that her feelings of ineptitude were integrally interrelated with her lack of knowledge about her disabilities, primarily her learning disability.

Mali expounded that not recognizing earlier that she had learning disabilities may have impacted her academic performance. She commented on how her inability to excel academically contributed to feelings of low self-esteem.

It’s just difficult on your self-esteem. Having been able to achieve so much prior to college and then getting to college and not being able to achieve very much. It has really got me down. It’s affected my grades, it’s affected how I study, how I’ve been thinking and without doubt how I’ve been presenting myself, you know.

**Finances**

Financial constraint was a challenge for all the participants, but was more pronounced for Mali who attributed her withdrawal to her inability to pay tuition fees. All participants required and accessed financial aid upon enrollment at college. However, Mali was later denied financial aid when she received low grades during her third year and was unsuccessful in meeting financial aid requirements. Denied financial aid, she decreased the number of courses she took and increased her number of employment hours. This was a difficult decision to make as she was determined not to be “defeated.” Taking a lower course load further decreased her chances of meeting eligibility requirements to obtain financial aid. She also recognized that, in addition to her learning difficulties, increased employment obligations would possibly detract from the increased academic performance she desired. This ultimately affected her ability to remain in school as she became indebted to LGU, which made her ineligible for future enrollments until her outstanding fees were paid. Mali expanded on how she felt and coined the term “financial disability” in reference to the financial difficulty she experienced. She explained:

I wasn’t able to register for the following semester because I still had to pay off my balance. My parents are unable to help. My dad just recently lost his temp job and my mom, who was unemployed for a few years, just recently found a job. So now it’s the financial disability and the learning disabilities that I’ve been worried about. I still can’t re-enroll as I still have those outstanding fees. And, you know, I just know that it’s stressing me out. … I can’t concentrate other than, you know, worrying about this stuff. I can’t, I can’t get anything done and I just feel like, like I’m so odd.

Adrian also shared that, prior to enrolling at LGU, he transferred to different colleges in an attempt to obtain the best financial package possible. After spending a year at a small college in the state where he grew up, he relocated to Colorado to attend a small college that offered what he thought was a better financial package. After enrolling at the small college, however, he realized that the financial package was untenable and would expire at the end of the year. He then transferred to LGU. Although Adrian noted finances as a contributing factor to his withdrawal from LGU, he did not emphasize them as one of the primary factors.

Beck also had financial limitations. During his enrollment at LGU he was unable to be gainfully employed as he was also recuperating from his brain injury. At that time he was dependent on both the financial and emotional support from a rehabilitation center. Beck had a disagreement with the rehabilitation
center and it “became obvious that the issues with the rehab center weren’t going to allow me to continue taking classes” as the financial support was cut off. Yet, he was adamant that he would complete his studies at the university in the near future. He described the withdrawal process as “just a little bump in the road, that is all.”

Carter noted that despite his efforts he was unable to maintain the grades his parents expected of him, which resulted in lack of financial support from his parents. To offset his financial responsibilities, Carter remained employed throughout his tenure in college, at least part time. This income was supplemented by student loans he received.

**Discussion and Recommendations**

A number of the personal withdrawal factors unearthed in this study have previously been cited in retention studies on SWDs. However, this current research on SWIDs provides a more personal and in-depth examination of some of the personal factors by contextualizing factors, personalizing students’ experiences, and providing new insights into the unique and often interconnected nature of personal factors already known to be associated with SWDs’ college withdrawal.

Participants offered nine reasons for their voluntary withdrawal from undergraduate studies that they considered to be individual and personal characteristics. All five participants at least partially attributed their withdrawal to three personal factors: their disability, feelings of inadequacy, and insecure or limited finances. After analyzing the data and carefully listening to the “stories” of participants, it is not clear that the traits mentioned were truly individual in nature. That is, all the personal traits mentioned by the participants were directly and indirectly impacted by environmental influences. Environmental influences such as faculty attitudes, institutional policies, stigma, parental expectations, and peer behavior meaningfully contribute to the individual factors that participants named as contributing to college withdrawal. Environmental influences on the individual traits identified by SWID are suggested below.

**Feelings of Inadequacy**

Participants reported similar feelings of inadequacy as those identified by previous authors (Dipeolu, Rardon, Sampson, & Burkhead, 2002; Stage & Milne, 1996).

In this study, SWIDs’ withdrawal was associated with feelings of embarrassment to seek help from faculty and staff; reticence to request classroom accommodations; and feelings of inferiority in their inability, whether perceived or real, to meet academic expectations.

Research directly supports the notion that the environment influences self-esteem and feelings of adequacy. For example, like all students, SWIDs formulate perceptions of themselves and their environs based on their interactions with environmental systems (Dipeolu et al., 2002). Long-term exposure to prejudicial attitudes can contribute to negative self-appraisal (Dipeolu et al., 2002). Some of the participants spoke of being labeled as a “student with special needs” in educational settings prior to college and the negative association they made and the negative schema they formulated with those experiences.

Feelings of inadequacy are connected to students’ perceptions of the systemic stigma that exists towards persons with disabilities and permeates higher education and other social structures. Another important finding is the internalized stigma experienced by participants; a number of the participants were embarrassed and or reluctant to disclose their disability and/or seek accommodation due to the perceived negative attitude of faculty and peers associated with persons with disabilities in general. Three of the participants internalized such beliefs, which inhibited them from advocating for their learning needs. Such internalization can also contribute to decreased self-efficacy. Mali in particular was adamant that society perpetuates attitudes of non-acceptance and limited tolerance, particularly for students with learning disabilities. Abby believed that society was highly intolerant of persons with mental health disabilities.

**The Disability**

The nature of the student’s disability was cited as a contributing factor to college withdrawal. Participants referred to the negative academic consequences of functional limitations such as the inability to pay attention, difficulty with memory, and unpredictable moods. At least two environmental influences impact the degree to which the “disability” may impact academic success and subsequent retention: the services and accommodations available to SWDs and their access (including the stigma surrounding service utilization). Legal mandates require that SWDs receive appropriate accommodations at institutions of higher education,
yet some institutions go beyond legal requirements and offer additional disability support services. Additional work needs to be accomplished in this area (i.e., websites and on-line materials accessible to all students including visually and hearing impaired students), this discussion should also focus on access to and the friendliness of services and accommodations.

Dowrick, Anderson, Heyer, and Acosta (2005) and Wegner (2008) suggest that SWDs’ proclivity to persist is related to the SWD’s ability to utilize support from faculty, staff, and other support networks. Some of the participants chose to optimally utilize disability services and support, while others opted to be selective in how they sought campus services and support. Abby, for example, chose not to disclose her psychiatric disability to either faculty or staff for fear of being stigmatized, deemed inferior, or treated differently. This perception influenced her decision not to use the campus health services, opting instead to retain her hometown mental health team that was in another state. Although services were available at the LGU, she chose not to access them because of stigma and fear of being negatively judged.

Finances

A number of SWDs carry lower course loads to increase their ability to be successful. Lower course loads increase the number of semesters needed to complete a degree, which may directly impact and restrict SWDs access to many federal funds given that federal monies are limited to an undergraduate degree and loads increase the number of semesters needed to increase their ability to be successful. Lower course loads may influence their chances to be successful in higher education. The participants also seemed to have a general lack of knowledge of other financial options available to SWDs in higher education. Parents are also encouraged to become knowledgeable about their students’ academic and nonacademic strengths and weaknesses and support them to achieve realistic goals without restrictive measures. In this study, Carter discussed how his parents failed to offer him financial assistance because he was unable to attain the academic standards they demanded. Rather than facilitating Carter’s success, this parental restriction also contributed to his academic demise.

Environmental influences such as stigma, institutional policies, and parental expectations impact even the most basic individual factors including personal attitudes, disability symptoms, and financial insecurity. Future research needs to identify the ways that environmental factors support college completion and explore the ways that the institutional, social, and family environment barriers can be eliminated or transformed to supports. For example, two study participants expressed the desire to attend a small college. Are there differential retention and completion rates between small colleges and large universities with regard to SWDs? Are small colleges more supportive of SWDs than large universities? If so, what specific characteristics are most effective in improving retention and completion rates of SWDs?

Another line of future research may include investigations of faculty attitudes towards SWDs with particular attention to attitudes toward students with visible disabilities, learning disabilities, and psychiatric disabilities. What are faculty attitudes towards reasonable accommodations? Do faculty members believe that they could benefit from additional information on SWDs and their needs?

In addition, access to services may be increased if SWDs advocate for their personal needs (Barnard-Brak et al., 2010; Getzel, 2008; Wegner, 2008). Like other researchers (Dorwick et al., 2005; Wegner, 2008), this researcher is advocating that SWIDs gain mastery in self-determination and self-advocacy skills. Students with disabilities should be educated about their legal right to equal access in higher education. SWIDs should be empowered to request academic accommodations and support as needed as this is one of the ways to ensure that they acquire the same opportunities as nondisabled students. These skills may be introduced to SWDs during high school, for example, or during college orientations.

It is important to note that college withdrawal is not always a negative action for students. As the participants’ experiences highlighted, withdrawal depends on the needs and goals of the students. In Adrian’s instance, he enrolled at the LGU as a practical matter: to maintain continuous enrollment, which would make him eligible to re-enroll at the small college
where he had completed his first year in college. This reinforces Bean’s (1982) assertion that a student should not be considered a drop out if his or her intended goal was accomplished before departing the institution. As revealed in this study, both Adrian and Abby left LGU to attend smaller colleges where they felt their needs were better addressed; once at that college, they successfully completed their undergraduate degree. Withdrawal was considered a negative outcome by the institution from which the student departed, but in reality it reflected success for those particular students. Thus, institutional data that reflect the reasons for withdrawal and future outcomes would provide the details needed for a more complete understanding of college withdrawal of SWDs after they completed 60 credit hours of classes.

This qualitative study sheds light on the complexity of personal factors SWIDs associate with their college withdrawal experience. The participants’ ability to manage their disabilities and advocate on their own behalf was intertwined with environmental influences including stigma, faculty, and peer attitudes, financial aid and institutional policies, and parental expectations.

Limitations

Despite the rich, detailed, contextual experiences provided by these SWIDs, only five former upper level students who voluntarily left LGU participated. One of the limitations of this study was the small sample size, yet the small sample allowed for the collection of more in-depth data. Another limitation was that the study was specific to LGU former SWIDs, which reduces the transferability of the data to other SWIDs’ realities. It is also possible that another group of former SWIDs may have generated different findings, recognizing that SWDs are a heterogeneous population. This study was also limited in that it was based solely on self-report. Therefore assumptions, suggestions, and recommendations are made based on these SWIDs’ reported experiences. The small sample size of this research and lack of having a comparable group do not allow for a conclusion to be made about factors that impact withdrawal within the first two years and those that may impact withdrawal in later years of college.

Conclusion

This study sheds light on the complex personal factors SWIDs associate with their college withdrawal experience and the environmental influences that impact these factors. The participants’ ability to have confidence, manage their disabilities and advocate on their own behalf, and maintain financial security was intertwined with other factors such as their perceptions of societal views of disabilities, financial and institutional policies, and parental expectations. Despite the emphasis on empowering SWDs, university administrators need to continually assess the sources of stigma on campus and cultivate strategies to mitigate them. Academia has a responsibility to provide an inclusive campus community where SWDs can be accepted for who they are, feel a sense of belonging, and have equitable opportunities to be academically successful. Any effort should be a collective one, which involves not just administrators, but all members of faculty, staff, and students alike.

Finally, the findings suggest the need for continuous dialogue and research on attitudes of faculty, students, and staff regarding SWDs, re-evaluation of potentially discriminating financial aid and university policies, and an investigation of the characteristics of small colleges versus large universities that may support or inhibit the academic success of SWD.

References


About the Author

Valerie Thompson-Ebanks received her first and second degree in Social Work at the University of the West Indies, Jamaica and Ph.D. in Education and Human Resource Studies with a cognate in Social Work from Colorado State University. Her experience includes working as a school social worker in Jamaica and teaching social work education at Colorado State University while pursuing her doctoral studies. She is currently a professor in the Division of Social work at the University of Wyoming. Her research interests include students with disabilities in higher education, retention issues in higher education and human diversity. She can be reached by email at: vthomps4@uwyo.edu
PRACTICE BRIEF
Applying Universal Design to Disability Service Provision: Outcome Analysis of a Universal Design (UD) Audit

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Abstract

This article presents an outcome analysis of a Universal Design (UD) audit to the various professional facets of a disability service (DS) provider’s office on a large North American campus. The context of the audit is a broad campus-wide drive to implement Universal Design for Learning (UDL) in teaching practices. In an effort for consistency and transparency, the DS staff decided to apply the principles of UDL that were being promoted to the very core of the user interface. The authors’ hypothesis is that DS providers themselves create environmental and procedural barriers and that, as promoters of barrier free access, they must carefully examine their professional framework. The data analyzed in the audit was qualitative and has been collected from unit staff and service users over a one year period.

Keywords: Universal design, UD audit, reflective practice, disability service provider

The opportunity for this practice brief arose following a disability service (DS) unit’s decision to impose the universal design lens on its own service provision in the form of a UD audit. Universal Design (UD) is a set of principles for designing products and creating environments that are equally accessible to a diverse user base (Ofiesh & McAfee, 2006; Ofiesh, Rojas, & Ward, 2006). Much of the literature surrounding the implementation of UD in higher education focuses on the obstacles and barriers course instructors encounter when designing or delivering their course (Izzo, Murray, & Novak, 2008; LaRocco & Wilken, 2013). To date, very little attention has been paid to the implications that UD implementation have for service providers. This article presents an outcome analysis of a twelve month effort to place DS provision in line with the wider principles of universal design. We carried out this analysis through a multifaceted observation of all aspects of DS provision. Whenever possible, the analysis attempts to move beyond the anecdotal observations to question the applicability of these results to other campuses and the DS field as a whole.

Context

The campus in question is a large North American campus of over 37,000 students. The DS provider’s office has a long history on this campus and has been in existence for over twenty years, with a substantial track record when it comes to meeting the needs of students with traditional disabilities. The unit has struggled to adapt its proactive efforts to address the needs of students with non-visible disabilities. While UD had been explicitly embraced for several years on the unit’s website and promotional materials, it must be accepted that it has had little success with regards
to hands-on UD implementation. Strategic management decisions were taken in summer 2011 to intensify efforts to implement UD in campus practices and, as a result, a lobbying plan was devised. The goals and tools selected were successful and the outcome became immediately tangible when UD implementation was discussed in great detail at a meeting of the university’s executive bodies in Fall 2012.

Through this process, the DS providers became increasingly concerned with a disparity between their external campus message of promoting UD and their internal practices. While the office endorsed and encouraged the use of online tools that created more universal access (e.g., synchronous and asynchronous chat, online discussion forums, and virtual document depository), the unit relied heavily on paper-based procedures and offered no alternative to in-person appointments. It became increasingly apparent that these service processes, per se, created barriers for students. In order to receive accommodations for final exams, students were required to complete and submit an exam registration form. This creates barriers on multiple levels: print based material is one of the biggest barriers for students with various impairments. Additionally, students had to visit the office in person to submit the required forms. This could create unnecessary barriers for students with physical impairments or students with social phobias or anxiety disorders. Additionally, students affected by a wide spectrum of attentional impairments often forgot the process entirely and, thus, lost access to their accommodations.

A year into this campus-wide UD implementation effort, the unit decided to assess the implementation of its own access guidelines on its internal procedures in the form of a UD audit. The audit was planned as a progressive, ongoing professional development exercise. It was decided that as much data as possible should be collected through this process in order to allow for an outcome analysis. The motivational factors that led to this decision were the following: (a) a desire for increased consistency between external messaging and internal procedures; (b) transparency with students and concern vis-à-vis users that procedures were having a contradictory effect; (c) a social justice preoccupation that procedures were not only restricting access, but allowing power and privilege dynamics to be deployed within the service provision framework.

The various dimensions of the audit process will not be described in detail, as they were not designed in detail before the audit begun. The aim was not to create a checklist and later assess the outcome of its application. On the contrary, the goal was to empower each participant-researcher to apply the essential principles of UD – the removal of barriers – wherever they could be identified. The central premise of UD is the identification and removal of barriers to access and the creation of inclusive environments. Consequently the first part of the audit consisted of creating a barrier analysis. The office then tried to erode these barriers using the three central principles of UDL: multiple means of representation, multiple means of expression, and multiple means of engagement (Rose & Gravel, 2010).

**Literature Review**

It seems important to begin by briefly refer to the existing literature on UD. The literature on UD in higher education is abundant and far ranging (Gradel & Edson, 2010; Rose, Harbour, Johnston, Daley, & Abarbanell, 2006). The aim of the audit was not to address each detailed item of the UD framework but, rather, to develop a global understanding of the key elements of UD and then apply them to DS service provision. This literature can be divided between literature on UDL (Rose & Gravel, 2010) and Universal Design for Instruction (UDI) (Embry, Parker, McGuire, & Scott, 2005). The unit staff did not adopt a rigid definition of the theoretical model; the intention was not to adhere to each technical recommendation enumerated in UD literature but to identify the spirit of the proposed framework and examine its applicability to DS service provision. In this sense, the participant-researchers did not narrow their use of literature to either UDL or UDI specifically. The three principles of UDL (Rose & Gravel, 2010) are more prominent in the unit’s analysis of potential barriers and solutions.

A key notion to retain seemed to be the idea that environments and practices can equally enable or disable individuals. In this sense, it takes the focus away from individual user characteristics to highlight instead the environment’s ability to widen or restrict access. In this sense, the researchers see UD as the procedural translation and application of the social model of disability (Swain, French, Barnes, & Thomas, 2004) and not as a stand-alone technique of access. The other critical dimension in the definition of UD we emphasized is the fact that it is seen as a sustainable, environment-focused framework to manage dis-
abilities issues. The links between sustainability and UD are rarely explicitly described (Colorado State University, 2013) but it often implicitly weaves the discourse on UD (Staeger-Wilson & Sampson, 2012). It seemed important to stress this facet as part of the unit’s endeavours: change is always difficult in terms of resource management, whether human or material. If a proposed change puts in place practices that are more sustainable, the management of change takes on a dimension that is much more palatable to the actors (Spaargaren, 2011). The interest for sustainable pedagogical practices in higher education is certainly triggering increasing interest (Ritchie, 2013). Links to UD are not always explicit, but the authors explored this angle systematically in its messaging to staff members.

It is important to remember that UD in essence requires the service provider, course instructor, or product creator to return to the conception phase of his or her practices. It is essential to remember this as, too often, discussions about UD implementation are narrowed down to redundant debates that attempt to remediate problematic end products rather than addressing initial conceptions. UD’s origins as an architectural concept are important in this reflection, as it is much easier to create a universally accessible built space from conception than it is to retrofit the building after the public begins to use it. The authors therefore repeatedly acknowledged that implementing UD would mean revisiting processes and practices from the start, rather than trying to fix the unfixable later (McGuire, Scott & Shaw, 2004). UD asks the practitioner to devise access at the creative stage; it is therefore quite distinct from a retrofitting exercise. Awareness had to be developed in the DS unit about the burden this would create for the team.

The final dimension of UD that the authors highlighted throughout this project is the fact that UD implementation is a progressive exploration and transformation. There is no such thing as a fully UD service delivery model. Service delivery or user interface can be more or less UD on a wide spectrum of accessibility (Rose, Meyer, & Hitchcock, 2005). It is important to realize how wide the UD goals are and that full attainment of the criteria is wishful thinking. It was very important to infuse this awareness into the team’s working definition so as not to demoralize staff or create overly ambitious objectives. Participants were encouraged to empower themselves through the notion that a number of barriers in their every day practices could be eliminated through a common sense analysis. The goal was to focus on realistic solutions that were immediately achievable, rather than outside the individual’s reach.

Much of the literature on UD in higher education focuses on its implementation within the pedagogical context (i.e., the classroom) by highlighting the hurdles encountered by course instructors (Harrison, 2006). There is, to date, little literature on the impact of UD implementation for service users, though barriers encountered by DS providers in technology-based strategy instruction have begun to be scrutinized (Parker, White, Collins, Banerjee, & McGuire, 2009). This is the gap that this practice brief seeks to explore.

**Methodology**

The working hypothesis of this audit was that, by applying principles of UD to DS provision, tangible results showing a positive evolution would be observed. We anticipated finding evidence of a positive evolution in both user satisfaction and unit staff perceptions, indicating an erosion of existing barriers. While carrying out the audit, we collected qualitative data from students and unit staff. The data collected from students emerged from the regular quality assessment exercises that are scheduled throughout the year. We also collected student data through existing consultations between the unit and the student advisory committee, key liaison individuals, and numerous student interns who collaborate on projects with the unit. Data collected from staff was accumulated through scheduled staff meetings, HR reviews, and key strategic get-together sessions (e.g., annual retreat, professional development debriefing exercises, and brainstorming of quality assurance).

Significant efforts were made to address researcher-participant power dynamics and to limit situations where the participants would have felt pressured to answer in a certain fashion. Perfect collaborative research – just like UD – remains a working ideal rather than a fully achievable goal. Ethical steps were taken to ensure that participants could contribute freely to discussions on outcome and impact on services without feeling that dynamics of power or authority came into the way. The student feedback was given anonymously by means of large scale surveying, for example, and members of the student advisory committee are, as a
matter of policy, invited to participate and comment in a variety of ways that bear no relation to their own service provision. In the case of staff members, the audit was carried out with each individual in one-on-one brainstorming sessions led by a peer in a process explicitly dissociated from reviews and job appraisals. The research collaboration included student advocates, liaison individuals from other campus units, and unit staff members.

The data analysis described in this practice brief constitutes a comparative barriers analysis (Barnes, Oliver, & Barton, 2002) for each dimension of the unit’s activities, assessing differences recorded between processes in place before the audit and after twelve months of reflective transformation. We collected data about these aspects of the DS providers’ work: (a) barrier-free user interface; (b) initial meeting and approach to documentation; (c) outreach towards a new, fluid, and emerging user base; (d) the development of faculty resources; and (e) management of change. We did not choose to examine the effect of the UD audit on specific job descriptions. Indeed, selecting study dimensions such as “exams” or “adviser relations” would have severely narrowed down the exercise and limited it to a classic HR review. The aim of the audit and this practice brief was to take as a starting point dimensions in DS provision that were likely to create barriers for users and to then tackle these various facets of our professional activity.

The global context of the project is action research in the sense that the researchers were also professionals of the unit who collaboratively committed to the research, underwent the audit, and collected the resulting data (Reason, 2003). The staff members were also engaged participants who experienced several benefits. More than mere actors, they had an interest in examining the transactional results of the exercise in order to improve their practice and user satisfaction. The exploratory dimension of the project fit in the wider mandate of the office and in its commitment to quality assurance. Participants were also empowered on a daily basis to modify their professional practices in order to achieve more equitable outcomes. The DS office was identified, consequently, as a professional environment particularly suited to action research (Wright & Marquez, 2006).

Findings

Barrier-free interface

The first element of focus for the UD audit was the interface with users. Of particular concern was the fact that the bulk of communications with students still required either paper, visits to the office, or appointments. This was true of most exam registration procedures but also of advising. The authors decided to become entirely “paper free” from September 2012. This process involved eliminating the use of all forms, letters, and printed material in interactions and exchanges with service users. An example of this was the elimination of paper-based exam registration forms that were required to be completed by students to register for exams, a change warmly welcomed by students (see Appendix A). The perception from users and staff members alike was that this in itself went a long way to removing barriers for the students. “Changing to online forms for exams was a huge improvement for me. I did not appreciate previously having to run around after my professors begging them to fill out exam forms. Thank you for changing the system,” reports a student in a survey carried out in 2013 (see Appendix A). This statement was characteristic of the feedback recorded through this process. Staff members in fact fed their own perceptions of the outcomes they had experienced into several academic and professional presentations (Mole & Bennett, 2013).

This change in practice went further than simply transferring existing forms to a web forum. Team members were encouraged to re-examine requests made on users and to eliminate all unnecessary demands. Occasions when users are asked to interact with the office staff in person were therefore reduced significantly. It became apparent that the unit, like many administrative organizations, had over time allowed procedures to develop their own raison d’être without necessarily adding to the smooth running of services. In many cases, it became apparent that these procedures were burdensome for staff as for students, since the data produced by form-filling in turn required data entry and filing by staff. A UDL approach was encouraged asking staff members to reflect on UDL’s three principles and to explore how the integration of UDL into the DS unit’s daily practices could widen access for students. Even when procedures could not be entirely eliminated, the staff participants were encouraged to carry out the barriers analysis on a narrower scale and to determine...
(a) whether the procedure included several steps, and (b) if some of these steps could be eliminated.

Last but not least, the team decided that the barriers analysis should be extended to the advising relationship itself. It was apparent that requiring students to come to the DS office in person when they might not be available or able to make their way to our office also created barriers. It was therefore decided to offer virtual registration and advising (see Appendix B). Ethical aspects were examined at length but the team failed to see any arguments sufficiently powerful to prohibit this exploration. The confidentiality of the discussions was not compromised, the use of synchronous virtual platform was perceived to maintain the solemnity of formal face-to-face meetings, and the ability to observe non-verbal communication reassured the advisers that all aspects of effective communication remained in place. The results were immediately tangible. Results of a satisfaction survey carried out amongst service users showed that only a few months after its introduction, Skype was already being used by 15% of students seeking access advice (see Appendix A). The survey was orchestrated electronically by student services at the campus in question, thus explicitly creating ethical distance between the organizers and the unit in question. It was sent out via email to the entire user base of the unit in question. It was sent out via email to the entire user base of the office and a participation rate of 25% was recorded. This was the first survey of this kind attempted by the unit and it is now hoped that the evaluation can be renewed each spring in order to monitor the impact of further UD improvements on the service user experience.

Initial Meeting and Approach to Documentation

Face-to-face interaction with users was scrutinized as well. Even when students successfully made their way to the office, it was felt that barriers still remained and that these shaped and narrowed the relationship between students and access advisers. The barriers identified were globally attributed to the imprint of the medical model of disability theory on the content and format of access appointments. The barriers, often loaded with symbolic meaning, are both verbal and non-verbal. The team examined the typical routine of the access appointment and identified key elements that amounted to barriers and flavoured the interaction. Examples included the request for documentation in advance of an appointment, waiting area protocol and office terminology (“intake appointment”), the physical placing of documentation on a desk between the adviser and the service user, and the weight of the diagnostic perspective in determining students’ eligibility for accommodations.

At worst this might well deter students unwilling to submit to such procedures from accessing the DS office. Literature on postsecondary transition for students with disabilities has amply evidenced their reticence to continue accessing services in the format prescribed (National Longitudinal Transition Study-2 [NLTS-2], 2005; Marshak, Van Wieren, Raeke Ferrell, Swiss & Dugan, 2010). At best it communicates a clinical view of a person and implies that his/her disability is the problem, not the environment on campus. The terminology has been revised and the unit’s website reworded to better reflect a user’s perspective. To this end, documentation is not required in what is now framed simply as a “first appointment.” Opening words are strategically utilized now by DS staff: “What brings you here today?” equalizing power dynamics and giving the student’s story legitimacy. The Association on Higher Education and Disability documentation guidelines ([AHEAD], 2012) were seen to fit comfortably with this reflective exercise and have been proactively integrated into the office’s ethos. The conversation centers on barriers experienced by students in their current environment.

Reaching a New, Fluid And Emerging User Base

Barriers are also created through public relations, branding, and outreach work. Our implementation of a social model of disability raises interesting questions concerning the clear delineation of a “user population” for a DS provider. If the environment creates barriers and disables students, then there can really be no such thing as a tangible, clearly identifiable body of students associated with such an office. The user population must inherently be seen as fluid and free flowing. A student might be in a disabling situation one semester or within one specific class where pedagogical delivery and evaluation methods do not fit his or her learning profile, but not in another semester or class. Defining one’s role with too much rigidity or assuming that students can be categorised and labelled as users or non-users of a service, therefore, creates attitudinal barriers. The team’s solution has been to involve students in redefining the unit’s outreach message. The DS office in collaboration with its student advisory body has devised advertising material that targets students
by identifying possible campus barriers. One example is a series of posters that are displayed in residence in the first weeks of a new term – in “neutral” places such as the back of bathroom stalls – where they can be considered at will and without fear of stigma. The ultimate outcome of this reflective work has been a student-led project focusing on a name change for the office, which was completed in late 2013 (See Appendix C).

The Development of Faculty Resources

A keystone repercussion of implementing the social model of disability in postsecondary education is the realization that interventions cannot continue to be directed at students if it is the teaching environment that creates barriers. The natural conclusion is that a large proportion of the resources and efforts of a unit must therefore be redirected towards the environment itself. This redirection began early on in the UD implementation effort. Staff members’ job descriptions are progressively being redefined. In an initial transition effort, 50% of advisor hours are being freed for the promotion of UD on campus. This has led to the creation of hands-on implementation tools for course instructors, which include tailor-made workshops, a bank of 2 minute videos, and tips on sustainable classroom practices focusing on eroding barriers. The last outcome of this strategic rethinking has been the development of a consultancy service for faculties or course instructors wishing to receive support when redesigning course content or evaluation methods.

Management of Change

Removing barriers within a DS unit goes hand in hand with managing change effectively. It quickly becomes apparent that many of these procedural barriers have simply developed over time. Intention or planning has rarely had anything to do with their creation and staff members develop habits that are difficult to break without triggering fear and a feeling of inadequacy. No one likes the “new” even if the “old” does not necessarily make sense or bring professional satisfaction.

An added facet of the challenge of change is the “centrism” that professionals naturally develop in positions of power and authority (Wilson, 2000). Through complex mechanisms of “counter-transference” one rapidly convinces oneself that what we are doing as professionals is what students are requesting (Hinshelwood, 2009). Sound ethnographic exploration of user expectations must therefore occur in parallel with the management of change. Change is not being triggered simply for its own sake but because user expectations and behaviours are indicating that change is needed.

An anecdotal illustration of this complex leadership exercise would be the work the team carried out with regards to registration for final exams. In preceding semesters, students were required to register for finals; there were early deadlines and forms and visits to the office were required. This begged the question, Might it be possible to turn the existing procedure on its head so that any student known to the office might automatically – and without any procedural requirement - have a place reserved to sit final exams just as is the case for these students’ peers in the mainstream setting? Student feedback and the record of complaints indicated this as a high priority for action. Staff fears and apprehensions ran high, but were heard and addressed through the logic of the UD audit.

The new process was instituted in the Fall 2012 semester. The volume of final exams sat jumped during one semester from 1096 to 1632. The level of “no shows” remained almost identical. A large volume of students were in all evidence previously not submitting to the procedures in place and therefore did not have access to accommodations available to them. In the end staff devised an alternative, more global technological method to obtain directly from the university the student data they required. The ethnographic concern led to creative problem solving. Staff members report that their administrative burden has been significantly reduced as a result and that they are feeling empowered by the process.

Scope of Findings

There are some limitations in the data collection. The fact that the audit relied primarily on qualitative data and involved merely one DS provider limits the transferability of outcomes. While the framework of the analysis remains action research, its scientific relevance remains of narrow scope. It was, however, an important first exploration in a fast moving environment which, unfortunately, attracts little independent scientific research. One way this shortcoming might be addressed in the future is the fact that this DS unit carries out annual quantitative surveying of its users. It is hoped that such surveying will be able to identify objective and quantifiable transformation in user perspectives and, thus, more robust evidence of positive outcomes.
As stated in the introduction, the intention of the researchers was explicitly to move away from anecdotal observations and to focus from the start on wider implications of the recorded observations. The unit is conscious of its unique position as one of the few DS providers having undertaken such an exercise on a global documented scale, and as one of the first to publish findings. While the relevance of this work in progress’s results to the field is still limited, there are nonetheless certain key elements of the emerging findings that could be of use to other professionals. Many of the outcomes highlighted below are not unique and draw some validity from the fact that they also appear in the literature on program evaluation, including the small body of literature on program evaluations (Dukes, 2011; Parker, Shaw & McGuire, 2003).

The first important realization is that a UD audit is a complex and multi-faceted process that few units attempt successfully as a team. Our tasks within DS units are varied to the point of having little in common when it comes to specific tasks and routines. In this sense our personal responses to UD implementation may vary greatly depending on our level of comfort or the increased burdens this may place upon us. The notion of a UD audit may be readily appealing to management and access advisers. Conversely, the danger might be that such a process may alienate some professionals within our teams because motivation towards the changes envisioned has not been nurtured or because new challenges are created by this reframing of daily tasks. It has proved extremely important - and even key to the success recorded - to implement this process as a team and to adopt a global, systemic approach to the management of change. The repercussions of decisions made by some on the work of others in DS units are numerous. Seeing the UD audit as a top-down process would be condemning its success or at the very least severely restricting its width. The UD audit is therefore a process that must be planned by all, must take into account the various specific professional facets of each individual unit, and must be embraced by all (Goodin, Parker, Shaw, & McGuire, 2004).

Secondly, it is quickly apparent that professional perspectives are often contradictory through this process. It would be naive to assume that the process of a UD audit can be completed without tension and transitional friction. As stated, the decisions of some professionals in this transformation have impact on others. The process of change itself can bring to the surface power dynamics. Furthermore, UD – as any sustainable change – can increase an individual’s workload while the review is carried out and before the sustainable change leads to the desired impact. Resource issues are bound to arise, as they did here. The lesson to remember is that such a change process must be planned, proactively monitored, strategically followed and managed with agility. Resistance factors are inherently abundant (Smollan, 2011) and require a degree of forward planning.

Similarly, the audit can be a very threatening process for some the participants, as it requires all professionals in the team to critically re-assess their roles. The implementation of the social model of disability is likely, through the next decade, to radically change our job descriptions. The UD audit is perhaps the first glimpse DS professionals have of the changing face of the millennium campus. As such the audit process can be daunting. An inclusive campus is one that requires fewer and fewer retrofitting resources. Implementing UD is effectively working ourselves out of a job or at least the ones we now have. This can be extremely unsettling for some colleagues, even if the desired outcome still is some way off. Clearly DS professionals will be called upon in the future to take on roles that are only partially imagined at this stage and might include faculty support, campus-wide UD promotion and global consultancy on inclusion. In the early stages of change, fear is tangible – as was the case here – and requires sensitivity and the creation of a “safe” environment in which participants can voice their concerns.

The implications for student stakeholders are multiple. Extensive qualitative feedback was collected through the study: the impact of the changes was registered through large scale surveying of the unit’s user base carried out in March 2013. We received completed surveys from 300 students, a response rate of 25%. More than 80% of the survey respondents were satisfied or very satisfied with the impact that the implementation of UDL principles was having on their user experience (see Appendix A). The surveying also allowed space for semi-directive comments. These data show an understanding and appreciation of the solutions crafted during this reflective exercise by the DS team. Further in-depth qualitative data was collected through four meetings within the span of one year with the unit’s Student Advisory Board, which
played an active part in examining and supporting the changes proposed. Students have appreciated the multiple ways that they can contact an adviser, the greater independence that they have from our office because they can manage their affairs on line, and the removal of deadlines that previously caused grave difficulties for those who failed to meet them. The outreach campaign has had a noticeable impact on the numbers of students contacting the office to explore access to learning. A two-fold increase from 657 to 1311 has occurred in the volume of service users over the duration of the UDL implementation work (Appendix D). The audit has constituted an important and symbolic step towards increased awareness of user expectations and a more systematic ethnographic exploration of the student perspective.

A growing number of postsecondary DS providers are likely to encounter the need to conduct a UD audit of their own procedures as the social model becomes a more pervasive paradigm in DS practices. The exercise has an ecological relevance that is immediately transferable, as it highlights a critical tension in units’ expressed mission statements and how student users experience the implementation of that mission. Though internal in nature and designed specifically for the context of this unit, the audit therefore can offer external relevance as a process. This outcome analysis has value for the unit undergoing the transformation but also for the field of DS provision. Beyond this it is likely to have a transformational impact on campuses as a whole, as has been the case here, by making them more aware of the need for inclusion and student-centered quality assessment.

References


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Appendix A

The OSD user satisfaction survey was conducted in March 2013.

**Which of the following OSD services have you used? (Check all that apply)**

<table>
<thead>
<tr>
<th>Count</th>
<th>Respondent %</th>
<th>Response %</th>
</tr>
</thead>
<tbody>
<tr>
<td>142</td>
<td>51.08%</td>
<td>23.91% Access advisor</td>
</tr>
<tr>
<td>79</td>
<td>28.42%</td>
<td>13.30% Learning resource advisor</td>
</tr>
<tr>
<td>84</td>
<td>30.22%</td>
<td>14.14% Testing coordinator</td>
</tr>
<tr>
<td>21</td>
<td>7.55%</td>
<td>3.54% Adaptive technology specialist</td>
</tr>
<tr>
<td>18</td>
<td>6.47%</td>
<td>3.03% Digitalized text specialist</td>
</tr>
<tr>
<td>192</td>
<td>69.06%</td>
<td>32.32% Exam coordinator</td>
</tr>
<tr>
<td>11</td>
<td>3.96%</td>
<td>1.85% OSD visibility or advocacy event</td>
</tr>
<tr>
<td>47</td>
<td>16.91%</td>
<td>7.91% Workshops</td>
</tr>
</tbody>
</table>

278 Respondents  
594 Responses

**How satisfied are you with each of the following? - Overall service provided by the OSD**

<table>
<thead>
<tr>
<th>Count</th>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1.70%</td>
<td>Very dissatisfied</td>
</tr>
<tr>
<td>4</td>
<td>1.36%</td>
<td>Dissatisfied</td>
</tr>
<tr>
<td>35</td>
<td>11.90%</td>
<td>Neutral</td>
</tr>
<tr>
<td>124</td>
<td>42.18%</td>
<td>Satisfied</td>
</tr>
<tr>
<td>126</td>
<td>42.86%</td>
<td>Very satisfied</td>
</tr>
</tbody>
</table>

294 Respondents

Please indicate your level of agreement with the following statements:

**The Office for Students with Disabilities’ . . . - Personnel make it easy for me to arrange for access/accommodations**

<table>
<thead>
<tr>
<th>Count</th>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>4.06%</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>14</td>
<td>4.37%</td>
<td>Disagree</td>
</tr>
<tr>
<td>28</td>
<td>8.75%</td>
<td>Neither agree nor disagree</td>
</tr>
<tr>
<td>136</td>
<td>42.50%</td>
<td>Agree</td>
</tr>
<tr>
<td>129</td>
<td>40.31%</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

320 Respondents

Please indicate your level of agreement with the following statements:

**The Office for Students with Disabilities’ . . . - Access/accommodations processes are easy to follow**

<table>
<thead>
<tr>
<th>Count</th>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2.48%</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>16</td>
<td>4.97%</td>
<td>Disagree</td>
</tr>
<tr>
<td>42</td>
<td>13.04%</td>
<td>Neither agree nor disagree</td>
</tr>
<tr>
<td>140</td>
<td>43.48%</td>
<td>Agree</td>
</tr>
<tr>
<td>116</td>
<td>36.02%</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

322 Respondents

80%+ students are satisfied with (a) access/accommodations services received from the OSD, (b) responsiveness of OSD staff to needs, (c) Timeliness with which questions were answered, (d) confidentiality, and (e) Overall service provided by the OSD
Appendix B
Appendix C

The OSD has renamed all of its services to students....

my ACCESS

Your access preoccupations, our mission
### Context – Demographics and current trends at McGill OSD

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Students registered with OSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/2005</td>
<td>492 (+approx. 130)</td>
</tr>
<tr>
<td>2005/2006</td>
<td>493 (+approx. 130)</td>
</tr>
<tr>
<td>2006/2007</td>
<td>533 (+approx. 130)</td>
</tr>
<tr>
<td>2007/2008</td>
<td>552 (+approx. 130)</td>
</tr>
<tr>
<td>2008/2009</td>
<td>541 (+approx. 130)</td>
</tr>
<tr>
<td>2009/2010</td>
<td>657 (+approx. 130)</td>
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<tr>
<td>2010/2011</td>
<td>770 (+approx. 130)</td>
</tr>
<tr>
<td>2011/2012</td>
<td>994</td>
</tr>
<tr>
<td>2012/2013</td>
<td>1311</td>
</tr>
</tbody>
</table>
BOOK REVIEW

J. Mark Pousson
Fontbonne University


Short buses still appear on streets throughout the United States. These short, stubby, yellow school buses are appropriated to transport children with disabilities to school. In Jonathan Mooney’s book, *The Short Bus: A Journey Beyond Normal,* the short bus represents a journey that some individuals will never know and others will never forget. For many who ride or have ridden this form of transportation, the short bus is a symbol of disability and difference; a vehicle for experiences with oppression. For those who read this book, Mooney takes his readers on a ride that is emotional and thought provoking and will challenge anyone’s ideas of normalcy and the meanings attached to being different. This book is for all who try to figure out what is normal.

Mooney was diagnosed with Attention Deficit Disorder and a reading disability as a boy. As a short-bus rider, he became a special education student; a label that tagged him as being different, not normal. This book is a memoir. As such, it presents a recollection of Mooney’s memories of his educational experiences as a student with disabilities as well as a reflection of society’s perceptions of normalcy and difference. Plagued by the demons of difference he endured throughout his life, Mooney sought to exorcise those demons by learning how others moved beyond being labeled. He bought a short bus and toured the country, meeting with children and adults who found imaginative ways to overcome being different in what is known as a normal world. Through Mooney’s story and the stories of other individuals who have transformed their experiences of being labeled as different, the reader is invited to evaluate their own capacity for meaning making while remembering that transformation is common to all human beings.

Mooney shares his interactions with many individuals. Some stories that stand out include a young girl with visual and hearing impairments in Virginia, a young woman with Down’s Syndrome in Ohio, a young male teenager with learning disabilities in California, and a middle-aged man who is on the autism spectrum in California. These stories present firsthand accounts of a child’s or adult’s experience in school. The reader learns about their educational challenges and the ensuing transformation process related to their sense of self. Included in some of the stories is a historical perspective of the diagnosis. This provides another frame to understand the experience that Mooney and others have had living with certain diagnoses. Equally powerful are the descriptions of the impact these diagnoses have had on family members. Parents are generally depicted as strong advocates for their children while struggling to make sense of their children’s educational struggles. They, too, entered into a symbolic chrysalis state as the result of interacting with a child with a disability. Some emerged with greater insight than where they first started. Others still wait. Throughout Mooney’s reflections on his interactions with these individuals, the reader learns more about his past and current struggles with the meanings he has attached to himself as someone with disabilities. While he may not have exorcised his demons by the end of the book, his story tells us how his own transformation has occurred.

Mooney’s book is a good anecdotal disability studies primer on many levels. This book is a relevant example of how symbols, such as language, can affect how individuals with disabilities perceive themselves. This symbolic interplay between human thought, emotion, and behavior of an individual influences and shapes other individuals’ thoughts, emotions, and behaviors. In turn, the synergistic nature of this interaction creates societal norms and beliefs that influence an individual’s identity and/or self-image. As long as the societal focus is on a state of being, such as disability, discrimination is probable. Challenging the social construct of disability could lead to a remedy for this logic. Yet another opportunity for transformation presents itself.
Mooney’s book, albeit humorous, reflective, and instructional, is really a book about the search for normalcy. Where this book can lead its readers to is an understanding that normalcy is not about the absence of pathology, or being average, or even enlightened. What is normal is the nature of transactions between human beings. The experience of interacting with one another in a social context is the norm; it is what is normal (Longres, 2000). Will there be conflict, possibly stares? Yes. There is a natural tension between the needs of the individual and the needs of others in the social environment. Hopefully, the common good is what is sought in these interactions. Mooney’s stories of interaction with a variety of different individuals coalesce into a kaleidoscope of humanity in all of its varying shades of beauty. What could be more normal?

References


About the Author

J. Mark Pousson received his B.S. in Philosophy from Cardinal Glennon College, an M.Ed. from the University of Missouri – St. Louis, an M.S.W. and a Ph.D. in Higher Education from Saint Louis University. His experience includes working as a mental health clinician on a university campus. He is currently the Director of Academic Resources and ADA Coordinator at Fontbonne University. He has been an adjunct faculty member in the School of Social Work at Saint Louis University. His research areas include attitudes of college students toward their peers with disabilities, attitude formation, and universal instructional design. He can be emailed at mpousson@fontbonne.edu.
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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.

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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.
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- 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.
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- A 40-50 word bibliographic description for each author.
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- 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

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