Accommodations and Support Services for Students with Autism Spectrum Disorder (ASD): A National Survey of Disability Resource Providers

Kirsten R. Brown[1]

Abstract

Students with Autism Spectrum Disorder (ASD) are participating in postsecondary education at an increasing rate. Yet, we know little about what types of accommodations or services disability resource providers employ to support students with ASD. The purpose of this study was to examine how postsecondary institutions are fostering the academic success of students with ASD. Using a randomly selected, nationally representative sample of postsecondary institutions (n =1,245 response rate 38.8%; return rate 41.9%), this study explored enrollment trends of students with ASD and the types of reasonable accommodations and support services offered to those students. This study used predictive modeling to isolate factors that are strong indicators of whether or not and institution provided ASD-specific programs. Findings indicate that although students with ASD are more likely to attend two-year public institutions, there are no differences in accommodations or student support services by institution type. Over 90% of institutions used academically focused accommodations (e.g., extended exam time), but only 44.7% of institutions provided sensory accommodations and 28.3% of institutions offered ASD-specific services. The existence of peer mentoring programs was the strongest predictor of whether or not an institution had ASD-specific services. Implications for practitioners working in postsecondary environments and future research are discussed.

Keywords: Autism, ASD, college, accommodations, support services

One in 10 college students reported having a disability (U.S. Government Accountability Office, 2009). As members of this population, students with autism spectrum disorder (ASD) are increasingly participating in higher education (Geller & Greenberg, 2010). The United States Department of Education indicated that from 2008 to 2009, approximately 78% of four-year public institutions and 70% of two-year public institutions enrolled students with ASD (Raue & Lewis, 2011). A 2010 survey of Association of Higher Education And Disability (AHEAD) members, found that disability resource offices at four-year doctoral granting and two-year public institutions served an average of 8.8 students with ASD (Kasnitz, 2011). It is likely that these findings underreport the total number of students with ASD, as research shows a 50% decrease between students identified as having a disability in high school and those who self-disclose in college (Newman, Wagner, Cameto, & Knokey, 2009). It is also probable that the number of students with ASD in postsecondary education will increase, as the current rate of childhood diagnosis is one in 68 individuals (Centers for Disease Control and Prevention, 2014).

Students with ASD must negotiate ableism in their pursuit of higher education and some of the barriers they face may occur within the campus environment (Brown, Peña, & Rankin, 2015). Although the retention and persistence rates for students with ASD are not known, the broader literature on students with disabilities demonstrates that several institutional factors are related to academic success including social engagement (Mamiseishvili & Koch, 2011), positive faculty attitudes (Lombardi & Murray, 2011), and access to appropriate accommodations (Stein, 2013). Accommodations and support services are important predictors of academic success for students with disabilities (Kim & Lee, 2015). Yet, students identified

[1] *University of Wisconsin-Madison*

accessing accommodations as a major barrier in their transition to postsecondary education (Cawthon & Cole, 2010). Moreover, existing accommodations may be ineffective (Kurth & Mellard, 2006).

Proper accommodations and support services can positively influence the experience, persistence, and success of students with ASD (Van Hees, Moyson, & Roeyers, 2015). Given the substantial variations in how colleges or universities support students with disabilities (Kurth & Mellard, 2006), a focused study of current ASD practices is critical for both researchers and practitioners. Additionally, the connection between research and practice is imperative because ASD-specific policies and programs that are developed on a lack of knowledge or stereotypical, pop-culture assumptions empowers ableism and creates hostile environments. The purpose of this research is twofold: first, using a nationally representative and randomly selected sample of postsecondary institutions, this research describes differences in reasonable accommodations and general support services for students with ASD; second, this research explores factors that best predict whether institutions offer ASD-specific support services.

Related Literature

Concepts that informed this research include legal precedent, reasonable accommodations as a method of supporting academic success for students with disabilities, and the intersection between functional limitations and the campus environment for students with ASD. This section concludes by summarizing the limited information on accommodations and support services for students with ASD in postsecondary education.

Legal Framework

Legislation and case law structure policies and practices that affect the experiences of students with disabilities in postsecondary education. Although several legal concepts informed this research, this review focuses on reasonable accommodation, academic standards, and personal services. After a student meets the definition of a person with a disability under the Americans with Disabilities Act Amendments Act (ADAAA) (P.L. 110-325) and properly notifies their institution, the accommodation process starts. Accommodation is defined by the Americans with Disabilities Act of 1990 (ADA) (P.L. 101-336) as, "any change in the work or school environment or in the way things are customarily done that enables an individual with a disability to enjoy equal opportunities" (42 U.S.C. sec 121001). Legislation is interpreted via case law (e.g., *Southeastern University Community College v. Davis, 1979*) and the courts coined the term "reasonable accommodation" to negotiate a balance between providing access and modifications that substantively devalue academic standards (Kaplin & Lee, 2013).

Students also have responsibilities when requesting reasonable accommodations. Individuals with ASD must meet the definition of a person with a disability by being "otherwise qualified," for the purposes of performing the essential functions or duties of the position (*Jakubowski v. The Christ Hospital, 2010*). There are no legal protections for students with disabilities who are dismissed for misconduct (Kaplin & Lee, 2013), including threats to physically harm others (*Mershon v. St. Louis University, 2006*) or cheating on exams (*Strahl v. Purdue University, 2009*). Hence, violations of conduct codes are not reasonable (Simon, 2011).

The ADAAA differentiates between reasonable accommodations and personal services. Under the Individuals with Disabilities Act (IDEA) (P.L. 105-17), students with ASD in K-12 education may receive personal services, such as an organizational coach or social role playing. However, when students enter the postsecondary environment, they shift from a framework of entitlement (IDEA) to a framework of equal access and protection from discrimination (ADAAA) (Wolf, Brown, & Bork, 2009). The change in legislative landscape means that students with ASD may face a significant reduction in support when they enter college (Wolf et al., 2009) because the ADA does not mandate personal services (Simon, 2011).

Reasonable Accommodations and Academic Success

The National Center for Education Statistics (NCES) tracks trends in the types of support services and accommodations provided to students with disabilities. A substantive number of institutions provide academically focused accommodations, such as "classroom note takers (77%), faculty-provided written course notes or assignments (72%), help with learning strategies or study skills (72%), alternative exam formats (71%), and adaptive equipment and technology (70%)" (Raue & Lewis, 2011, p. 3). However, NCES does not provide data on campus life accommodations such as residence hall modifications.

Students with disabilities who use accommoda-

tions have greater rates of academic success than those who do not access accommodations (Denhart, 2008; Kim & Lee, 2015; Mamiseishvili & Koch, 2011). Kim and Lee (2015) found that test and course accommodations, such as extended exam time, were significant predictors of grade point average (GPA). Mamiseishvili and Koch (2011) examined factors that influenced the first- to second-year persistence of students with disabilities and found that, students who used accommodations in the first year were more likely to persist than students who did not use accommodations.

Several factors influence students' access to and use of accommodations. For example, students must self-advocate; however, research indicates that not all students possess this skill (Hong, 2015). The existent literature demonstrates that for students to use accommodations, the student must view the accommodations as both confidential (Stein, 2013) and effective (Marshak, Van Wieren, Ferrell, Swiss, & Dugan, 2010). Unfortunately, Kurth and Mellard (2006) found that students rated accommodations as ineffective between 12.5% and 36.4% of the time. Ineffective accommodations were inconsistently delivered, accommodations that obstructed sense of belonging (e.g., different testing location) (Kurth & Mellard, 2006), or accommodations that violated anonymity (Stein, 2013). Appropriate accommodations are based on the students' functional needs within the learning context rather than the students' disability label (Kurth & Mellard, 2006; Lindstrom, 2007). Research demonstrates that students did not ask for accommodations in every course, instead students used accommodations when they perceived that the accommodation was necessary for success (Stein, 2013).

Institutional barriers and ableism also influence students' use of accommodations (Hong, 2015; Stein, 2013). Students reported that institutional processes such as complex documentation requirements (Bolt, Decker, Lloyd, & Morlock, 2011), disability testing (Denhart, 2008), differences between high school and college (Cawthon & Cole, 2010), and variability in the type or extent of accommodations (Lindstrom, 2007; Madaus, Banerjee, & Hamblet, 2010) hinder use of accommodations. The perceptions of others and associated stigma, are substantive factors in the decision to seek out accommodations (Barnard-Brak, Lechtenberger, & Lan, 2010). Students identified facets of ableism, including the desire to avoid negative social reactions, insufficient knowledge from faculty or staff, and negative experiences with faculty as barriers (Denhart, 2008; Marshak, et al., 2010).

The perceptions of faculty members are critical in the accommodations process (Kurth & Mellard, 2006; Rao & Gartin, 2003). When faculty members have a positive stance on disability, students show greater willingness to use accommodations (Hartman-Hall & Haaga, 2002). However, existing research demonstrates that faculty members are often unfamiliar with disability support services and accommodations strategies (Bolt, et al., 2011). Research shows that faculty can hold erroneous beliefs, such as students claim to have a disability to avoid working as hard (Beilke & Yssel, 1999) or accommodations lower academic standards (Kurth & Mellard, 2006). Furthermore, how disabled a student appears also influences faculty members' willingness to provide accommodations (Rao & Gartin, 2003). Faculty members' ablest attitudes can translate into discriminatory actions; students reported experiencing barriers in relation to faculty perceptions' of their abilities (Hong, 2015) and unwillingness to make accommodations (Cawthon & Cole, 2010). In a study on faculty perceptions of ASD, Gibbons, Cihak, Mynatt, and Wilhoit (2015) demonstrated that faculty members thought the inclusion of students with intellectual disabilities and autism would disturb the class routine and take more instructor time.

Support Services

Transition programs, mentoring, and career counseling are key support services for students with disabilities (Brown & Broido, 2015). Transition programs assist students and their families with negotiating social, legal, and self-advocacy changes between high school and college (Roberts, 2010; Wolf et al., 2009). Students that engaged with disability services during the transition to college had better academic performance than students that sought support after their first-year (Lightner, Kipps-Vaughan, Schulte, & Trice, 2012) and alumni with disabilities identified the ability to self-advocate as critical to their postsecondary success (Barber, 2012). Nationally, 42.6% of institutions offer orientation or transition programs (Stodden, Whelley, Harding, & Chang, 2001) and these are important resources, as less than 10% of high school students with disabilities reported having college preparation meetings (Cawthon & Cole, 2010).

In their review of the literature on mentoring for students with disabilities Brown, Takahashi, and Rob-

erts (2010) noted there is a paucity of evidence-based research on effective mentoring practices. The limited research indicates that students with disabilities who participate in peer mentoring have a better understanding of skills needed for success (Burgstahler, 2001) and enhance self-efficacy (Zwart & Kallemeyn, 2001). No national data on the prevalence of mentoring programs for students with disabilities or research on the effectiveness of peer mentoring for college students with ASD was located within the literature.

Almost 90% of institutions provided career counseling (Stodden et al., 2001) and 26.0% of institutions provided targeted career or placement services for students with disabilities (Raue & Lewis, 2011). Yet, college graduates with disabilities have significantly lower rates of employment then degree holders without disabilities (U.S. Bureau of Labor Statistics, 2015). Concerns voiced by students with disabilities included being treated fairly, disclosing disability status and discussing job accommodation needs with their employer, presenting themselves positively in job interviews, and knowing how to write resumes (Hennessey, Roessler, Cook, Unger, & Rumrill, 2006). Alumni with disabilities stated internships, mentoring programs, classes related to disability and the employment transition, self-awareness of strengths and limitations, and post-graduation access to career services were critical supports (Madaus, 2006).

Functional Limitations and the Campus Environment

Understanding students' functional limitations is crucial when creating appropriate interventions (Bedrossian & Pennamon, 2007). Common difficulties that college students with ASD face include managing executive function, coping with sensory input, socializing, and understanding nonverbal communication (Hart, Grigal, & Weir, 2010). Due to differences in executive functioning, students with ASD may struggle with navigating change and balancing several simultaneous tasks (VanBergeijk, Klin, & Volkmar, 2008). Transition programs that assist students with negotiating the adjustment to college or services that help students manage the demands of multiple classes may be supportive (Bedrossian & Pennamon, 2007).

Students with ASD may also experience difficulty with socializing, resulting in loneliness and isolation (Madriaga, 2010). A chilly campus climate can compound students' functional limitations; students with ASD reported experiencing hostile behavior and sexual assault at a significantly greater rate than their peers without disabilities (Brown et al., 2015). Therefore, colleges should consider interventions that target bullying and sexual education or promote co-curricular involvement and interacting with faculty (Wolf et al., 2009).

Students with ASD may process input from the five external-directed senses (vision, hearing, smell, taste, touch) and two internal-directed senses (balance, muscular feedback) differently (Robertson & Ne'eman, 2008). These differences can cause students with ASD to feel overwhelmed in the classroom and college living environment. Problems associated with visual (e.g., type of lighting), auditory (e.g., use of a microphone in a lecture), and tactile (e.g., texture of cafeteria food) sensitivity are common for students with ASD (Boutot & Myles, 2011).

Postsecondary Support Services for Students with ASD

Existing literature demonstrates that practitioners seeking to accommodate students with ASD face several challenges. First, as described above, there is variability in the types and extent of accommodations generally provided to students with disabilities across different institution types (Lindstrom, 2007; Madaus et al., 2010) leading to a lack of benchmarking or standards for comparison. Second, the functional limitations associated with ASD pose unique challenges within the living-learning environment. Hence, reasonable accommodations employed for students with other disabilities, may not be the best fit for students with ASD (Brown & Coomes, 2016). Students with ASD often need support with executive functions tasks and social-emotional relationships (Longtin, 2014), which are "two areas typically unaddressed by accommodations on postsecondary campuses" (Burgstahler & Russo-Gleicher, 2015, p. 200).

Current literature on students with ASD emphasizes the transition into college (e.g., Roberts, 2010), parental experiences (e.g., Peña & Kocur, 2013), pre-college expectations (e.g., Camarena & Sarigiani, 2009), attitudes towards students with ASD (e.g., Gibbons et al., 2015), and the experiences of faculty members (e.g., Gobbo & Shmulsky, 2014). As noted by Dallas, Ramisch, and McGowan (2015) there is a paucity of information regarding accommodations or support services for students with ASD. Furthermore, many of the findings within the existent literature are difficult to generalize because the data are

specific to one institution or collected using non-random sampling techniques. An extensive review of the literature only located one exploratory study (Smith, 2007) with a nominal (N=5; 4.9%) response rate that focused on interventions for students with ASD. Research that explored reasonable accommodations or supports for students with ASD, at a national level, was not located in the existent literature.

Methods

This study investigated interventions that postsecondary institutions use to support students with ASD. Three research questions shaped this study: (1) What types of reasonable accommodations, general support services, and ASD-specific support services are institutions offering?, (2) Are there differences in the provision of accommodations and support services by institution type?, and (3) What factors predict if an institution will offer ASD-specific support?

Operational Definitions

The definition of *reasonable accommodation* follows legal parameters and the intent of providing equal access while maintaining academic standards. The term *general support service* refers to free services or programs designed to support students with and without disabilities. These services provide transition, educational, and social support beyond the level of reasonable accommodations; however, they are programs commonly offered by institutions to a variety of students (e.g., career counseling). The term *ASD-specific service* refers to any service specifically designed to support students by targeting the functional limitations associated with ASD; this assistance is beyond the level of reasonable accommodations (e.g., social coaching). *Peer mentoring* refers to programs that utilize other students as educational and informational resources via one-on-one or small groups. For more description, see Brown and Coomes (2016).

Data Collection

The targeted population was the Director of Disability Resources at non-profit postsecondary educational institutions within the United States. Since ADA compliance is federally mandated, it is reasonable to assume the vast majority of postsecondary institutions will have one person designated as a disability services professional or ADA compliance officer, even if that role is only part of their job responsibilities. A list of postsecondary institutions was identified via the *Carnegie Classifications Data File* (Carnegie Foundation for the Advancement of Teaching, 2011). For-profit institutions, branch campuses, professional schools (e.g., seminaries), Tribal Colleges, and institutions in Puerto Rico or Gaum were excluded to avoid duplicative or extraneous data. The sample frame had 2,629 institutions. The Institutional Review Board at Bowling Green State University approved this research prior to data collection.

A one-stage, stratified random design was employed to sample one disability services professional per postsecondary institution. Stratification was guided by previous research that categorized institutions as two-year public, four-year public, and four-year private (Collins & Mowbray, 2005, 2008). Because a comprehensive list of disability service providers does not exist, manual Internet searches were used to obtain contact information to achieve a random sample. If a disability services provider could not be located within the institution, (less than 20 cases), a substitute institution was randomly selected.

Recruitment emails were sent out to 1,245 email addresses and 483 individuals completed the survey, for a response rate of 38.8%. Not all email addresses identified during the manual search were valid, defined as individuals with continuous employment, in disability services, at the selected institution, during the three-month window of survey administration. A return rate is the number of respondents who answered the survey divided by the number of valid email addresses in the sample. Auto-reply responses indicated that 89 individuals did not have valid emails (e.g., no longer an employee or on maternity leave). In total, 1,156 eligible addresses existed, for a return rate of 41.9%.

Instrumentation

The existing literature did not have a comprehensive survey regarding interventions for students with ASD. In constructing a survey instrument, Creswell (2003) outlined validity and reliability as critical components. Content validity was addressed by reviewing other surveys that assessed interventions offered to college students with disabilities (e.g., Collins & Mowbray, 2005, 2008; Smith, 2007) and a panel of ASD experts, including faculty that study ASD and a director of disability services were employed to assess the survey. Reliability of the survey instrument was addressed through pilot testing with

20 institutions. Nominal changes to question wording, question format, and routing were made because of the pilot process; these changes were primarily to address screen reader accessibility. The survey contained 47 questions, because the survey employed question routing respondents saw between 35 and 47 questions. The survey had 11 demographic questions, 19 questions about services, three open ended questions, and two routing questions with the potential of 12 sub-questions.

Data Analysis Procedures

The survey data were transferred into SPSS 19™ and data were inspected for scores that were incongruent or outside of an accepted range (Creswell, 2005). Three participants were removed because data indicated a pattern of similar answers and the timing of their survey completion was substantively less than the average. Further, 11 participants were removed because their surveys were missing more than 50% of the data. The Kolmogorov-Smirnov statistic was used to assess normal distribution and histograms were employed to view outliers; none were found. The cleaned data had 469 participants.

Analysis techniques consisted of descriptive and inferential statistics. The first research question was addressed using descriptive statistics. Pearson chi-square test for independence was employed in research question two because both the independent and dependent measures were categorical. Cramer's V was used as the measure of effect size for nominal level variables. Gravetter and Wallnau (2012) provided a calculation for effect size in tables that are larger than 2x2; in a table with three rows and two columns the R-1 or C-1 equals 1, therefore a small effect size is .01, medium is .30, and large is .50. ANOVAs were used for variables that were a continuous and normally distributed. If the assumption of homogeneity of variances was violated, the Welch statistic was reported as a robust test of equality of means.

Research question three employed logistic regression models to explore factors that best predicted whether or not an institution would offer ASD-specific support services. A logistic method was selected because the dependent variable was dichotomous and regression allows for the prediction of outcomes. The dependent variable was created by transforming two survey questions into a composite dichotomous (yes/no) variable indicating if the institution offered ASD-specific support services. Independent variables were grouped into two different sets, institutional characteristics (e.g., institution type, geographic location, etc.) and institutional practices (e.g., ASD educational training for faculty/staff, peer mentoring, etc).

Data were screened for linearity, normality, and homoscedasticity. Several regressions were developed through a nested building process using independent variables that demonstrated the greatest correlational value, added subsequent independent variables, noted the model's effectiveness, and used a chi-square test to establish if the new model was significantly different. The model presented, is the most parsimonious combination of independent variables that were either theoretically linked to, or statistically correlated with, the dependent variable.

Findings

Table 1 provides characteristics of survey respondents. Participants from different institution types responded at approximately the same rate; 146 public two-year institutions, 158 public four-year institutions, and 165 private four-year institutions participated. The distribution of institutional enrollment size followed the shape of a normal curve for two-year and four-year public institutions; the majority of private four-year institutions (55.8%) had an enrollment of 1,000-5,000 students. The modal category of full-time disability resource office (DRO) staff consists of one individual and the majority of institutions (72.1%) are members of the Association on Higher Education and Disability (AHEAD). The majority, 93.7%, of institutions in this sample had at least one student with ASD. Table 2 provides the average number of students registered with disability services and the average number of students registered with documentation for ASD by institution type.

Current Practices

An overwhelming majority of postsecondary institutions supported students with ASD via reasonable accommodations with an academic focus. For example, over 93% of the institutions provided a note taker, the use of an audio recorder, extended exam time, and alternative testing locations (See Table 3). Reasonable accommodations that addressed sensory and social limitations were less frequently offered; 44.7% of institutions provided sensory accommodations, 39.2% of institutions offer a single residence hall room for a reduced price and 55.5% provided

single rooms at cost. The prevalence of single room accommodations maybe slightly higher than these frequencies represent because some participating institutions do not have residence halls and therefore are not able to offer that accommodation.

General support services with an academic or counseling focus were provided by over 95% of the institutions surveyed (See Table 4). However, services were commonly administered by a campus department or office other than DRO. Support services with a social focus such as transition programs (43.6%) or peer mentoring (49.9%) were offered less frequently.

ASD-specific services were not provided as frequently as general support services; 132 out of 466 respondents (28.3%) indicated their institution offered free of charge ASD-specific services. Three respondents did not answer this question. Only 2.2% of respondents indicated that their postsecondary institution offered ASD-specific services for an additional charge.

Differences by Institution Type

There were significant differences by institution type in the number of students registered with documentation for ASD, Welch (2, 278.93) = 20.83, p = .00. The effect size, calculated using eta squared, was .084. Post-hoc comparisons using the Tukey HSD test indicated that the average number of students registered with documentation for ASD was significantly greater at two-year public institutions than four-year public and four-year private institutions. Furthermore, the average number of students registered with documentation for ASD was significantly greater at four-year public institutions than four-year private institutions.

Pearson chi-square tests for independence and Cramer's *V* as a test of effect size were utilized to determine if relationships existed between the categorical variables of institution type and the availability of reasonable accommodation or support services (See Table 5). Two reasonable accommodations had significant associations with institution type: the provision of a note taker χ^2 (2, n = 463) = 7.00, p =.03, V = .12 and priority class registration χ^2 (2, n = 449) = 18.42, p < .001, V = .20. Additionally, two types of general support services had significant associations with institution type: the existence of a disability-related student organization χ^2 (2, n = 438) = 27.86, p < .001, V = .25; and the existence of a peer mentoring program χ^2 (2, n = 449) = 13.60, p < .001, V = .17. The effect size for these variables was small (Cohen, 1988).

Variables with significant differences by institution type that had a medium effect size were related to housing-specific accommodations. Since two-year public institutions often do not have residential facilities, these results could lack practical implications. Several of the general support services (e.g., career counseling) violated an underlying assumption of chi-square by having less than five counts per cell and indicating that the vast majority of institutions provide these services. There was not a significant relationship between institution type and the existence of ASD-specific support services χ^2 (2, n = 466) = 1.41, p = .50, V = .06.

Predictors of ASD-Specific Service

The initial relationship between number of students registered with documentation for ASD and whether or not an institution offered ASD-specific services was investigated using Spearman's rho correlations coefficient. Spearman's rho is the non-parametric alternative used when one of the variables in the correlation is categorical. There was a weak positive relationship between the two variables r = .12, n = 466, p <. 01 indicating that an increase in the number of students registered with documentation for ASD was associated with an increase in provision of ASD-specific services. The coefficient of determination for this correlation was .014; therefore, the number of students registered with documentation for ASD explained 1.4% of the variance in the provision of ASD-specific services.

Logistic regression was employed to predict whether or not a postsecondary institution would offer ASD-specific support services (See Table 6). The existence of a peer mentoring program, the existence of sensory accommodations, the number of students registered with documentation for ASD, and the provision of a single residence hall room at a reduced price created the most parsimonious model. This model was statistically significant, χ^2 (4, n = 400) = 49.13, p < .001 and correctly classified 74.3% of the cases. The model explained between 11.6% (Cox and Snell R squared) and 16.5% (Nagelkerke R squared) of the variance.

The presence of peer mentoring, with an odds ratio of 3.12, was the strongest predictor of the institution offering ASD-specific services. Respondents who worked at institutions with peer mentoring were

over three times more likely to report their institution had ASD-specific services than those who did not have peer mentoring. The presence of sensory accommodations had an odds ratio of 1.91; respondents who worked at institutions with sensory accommodation were almost twice as likely to report their institution had ASD-specific services in comparison to institutions that did not have sensory accommodations. In spite of having a weak correlation with the dependent variable as indicated above, the number of students with ASD was included in the regression analysis for theoretical reasons. The number of students registered with documentation for ASD had an odds ratio of 1.02. After controlling for all other factors in the model, for each additional student registered with documentation for ASD, respondents were 1.02 times more likely to report their institution offered ASD-specific services. Although included in the model for theoretical reasons and to test the importance of chi-square differences, the provision of a single residence hall room at a reduced price was not statistically significant.

Discussion

The purpose of this was to survey and examine supports and interventions for students with ASD in postsecondary education. This study confirms existing literature regarding the prevalence of some types of reasonable accommodations. The majority of reasonable accommodations for students with ASD are offered at a rate that is consistent with, or slightly higher than, the rate at which reasonable accommodations are provided to all students with disabilities (Raue & Lewis, 2011; Stodden et al., 2001). For example, 99.3% of the survey respondents in this study indicated that students with ASD received additional exam time. In comparison, NCES indicated that the vast majority of institutions (93%) provided additional exam time to students with disabilities (Raue & Lewis, 2011).

Currently, national disability surveys (e.g., Raue & Lewis, 2011; Stodden et al., 2001) do not provide information regarding sensory accommodations, disability-focused student organizations, peer mentoring programs for students with disabilities, or ASD-specific services. This research extends the existing literature, finding that 44.7% of institutions offer sensory accommodations, 37.2% of institutions have a disability-focused student organization, and 49.9% of institutions provide peer mentoring programs. This research also addresses the paucity of information regarding services for students with ASD (Dallas et al., 2015), finding that 28.3% of institutions offered free of charge ASD-specific services and 2.2% of institutions provided fee-based ASD-specific services.

This research highlights the gap between the enrollment of students with ASD and provision of services for these students. In light of the fact that there are significant differences in the number of students with ASD by institution type, the lack of a difference in the provision of sensory accommodations, most general support services, and ASD-specific services is notable. A greater number of students with ASD are attending two-year public institutions; yet those institutions are not providing a greater level of support.

While student use of accommodations is well-documented (e.g., Hong, 2015; Marshak et al., 2010; Stein, 2013), existing literature does not address institutional behavior, and it is unknown why some institutions offer greater levels of ASD support while other institutions do not. This research extends the literature by examining factors that predict institutional behavior and supports for students with ASD. Specifically, with an odds ratio of approximately 1, the number of students with ASD is not a strong practical indicator. There are several plausible explanations for this finding. It is possible that students with ASD have not reached a critical population size that warrants a unique set of specialized services or it is possible that providing specialized services is not feasible because the majority (67.7%) of institutions have 2 or less full-time DRO staff. The strength of peer mentoring as a predictor indicates that when it comes to ASD services, the best predictor of institutional behavior is, other institutional behaviors. This is particularly notable in that, 23.4% of peer mentoring occurred outside of the DRO, indicating that some colleges or universities invest in an institutional culture of student support.

Implications for Practice

The present research has implications for practitioners and administrators seeking to support the success of students with ASD. For accommodations to be effective, they must fit the students' functional limitations (Kurth & Mellard, 2006; Lindstrom, 2007). As the number of students with ASD increases, it is necessary for postsecondary institutions to assess the

types of accommodations provided and evaluate if current practices support students' functional limitations. This research establishes that institutions provide accommodations with an academic focus more frequently than accommodations with a sensory or social focus. Yet, for many students with ASD, sensory and social functional limitations affect learning (Madriga, 2010). Tailoring services to address functional limitations within the learning environment, is a best practice for disability professionals supporting students with ASD (Brown & Coomes, 2016).

Academic engagement and co-curricular engagement are important predictors of retention (Mamiseishvili & Koch, 2011). For students with disabilities, mentoring programs enhance self-efficacy, learning strategies, and study skills (Zwart & Kallemeyn, 2001). Yet, one of the functional limitations students with ASD face is social interactions (Bedrossian & Pennamon, 2007). It is notable then, that one of the best predictors of ASD-specific services was the existence of peer mentoring programs. Practitioners should understand that this finding does not necessarily imply that students with ASD will directly benefit from engagement in mentoring. Rather, this finding indicates that colleges with peer mentoring have an institutional culture that is willing to invest fiscal and staffing resources in ASD-specific services.

The findings are particularly important for administrators who follow data-driven budgetary decisions. Practitioners with limited resources can leverage the idea of investing in an institutional culture of support by developing or growing general services (e.g., peer mentoring) that benefit all students as a forerunner to building ASD specific programs. Further, the finding that two-year institutions serve a significantly greater number of students with ASD may be useful for practitioners at community colleges who are advocating for additional staff or funding.

Limitations and Future Research

There are limitations to this study. Although respondents were randomly selected, participation was voluntary and therefore open to self-selection bias. Disability resource providers might be more likely to respond if they have students with ASD on their campuses.

There is substantive variation across institutions in disability documentation requirements and accommodation practices (Lindstrom, 2007; Madaus et al., 2010). Moreover, there are differences between interpreting the letter of the law and the spirit of the law. As outlined in the literature review, the letter of the law informed this research; however, the spirit of the law guided it. To that end, operational definitions and survey questions focused on exploring ASD issues rather than delimiting legal compliance. I present data for the specific types of accommodations as a method of addressing variation; the intent is to allow the reader to discern which specific accommodations are applicable within the academic standards of their institution.

The perceptions of faculty members are critical in the accommodations process (Kurth & Mellard, 2006; Rao & Gartin, 2003) and research indicates that faculty think the inclusion of students with ASD in their classroom would take more time and would disturb the class routine (Gibbons et al., 2015). Given their importance in the accommodations process, future studies should explore methods that disability resource providers can use to educate faculty about ASD.

Co-occurring diagnosis is common (Boutot & Myles, 2011) and young adults with ASD often experience anxiety, ADHD, and depression (Ghaziuddin, 2005). The current research focused solely on ASD; but it is important to see the student as a complex individual and future research should take an intersectional approach.

A significant proportion, 25% of the respondents in this study, were not members of AHEAD and these practitioners may not have access to disability professional development opportunities. Future research should employ random selection and representative sampling to gain a better picture of disability practices and educational opportunities for disability resource providers. Future research should also focus on improving national data collection for sensory accommodations, investigating promising practices at institutions with ASD-specific programs, and exploring the effectiveness of ASD-specific supports on student academic success. Finally, the quality of peer mentoring programs should be explored further via qualitative methods.

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About the Author

Kirsten R. Brown completed her Ph.D. in Higher Education Administration and Student Affairs at Bowling Green State University in 2012. She also holds a Masters in Sociology from the University of Wisconsin-Milwaukee (2008), and a Bachelor's of Science from Carroll College (2003). Dr. Brown is a student affairs professional at the University of Wisconsin-Madison and a part-time faculty member in Sociology at Madison College. Dr. Brown's research focuses on access to higher education, neurodiversity, and social constructions of ability. She can be reached by email at: krbrown7@wisc.edu.

Table 1

Participating Disability Resource Practitioners by Institution Type

	Public two-year (*n*=146)	Public four-year (*n*=158)	Private four-year (*n*=165)	Total (*n*=469)
Characteristics	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Enrollment				
Under 1,000	5 (3.3)	2 (1.3)	30 (18.2)	37 (7.9)
1,000 – 5,000	41 (28.1)	29 (18.4)	92 (55.8)	162 (34.5)
5,000 – 10,000	43 (29.4)	39 (24.7)	19 (11.5)	101 (21.5)
10,000 – 20,000	36 (24.6)	38 (24.1)	18 (10.9)	92 (19.6)
20,000 – 30, 000	13 (8.8)	29 (18.4)	4 (2.4)	46 (9.8)
More than 30,000	8 (5.4)	21 (13.3)	2 (1.2)	31 (6.6)
Location				
Urban	45 (30.8)	53 (33.6)	65 (39.4)	163 (34.8)
Suburban	45 (30.8)	44 (27.9)	60 (36.4)	149 (31.8)
Rural	46 (31.5)	60 (37.9)	37 (22.4)	143 (30.5)
Multiple campus	10 (6.8)	1 (0.6)	3 (1.8)	14 (3.0)
Full-time staff				
None	21 (14.5)	13 (8.2)	38 (23.0)	72 (15.4)
1	45 (30.8)	36 (22.8)	67 (40.6)	148 (31.6)
2	27 (18.6)	34 (21.5)	36 (21.8)	97 (20.7)
3	13 (8.9)	18 (11.4)	11 (6.7)	42 (9.0)
4	13 (8.9)	16 (10.1)	6 (3.6)	35 (7.5)
5	8 (5.5)	12 (7.6)	3 (1.8)	24 (5.1)
6 or more	18 (12.4)	29 (18.4)	4 (2.4)	51 (10.9)
Reporting structure				
Academic affairs	20 (13.7)	41 (25.9)	74 (44.8)	135 (28.8)
Student affairs	126 (86.3)	117 (74.1)	91 (55.2)	334 (72.1)
AHEAD member				
Yes	97 (66.4)	127 (80.4)	124 (75.2)	348 (74.2)
No	49 (33.6)	31 (19.6)	41 (24.8)	121 (25.8)

Table 2

Number of Students Registered with Disability Resources by Institution Type

Characteristics	Mean	*SD*
Students with disabilities		
Two-year public	412.59	451.71
Four-year public	425.87	349.31
Four-year private	181.17	232.14
Students with ASD		
Two-year public	16.37	18.85
Four-year public	11.96	9.87
Four-year private	6.39	10.65

Note. n=469

Table 3

Reasonable Accommodations Offered to Postsecondary Students with ASD

Type of Accommodation	DRO *n* (%)	Other Office *n* (%)	Not Provided *n* (%)	Total *n*
Note taker	421 (90.9)	12 (2.6)	30 (6.5)	463
Priority registration	267 (59.5)	32 (7.1)	150 (33.4)	449
Use of audio recorder	420 (91.9)	11 (2.4)	26 (5.7)	457
Extended exam time	456 (97.6)	8 (1.7)	3 (0.6)	467
Alternate test location	440 (94.6)	21 (4.5)	4 (0.9)	465
Sensory accommodations	153 (35.1)	42 (9.6)	241 (55.3)	436
Single room (reduced price)	93 (22.1)	72 (17.1)	256 (60.8)	421
Single room (at cost)	128 (28.5)	121 (26.9)	200 (44.5)	449

Note. DRO=Disability Resource Office

Table 4

General Support Services Offered to Postsecondary Students with ASD

Support Service	DRO *n* (%)	Other Office *n* (%)	Not Provided *n* (%)	Total *n*
Tutoring	182 (39.5)	256 (55.5)	23 (5.0)	461
Transition program	107 (24.4)	84 (19.2)	247 (56.4)	438
General counseling	184 (39.7)	262 (56.5)	18 (3.9)	464
Career counseling	147 (31.8)	306 (66.2)	9 (1.9)	462
Student organization	119 (27.2)	44 (10.0)	275 (62.8)	438
Peer mentor program	119 (26.5)	105 (23.4)	225 (50.1)	449

Note. DRO=Disability Resource Office

Table 5

Chi-square Test: Accommodations, General Services, and ASD-Specific by Institution Type

Item	Yes *n* (%)	No *n* (%)	χ^2	*Df*	*V*	*n*
Note taker			7.00*	2	.12	463
Two-year public	136 (31.4)	8 (26.7)				
Four-year public	150 (34.6)	5 (16.7)				
Four-year private	147 (33.9)	17 (56.7)				
Priority registration			18.42**	2	.20	449
Two-year public	80 (26.8)	60 (40.0)				
Four-year public	121 (40.5)	31 (20.7)				
Four-year private	98 (32.8)	59 (39.3)				
Audio recorder			2.23	2	.07	457
Two-year public	137 (31.8)	5 (19.2)				
Four-year public	146 (33.9)	9 (34.6)				
Four-year private	148 (34.3)	12 (46.2)				
Extended exam time			5.58	2	.11	467
Two-year public [a]	145 (31.3)	0 (0.0)				
Four-year public [a]	158 (34.1)	0 (0.0)				
Four-year private [a]	161 (34.7)	3 (100)				
Alternative test location			7.34*	2	.13	465
Two-year public [a]	144 (31.2)	0 (0.0)				
Four-year public [a]	156 (33.8)	0 (0.0)				
Four-year private [a]	161 (34.9)	4 (2.4)				
Tutoring			1.59	2	.06	461
Two-year public	136 (31.1)	9 (39.1)				
Four-year public	150 (34.2)	5 (21.7)				
Four-year private	152 (34.7)	9 (39.1)				
Single room (reduce price)			47.77**	2	.34	421
Two-year public	21 (12.7)	114 (44.5)				
Four-year public	65 (39.4)	73 (28.5)				
Four-year private	79 (47.9)	69 (27.0)				
Single room (at cost)			100.12**	2	.47	449
Two-year public	27 (10.8)	109 (54.5)				
Four-year public	108 (43.4)	44 (22.0)				
Four-year private	114 (45.8)	47 (23.5)				
Transition program			2.82	2	.08	438
Two-year public	58 (30.4)	80 (32.4)				
Four-year public	73 (38.2)	76 (30.8)				
Four-year private	60 (31.4)	91 (36.8)				
Sensory accommodations			5.70	2	.11	436
Two-year public	49 (25.1)	86 (35.7)				
Four-year public	74 (37.9)	76 (31.5)				
Four-year private	72 (36.9)	79 (32.8)				

Table 5, *continued*

Item	Yes *n* (%)	No *n* (%)	χ^2	*Df*	*V*	*n*
General counseling			25.23**	2	.23	464
Two-year public	127 (28.5)	15 (83.3)				
Four-year public [a]	157 (35.2)	0 (0.0)				
Four-year private [a]	162 (36.3)	3 (16.7)				
Career counseling			.88	2	.04	462
Two-year public [a]	140 (30.9)	4 (44.4)				
Four-year public [a]	153 (33.8)	2 (22.2)				
Four-year private [a]	160 (35.3)	3 (33.3)				
Student organization			27.86**	2	.25	438
Two-year public	51 (31.3)	90 (32.7)				
Four-year public	77 (47.2)	69 (25.1)				
Four-year private	35 (21.5)	116 (42.2)				
Peer mentor			13.60**	2	.17	449
Two-year public	53 (23.7)	88 (39.1)				
Four-year public	88 (39.3)	62 (27.6)				
Four-year private	83 (37.1)	75 (33.3)				
ASD-specific service			1.41	2	.06	466
Two-year public	38 (27.5)	108 (32.9)				
Four-year public	50 (36.2)	106 (32.6)				
Four-year private	50 (36.2)	114 (34.8)				

Note. *$p < .05$. **$p < .01$. [a] Indicates cells that violated the minimum 5 case assumption.

Table 6

Logistic Regression Predicting Provision of ASD-Specific Services

Predictor	*B*	S.E.	Wald	*Df*	O.R.
Single room at reduced price					
Yes	0.45	.25	3.34	1	1.57
No (omitted)					
Sensory accommodation					
Yes	0.65**	.24	7.21	1	1.91
No (omitted)					
Peer mentoring program					
Yes	1.14**	.24	21.72	1	3.12
No (omitted)					
Number of students with ASD	0.02*	.01	4.31	1	1.02
Constant	-2.19**	.25	75.06	1	.11

Note. *p < .05. **p < .01. n =400.