

Boston College
Lynch School of Education and Human Development

Department of
Teacher Education, Special Education, and Curriculum and Instruction

MULTIFACETED EXPLORATION OF DISABILITY SUPPORT OFFICES IN
HIGHER EDUCATION INSTITUTIONS: ANALYZING WEBSITES, STAFF
MEMBERS' AUTISM ATTITUDES AND KNOWLEDGE, AND PERSPECTIVES OF
AUTISTIC STUDENTS

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SO YOON KIM

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Abstract

Multifaceted Exploration of Disability Support Offices in Higher Education Institutions: Analyzing Websites, Staff Members' Autism Attitudes and Knowledge, and Perspectives of Autistic Students

So Yoon Kim

Advisor: Dr. Kristen Bottema-Beutel

Many autistic students enrolled in colleges/universities, who are academically qualified for admission, experience difficulties adjusting to their college life. Disability support offices (DSOs) of higher education institutions (HEIs) assume the responsibility of providing supports to autistic students, but many DSOs lack the resources to cater to the varied needs of these students. To gain a nuanced understanding, this set of three studies explores contextual factors around DSOs that may influence autistic students' experiences with DSOs and their perspectives about available DSO support. In Study 1, DSO websites of 12 US HEIs were examined using multimodal discourse analysis, and the study revealed that DSO websites share genre features with advertisements. DSO websites advertised the services they provide in efforts to 'brand' their institution. This commodification of DSO supports raises concerns because accommodations given to students with disabilities should be understood as their legal rights rather than sellable products. In Study 2, a nationwide sample of 153 DSO staff members completed a battery of online surveys to determine significant predictors of their attitudes and knowledge about autism. The quality of previous contact was shown to be associated with social distance, openness, and knowledge about autism, and several institutional variables significantly predicted staff members' attitudes and knowledge about autism. Lastly, in Study 3, 27 autistic undergraduate students were interviewed about their experiences with

DSOs, and their responses were qualitatively analyzed using a generic inductive approach. Students reported on their general perceptions of DSOs, decisions about not receiving DSO supports, and their perception of ways that DSOs could support them better. Together, the findings of the three studies inform the work of DSOs in developing appropriate systems that support autistic students to successfully navigate college. Developing service provision systems that comprehensively address these issues reported by autistic students should be a collective institutional responsibility to increase autism awareness and acceptance on college campuses and make online and physical space accessible for autistic students.

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Chapter 1

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that is characterized by impairments in reciprocal social interaction and communication and the presence of stereotyped and repetitive behaviors and interests (American Psychiatric Association, 2013). Although the number of autistic students pursuing post-secondary education is increasing (Shattuck et al., 2012), studies show that many qualified autistic youths with sufficient intellectual ability to do college-level work choose not seek admission to or attend college or drop out prematurely (Glennon, 2001). In addition, autistic students who attend the higher education institutions (HEIs) frequently report anxiety, loneliness, depression, marginalization, and roommate concerns due to less structured nature of postsecondary education and the increased pressure for independence as compared to K-12 environments, and the social and academic demands of college (Gelbar, Smith & Reichow, 2014).

Meanwhile, according to The American with Disabilities Act (ADA, 1990), all US HEIs are required to provide appropriate support programs for students with documented disabilities. Disability Support Offices (DSOs) assume the responsibility of providing the supports and accommodations that make the college life accessible, but unfortunately, many DSOs lack the resources to address the varied needs of autistic students (Van Bergeijk et al., 2008). Meanwhile, very few empirical studies examine the supports that autistic undergraduates receive from DSOs in their HEIs or their experiences with support that is available. Therefore, this dissertation explores the contexts around DSOs of HEIs that may influence the experiences of autistic undergraduate students and autistic students' perception of DSOs and DSO supports to aid a more holistic understanding of how DSOs can provide better support to autistic

undergraduate students.

Conceptual Framework

Prioritizing the provision of improved and individualized supports, this dissertation considers ASD through the lens of the neurodiversity framework. Initially emerging from the autistic self-advocate community, the neurodiversity movement challenges people and institutions' efforts and ideology to find a cause and cure for autistic symptoms (Kapp, Gillepie-Lynch, Sherman, & Hutman, 2013). Rather, the neurodiversity framework considers genetic and biological differences as inherent and unique to a person's identity and his/her sense of self and highlights the need for contextual social support and acceptance (Kapp et al., 2013). The neurodiversity framework opposes intervention that aims to eliminate unusual but harmless behaviors, like avoiding eye contact or repetitive body movements, across all contexts and without regard for the coping mechanisms they may serve (Chamak, 2008). In line with the preference of autistic advocates (Bagatell, 2010; Ortega, 2009), I use identity-first terms (e.g., "autistic person") rather than the person-first (e.g., "individual with autism") and consider an individual's strengths, differences, and weaknesses associated with autism as part of an autistic identity.

The Current Studies

In sum, anchored in the neurodiversity framework, this dissertation examined how different contextual factors and supports from DSOs are enacted in HEIs and received by autistic undergraduate students to understand how DSO services can better support realization of the potential of autistic undergraduate students. To gain a nuanced understanding from different angles, messages communicated by webpages of DSOs,

DSO staff attitudes and beliefs about autism, and perspectives of autistic undergraduate students specifically about DSOs were investigated. The dissertation consists of three studies, each of which is structured around a different set of research questions to address each of the following purposes:

Study #1. To examine the DSO websites and what kinds of messages they communicate to students with disabilities

RQ. What semiotic resources are deployed to describe DSO services on their websites, and what discursive functions do they perform?

Study #2. To examine factors that are associated with DSO staff members' attitudes and knowledge about ASD

RQ1. Among four sets of putative predictors, including knowledge about ASD, quality of contact, demographic variables, and institutional variables, which variables uniquely predict DSO staff members' attitudes about ASD?

RQ2. Among three sets of putative predictors, including quality and quantity of contact, demographic variables, and institutional variables, which variables uniquely predict DSO staff members' knowledge about ASD?

Study #3. To examine the perspectives of autistic students on their experiences with DSOs

RQ1. What were the autistic students' perceptions of DSO supports?

RQ2. What were the reasons that some autistic students did not receive DSO support?

RQ3. How do autistic students perceive that DSOs could support them better?

Chapter 2

College Disability Support Offices as Advertisements: A Multimodal Discourse Analysis

Abstract

While the demand for disability support offices (DSOs) in higher education institutions (HEIs) to provide appropriate accommodations to students with disabilities is increasing, no research has specifically addressed how DSO websites communicate information about their offerings. DSO websites of twelve US HEIs were within 4 clicks from HEI homepages but had inconsistent navigation paths, making it difficult to reach DSO websites. Also, the study reveals that DSO websites share genre features with advertisements. This is achieved by using multimodal promotional rhetoric such as: a) situating accessibility as a central commodifiable attribute, b) promoting the value of accessibility, c) establishing the superiority of the institution, d) constructing images of students with disabilities as empowered but dependent upon the DSO, and e) situating students within a college community. Implications for DSO websites functioning as advertisements are also discussed.

The number of students with disabilities enrolled at US higher education institutions (HEIs) has dramatically increased during recent decades (Forsbach & Rice-Mason, 2001; Shattuck et al., 2012). This is in part due to the Americans with Disabilities Act (ADA), which protects the rights of individuals with disabilities and prohibits discrimination based on disability status. In educational practices, HEIs are now required to ensure equal access to students with disabilities, by providing both academic accommodations (e.g., sign language interpreters, extended time on tests) and physical accessibility of campus facilities (Forsbach & Rice-Mason, 2001). Disability support offices (DSOs) assume a prominent role in ensuring these supports are available for students with disabilities (Collins & Mowbray, 2008). With an increasing enrollment of students with disabilities in HEIs, the demands and responsibilities placed on these offices have also been increased.

Unlike K-12 school contexts, where the automatic provision of support is legally guaranteed, college students with disabilities must solicit support by self-disclosing their disability status and identifying their needs (Adreon, & Durocher, 2007). Students with disabilities, therefore, are responsible for providing the DSOs with appropriate documentation of their diagnosed disabilities, requesting supports and services, and interacting with faculty members to receive needed accommodations (Rehfuss & Quillin, 2005). Most DSOs' websites provide information on their support services, the steps students need to take to receive accommodations, and the documentation required to be eligible for services. Also, prospective students with disabilities may visit the DSO's websites to gain information about services and accommodations available at particular institutions. Therefore, how a DSO's website describes its office, its services, and the

students it serves may lead to certain expectations of the DSO and the institution itself, influence prospective students' decisions as to whether to apply or matriculate at particular institutions, and influence students' intentions to approach the DSO once they are enrolled.

Only a few qualitative studies have addressed the issue of disability on HEI websites. Boyer et al. (2006) consider an HEI website to be a recruitment tool, which provides an image of the institution's readiness to recruit and welcome students with disabilities. They also report that while these websites often include many images of racial minorities and international students, they rarely feature individuals with visible disabilities. Furthermore, Gabel et al.'s (2016) discourse analysis of HEI websites revealed that disability was disengaged from institutional diversity and was situated as deficits of individual students. The HEI websites analyzed by Gabel et al. (2016) frequently used terms consistent with medical model discourse when referring to disabilities, thereby positioning disability as a problem located within students, who need to proactively and independently seek accommodations. Gabel and colleagues also suggested that the low visibility of disability on the home pages of HEIs powerfully communicates an institutional lack of attention toward disability as a part of diversity.

Because no study has examined the DSO websites of HEIs and what kinds of messages they communicate to students with disabilities, this study fills this gap by investigating the navigation path to reach DSO websites and multimodal discursive strategies evident in the DSO webpages. Hereafter, a webpage is defined as a document, screen, and/or page on the Internet, while a website is defined as a collection of linked web pages, which share a common domain name (Writing Explained, n.d.). A home page

is the first webpage encountered on a website (Merriam-Webster dictionary, 2019).

Navigating to DSO Websites

Navigation path to specific content from a homepage is related to prioritization and categorization of the information and the users' perception of being welcomed into the website (Gabel et al., 2016). Gabel et al. (2016) conducted the "snapshot click study," which gathered the number of clicks and navigation paths needed to find disability content from the homepages of HEIs. Gabel and colleagues found that 12% of the HEI websites included did not have disability content within the 4 clicks from the home page or required users to do a search for "disability" to reach disability contents. In addition, they reported locating disability content frustrating due to the lack of consistency and predictability in navigation links and concluded that this invisibility of disability content can make students with disabilities feel less welcomed in such institutions. Indexing how easily DSO websites can be reached, the number of clicks and navigation path serves as a proxy for accessibility of the websites. Therefore, the navigation path to reach DSO websites was analyzed along with the multimodal discursive contents of DSO websites to understand what kinds of messages about the accessibility of DSO are being delivered to users.

Multi-modal Discourse Analysis: Visual Semiotics and Texts

Webpages are multimodal texts. Because the contents of webpages are presented in various modes such as texts, pictures, videos, and links, making articulation of contents primarily reliant on visual processes (Kress & Van Leeuwen, 2001), the multimodal discourse analysis was chosen to conduct a holistic investigation of these webpages. According to Jewitt (2016), as a form of discourse analysis, multimodal

analysis extends “the social interpretation of language and its meanings to the whole range of representational communicational modes or semiotic resources for making meaning that are employed in a culture – such as image, gesture, gaze” (p.1). Van Leeuwen (2005) defines semiotic resources as any device, which can be physiologically produced by voice, gesture, or bodily expression, or technologically produced by various writing apparatus or computer software that is used to communicate. Social semiotics examines *how* people choose to represent and organize different semiotic resources to generate meanings (Van Leeuwen, 2005). Therefore, multimodal analysis is important because the full range of resources used to make meaning cannot be understood without the recognition of different sources or modes of social semiotic resources (Kress & Van Leeuwen, 2001).

Semiotic resources are considered a product of social interaction (Kress & Van Leeuwen, 2001). A person expresses meaning by choosing semiotic resources available in a particular moment (Kress & Van Leeuwen, 2001), and this choice of semiotic resources also depends on the discourse that influences how people utilize different modes of resources in a specific moment and culture (Jewitt, 2014). Relatedly, making various choices to express the contents, developers of webpages are regulating different semiotic resources to represent and generate meaning in the context of specific social practices within online space (Knox, 2007). Therefore, the layout and content of HEI webpages are also considered semiotic resources.

Promotional Genres in Higher Education Discourses

Researchers have raised concerns about the increasing marketization of higher education, suggesting that treating knowledge as a profitable product may constrain

discovery and innovation (Slaughter & Rhoades, 2004). Such commercializing trends in higher education are also made evident in current linguistic conventions of HEIs discourses (Askehave, 2007). Marketization of higher education can be defined as the adoption of a business model in operating colleges, such as producing and advertising products that are popular and profitable (Kwong, 2000). Fairclough (1993) claimed that marketization of higher education has seeped into the discursive practices of universities. Indeed, studies have shown how university discursive practices now include corporate terms such as “clients”, “markets,” “corporate identity,” “mission statement,” and “strategic plans” (Connell & Galasinski, 1998; Askehave, 2007; Mok, 1999 as Cited in Zhang, 2017). Thus, while presenting information about the university and its requirements, the websites have become “new hybrid, partly promotional genres,” (Fairclough, 1993, p. 139) with their distinct rhetorical action to highlight the selling qualities of the universities and convince prospective students to choose the institution.

The Current Study

The purpose of this study is to examine how semiotic resources are deployed to describe DSO services on their websites and to determine the discursive functions of advertisement they perform. This analysis anchored on Kress & Van Leeuwen (2001)’s social semiotics, Fairclough (1993)’s analysis of promotional genre in higher education discourse, and Pauwels (2012)’ multimodal framework for analyzing websites (2012). This analysis did not begin with a specific focus on advertising. Rather, the focus on the discursive functions of advertisements was chosen because the iterative analysis revealed semiotic resources used in DSO websites frequently resembled those used in advertisements.

Pauwels (2012)'s framework for analyzing websites was chosen to guide the analysis because it considers analyses of websites to be explorative (determining what information do websites have) and interpretive (what the websites can inform about aspects of culture). For example, Hallett and Kaplan-Weinger (2006) show how official government websites are involved in national identity construction to promote their countries to potential tourists and shape their expectations. Similarly, DSO websites promote the institution as an appropriate place for students with disabilities by offering information about the services they may receive and the steps to receive the services (Gabel et al., 2016). To achieve these functions, the websites include content and modalities such as written texts, static or moving pictures, and videos through which institutions represent themselves. Pauwels (2012) argues that very few choices made in designing websites are culturally neutral, and researchers can explore which and how many features of this highly hybrid medium express a range of nuanced issues such as values, norms, and opinions regarding gender, class, race, and religion. This way, websites become one of the places where the ideology of DSOs is represented through specific choices and layouts of semiotic resources.

Methods

Data Sources

Twelve purposefully chosen DSO websites affiliated with HEIs in the United States were examined. Because these websites are publicly accessible and present information to an unrestricted audience, analyzing online contents is permitted for research purposes without obtaining informed consent (Eysenback & Till, 2001). However, the faces of people in the photographs were blurred to protect their identities.

First, three institutions were randomly chosen from the list of each tier of *The K&W Guide to Colleges for Students with Learning Differences* (2016), using a random number generator to include the HEIs with different levels of support offerings. *The K&W Guide* (2016), published by Princeton Review, assigns US HEIs to one of three categories depending on their levels of support services: “Structured Programs,” “Coordinated Services,” and “Services.” At the highest level, “Structured Programs” offer services that go beyond the legal requirements to provide equal and fair access to the learning environment. Students enrolled in institutions with “Structured Programs” may develop their own individualized learning plans, similar to Individualized Education Programs utilized in K-12 education, in conjunction with tutoring and/or emotional counseling services provided by certified staff. The director of the program is actively involved in admission decisions, and the criteria for admission may be more flexible for students with disabilities. Institutions providing “Coordinated Services,” which provide less comprehensive and individualized services than “Structured Programs,” include at least one certified learning disability specialist on the DSO staff. Finally, the colleges and universities in the “Services” category provide accommodations for students with disabilities that meet legal requirements for equal access to the learning environment but do not have a certified learning disability specialist on staff. Categorizing 55, 176 and 102 colleges and universities as offering Structured Programs, Coordinated Services, and Services, respectively, *The K&W Guide* (2016) is not comprehensive in categorizing all US HEIs.¹

Because research shows that there are more students with disabilities in two-year

¹ Authors of *the K&W guide* indicate that they prioritized to include all colleges with Structured Programs first and then use the remaining pages to colleges, which are most forthcoming in giving us the information that they were seeking.

or community colleges than four-year institutions (Van Noy, Heidkamp, & Kaltz, 2013), one additional community college website was randomly selected from each of the “Coordinated Service” and the “Services” tiers of *The K&W Guide* to ensure a more stratified data source. Because the “Structured Program” tier of *The K&W Guide* (2016) did not include any community or vocational colleges, one additional four-year institution was randomly selected from “Structured Program” tier. The full list of websites included is presented in Table 2.1.

Table 2.1

List of Websites Included

Categories	Universities	Web addresses (URL)
Structured programs	Curry College	https://www.curry.edu/resources-and-services/student-services/disability-services.html
	Marist College	https://www.marist.edu/academics/academic-resources/accommodations-accessibility
	Georgian Court University	https://georgian.edu/academics/adsc/
	University of Arizona	https://drc.arizona.edu/students/resources
Coordinated services	Laramie County Community College	http://lccc.wy.edu/services/disability/index.aspx
	UMASS – Amherst	https://www.umass.edu/disability/about-disability-services
	Loyola University of Chicago	https://www.luc.edu/sac/
	Canisius College	https://www.canisius.edu/student-experience/student-support-services/griff-center/accessibility-support
Services	Southern Main Community College	https://www.smccme.edu/academics/resources/disability/
	Le Moyne College	https://www.lemoyne.edu/Student-Life/Student-Services/Accessibility-Disability-Support
	University of Alaska -	https://www.uaa.alaska.edu/students/disability-support-services/

Data Analysis

As a preliminary step to understand how the DSO websites can be reached from HEI websites, the author created a navigation procedure manual for determining the number of clicks and navigation paths to get to the DSO websites from the homepages of institutions. An undergraduate research assistant and the author independently retrieved the counts and navigation paths from phone and PC interfaces using the manual and compared their results. If multiple ways were identified to arrive at the DSO websites from the homepages, the most salient way based on the size of the textual image cueing navigation was chosen. Any discrepancies were resolved through discussion and consensus.

The analysis of the research aim involved an iterative process. First, the websites of 12 postsecondary institutions were examined to gather first impressions. Then, an adapted Jocson’s matrix analytical tool (2013) was used to systemize the analysis of the content and representation of visual images and texts, which emerged in an initial pass of the websites (Table 2.2).

Table 2.2

Matrix Analytic for Website Compositions: Adaptation of Jocson’s Matrix (2013)

Mode	Technical	Conceptual	Aesthetic	Accessibility
Text	How long is the written text? Are the texts original?	What messages are conveyed by the texts?	What are stylistic choices in presenting texts? What messages do types of choices communicate? How are hierarchies of the	What efforts are taken by texts to increase accessibility? Are there font options or instructions about font options?

			webpages (menu bar, alphabetical font, and size of fonts) portrayed?	
Image	What images are included? How many? From where are images retrieved or collected?	Who/what is represented? What is the logic behind the inclusion of the images?	What stylistic choices are present? What mood do these images create for the viewer?	What efforts are taken by images to increase accessibility? Are there captions describing images?

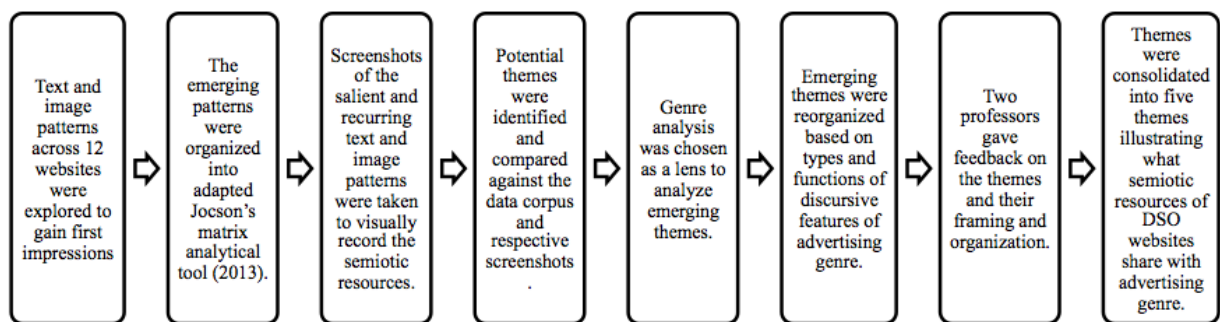
The matrix captures the technical, conceptual, and aesthetic elements of images and texts and various modes in both PC and phone interfaces used to deliver information and occupy the computer screen. In this paper, a text refers to alphabetical writing used to express content, and an image refers to non-alphabetical, visual representation of content such as drawings, photographs, graphs, or logos. Screenshots of homepages were taken to record each salient component of webpage, and descriptive notes of each screenshot were added alongside the date each screenshot was taken (e.g., March 30, 2019) and the picture ID (e.g., 1a).

Potential themes were identified, and the themes were constantly compared with the data corpus to make sure the emerging themes reflected the data. The pattern of initially emerging themes suggested genre analysis, a lens to examine the consistency of prototypical and criterial features of recurrent social-communicative events (Bhatia, 1993; Miller, 1984; Swales, 1990), can be used to capture and analyze lexical, grammatical, syntactic, and rhetorical moves, and the communicative and discursive function of salient components from Jocson's matrix (2013). Subsequently, the themes were reorganized based on the types and functions of different discursive features in the advertising genre (Fairclough, 1993).

Two professors with expertise in discourse analysis validated the relations among potential themes and their discursive purposes and provided suggestions on constructing and reorganizing the themes. Situatedness of DSO websites within the advertisement genre was chosen as the overarching theme. After several rounds of iterative analysis, five themes of rhetoric frequently adopted in advertisement genre were identified: a) situating accessibility as a central commodifiable attribute, b) promoting the value of the DSO services that provide accessibility, c) establishing the superiority of the institution, d) constructing images of students with disabilities empowered but dependent upon DSO services, and e) situating students within a college community. A flowchart that outlines the data analysis process is presented in figure 2.1.

Figure 2.1

Flow Chart of Data Analysis Process



Findings

Number of Clicks and Navigation Paths

When accessed from PC devices, DSO websites were three or fewer clicks from the main homepages of all institutions included. Three to seven clicks were needed to access the websites from phone interfaces. Fewer clicks were required on PC devices

because putting a cursor, or hovering, on a menu bar often automatically opened the sub-menu bar, whereas a phone user would need to click the menu bar icon to open the same sub-menu bar. Gabel et al. (2016) suggest that four or fewer clicks on computers are within a comfortable range for users.

However, while the number of clicks is meaningful for users familiar with navigating institutional websites, for first-time users, how fast one can reach a website concerns not only the number of clicks but also identifying the correct path between navigation links. In eight sites, the first path to get to DSO websites used “Student life,” “Current Student,” “Student,” or “Student Life” as the navigation link. Gabel et al. (2016) also found that beginning with a link related to some version of student affairs was the most common way to find a link to disability content. However, in the other four websites, users had to click “Academics” or “About” from the main menu bar to ultimately arrive at the DSO web pages. The author and research assistants often experienced difficulty locating DSO webpages due to the inconsistencies in the navigation path. Even after the user has clicked the first navigation link correctly, as Table 2.3 shows, the second navigation link was not consistent across the websites. Therefore, despite requiring a relatively low number of clicks from the homepages of institutions, the inconsistency of the navigation path conveyed the difficulty and inconvenience that users who are interested in reaching DSO websites may experience.

Table 2.3

Number of Clicks and Navigation Path

University	# of clicks (PC)	# of clicks and hover (PC)	Navigation Path	Number of clicks (phone)
------------	------------------	----------------------------	-----------------	--------------------------

Curry College	2	2	Student Life - Disability Services	3
Georgian Court University	1	3	Academics (h) - Academic Support (h) - Academic Development & Support Center	4
Marist College	3	3	Academics – Academic Resources – Accommodations and Accessibility	4
University of Arizona	2	3	About (h) - Tradition and Culture - Disability Resources Center	4
Laramie County Community College	2	3	Current Student (h) - View more - Disability Support Services	4
Loyola University of Chicago	3	5	Academic (h) - Academic Affairs - Student Academic Services (h) - Academic Advising & Support Services - Services for Students with Disabilities	7
UMASS – Amherst	2	3	Student Life (h) - Advocacy, Inclusion, and Support - Disability Services	3
Canisius College	2	3	Student Experiences (h) - Student Affairs - Griff Center	4
Southern Main Community College	1	3	Academics (h) - Academic Resources (h) - Disability Services	4
Le Moyne College	2	3	Student Life - Student Services - Accessibility & Disability Support	4
Clemson University	2	2	Campus Life - Student Disability Services	3
University of Alaska - Anchorage	2	2	Current Student - Disability Support Services (under Support and Advocacy)	3

Note. (h) indicates users need to hover the cursor without clicking

DSO Websites as Advertising Genre

I now illustrate the multimodal discursive means through which the DSO websites situate themselves within the advertising genre. The designs, lay-out, and contents of the DSO websites resembled the rhetorical moves frequently adopted in the advertisement genre. First, the websites presented accessibility as a commodifiable attribute of DSOs.

Situating Accessibility as Central Attribute

Kress and van Leeuwen (1998) explain that saliency suggests “a hierarchy of importance” (p. 200) among the elements on a visible screen. Combinations of different visual variables such as size, contrast, color, balance, and symbols appoint different ‘weight’ to the elements on a screen (Kress & van Leeuwen, 1998). Previous studies of online newspapers have shown how headlines, elements analogous to the top of a homepage, are written in larger and more colorful fonts to convey greater salience and therefore more importance (Knox, 2007). Chan-Olmsted and Park (2000) argue that the homepage can persuade target users to believe that the website contains what the users want.

The home pages of the DSOs included in the analysis displayed the term “accessibility” in such a way that they conveyed a high degree of saliency. Defined as the precondition for an inclusive society which provides flexibility and accommodation to meet everyone’s needs and preferences (United Nations Report, 2004), the ideology of accessibility is increasingly surfacing in relation to disabilities in the context of digital media technologies (Ellcessor, 2015) and designing buildings and facilities (ADA Accessibility Guidelines; 2010).

For example, the home page of Le Moyne University’s DSO features the phrase “Accessibility & Disability Support,” which is also the name of the university’s DSO, above the image of a smiling male in a wheelchair (Figure 2.2). The text Accessibility & Disability Support is written in a significantly larger font than other texts on the screen. In contrast with the colors of the background image, the white color accentuates and draws the visitor’s attention to the text. In addition, the picture shows only the upper torso of the person, just enough to show that he is sitting in a wheelchair, and the menu bar blocks his upper face, signifying that the website is using this image as a background to the highlighted text written over it.

Figure 2.2

DSO Website of Le Moyne University



Accessibility Note. Home page of the DSO website of Le Moyne University. The background features the image of the upper torso of a smiling male in a wheelchair, and “Accessibility & Disability Support” is written in a large, white font. The face of the person is blurred. Below the “Accessibility & Disability Support,” “Providing access, and facilitating success” is written in white but in a smaller font.

In the home page of Loyola University- Chicago’s DSO, the term “accessibility” is written in a mixture of orange (“access”) and black (“ibility”) on a white background (Figure 2.3). It is also written in the largest font on the screen, and the term “access” is

further highlighted because the rest of the webpage uses dark red, black, or white for its text and background. Figure 2.4 also presents the home page Southern Maine Community College’s DSO, on which “Ensuring Equal Access & Full Participation for All” is written in the largest font and eye-catching color.

Figure 2.3

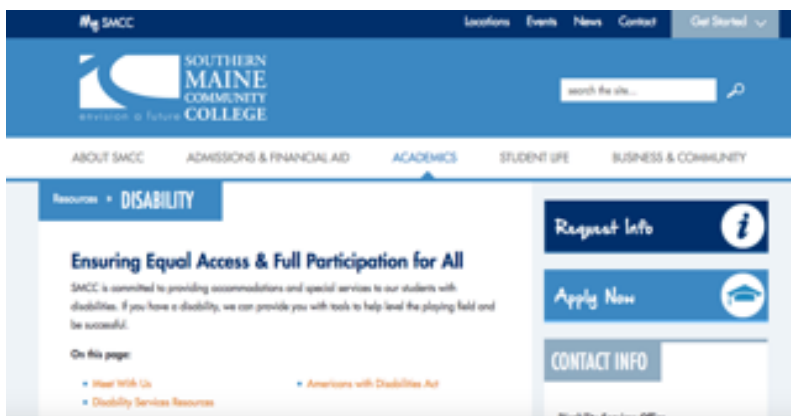
DSO Website of Loyola University Chicago



Accessibility Note. Home page of the DSO website of Loyola University Chicago. “student accessibility center” is written in the center of the page. The word “accessibility” is written in the largest font within the page, and “access” is written in orange color, while all the other texts are written in black. The image of a key is presented next to “center” in the same orange color as “access.”

Figure 2.4

DSO Website of Southern Maine Community College



Accessibility Note. Home page of the DSO website of Southern Maine Community College. In blue font, it is written “Enduring Equal Access & Full Participation for All.” The page also includes a brief description about the DSO, which is written in a smaller and black font.

That the text for “accessibility” was made salient by prominent color and font size on the home pages indexed the effort the DSOs claim that they are exerting to provide accessible services to students with disabilities and their prioritization of accessibility. The DSO websites were, therefore, promoting the value of accessibility by representing it as a central tenet of their mission.

Promoting the Value of Accessibility

In addition to emphasizing the saliency of the key elements, DSO websites were employing techniques frequently utilized in advertisements such as “catchy headlines,” parallel syntactic structure, or visually matching texts to associate accessibility with students’ success and to promote the value of their accessible services. For instance, the use of “catchy headlines” is often adopted as a promotional strategy in university advertisement discourse (Fairclough, 1993, p.146). The websites’ abundant use of eye-catching semiotic resources that emphasized the primacy of accessibility as a selling point resembled the promotional textual headline, described by Fairclough (1993). In Figure 2.2, below the phrase “Accessibility & Disability Support,” the webpage further presents another text “Providing access, and facilitating success.” The location of the text, and a parallel syntactic structure and the verb choice of ‘provide’ and ‘facilitate’ together signaled that it is describing what the office does, and the first function they mention is to provide access and success, insinuating the direct relation between the access provided by DSO and success.

Also, the slogan, “Providing access, and facilitating success” utilizes a rhyme (i.e., matching the sounds between words and endings of words) and rhythm (i.e., making a

variation of stressed and unstressed syllables) techniques (Skorupa & Duboviciene, 2015). As one of the most frequently utilized techniques in corporate advertisements, this advertisement technique attracts the attention of potential consumers and makes the phrase and the advertised commodity, “access,” more memorable (Skorupa & Duboviciene, 2015).

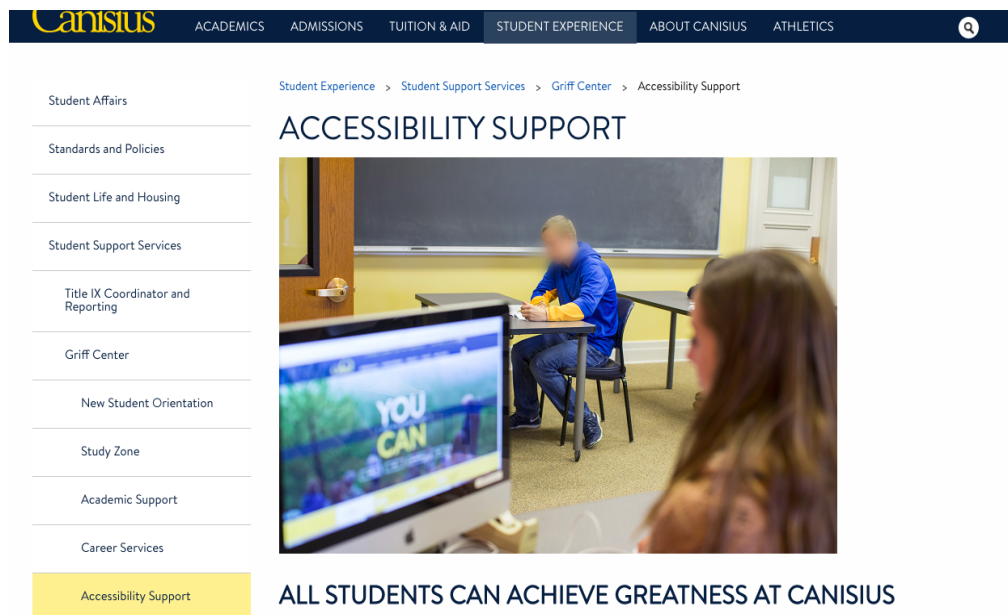
Additionally, as shown in Figure 2.3, the image of a key is presented next to “center” in the same orange color as “access.” The orange color orients the attention of the viewers to both orange images together, prompting the viewer to form the association between key and access. Without being given any contextual information on what the image of the key signifies, the viewers are left to interpret the meaning of the key. Here, viewers can view the image and construe it’s meaning similar to the general definition of a key as a noun “a means of gaining or preventing entrance, possession, or control” or as an adjective “extremely or crucially important” (Merriam-Webster Dictionary, 2019). Although the image of a key is not in the form of a text, it serves the same function as the catchy phrase in Figure 2.2, which is to persuade people to understand that the accessibility service that the DSO provides is the key to success. Using an image of a key in a salient orange color, therefore, served as an advertising device that made the advertised message (i.e., the relations between the accessibility service and success) stand out.

Lastly, Canisius University’s DSO webpage presents a photograph image of a student who appears to be taking a test in a quiet environment, above which, “ACCESSIBILITY SUPPORT” is written in all capital letters (Figure 2.5). This positioning of text and image indicates that the pictured student is receiving accessibility

to a suitable testing environment from the DSO. Below the image, also in all caps and the same font, size, and color as ACCESSIBILITY SUPPORT, is the sentence ALL STUDENTS CAN ACHIEVE GREATNESS AT CANISIUS. The matching font and color of the two phrases and the layout of the text and image in Figure 2.5 suggested that all students who receive accessibility support provided by the DSO can achieve “greatness” at Canisius.

Figure 2.5

DSO Website of Canisius University (within Accessibility Support Subsection)



Accessibility Note. Student Accessibility Support subsection page of the Canisius University. The image features a white male student taking a test in a quiet environment and a white female proctor watching her computer screen. The faces are blurred. The computer screen reads “YOU CAN.” Above the image, “ACCESSIBILITY SUPPORT” is written in all capital letters, and below the image, also in all capital letters and the same font, size, and color as ACCESSIBILITY SUPPORT, is the sentence ALL STUDENTS CAN ACHIEVE GREATNESS AT CANISIUS.

Furthermore, the proctor is included in the photograph, which has been taken from an angle that allows the visitors to see a student within the same visual field as the proctor. The computer screen in front of the proctor reads “YOU CAN.” By associating this inspirational phrase with a context in which the DSO is providing accessibility to a

student, the DSO further intended to persuade target users of the value of accessibility that the DSO can provide. The phrases, “YOU CAN,” and “ALL STUDENTS CAN ACHIEVE GREATNESS AT CANISIUS” are both written in full capital letters, a method frequently utilized in advertisement to attract more attention and emphasize each word of the slogan (Zembytska & Mazur, 2018). Also, using the second person addressee “you” in “YOU CAN” makes the message more personal and emotionally attached as in the advertisement of The National Lottery “It Could Be You” (Zembytska & Mazur, 2018).

All three images described above implied that the accessibility that the DSOs provide to students with disabilities was directly related to their success and greatness, using advertisement techniques that made advertised messages memorable, emotional, and distinct from other styles. These webpages, therefore, were adopting syntactic, lexical, and visual choices that are prevalent in promotional genres to promote the value of accessibility services as a commodity.

It is interesting to note that while the DSO websites frequently referenced accessibility as the central attribute of their services, the websites included in these analyses often were not following principles of accessibility themselves. For instance, despite frequent uses of images, none of the websites provided text captions of the images, making images unrecognizable for individuals who use screen readers to access the information on the screen. Furthermore, against Web Content Accessibility Guidelines 2.0 (WCAG, n.d.), the majority of websites included some form of non-text content that was purely decorative without providing text alternatives that could be processed by assistive technologies. This disconnect adds to the evidence that DSO

websites are utilizing the ideology of accessibility as advertisement, rather than putting in efforts to make the websites, in fact, accessible.

Establishing Superiority

Promotional and advertising genres persuade the consumers that they currently have a demand that needs to be addressed and that the service provided by them will be the solution to the demand (Jordon, 1986) by establishing credential and superiority to other service providers. In the context of higher education discourse, Zhang (2017) shows how frequent use of evaluative adjectives and superlative forms in the websites of HEIs has been related to institutions’ efforts to promote their history, reputation, research, and “Unique Selling Points (USPs)” (p.71). Zhang (2017) also notes that the purpose of including plentiful qualitative terms is to convince the public about the strength and quality of institutions rather than to provide substantive information. Similarly, the DSO websites included in this study frequently used such evaluative and hyperbolic adjectives when describing their accessibility services, as the examples in Table 2.4 across the websites illustrate.

Table 2.4

Examples of Evaluative and Hyperbolic Adjectives

University	Examples
Clemson University	“We strive to provide access that is <u>proactive, sustainable, equitable,</u> and <u>inclusive</u> to the widest population possible.”
UMASS Amherst	“Disability Services at UMASS Amherst is committed to <u>full</u> access for <u>all</u> persons at the University of Massachusetts... Our staff is committed to providing members of the University community with the <u>finest</u> educational opportunities and the <u>most appropriate</u> accommodations available for students with disabilities.”
University of Alaska	“DRC works proactively to impact the systemic design of our campus environments to be <u>seamlessly accessible.</u> ”
U of Arizona	“Disability Resources (DRC) believes University experiences should be designed to be usable by <u>all to the greatest extent possible.</u> ”

U of Arizona In “What Sets Us Apart” section: “most comprehensive collegiate wheelchair and adaptive sports program in the nation.”

Note. Evaluative and hyperbolic adjectives are underlined.

Such qualitative terms as “proactive,” “sustainable,” “equitable,” “widest population possible,” “seamlessly accessible,” “finest,” “most appropriate,” “full,” “greatest extent possible,” “most comprehensive,” and “in the nation” used to describe the accessibility services provided by DSOs were purposefully utilized to establish the superiority of their service products. This purpose was further accentuated in the text, “What Sets us Apart” from the DSO website of the University of Arizona, which emphasized that their *most* comprehensive wheelchair sports program *in the nation* distinguishes this university from all other U.S. universities in the area of accessible sports programs. Thus, this language was intended to persuade prospective consumers to believe in and *buy* this institution’s services, touted as “not just a solution but the best solution” (Jordon, 1986, p. 36)

Constructing Images of Students with Disabilities

In addition to highlighting their accessibility services, the DSO websites utilized rhetoric frequently used in the promotional genre to situate prospective students in relation to the services provided. The websites examined frequently constructed images of students with disabilities as empowered and proactive, given that they make use of the services offered by DSOs. This relation between the DSO as the “initiator” and the students as “doer” was facilitated by what Askehave (2007) calls enabling clauses, in which the institution, or in this analysis the DSO, acted to provide the “possibility of doing/being something” to the students who benefit from the actions of the DSOs by “doing/being something” (p.733). Askehave (2007) further claims that this rhetorical

move constructs an image of the institution as offering “productive products to demanding clients [who] look-out for the best possible university experience” (p. 739).

Table 2.5

Examples of Enabling Clauses

University	Examples
Marist College	“The mission of the Office of Accommodations and Accessibility is to <u>support</u> students with documented disabilities in becoming empowered, independent learners by <u>providing</u> the appropriate accommodations and services necessary to access the educational opportunities at Marist College...Marist College supports the concept of self-advocacy in all students. The Office does not provide faculty with prior notification of a student's enrollment. Requests for academic accommodations are made directly by the student.”
Curry College	It <u>provides</u> accommodations and services that promote individual growth and self-advocacy.”
University of Alaska - Anchorage	“It is your life, your education, your decision to request accommodation and use it in a manner that works best for you. We believe it is a valuable and important process to develop self-advocacy skills as well as to learn how to make sure you get what you need. We are <u>here to help</u> .”
Southern Maine Community College	“You will still have to meet academic expectations, but we will <u>ensure</u> you that you will have reasonable access to the programs and services at the college.”
Canisius College	“The Frigg Center for Academic Engagement <u>provides</u> comprehensive programs, services, and resources to support student academic and career success and a transformative learning experience.”

Note. Enabling clauses are underlined.

Examples of enabling clauses used in the DSO websites are presented in Table 2.5. Thus, students were positioned as active individuals, who can gain individual growth and self-advocacy skills, meet academic expectations, and achieve academic and career success through a transformative learning experience owing to the help and support given by the DSOs. This constructed an image of students with disabilities, who were empowered but also dependent upon the DSO services to become empowered. It is also interesting to note that this notion of control and action indexed a very Western

conception of independence and individual growth as the ultimate goal of success. On the other hand, DSOs were depicted as service providers, evidenced by such verbs as “provide,” “help,” and “ensure.” Constructing images of students as action takers branded DSOs as student-oriented, service-minded, and customer driven-organizations, a rhetoric often used in the consumer culture of Western society (Gibson, Lee, & Crabb, 2015).

In addition, these enabling clauses situated students as action takers with authority to make choices (Fairclough, 1993). Fairclough (1993) explains that advertising discourse generally positions consumers as having authority, and how this tendency to promote consumers contradicts the traditional institutional authority over prospective students because HEIs need to demand a certain level of condition and requirements from the applicants upon entry. In his analysis of the newspaper faculty recruitment notices of three universities, Fairclough (1993) shows that universities resolve this dilemma by communicating the requirements in less direct and obligatory forms. For example, Marist College’s DSO website utilized expressions (i.e., specifying that they “support the concept of self-advocacy” and the accommodation requests are “directly made by students”) to juxtapose the student-centered image of institutions with conditions and requirements. The institutional requirement that students have to request academic accommodations was thus construed as support for students’ autonomy and self-advocacy skills. Also, the requirements were expressed in passive voices rather than making students the subject of the sentence. Similarly, Southern Main CC softened the degree of demand by expressing that students “are *still expected to* meet academic expectations” rather than more directly enforcing the requirements. These linguistic strategies

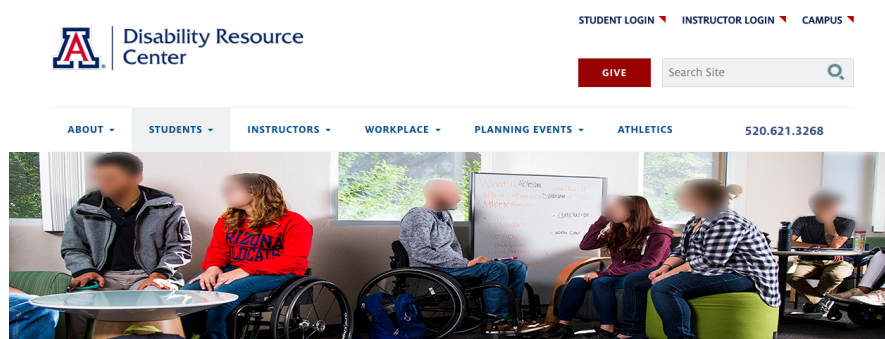
deemphasized institutions' demands of prospective students by promising an easy pass as long as they put some effort and receive the support from the DSO.

Situating Students within the Student Community

The websites also utilized promotional rhetorical moves and *offer* images to situate prospective students within a college student community. To establish the superiority of the accessible service of the institutions, evaluative adjectives and superlatives were employed to support the claim that students with disabilities who attend this institution will have access to quality community involvement. The UMASS website featured the testimony of a current student with disabilities, who says, "I was accepted by the DS community as soon as I stepped into the office for my first appointment." This statement informed the viewer that there is a community within the DSO, and the phrase *as soon as I stepped into* indexed the opportunity for students to be a part of the community without having to strive for it. Relatedly, the DSO of the University of Arizona alluded to an institutional commitment to social justice by claiming "disability is integral to our society and to the University of Arizona (UA) community (Figure 2.6).

Figure 2.6

DSO Website of Arizona State University (Student Sub-section)



STUDENTS

Accessibility Note. Eight individuals in the same room are engaging in conversations within small groups of two or three and each group includes a person in a wheelchair. Behind the group at the

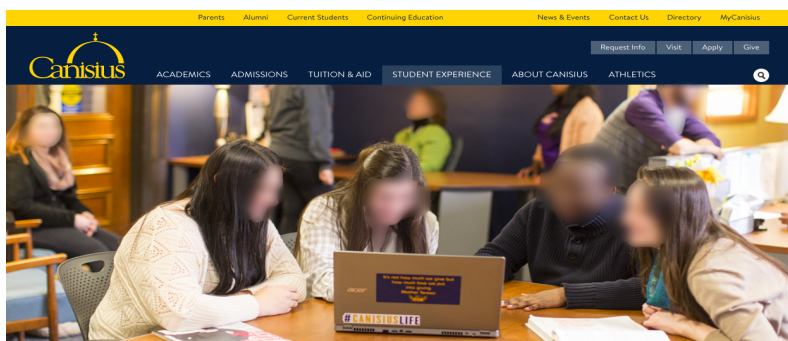
center, there is a whiteboard, and questions such as “What is ableism and how it affects persons with disabilities in the athletic field?” are written. Two white females in the group at the center are both looking at the white male student in a wheelchair, who is holding the marker.

All disabled students and employees are valued members of this community.” Using such evaluative terms as “integral,” “all,” and “valued,” the DSO was persuading website visitors to believe in the capability of the DSO to facilitate inclusion of all students with disabilities into the UA community.

Additionally, the DSO websites frequently included photographs of students actively engaging in a social community. Figure 2.6 depicts a scene in which eight individuals in the same room are engaging in conversations within small groups of two or three, each of which includes a person in a wheelchair. Writing on a whiteboard centered behind the group posing such questions as “What is ableism and how it affects persons with disabilities in the athletic field?” shows that the topic of the conversation is relevant to the target viewers. In this group, the marker is in possession of the male in a wheelchair. Thus, this photograph highlights the inclusive environment of the University of Arizona where students with physical disabilities are not only socially included but can lead to important discussions about disability. Figure 2.7 depicts four students looking into a computer screen together, all smiling and laughing.

Figure 2.7

DSO Website of Canisius University



Accessibility Note. Student Support webpage of Canisius University. The image features three white female students and one African American student looking into a computer screen together, all smiling and laughing. The faces of people are blurred.

Notably, the students depicted in Figure 2.6 and 2.7 are not looking directly at the viewer but are gazing away. Kress and van Leeuwen (2006) categorize such images as “offer” pictures, in which the characters’ gaze is directed away from the viewer. Brookes and Harvey (2015) note that *offer* images contribute to the degree of authenticity attributed to the scenes portrayed in the photographs. It is as if the viewers are spying on the daily activities of the characters and their world, while the characters are minding their own business, oblivious to being observed (Brookes & Harvey, 2015). These two offer images are also subjective according to Kress and van Leeuwen’s (2006) “point of view” system.

Kress & van Leeuwen (2006) offer an example with the magazine advertisement, in which the product being advertised is placed on a window sill, positioning the viewer from the photographer’s perspective as observing subjects within the image (Figure 2.8).

Figure 2.8

Subjective Image in Kress & van Leeuwen (1996)



Accessibility Note. Poster advertisement for a cigarette. This black and white image features two cigarette boxes placed on a windowsill, and a sailboat on the sea horizon can be seen from inside the window. It reads “SPECIAL MILD 35’s” at the top of the image, and, in the bottom, it reads “35’s value in specially blended mild cigarettes” in a smaller font.

This way, viewers perceive the image as the real world and position themselves as a part of the image. The intensification of authenticity supported by the subjective point of view of these offer images are intended to convince consumers to see the students in the photographs in aspirational terms as they receive services previously described with such terms as “seamless,” while the viewers themselves vicariously reside in the characters’ world while attending this institution. Therefore, these offer images, which are high in social affinity and full of positive affect, were attempts to situate students within the social community and indexed future experiences that prospective students can expect to have once they receive these services.

In addition, the characters in Figure 2.6 and 2.7 are presented as average prototypes of undergraduate students on campus. This *averageness* of the characters amplifies the subjective point of view (Kress & van Leeuwen, 2006), creating a sense of connection between the characters and the prospective student viewers. By positioning themselves as the characters in the images, student viewers can envision themselves as actual students on campus and as a part of the college community. Because prospective students value a sense of belonging to a community within higher education contexts (Freeman, Anderman, & Jensen, 2007), the DSO websites were promoting their services by representing community involvement as a commodity that students can access with the support of DSOs.

Discussion

Click Study

This study replicated the snapshot click study (Gabel et al., 2016) to preliminarily explore how easily users can reach the DSO websites and applied genre analysis to understand how multimodal semiotic resources are utilized in DSO websites and what discursive function of advertisement they perform. The findings from the click study suggests that DSO websites can be difficult to reach, not necessarily due to the number of clicks but due to incoherent navigation path to get there. The lack of informative or notable headers or descriptions cueing the users to the DSO may also attribute to the difficulty navigating to the DSO websites. Furthermore, users can recognize how institutions categorize DSOs by locating DSOs as a subsection of a broader set of specific aspects of college life (e.g., student life, academics), and this can also influence the conceptions that users may develop about the nature of the services. Some disability support services were positioned under academic resources and support, suggesting that in these institutions, services for students with disabilities are limited to academic areas, and those seeking more comprehensive services from DSOs may feel unsupported or out of place. It is important to consider how the users will perceive the situatedness of the DSO websites within HEI to accurately communicate to the users about the purpose and function of DSO and their services.

DSO Websites as Advertisements

While previous studies have focused on the marketization discourse of the entire institution, this study expands on the previous literature by showing that an organization within an institution, the DSO, also makes rhetorical choices to situate itself within the marketization of the HEI at the discourse level. The rhetorical choices utilized by DSO websites suggested that DSO websites are within advertisement genre. DSO websites

appointed prominent color and font size to highlight accessibility as a central commodifiable attribute, used syntactic, lexical, and visual choices to promote the value of the DSO services that provide accessibility, and employed evaluative adjectives and superlative to establish the superiority of the institution. Additionally, DSO websites utilized enabling clauses to construct images of students with disabilities empowered but dependent upon the services of DSO and included evaluative adjectives and superlative and offer images to suggest that prospective students will have access to such social communities they receive the services from DSO.

That DSO websites are within the advertisement genre has several implications that are worth considering. Previous studies have raised concerns about the long-term consequences of marketization of higher education website discourse, which focuses on highlighting the beauty and location of a campus to attract the potential *consumers* and construct an institutional brand (Zhang, 2017). Similarly, this study shows that DSO websites examined in this study were prioritizing branding the institutions rather than presenting useful information about education condition and the kinds of services that students can actually access. However, the commodification of accessibility and services of disability support services is especially problematic because it assumes that *accessibility* is sellable, while it should be understood as accommodation given to students with disabilities as their legal rights. Although there has been increasingly more acknowledgment of the inevitability of the marketization of HEI, advertising beauty and location of campus to build an image of an institution should not be treated the same as advertising and presenting the accessible services that DSO can provide as a commodity.

Further, students with disabilities need accurate information about DSO services because they base their matriculation decisions based on expectations about college experiences (Anctil, 2008). This study shows that DSO websites made prospective students envision being a part of a college community, surrounded by peers, once they attend the particular institution and receive the services by DSO. However, it might not be an accurate presentation of the services some DSOs can provide if they mainly provide academic accommodations. Filled with advertisements and promotions, it may be difficult for prospective students to make accurate expectations about their future college experiences. Anctil (2008) suggests that HEIs should reconsider marketing strategies and make them better align with the stakeholders' needs. Developers of DSO websites need to prioritize delivering valid information on the types and extent of DSO services, rather than attracting students with disabilities and families by suggesting they have what prospective students want.

In addition, situating disabled students as dependent upon DSOs to become empowered creates a power hierarchy between students with disabilities and DSOs such that students with disabilities always need the support of DSO to gain self-advocacy skills. While it is unclear what efforts the DSOs are exerting to help students gain more self-advocacy skills or become empowered, more efforts to frame the relationship between students with disabilities and DSOs as more collaborative and equal may be necessary to help students with disabilities more easily approach DSO. Furthermore, making students with disabilities dependent upon DSOs lessens the responsibility of the institution to break down the barriers that keep HEIs from being accessible in the first place.

Also, the DSO websites promoted a Western ideal of empowerment in terms of individual autonomy and growth and communicate the importance of self-advocacy skills. However, idealization of individual empowerment may not be in accordance with some students' cultural backgrounds or realities. Therefore, the ability to thrive as a constituent of society while providing and receiving mutual support should be equally emphasized in the conceptualization of ideal growth in higher education experiences.

Increasing Web Accessibility on DSO Websites

Furthermore, with the increasing attention to accessibility among disability communities, most DSO websites included in this study were highlighting and publicizing the accessibility of their campuses and services. Yet, they were not following web accessibility guidelines on their DSO websites. Such discrepancies between their claims about accessibility and actual measures to provide accessibility of information may also influence how prospective students and their families perceive the DSOs. These findings call for the website developers to revise their DSO websites to match their claim about accessibility with actual accommodations to ensure accessibility to students with disabilities.

Recently, Raymaker et al. (2019) developed AASPIRE Web Accessibility Guidelines, using a community-based participatory research approach with adult autistic web users. Although specifically targeted to develop websites to increase health care access for autistic adults, Raymaker et al. (2019) contend that similar guidelines can be applied to increase the general accessibility of websites as well. For instance, including low-contrast neutral colors or a range of color options for individuals with sensitive vision, providing a font size option, clearly and consistently labeling site elements

throughout the website, and refraining from the drop-down combo boxes which require users to assume the categorization of an item or content have been suggested as relatively easy and practical strategies to implement. Additionally, Gabel et al. (2016) also presents different guidelines and regulations such as ADA (<https://www.ada.gov/pcatoolkit/chap5toolkit.htm>), User Interface Design (<http://goodui.org>), and the World Wide Web Consortium (W3C) (<https://www.w3.org/>) as resources for website developers to design fully accessible websites.

Conclusion

The current study expands the scope of genre analysis by showing that the rhetorical strategies used in university discourse can be similarly used in describing the services of DSOs (i.e., advertising discourse) and that DSO websites are within advertisement genre. Future studies need to be conducted to explore the extent to which this pattern of marketization of services of DSO found here is observed in a larger number of DSO websites of HEIs. Also, this study calls for an examination of how websites' messages about disability and support services are related to the institutional choices of students, their application and attendance behaviors, their actual experiences with the DSOs, and their overall experiences within their institutions.

Chapter 3

Disability Service Office Staff Members' Attitudes and Knowledge about ASD in US

Higher Education Institutions

Abstract

Disability support office (DSO) staff are responsible for providing appropriate support for an increasing population of autistic undergraduate students. One hundred fifty-three DSO staff members in US higher education institutions completed the online survey on their attitudes and knowledge about ASD, previous contact with autistic people, and demographic characteristics. Multiple regressions were conducted to investigate which variables uniquely predicted DSO staff members' attitudes and knowledge about ASD. The type of institution DSO staff members was working predicted their attitudes toward autistic symptoms; quality of contact predicted openness toward ASD. Quality and quantity of contact, knowledge, public vs. private status of institutions predicted the Social Distance. Lastly, quality of contact, school size, and average annual cost predicted the knowledge about ASD.

Recent trends suggest increasing enrollments of autistic students in higher education institutions (Longtin, 2014; Shattuck et al., 2012). Section 504 of the Rehabilitation Act of 1973 stipulates that all students with documented disabilities can request accommodations that will enable them to participate in and benefit from all post-secondary educational activities to the greatest extent possible. Disability service offices (DSO) thus exist in US higher education institutions to help students with various disabilities access resources on campus and successfully complete their education (Enright, Conyers & Szymanski, 1996). Yet, many autistic undergraduates have reported significant difficulties and institutional barriers in making a successful transition into, and graduating from, college (Gelbar, Smith & Reichow, 2014), even though they are just as academically qualified to be in colleges/universities.

While Cai and Richdale (2016) report the positive influence of DSO staff in supporting autistic students with class selection, time management, and academic assignments, growing evidence shows that many campus disability offices lack the resources and knowledge to cater to the varied needs of autistic students (Van Bergeijk & Cavanagh, 2012). For instance, Megivern, Pellerito, and Mowbray (2003) reported that 90% of the autistic college student participants in their sample decided not to seek accommodation from college counseling services or DSOs, and this decision was attributed to the perception that DSO staff lack knowledge about their needs. Autistic students also stress the need for sufficient awareness and knowledge about ASD among staff members to successfully support them (Cai & Richdale, 2016; Van Hees, Moyson, & Roeyers, 2015).

When DSO staff members have accurate knowledge about ASD, they may be

more effective in understanding students' needs and providing helpful and appropriate services for them. Staff members with more accurate knowledge about ASD may also be more likely to advocate on behalf of the students to provide a better and more inclusive environment. Similar to knowledge about ASD, attitudes held by DSO staff members about ASD are also particularly critical for autistic undergraduate students in college settings. Students with disabilities are expected to disclose information to the university in order to become eligible for any accommodations for their disability. Typically, this requires that students encounter staff members at disability support offices during this process. When the staff members show accepting attitudes, autistic students are more likely to disclose their disability and any related concerns (Conyers & Ahrens, 2003; Dalgin, 2001).

While the majority of studies have focused on assessing attitudes and knowledge of non-autistic peers (Gardiner & Iarocci, 2014; Neville & White, 2011; White, Hillier, Frye, & Makrez, 2019), no previous study has examined DSO staff members' attitudes and knowledge about ASD. Therefore, this study will investigate DSO staff members' attitudes and knowledge about ASD, and determine whether knowledge, previous contact, demographic variables, and institutional variables are associated with DSO staff members' attitudes about ASD. Additionally, associations between knowledge about ASD and previous contact, demographic variables, and institutional variables will also be examined. Understanding how these constructs are related to attitudes and knowledge about ASD would inform which subgroups of DSO staff members may need further assistance to promote their attitudes and knowledge about ASD and how to train DSO staff members to better support autistic students.

Attitudes

Noting the difficulty of defining the term ‘attitude,’ Eagly and Chaiken (2007) theorize that attitude refers to the degree of favorability or unfavorability when overtly or covertly evaluating a particular entity and the characteristics associated with it. The ASD literature has frequently investigated openness toward ASD (e.g., how much a person feels afraid or comfortable around an autistic person, or how much a person thinks an autistic person is different from him/her or as smart as him/her) (Neville & White, 2011) or stigmatizing attitudes held about ASD (i.e., considering a person with a socially disfavored attribute, behavior, or reputation to be inferior) (Gillespie-Lynch et al., 2015; Goffman, 1963). Previous studies often assess stigmatizing attitudes held about ASD by asking participants about their willingness to engage in various social activities or relationships with an autistic person (Gillespie-Lynch et al., 2015) based on the assumption that unwillingness to engage stems from inferior evaluation of an autistic person.

At the same time, stigmatizing attitudes held about autistic individuals have been reported to be closely associated with observable autistic symptoms and behaviors (Gillespie-Lynch et al., 2015). Examining whether or not DSO staff members think that reducing autistic symptoms would benefit autistic individuals would inform if they consider autistic symptoms and behaviors as socially disfavored behaviors and provide insight into how staff members evaluate autistic individuals.

Knowledge

In the ASD literature, knowledge about ASD is frequently assessed by measuring the extent to which non-autistic individuals can correctly identify social, emotional,

behavioral or cognitive traits and general features of ASD and reject inaccurate misconceptions about ASD (Gardiner & Iarocci, 2014; Gillespie-Lynch et al., 2015; White et al., 2019). The association between knowledge and attitudes about ASD has been repeatedly shown in previous studies (Gillespie-Lynch et al., 2019; Kuzminski et al., 2019; Mahoney, 2008). For instance, Kuzminski and her colleagues (2019) reported that specific types of knowledge (i.e., societal views and ideas) about ASD positively influenced attitudes about ASD in participants who completed their survey online. Meanwhile, White et al. (2019) recently found a more nuanced association between attitudes and knowledge. Inaccurate knowledge about behavior traits (e.g., autistic individuals tend to be more aggressive) were associated with negative attitudes regardless of their ability to accurately identify the correct traits (White et al., 2019).

Previous studies have attempted to investigate how knowledge about ASD may inform effective pathways to improving attitudes about ASD. Gillespie-Lynch and colleagues (2015) implemented an online training program on typically developing undergraduate students to teach accurate knowledge about ASD. They found that this program increased participant's knowledge about ASD, decreased their tendency to stigmatize, and increased their inclination to socially engage with autistic people.

Contact

Previous studies have also tried to understand the associations between attitudes and knowledge about ASD and previous contact with autistic individuals. Allport (1954)'s Intergroup Social Contact theory describes how high-quality contact between in-group and out-group members, marked by cooperative interaction among individuals with equal status, pursued to achieve common goals, and supported by customs or

authorities increases knowledge about the outgroup, and this knowledge can reduce prejudice (Allport, 1954; Pettigrew & Tropp, 2006). Indeed, the positive association between quality of contact with autistic persons and attitudes has been repeatedly shown in previous studies (Gardiner & Iarocci, 2014; McManus et al., 2011; White et al., 2019).

Yet, contrasting findings have been reported regarding the association between quantity of contact and attitudes and knowledge about ASD. For instance, Bottema-Beutel, Kim, and Miele (2018) showed the quantity of previous contact specified by familial and social experiences (e.g., number of autistic individuals in a family, school, or neighborhood) was not associated with undergraduate students' evaluations about scenarios in which autistic peers are excluded from social activities. However, some studies have also reported a positive association between quantity of contact and attitudes about ASD (Gillespie-Lynch et al. 2015; White et al., 2019).

Besides White et al. (2019), which found undergraduate students who did not know someone with ASD were more likely to indicate that autistic individuals have unobservable, incorrect traits regarding the cognitive impairments of autistic individuals, there is no study investigating the association between quantity of contact and knowledge. The quantity of contact alone may not change or improve knowledge about ASD. Frequent contact that results in negative or uncooperative interaction (i.e., counter to what Allport (1954) describes as the high-quality contact) may negatively influence attitudes and knowledge by reinforcing stereotypes of ASD, and both the valence and duration of previous contact may affect attitudes and knowledge about ASD.

Demographic Factors

The demographic characteristics of DSO staff members may also influence their attitudes and knowledge about ASD. Several of these characteristics have been suggested as potential variables influencing attitudes and knowledge about ASD, but the results have been inconsistent across studies. Specific demographic factors explored in this study are age, gender, education level, years of employment, race, and specific ASD training. Below, I will discuss the potential associations between each of these variables and attitudes and knowledge below.

Demographic characteristics frequently studied in previous studies studying non-autistic individuals' attitudes about ASD are gender and age (Gillespie-Lynch et al., 2015). While some studies have reported that women are less likely to stigmatize (Gillespie-Lynch et al., 2015) and more likely to be accepting of autistic individuals (Dachez et al., 2015; Findler et al., 2007; Kuzminski et al., 2019), Nevill and White (2011) found no gender differences in attitudes. Similar contradictory results have been found regarding the association between age and attitudes, with at least one study reporting a significant positive association (Findler et al., 2007), while others did not find such an association (Dachez et al., 2015; Sasson & Morrison, 2017). Meanwhile, only a few studies have examined demographic factors that may influence knowledge about ASD. For instance, Tipton and Blacher (2014) reported that females and younger individuals had more accurate knowledge about ASD but also that demographic variables explained only a small portion of the variance.

In regards to education level, Tipton and Blacher (2014) showed that there was no significant pattern between education level and knowledge about ASD of the members of a college campus community (staff, faculty, and students). Yet, because most existing

studies on attitudes about ASD have been conducted on undergraduate students, education level has not been extensively studied in previous studies. It is likely that DSO staff members hold a degree related to education and/or disability, and having a higher level of education in such areas may indicate more opportunities to be exposed to the discussion that dispels negative attitudes toward, and misconceptions about disabilities. Nevertheless, education level may not be related to knowledge and personal attitudes about ASD because DSO staff members with expertise on other types of disabilities (e.g., learning disabilities) may not necessarily have positive attitudes and accurate knowledge about ASD specifically.

Years of employment as a DSO staff member may indicate more expertise working as a service provider and, consequently, more perceived ease working with autistic students, which may contribute to more positive attitudes and accurate knowledge. However, DSO staff simply may see supporting autistic students as a profession, and expertise working as a DSO staff member may not necessarily indicate they also have positive attitudes. In addition, recurrent stress of working as disability support workers has been repeatedly known to be associated with burnout (Smyth, Healy & Lydon, 2015), and Mohamed (2015) specifies the burnout includes depersonalization (i.e., negative attitudes toward people to whom the staff provide the support). Therefore, more years of employment as a DSO staff member may have resulted in higher perceived burnout and depersonalization.

The influence of race has not yet been explored in the literature on attitudes and knowledge about ASD. However, a particular racial group may have low awareness and highly stigmatized view about ASD or autistic behaviors (Kang-Yi, Grinker, & Mandell,

2013). For instance, Carthaigh & Lopez (2020) showed that British student nurses reported greater knowledge and more favorable attitudes about ASD than South Korean student nurses. However, it is also possible that variables that are related to personal experiences related to ASD are more strongly associated with attitudes and knowledge about ASD than race is. Gillespie-Lynch et al. (2019) have also shown that the country that the participants lived in was not a significant predictor of the attitudes toward ASD after controlling for the quality of previous contact and autism knowledge, belief that inequality is a natural social phenomenon, and openness to new experiences.

Finally, having ASD specific training would be positively related to attitudes and knowledge about ASD because it is likely that DSO staff with direct ASD training would have been exposed to the discussions that focus on promoting ASD awareness and acceptance. Indeed, Park, Chitiyo and Choi (2010) showed that pre-service teachers with special education degrees had more positive attitudes toward autistic children than those with general education degrees (Park et al., 2010). Park and colleagues (2010) further explain that pre-service teachers with special education degrees had more opportunities to learn about ASD and have direct contact with children with autism. On the other hand, Park et al. (2010) also reported the experience of attending autism workshops was not associated with pre-service teachers' attitudes toward autistic children, highlighting the potential importance of working and teaching experience over attending workshops. Additionally, training organized around ableist assumptions, characterizing autistic behaviors as inferior, may actually make attitudes about ASD more negative.

Institutional Factors

In addition to demographic factors of DSO staff members, institutional factors specific to each higher education context, such as the location or the number of autistic students attending the institution, may be associated with DSO staff members' attitudes and knowledge about ASD. Determining which institutional variables are correlated with knowledge and attitudes may help researchers and educators plan targeted support and resources to help staff gain more accurate knowledge and more accepting attitudes. Yet, no previous studies have investigated the associations between knowledge and attitudes about ASD and various institutional variables. Potential factors that may be associated with DSO staff members' attitudes and knowledge about ASD are whether or not the institution is private or public, average annual costs, the school size (i.e., size of the undergraduate student body), the urbanicity of the institution, and whether or not the institution is a four-year institution.

Related to Allport's Intergroup Contact Theory (1954), staff members who are better supported by institutional authority and customs may be more likely to have high-quality contact with autistic students, which may then translate into accurate knowledge and positive attitudes about ASD. For instance, private institutions or institutions with higher average annual costs may provide better resources to DSO staff (e.g., smaller staff to student ratios or better pay) than public institutions or institutions with lower annual cost and may motivate staff members to learn more about ASD and have better opportunities to have positive and sustained interaction with autistic students. The school size may also be associated with the staff-to-student ratio and thus the amount of sustained quality time DSO staff members can spend with autistic students, which in turn may result in more accurate knowledge and positive attitudes. Lastly, because there are

more health care providers in urban areas than in rural areas (Malatzky & Bourke, 2016), staff members working in rural institutions may feel more supported by the availability of on and off-campus health care providers (e.g., mental health counselors or job coaches) who can more effectively assist autistic students in areas that DSO staff cannot. Staff members at two-year, technical, or community colleges may have more experience working with autistic students as 80% of autistic young adults choose to attend such institutions rather than four-year colleges (Roux et al., 2015). At the same time, because more autistic students attend two-year, technical, or community college colleges, DSO staff members at these institutions may receive a more structured institutional support that allows DSO staff to have higher quality interactions with students, leading them to have more positive attitudes and accurate knowledge than those at four-year institutions. Yet, it is as likely that these institutional characteristics may not be related to the resources provided to DSO staff and, consequently, do not influence DSO staff members' attitudes and knowledge about ASD.

The Current Study

In this study, an online survey was utilized to quantitatively assess DSO staff members' autism knowledge and attitudes (comprised of levels of openness, degree of social distance from ASD individuals, and Attitudes toward autistic symptoms) to address the following research questions:

1. Among four sets of putative predictors, including knowledge about ASD, quality of contact, demographic variables, and institutional variables, which variables uniquely predict DSO staff members' attitudes about ASD?

2. Among three sets of putative predictors, including quality and quantity of contact, demographic variables, and institutional variables, which variables uniquely predict DSO staff members' knowledge about ASD?

This was an exploratory study without specific directional hypotheses associated with each variable, with one exception; it is hypothesized that the quality of contact will be positively related to DSO staff members' attitudes and knowledge about ASD. Positive quality of previous contact with autistic individuals may lead DSO staff to reject misconceptions about ASD and develop more accepting attitudes about ASD, and unpleasant experiences from previous contact with autistic people, in general, may reinforce incorrect misconceptions and negative attitudes about ASD.

Methods

Participants

One hundred fifty-three DSO staff members of 92 US higher education institutions participated in this study. All participants were compensated with a \$20 Amazon gift card for completing an online survey, and participants had options to quit during the survey and receive a prorated amount. Detailed participant characteristics are reported in Table 3.1. Nine participants self-identified as having a type of developmental disability that is not ASD. The survey responses from these participants were included because the purpose of the study was to explore attitudes and knowledge about ASD of any DSO staff member whom autistic undergraduate students might encounter in their institutions regardless of their disability status. Also, sensitivity tests showed that disability status did not influence the results of significance testing of any regression models.

Table 3.1

Participant Characteristics

Demographic Variable	Frequency (%)
Gender	
Male	26 (18.1)
Female	118 (81.9)
Race ^a	
European American	120 (81.1)
African American	10 (6.8)
Asian	8 (5.4)
Other	10 (6.8)
History of other developmental disabilities	9 (6.0)
Highest degree of education	
2-year or community college degree	22 (14.4)
Bachelor's degree (4-year college)	24 (16.1)
Master's or professional degree	103 (69.1)
Types of institution they work in ^b	
4-year institutions	104 (67.8)
2-year, technical, and community college	46 (30.1)
Years working as a staff members	
Less than 1 year	17 (11.5)
1-5 years	55 (37.2)
5-10 years	32 (21.6)
More than 10 years	44 (29.7)
Autism training	
Have a specialization in autism from BA/MA/PhD degree	18 (12.1)
No specialization in ASD but attended few workshop/conferences about ASD.	13 (8.7)
No specialization in ASD	118 (79.2)
	Mean (<i>SD</i>)
Age (years)	41.0 (13.4)

Note. ^a= race categories are not mutually exclusive. ^b= three participants did not want to disclose the name of the institution.

The minimum number of participants needed was pre-determined based on power analysis calculations derived from G*Power software prior to the recruitment. The parameters to calculate the number of participants in linear multiple regression models were α error probability of .05, power (1 - β error probability) of .95, an effect size of .15. Fourteen was entered as the number of predictors because this was the largest number of predictors to be included in the regression models in this study. The minimum number of participants needed was calculated to be 89. However, when the target number of participants was reached, the participant sample included a very few (n=3) DSO staff working at 2-year, technical, and community colleges. Therefore, after this point, more targeted attempts were made to recruit DSO staff working at 2-year, technical, and community colleges.

Initially, DSO staff members, whose contact information was collected from the websites of higher education institutions listed in the *K&W Guide to Colleges for Students with Learning Differences* (Kravets & Wax, 2016), were approached via email to participate in the survey. The K&W Guide categorizes US higher education institutions into three tiers based on their levels of support services available to disabled students and provides detailed information regarding their support services. Additionally, because the K&W guide does not provide a comprehensive list of US higher education institutions, professional organizations and conferences (e.g., the Association on Higher Education and Disability and the National Center for College Students with Disabilities) were asked to share the links to the survey with their members and attendees.

The K&W guide includes a relatively small number of two-year, technical, and community colleges and very few DSO staff members from two-year, technical, and

community colleges initially participated in the survey. Therefore, 10 DSOs of higher education institutions were randomly selected from each state from the Applying To School website and invited to participate in the survey. This website provides complete lists of two-year, technical, and community colleges in the US by state. Recruitment emails encouraged the participants to share information about the survey with their colleagues. The overall response rate was 10.9%.

Procedures

The online survey, which was administered via Qualtrics survey software, consisted of quantitative scales measuring staff members' attitudes and knowledge of ASD, quality and quantity of previous contact with autistic individuals, brief open response questions eliciting their perceptions of the support services of the institutions in which they worked, and a demographic questionnaire.

After giving consent, participants first completed the attitudes and knowledge surveys, which were administered in random order. Then, the quality and quantity of contact scales were administered in random order. Items within each scale were also randomized. After completing the quantitative section of the survey, participants completed the open response questions. Finally, participants completed a brief demographic questionnaire. This study focuses on their response to quantitative surveys; open-response questions will be explored in a future study.

Surveys, Demographic Variables, and Institution Variables

The Openness Scale

Adapted by Neville and White (2011), the Openness Scale features a vignette with a gender-neutral and socially withdrawn undergraduate student with restricted and

repetitive behaviors living in the same apartment as the reader. The diagnostic status of ASD is not revealed to the participants, who are asked to respond to seven statements on a five-point Likert scale from strongly disagree (1) to strongly agree (5). The summed scores from the responses to the seven items yield a total score, with higher scores indicating more openness toward individuals with ASD-like characteristics. In Neville and White (2011), the internal consistency was found to be acceptable with an alpha value of 0.77, and the principal component analysis revealed all communality values were equal to .80 or larger.

Social Distance Scale

The Social Distance Scale (SDS) measures stigmatizing attitudes held about ASD by asking six questions about the participants' inclination to engage with an autistic individual at different levels of contexts and intimacy. Participants respond on a 1-5 Likert scale, with 1 indicating the least stigma to 5 indicating most stigma, and the scores across the nine items are summed to create a unidimensional level of stigma score. Internal consistency reported in previous studies on attitudes toward ASD (Gillespie-Lynch et al., 2015) was $\alpha = 0.87$.

Attitudes toward Autistic Symptoms

This subscale investigates if participants believe the reduction of autistic symptoms may lead to a better quality of life for autistic individuals. This measure was adapted from a measure previously constructed by the author, the Autism Acceptance and Awareness scale (AAAS) and validated on 127 non-autistic adults (unpublished data). The AAAS consists of two subscales; the general acceptance subscale and the attitudes toward autistic characteristics subscale. For the present study, only the attitudes toward

autistic characteristics subscale was used, and an additional item was added for a total of 4-items. Participants respond by selecting the extent to which they agree on a 5-point Likert scale, and higher summed scores on this scale indicate that participants agree that assimilating into neurotypical expectations will be helpful for autistic individuals. The original version of the AAAS loaded onto one factor explaining 60.60% of the variance with a Cronbach's alpha of .67 and a Kaiser-Meyer-Okin (KMO) value (a measure of sampling adequacy) of .68, indicating that the measure performed acceptably (DeVeillis, 1991). The adapted version of the scale used in the current study loaded onto one factor explaining 47.78% of variance, and met all DeVeillis' (1991) established statistical guidelines. Chronbach's alpha was .70, and the KMO value was .66.

The Autism Awareness Survey (AAS)

The AAS measures participants' knowledge about ASD. Originally developed by Stone (1987), Tipton and Blacher (2014) modified the measure to assess undergraduate students' knowledge of ASD. Participants rated the truthfulness of 14 statements on a 0–4 scale (0 = disagree, 4=agree), and the responses were added to produce the total correct score, which ranged from 0 to 56, with higher scores representing more accurate knowledge about ASD.

Level of Contact Report

The original Level of Contact Report (Holmes et al., 1999) measures the level of exposure to a person with mental illness. Gardinar and Iarocci (2014) adapted this 12-item scale to measure the quantity and intimacy of previous contact with an autistic person. Participants are asked to respond “yes” or “no” to statements such as “I have observed, in passing, a person I believe may have had autism,” each of which describes a

different level of intensity of experience with a person with ASD. While the participants provided responses for all 12 items, each item was weighted based on the level of contact. For instance, “I have never observed a person that I was aware had autism” would be ranked lower than “I have worked with a person who had autism at my place of employment.” The rank of the item representing the most frequent and intimate contact of a participant was used to assign a score, and a higher score thus indicated a more intimate and frequent level of exposure. It should be noted that the internal consistency of the subscale has not been reported, and the Chronbach’s alpha was in this study was .64.

Quality of Contact Subscale

Islam and Hewstone’s (1993) six-item Quality of Contact subscale measures attitudes toward different religious groups. Mahoney (2008) adapted this scale by changing the referent for the items from the religious groups to “individual with autism.” The participants were asked to rate the extent to which they had experienced previous contact with someone with ASD as positive, enjoyable, pleasant, fun, and friendly on a scale from 1 to 7 with lower scores representing a lower quality interpersonal contact. The scores on 6 items were averaged to yield the final score. Those who had never had contact with an individual with ASD received a score of 0. Mahoney (2008) reported moderate internal consistency ($\alpha = .68$) of the adapted version of the scale.

Demographic Questionnaire

Demographic information, including gender, age, race, highest level of education, the name of the institution at which the participant was employed, ASD specific training experience, education level, and years of experience working at the disability service office were collected. Because the majority of participants self-identified as White, the

variable race was dichotomized into White vs. non-White groups to allocate enough number of participants in each group for hypothesis testing. Participants who only selected European American were categorized as White. The Level of ASD specific training variable was also dichotomized into those who reported no training on ASD and those who reported having specialties in ASD from an MA or PhD degree or few workshops or training on ASD.

Institution Variables

Participants' institutions were categorized based on the U.S. Department of Education's classification of all US higher education institutions, which includes private vs. public status, school size, urbanicity, average annual cost, and institution type. To run statistical analyses with similar size sub-groups, the Urban, Suburban, Town, and Rural variable was dichotomized into Urban and Non-urban (Suburban, Town, and Rural). Similarly, institution type (i.e., four-year, two-year, vocational, technical, and community colleges) was dichotomized into four-year and non-four-year institutions.

Data Analysis

Stata software (StataCorp, 2017) was used for all statistical procedures. Initially, means and standard deviations were computed for all continuous variables. Transformation of variables was conducted so that each variable has skewness $< |.8|$ and kurtosis $< |3.0|$ (Tabachnik & Fidell, 2001). Social distance and knowledge variables were squared-transformed. The school size variable was log-transformed, and the average annual cost was square-root-transformed.

To select the predictors to be included in the regression models among a large group of potential predictors, Yoder et al. (2015)'s guidance was followed to address the

multicollinearity of predictors and to determine the predictors that are included in the final model. The following steps were used to select predictors:

1. Of the full set of predictors, those with significant zero-order associations with the outcome variable were identified. Pairwise Pearson r correlations were computed for continuous variables, and point-biserial correlations were computed for dichotomous variables.
2. Of the significant institutional predictors that were individually and significantly correlated with the outcome variable, highly intercorrelated ($r > .39$) predictors were flagged. Then, each of the highly intercorrelated institutional variables was entered as a single predictor to predict the outcome variable, and a variable that explained the most variance of the outcome variable than its counterparts was chosen. Comparison of highly intercorrelated predictors was repeated with previous contact and demographic variable sets.
3. Predictors that were significantly correlated with the outcome variable in Step 1 but not highly intercorrelated with other predictors ($r < .39$) were entered into each regression.
4. The models with predictors that explained the greatest variance of their respective outcome variables were chosen as the final model.

In sum, four separate multiple regressions were conducted, with scores on either Openness, Social Distance, Attitudes toward autistic symptoms, or knowledge measures entered as the outcome variable and variables determined from above the steps as predictor variables in each model. Because outliers were identified by examining studentized residual and Cook's distance, robust regressions ("vce(robust)"), which

corrected for violations of distributional assumptions such as residuals and outliers, were conducted. The “Beta” option in Stata was used to generate standardized coefficients to assess the relative strength of each predictor (this was necessary as the predictors were on different scales). Listwise deletion was employed to address missing data because all variables had less than 10% missing data (Raaijmakers, 1999). The variables from previous contact sets were entered first, followed by knowledge, demographic and institutional sets. The quality of contact variable was entered into the final models regardless of results from the above steps because it was associated with an *a priori*, directional hypothesis.

Results

Preliminary Analysis

Table 3.2 shows descriptive statistics for respondents’ ratings on the attitude and knowledge surveys and quality and quantity of previous contact.

Table 3.2

Summary Statistics for Attitudes and Knowledge about ASD and Previous Contact

Measures	M (SD)	Range (Min, Max)
Openness (1 = ‘Strongly disagree; 5 = ‘Strongly agree’)	28.56 (3.22)	14, 35
Social Distance (1= ‘Definitely unwilling’; 5 = ‘Definitely willing’)	40.68 (5.13)	18, 45
Knowledge about ASD (1 = ‘Strongly disagree; 5 = ‘Strongly agree’)	64.26 (7.98)	42, 70

Note. Higher scores of Openness, Social Distance, and knowledge about ASD correspond to more openness, less social distance, and more accurate knowledge about ASD

The means of the summed scores for the Openness, Social Distance, Attitudes Toward Autistic Symptoms, and Knowledge about ASD scales were 28.56 ($SD = 3.22$), 40.68 ($SD = 5.13$), 8.56 ($SD = 2.84$) and 64.26 ($SD = 7.98$), respectively, while the maximum

score for each measure was 35, 45, 16 and 70, respectively. Appendix 3.1 provides a complete list of the mean percentages of all items on the attitude and knowledge measures.

Regression Models

Zero-order correlations between outcome variables and predictor variables are presented in table 3.3 (Step 1). Zero-order correlations between predictors that were found to be significant in Step 1 are presented in Table 3.4 (Step 2).

Table 3.3

Results of Zero-order Correlation Analysis

Set	Predictor	Correlation		
		Openness	Social Distance	Knowledge
Knowledge	Knowledge	.15	.29*	N/A
Previous contact	Quality of contact	.37*	.35*	.24*
	Quantity of contact	.13	.32*	.27*
Demographic variables	Age ^{a, d}	-.16	-.03	.17*
	Education level	-.22*	-.02	.28*
	Gender	<.01	-.02	-.13
	Years of experience working in a DSO	-.11	-.05	.07
	Race ^{a, c}	.05	<.01	-.06
	ASD-specific training ^{a, b}	.06	-.09	-.25*
	Institutional variables	Institution type ^a	-.06	<.01
	Urbanicity ^a	-.02	.09	.09
	Private vs. public ^a	.06	.24*	.04
	School size	-.03	.25*	.19*
	Average annual cost	-.12	-.05	.20*

* $p < .05$ Note. ^a=point-Biserial r was computed to calculate the correlations. ^b = Participants who reported no training on ASD were categorized as the reference group. ^c = Non-white participants were categorized as the reference group. ^d = Female participants were categorized as the reference group.

Table 3.4

Correlations Matrix between Significant Predictors

Variables	1	2	3	4	5	6	7	8	9
1. Knowledge									
2. Quantity of contact	.24*								
3. Quality of contact	.27*	.35*							
4. Age	.17*	.02	.31*						
5. Education	.28*	.11	.31*	.35*					
6. ASD-specific training ^{a, b}	.25*	.17*	.41*	.38*	.48*				
7. Institution type ^a	-.09	.08	.05	.20*	.13	.09			
8. Private vs. public ^a	-.04	-.16	-.07	-.12	-.14	-.11	-.38*		
9. School size	.19*	.21*	.21*	-.07	.20*	.07	.16*	-.61*	
10. Average annual cost	.20*	-.01	.12	-.08	.08	.09	-.73*	.62*	-.19*

* $p < .05$. *Note.* Bolded font indicates $>.40$, highly inter-correlated variables within a set. ^a=point-Biserial r was computed to calculate the correlations. ^b = Participants who reported no training on ASD were categorized as the reference group.

Two institutional variables, institution type and average annual costs, were highly correlated (Point bi-serial correlation = .73). Private vs. public status and school size were highly correlated (Point bi-serial correlation = .73), as were education and ASD specific training (Point bi-serial correlation = .48). Institution type, whether the institution is private vs. public, and education explained more variance on the outcome variable than their counterparts (Table 3.5), and, therefore, were chosen to be included in the next step of model building.

Table 3.5

Summary of Regression Output for Associations between Outcome Variables and Highly Inter-correlated Variables within Each Set

Outcome Variable	Predictor 1		Predictor 2	
	<i>B</i>	<i>R</i> ²	<i>B</i>	<i>R</i> ²
	Private vs. Public		School size	
Social Distance	-.25**	.064	.24**	.058
	Education		ASD-specific training ^a	

Knowledge	.28**	.08	.25**	.6
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* $p < .05$, ** $p < .01$. Note. ^a = Participants who reported no training on ASD were categorized as the reference group.

The variables that survived the selection process were entered into each model by set, and Tables 3.6, 3.7, 3.8, and 3.9 present the summary of regression results for predicting Openness, Social Distance, Attitudes toward autistic symptoms, and knowledge about ASD, respectively. The final model predicting Openness only included Quality of contact, which was significant and explained 14% of the variance alone. Quality and quantity of contact, knowledge, and private vs. public status all were statistically significant predictors of Social Distance, together explaining 24% of the variance. Participants with higher quality contact, more frequent contact, better knowledge about ASD, and who worked for private universities reported lower levels of social distance from autistic individuals. The institution type was the only significant predictor of Attitudes toward autistic symptoms. The entire model including the institution type, quality of contact and knowledge explained 5% of the variance. Finally, Quality of contact, average annual cost, and school size were positive and statistically significant predictors of knowledge about ASD, together explaining 21% of the variance.

Table 3.6

Summary of Regression Analysis for Predicting Openness

Predictors	Model 1 ^a	Model 2
	β	β
Quality of contact	.37**	.35**
Knowledge		.06
R^2	.14	.14
F	20.26**	11.17**

* $p < .05$, ** $p < .01$. Note. Model 1 refers to when the variable from the previous contact set were entered. Model 2 refers to when Knowledge variable was entered. ^a= Final model that explains the greatest variance of the outcome variable.

Table 3.7

Summary of Regression Analysis for Predicting Social Distance

Predictors	Model 1	Model 2	Model 3 ^a
	β	β	β
Quality of contact	.27**	.23**	.20*
Quantity of contact	.26**	.21*	.21*
Knowledge		.21*	.20*
Private vs. Public			-.21*
R^2	.19	.23	.27
F	12.47**	12.15**	11.36**

* $p < .05$, ** $p < .01$. *Note.* Model 1 refers to when the variables from the previous contact set were entered. Model 2 refers to when Knowledge variable was entered. Model 3 refers to when the surviving variable from the demographic variable set is entered. ^a= Final model that explains the greatest variance of the outcome variable.

Table 3.8

Summary of Regression Analysis for Predicting Attitudes toward Autistic Symptoms

Predictors	Model 1	Model 2	Model 3 ^a
	β	β	β
Quality of contact	.04	<.01	<.01
Knowledge		.15	.14
Institution type			-.17*
R^2	<.01	.02	.05
F	.24	1.72	2.50*

* $p < .05$, ** $p < .01$. Model 1 refers to when the variable from the previous contact set was entered. Model 2 refers to when knowledge variable was entered. Model 3 refers to when the surviving variable from an institutional variable set is entered. ^a= Final model that explains the greatest variance of the outcome variable

Table 3.9

Summary of Regression Analysis for Predicting Knowledge

Predictors	Model 1	Model 2	Model 3 ^a
	β	β	β
Quality of contact	.17	.20*	.20*
Quantity of contact	.23*	.17	.11
Age		.06	.13

Education		.20	.15
Average annual cost			.22**
School size			.16*
R^2	.12	.18	.24
F	6.25**	3.36*	3.78**

* $p < .05$, ** $p < .01$. Model 1 refers to when the variables from the previous contact set were entered. Model 2 refers to when the surviving variables from the demographic variable set is entered. Model 3 refers to when the surviving variable from an institutional variable set is entered. ^a= Final model that explains the greatest variance of the outcome variable.

Discussion

This study explored DSO staff members' attitudes and knowledge about ASD and examined which variables uniquely predicted DSO staff members' knowledge and three types of attitudes about ASD.

Predictors of Attitudes about ASD

Attitudes toward Autistic Symptoms

Attitudes toward autistic symptoms were predicted only by the type of institution where the DSO staff member was employed. DSO staff members working in four-year institutions were more likely to believe that treating autistic symptoms would benefit autistic individuals than those who worked in two-year, technical, or community colleges. In a nationwide study, the largest number of individuals with disabilities attended two-year institutions, followed by vocational and technical schools with only 15% attending four-year institutions (NLTS2, 2002). Staff members working at two-year, technical, and community colleges may have more opportunities to be exposed to student-organized events or social events related to disability, social justice, and awareness than staff members working at four-year institutions. These events would not have been captured by the training on ASD variable (which was not significant), but the frequent exposure to such events may have influenced the DSO staff members' attitudes toward autistic

symptoms, resulting in a perception that not all autistic symptoms should be eliminated.

Additionally, the culture around supporting students in two-year, technical, and community colleges may be different from that in four-year institutions. DSO staff members in two-year, technical, and community college may be expected to provide more support to students with different disabilities with a variety of symptoms while DSO staff members in four-year institutions expect more independence and competence from their undergraduate students. Therefore, autistic students may be viewed as deserving support from staff members in two-year, technical, and community colleges rather than having behaviors that need to be and can be eliminated.

Openness

Consistent with previous research using the openness measure (Gardiner & Iarocci, 2014; White et al., 2019) and Allport's Intergroup Contact Theory (1954) theory, quality of contact significantly predicted openness, indicating that DSO staff who had more positive experiences with autistic individuals reported more openness toward ASD. Gardiner and Iarocci (2014) suggest that positive interactions with autistic individuals may lead to increased comfort and decreased anxiety, resulting in more openness toward autistic individuals. Similarly, the positive in-person contact may have led the staff members to perceive the similarities between themselves and autistic individuals, resulting in higher scores in Openness scale, especially in questions asking if they think the autistic individual featured in the survey is different from them or as smart as they are.

Social Distance

Knowledge about ASD, Quality of contact, Quantity of contact, and private vs.

public status of the institution significantly predicted Social Distance. Staff members with inaccurate knowledge about ASD were less willing to engage with autistic individuals. This finding points to the importance of dispelling inaccurate and negative stereotypes about autism. Similar to the significant association shown between the quality of contact and openness, positive interactions with autistic individuals may have led to increased comfort and decreased anxiety (Gardiner & Iarocci, 2014), consequently resulting in a willingness to engage in more intimate interaction.

The Quantity of Contact scale asks if participants have had frequent and intimate contact, and the Social Distance scale asks if participants are willing to engage in personal and intimate interaction. Therefore, staff members who are already engaging in such personal and frequent interaction with autistic individuals may be more prone to agree to have a personal relationship with them.

Finally, DSO staff members working in private institutions reported significantly less social distance from autistic individuals than those working in public institutions. This study is the first to identify such institutional patterns, and the factors that contribute to the differences in the social distance between DSO staff members working in private institutions and those working in public institutions need to be explored in future studies.

Predictors of Knowledge about ASD

As hypothesized and similar to the patterns shown with openness and social distance, DSO staff members with more positive contact with autistic individuals had more accurate knowledge. Low-quality contact may have reinforced the perception that the inaccurate and negative traits of ASD are true. DSO staff members' knowledge about ASD was also significantly predicted by two institutional variables, school size and

average annual cost. Institutions with small student bodies and lower average annual cost may not have the resources to have several DSO staff members on staff. Instead, they may have a few staff members who provide more generic resources to all students (such as sending accommodation letters to faculty members) rather than spending individual time with each student.

Demographic Variables

None of the demographic variables uniquely predicted attitudes and knowledge about ASD in this study, consistent with insignificant associations between age and attitudes about ASD in Dachez et al. (2015) and Sasson & Morrison (2017) and between gender and attitudes about ASD in Nevill and White (2011). Meanwhile, having an ASD-specific degree or having attended ASD workshops and conferences was not significantly associated with attitudes or knowledge about ASD. This finding serves as a caution that current training systems may not be effective in improving attitudes about ASD or specific types of knowledge of ASD. It is also notable that this variable was not specific about what kinds of ASD training the participants were involved in. It is possible that some (but not all) types of training may have led people to believe that autistic individuals are incapable of independently completing certain tasks or that autistic symptoms (e.g., RRBs) are better to be eliminated.

It is also noteworthy that all dichotomous demographic variables (i.e., gender, ASD training, and race) were not equally divided between categories. The majority of the sample was White, Female staff members without specific ASD training. Although this imbalance may be attributed to sampling bias (i.e., individuals with these demographic characteristics may have been more likely to agree to take the survey than males or

people of color), it may be also aligned with DSO staff members' demographic characteristics working in US higher education institutions. Because of this imbalance, some demographic groups (e.g., male staff members) did not have a sufficient number of participants to contribute sufficient variability in all other constructs to enable appropriate significance tests. For instance, only 4 male staff members received ASD training. Because bivariate correlations showed some demographic variables may be associated with attitudes and knowledge about ASD, rather than dismissing these demographic variables, future studies will have to do stratified sampling to fully understand how the demographic variables are related to the constructs.

Directions for Future Studies

The findings of this study provide several implications for future studies. First, quality of contact was the variable that uniquely predicted all knowledge and attitudes about ASD except for Attitudes toward autistic symptoms. However, this should not be interpreted as the need for more social skills training for autistic individuals to enable high-quality interactions with non-autistic individuals. Sasson & Morrison (2017) also contend that awareness and perceptions of non-autistic peers toward autistic peers would be helpful in supporting social relationships and experiences for autistic individuals. Therefore, future studies investigating what kinds of institutional support and resources lead to cooperative and productive relationships between DSO staff and autistic students may inform such efforts to improve the quality of contact, and, consequently, DSO staff members' attitudes and knowledge about ASD.

The findings of this study also raise questions in regards to what should be taught to DSO staff members to make meaningful changes in their attitudes and knowledge

about ASD. For instance, rather than focusing only on etiology or symptoms of autistic children, Gillespie-Lynch et al.'s (2015) intervention included information on current ASD research across the lifespan, associations between some autistic traits and what people consider giftedness in the general population, and intelligence as a heterogeneous concept. Considering that they have a responsibility for providing support to autistic undergraduate students, training for DSO staff may need to be carefully designed to target knowledge about ASD that is relevant and useful in this setting. Also, institutions should provide ongoing structured support, particularly in the form of educational resources to DSO staff. Additionally, this study showed that the type of institutions matters, suggesting the kinds of training given to DSO staff might have to be different depending on what kinds of institutions they work in. Future research should be conducted to make specific recommendations along these lines.

Meanwhile, the Quantity of Contact scale used in this study may be inadequate to meaningfully capture the quantity of contact because most staff members are likely to have met and worked with an autistic student at least once. The Quantity of Contact scale asks questions such as “I have observed persons with autism on a frequent basis,” “I have worked with a person who had autism at my place of employment” and “My job involves providing services/treatment for persons with autism” to assess the frequency and intimacy of contact. Using measures that are better tailored to understanding experiences relevant to DSO staff members (e.g., asking how many students the staff members have worked with or how many times the DSO staff members actually met each student) may reveal more useful information about the frequency of and context around the contact and

inform the underlying mechanism that operates under knowledge and attitudes toward ASD.

Furthermore, the responses to the survey items may not capture the full pictures of staff members' mindsets or how they actually conduct themselves with autistic students. Future research utilizing a combination of direct observation and clinical interview could explore how DSO staff member's attitudes and knowledge about ASD translate into their actual behavior around and interactions with autistic undergraduate students. Lastly, future studies need to explore how autistic students themselves perceive DSO staff member's attitudes and knowledge about ASD, and how DSO staff attitudes and knowledge of ASD relate to autistic students' experiences.

Limitations

These findings should be considered in light of some limitations. First, although compensation was given to encourage participation, staff members with relatively high personal interests in autistic students may have been more prone to participate in the survey than those with less interest. Thus, the results may not be representative of all DSO staff members. Second, despite the anonymity and low demand characteristic of an online survey, participants may have been influenced by social desirability and provided responses that will be viewed favorably rather than responses that reflect their actual thoughts and feelings (Dalton & Ortegren, 2011). Therefore, participants' actual attitudes about ASD may be more negative than what was reported in this study. Third, the surveys included in this study did not call for consideration of the full range of support needs of autistic individuals. Considering that each individual has different support needs and presents different autistic symptoms, the attitudes of staff may differ depending on

how an autistic individual is described in a vignette. Lastly, the attitude scales did not measure participants' attitudes toward autistic students but rather toward ASD in general. Relatedly, the diagnostic status of the hypothetical person in the vignette was not revealed in the Openness Scale, although DSO staff are almost always aware of the diagnostic status of autistic students they support. Therefore, how DSO staff think about their own students might be different from what they report in this study.

Conclusion

This study utilized an online survey to determine predictors of DSO staff members' attitudes and knowledge about ASD. The quality of previous contact was shown to be relatively consistently associated with Social Distance, Openness, and Knowledge about ASD, reinforcing the importance of high-quality contact. The underlying mechanisms behind the significant associations between institutional variables and attitudes and knowledge about ASD need to be explored. Understanding what kinds of institutional supports and context-appropriate training should be provided to promote collaborative relationships between DSO staff members and autistic students is a promising avenue for future studies.

Chapter 4

Understanding Perceptions and Experiences of Autistic Undergraduate Students Toward Disability Support Offices of their Higher Education Institutions

Abstract

Although disability support offices (DSOs) provide support to an increasing number of autistic students attending higher education institutions (HEIs), the experiences of autistic undergraduates utilizing the services of DSOs in US HEIs are still not well understood. This study qualitatively examined 27 autistic undergraduate students' responses to semi-structured interviews soliciting their perceptions of a range of support services provided by DSOs in US HEIs. Students expressed appreciation of DSO academic accommodations and housing and social supports; however, some highlighted negative experiences with academic and non-academic supports. Students also perceived that DSO staff members were not effective in communicating with professors when professors refused to grant the accommodations, lacked specific autism knowledge and were often inaccessible. Some students initially decided not to receive DSO accommodations because they wanted to have a "normal" college experience, did not think they needed DSO support, or were challenged by the registration process, but many chose to reach out to their DSOs after experiencing academic difficulties. Finally, students' perceptions of ways for DSOs to support them better highlighted the need for institution-wide efforts to make a cultural shift about disability and acceptance and the need for more individualized services.

While recent trends suggest that college attendance of autistic undergraduate students is expected to increase as more individuals with fewer academic support needs are completing K-12 education with the potential for continuing on to postsecondary education (Shattuck et al., 2012). Previous studies also showed that many academically qualified autistic individuals often experience considerable difficulties that result in premature withdrawal (Van Bergeik et al., 2008). Gelbar, Smith, and Reichow's (2014) systematic review describing this population's collegiate experiences demonstrated that anxiety, loneliness, depression, and marginalization were commonly occurring concerns. Other researchers have also reported that withdrawal of parental guidance and monitoring, living independently (Howlin, Goode, Hutton, & Rutter, 2004), and adjusting to fast-paced and frequently varying schedules (Jobe & White, 2007) pose significant difficulties for autistic college students. Therefore, to meet the specific needs of autistic college students and reduce the difficulties they experience, higher education institutions (HEIs) are increasingly offering academic and non-academic support programs through disability support offices (DSOs) (Zager & Alpern, 2010).

Autistic Students' Perception of DSO Supports

To examine how DSOs can provide better support and accommodate autistic students, previous studies have examined autistic undergraduate students' perceptions of the supports offered by DSOs in terms of their experiences with academic and non-academic accommodations. These previous studies generally agreed that academic accommodations, particularly extra time on tests and academic tutoring, were most frequently utilized and also perceived as effective by autistic undergraduate students. For instance, Jansen et al. (2017) investigated the perspectives of 43 Belgian autistic

undergraduate students utilizing online quantitative surveys, and students rated the accommodations for taking exams such as extended examination duration most effective. They also indicated that these academic services also helped them plan their schedules and handle stress and anxiety. More recently, Accardo, Kuder, and Woodruff (2019) conducted a mixed-method study of how US autistic undergraduate students at a public university perceived different types of accommodations and support provided by their DSOs. Twenty-three participants completed the survey, which was followed up with semi-structured interviews with three students. The researchers found that the students appreciated extra time on tests, academic coaching, tutoring, and faculty mentoring.

Compared to the perceptions of academic support, students' perspectives toward other non-academic accommodations were less extensively explored. Students who participated in the Accardo et al. (2019) study appreciated housing accommodations, which allowed students to have a single room, while they reported that they did not use or plan to use social support services such as peer mentoring or social skills groups. However, contrary to Accardo et al. (2019)'s findings, students in Jansen et al. (2017) requested that DSOs provide more opportunities to meet autistic peers in a support group rather than a social skills training format. The reasons for the wide range of responses of different valence about social supports are not well-understood. Yet, it can be conjectured that the capability of institutions to provide non-academic accommodations and the quality and contexts of non-academic accommodations, especially those that are not required by the law, may drastically differ from institution to institution. This inconsistency provides students with various experiences that are associated with DSOs of their institutions.

Autistic students have also voiced ways for DSOs to support them better. Cai and Richdale (2016) used a semi-structured focus group discussion to gather data on the higher education experiences of 23 autistic students or recent graduates of HEIs in Australia and their families. The students expressed the need for improvements in staff knowledge about and attitudes toward autism, in timeliness in processing and delivering support, in eliminating unsuitable or inadequate support, and in the procedures to provide proof of autism spectrum disorder (ASD) diagnosis. Meanwhile, Van Hees et al. (2015) interviewed 23 undergraduate autistic students in Belgium and found they experienced challenges in adjusting to new expectations and routines, meeting social demands, processing the abundant information on campus, dealing with disclosure, and coping with mental health issues. To deal with these difficulties, the students wished to have additional non-academic support from DSOs such as psychosocial services including individualized support.

The Current Study

Despite the increased interest in gathering autistic students' perceptions on a range of support services from DSOs, few studies have examined how autistic students attending US higher education institutions utilize and perceive support services provided by DSOs in HEIs. A better understanding of their experiences with DSOs may aid in developing effective DSO services that cater to the specific needs of autistic undergraduate students. Therefore, in this study, semi-structured interviews were conducted to address the following research questions:

RQ1. What were the autistic students' perceptions of DSO supports?

RQ2. What were the reasons that some autistic students did not receive DSO support?

RQ3. How do autistic students perceive that DSOs could support them better?

Based on Van Hees, Moyson, and Roeyers' (2015) definition, college experiences are conceptualized in this study as comprising academics, student life, daily independent living, and relationships with friends, faculty and staff.

Method

Participants

Autistic students currently attending a US HEI were asked to voluntarily participate in an online interview for a \$20 gift card of their choice. Initially, 30 US HEIs were randomly selected from each of the three tiers of *K&W Guide to Colleges for Students with Learning Differences* (Kravets & Wax, 2016), which categorizes HEIs into three levels based on their support services available to students with various cognitive disabilities (e.g., ADHD, learning disabilities, and ASD) who may experience learning differences. Personnel from the DSOs and student life offices of the selected HEIs were asked to post flyers or share information about this study with autistic students and student groups. In addition, the DSOs and student life offices from 10 HEIs identified as having autism-specific service programs on the College Autism Spectrum website were randomly selected for recruitment. This method of recruitment was designed to include autistic undergraduate students who may be receiving more services from their institutions. Additionally, the first author approached the Asperger/Autism Network (AANE), the College Autism Network, and the Autistic Self Advocacy Network (ASAN) to share information about the study with their autistic student members. Lastly, the first author posted flyers on the campuses of HEIs in a Northeastern region of the US.

Because the above procedures did not yield any participants from two-year,

technical, and community college, efforts were made to purposively recruit participants from each of these institutions. Five DSOs from each state listed on the Applying TO School website, which provides complete lists of two-year, technical, and community colleges by state, were randomly selected and contacted. Also, flyers were posted on five community college campuses in a Northeastern state of the US. Appropriate ethical procedures including IRB approval from each participating institution were followed. However, these efforts failed to recruit students attending two-year, technical, or community colleges. Consequently, this study focused on autistic undergraduate students attending four-year institutions.

Twenty-seven autistic undergraduate students from 15 4-year HEIs participated in the online interviews. All participants reported having a clinical diagnosis of ASD. Table 4.1 presents the participants' characteristics.

Table 4.1

Participant Characteristics

Demographic Variable	Frequency (%)
Gender	
Male	11 (40.7)
Female	13 (48.1)
Other	3 (11.1)
Race ^a	
European American	21 (77.8)
African American	2 (7.4)
Asian	2 (7.4)
Other (American Indian/Hispanic)	3 (11.1)
Grade Level	
Freshman	5 (18.5)
Sophomore	4 (14.8)
Junior	7 (25.9)
Senior	9 (33.3)
Other (fifth year, leave of absence)	2 (7.4)
On IEP in K-12	
Yes	16 (59.3)

No	11 (40.7)
History of other developmental disabilities	12 (44.4)
ADHD	7 (25.9)
Learning disabilities	1 (3.7)
	Mean (<i>SD</i>)
Age (years)	21.81 (4.22)

Note. ^a= Race categories are not mutually exclusive.

Interview Procedures

Interested participants emailed the first author to make an appointment for the online semi-structured interview, which was conducted via web video or voice conference platform. Prior to the scheduled interview, the interviewer sent the consent form via email using a Qualtrics survey. After consent had been given by clicking on the Qualtrics survey, the online interview was conducted using Skype, Zoom or Facetime and lasted 46 minutes on average. The interview began by asking if the participant had an ASD diagnosis, and all participants gave verbal confirmation of their ASD diagnosis. The interview questions mainly addressed how the DSO influenced the participant’s college experience in terms of the three phases of transition, including moving in, moving through, and moving out, based on Schlossberg’s Transition Model (Chickering & Schlossberg, 1995). This model describes moving in as adjusting to on-campus housing, making new friends, and approaching disability support offices to receive services; moving through as the transitional period of managing daily issues such as dealing with the anxiety that may come from changing schedules; and moving out as preparing for life beyond college (e.g., looking for a job as graduation approaches).

The interview questions were tested in pilot interviews with two autistic individuals who had recently graduated from college and were revised accordingly. Major suggestions included changing the questions to be more positive and neutral

without assuming that all autistic students are experiencing difficulties (e.g., questions about coping strategies were changed to questions about daily management strategies). See Appendix 4.1 for the final interview questions. After the interview, participants completed a brief demographic questionnaire using the same online survey link. The first author conducted all interviews.

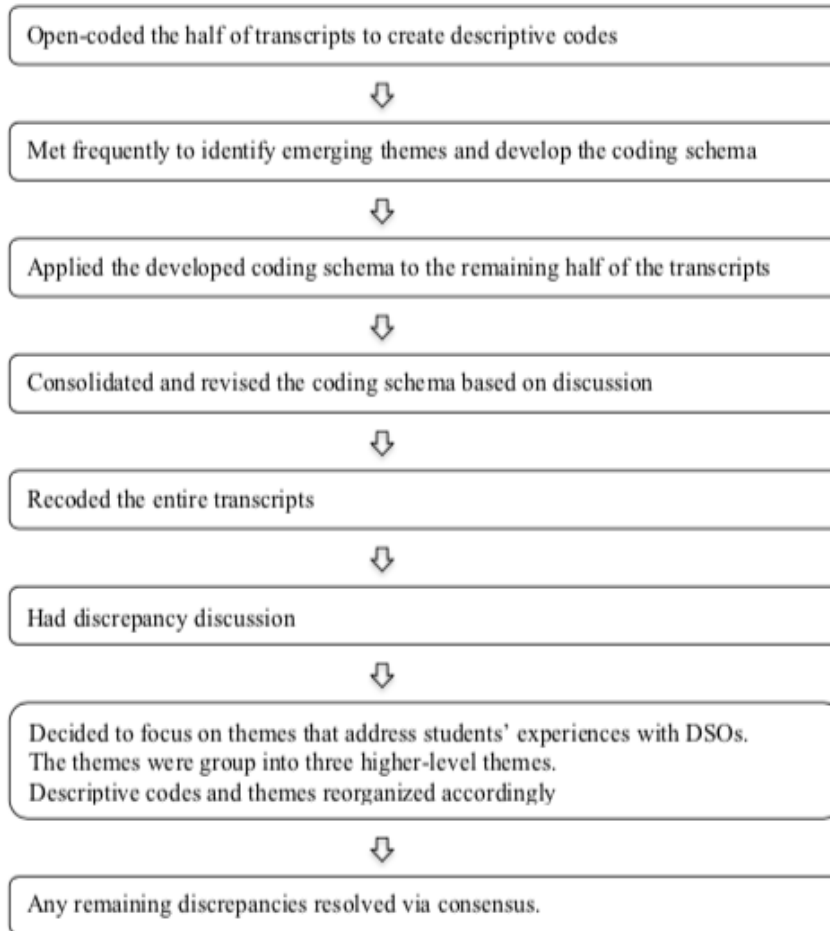
Data Analysis

All interviews were recorded and transcribed verbatim. A generic inductive approach, a method used to condense the raw data into a summary format that can clearly address the research questions, was used to qualitatively analyze the participants' responses (Thomas, 2006). A generic inductive approach is similar to grounded theory in that it allows important themes to emerge from the data through iterative analysis and is not guided by an explicit a priori theoretical framework. However, unlike grounded theory, which attempts to develop a substantive theory or model, the main purpose of the generic inductive approach is to present and categorize the important themes rather than build a theoretical or conceptual model (Kahlke, 2014; Lim, 2011).

Figure 4.1 presents the flowchart of the data analytic process. First, two doctoral-level coders independently open-coded (i.e., segmenting the data and providing a cursory label that describes the segmented data) half of the interview transcripts to generate descriptive codes, which consists of a word or short phrases used to describe the specific segments of transcripts. The computer software Dedoose for qualitative data analysis, version 6.1.18, was utilized to organize the findings, locate texts associated with a code, facilitate collaboration between the two coders, and tally the number of participant responses in each code.

Figure 4.1

Flowchart of Analytic Process



Coders met to compare the descriptive codes and group them together into emerging themes based on commonalities, frequency, and saliency across the responses within each interview question, and a tentative coding schema was developed during this process. Themes and their respective descriptive codes were grouped according to the interview questions. The coding scheme utilized a hierarchical category system, in which each interview question (e.g., “How do you think each type of service influences your college experience?”) was answered via its own set of themes (e.g., academic support) and each theme consisted of its own set of descriptive codes (e.g., reducing stress and

anxiety). The coding scheme was applied to the remaining interview transcripts. Coders frequently met to revise the coding scheme as necessary, and redundancy and overlap among the themes were eliminated.

Then, the two coders independently recoded all transcripts with the developed coding scheme, and coders frequently met to compare the codes. During this stage of analysis, for this study, we decided to focus on themes that are specifically associated with their experiences with DSOs. We realized that themes about DSOs overlapped across the interview questions and, thus, decided to group the themes based on topic (i.e., higher-level themes) rather than interview questions. Such themes and their respective descriptive codes were subsequently grouped into higher-level themes, and each higher level theme corresponds to each research question. Any remaining discrepancy was resolved via consensus, and data saturation was achieved.

Findings

Efforts were made to present the findings through participants' voices by maintaining participants' choice of words in the codes and including quotes throughout this section. The quotes are accompanied by participants' year in college and gender. The names of the institutions that students attended remain anonymous, and if students mentioned the name of the institutions within their quotes, the name was replaced with a more generic label (e.g., a state university, this university). The autistic undergraduate students' perceptions of associations between their experience with DSOs and their college experiences are presented first, followed by the patterns that emerged from the students who were not receiving support from DSOs and students' perception of how DSOs could support them better. Additional exemplary quotes are also presented in

Appendix 4.2 along with the number of participants who received each code.

Autistic Students' Perceptions of DSO Support

Academic Supports

Of the 27 participants in the study, 23 participants were registered at the DSOs at the time of the interview (whether or not they were receiving accommodations), and 18 students were only receiving academic supports. Most of these participants (n=14) perceived that academic supports enhanced their academic competency and reduced stress and anxiety. For example, few students (n=2) voiced that DSO staff members were effective in their communication with professors and students were able to receive necessary accommodations. However, others also recounted instances when DSO staff members did not wish to intervene and communicate with professors when the professors did not wish to provide accommodations from DSO accommodation letters (n=5). Others also reported on instances when they felt taking an exam in an alternate location negatively influenced them (n=3).

Autistic students expressed the importance of academic accommodations provided by DSOs in their ability to pass classes, focus on exams and improve performance, and earn credits needed for graduation. For example, one student reported “A lot of the classes without them, I would not have passed. Even if I did, I would not have done as well as I did” (P6, Sophomore, Female). Another student explained how being allowed to record the lectures and note-taking services supported his ability to learn. “Being able to record the lectures so that I can go back after class or in later down the road and listen to it. That way, ... in the moment [in the class, I can] sort of soak it all in. So overall it's just helped me better prepare myself for different exams and stuff” (P7,

Male, Freshman).

Participants explained that their increased academic competence may be related to the reduced stress and anxiety that occurred as a result of the academic supports DSOs provided. For instance, providing a quiet, low sensory environment where students could take exams, lessened unnecessary testing anxiety. “The exams I take in a separate room because there is a low amount of distraction as well as [it] help[s] put me in a more calm environment” (P5, Male, Senior). One student described a time when he was late to apply for an academic accommodation, and emphasized the importance of the DSO providing academic support and reducing his anxiety: “It definitely takes away a lot of stress. One time, I forgot to essentially request [for] one of my tests... It was fairly stressful and I found myself struggling to get done in time. So mostly, it helps relieve [stress] a lot” (P19, Male, Sophomore).

In addition to academic supports related to testing, more consistent academic supports such as being allowed to leave the classroom when needed or being provided note-taking supports helped, “take the edge off a little bit... [make] things feel a little bit better, a little calm” (P3, Male, Senior). For instance, one student described, “I’ve talked to them about just being allowed to leave the classroom for a few minutes if I’m feeling overwhelmed or panic. It makes me feel more comfortable so I don’t have as much anxiety going into things” (P9, Female, Freshman).

Students expressed that when DSO staff communicate effectively with professors, it helped professors to gain a more thorough understanding of their individual needs. “It’s nice when your professors actually understand that you need things and that they understand that you’re not just asking for something for the sake of getting it. So I think

that having that kind of support from the office has been really helpful” (P26, Female, Junior).

At the same time, students also reported how a lack of or ineffective communication between a liaison and the professor resulted in students not feeling supported academically. DSOs’ communication with professors was primarily made through one accommodation letter. If professors were unwilling to provide the academic accommodations asked of them in the letter from the DSO, the DSO staff often did not take the necessary steps to resolve the situation with the professors. “I’ve had asked one person from the disability resource to intervene with one professor. It didn’t have much effect. I’m still trying to work it out but even now it’s just dragging on...I don’t feel supported, because, like, I had asked DRC [Disability Resource Center] and they have been, like, that is [the] professor’s choice” (P16, Male, Junior).

Several students also described incidents related to taking exams in alternate locations. The change in environment negatively affected their grade because the students could not ask for clarification about the wording of the questions to professors. “I was taking a physics test, [in a] different room [from] everyone else, so I didn’t have access to my professor and I read into a question too closely and followed the directions correctly, but so literally that I actually lost points.” (P17, Male, Freshman). Others also mentioned instances in which the professors forgot to provide them with supplemental information because they were not in the same physical location as the other students.

Non-academic Supports

While autistic students talked about academic supports and its influence on their college experience, they also mentioned how they value non-academic supports which

can be “more focused on your experience as a student and making that positive both in and out of the class” (P13, Female, Junior but graduating). While only a very small number of participants (n = 5) received non-academic supports, housing accommodations and social support were reported to be the most common accommodations that students received.

Participants who received housing accommodations explained that a separate living arrangement provided by the DSO allowed them to live on campus with emotional stability and reduced anxiety. For instance, “They would actually work with the housing department and that made it to where I had my own apartment where I didn't have to share it with other people and be anxious all the time. For the emotional support animal, whenever they helped me with that, they helped me to live that help me to live on campus more, more easily” (P4, Female, Senior).

Meanwhile, other students expressed dissatisfaction with housing support and reported they had to navigate the situation themselves, which left them feeling unsupported and frustrated when housing offices shifted responsibilities onto different departments. “It's kind of this whole mess between housing department and the DSO, which [no one] knows who is really responsible for that...I arrange a meeting and the person was just like there's basically nothing I can do... Go to them [housing department]” (P19, Male, Sophomore).

Students articulated how the different forms of social support that DSOs provide gave them a sense of belonging and opportunities to meet other autistic students on campus. One student mentioned that the DSO connected him with another autistic student from a higher grade level, and how helpful the connection was for him: “There's

something very specific about being with someone who is exactly on the same page and knows what to expect and can empathize with your experiences. So every time I get to meet her, it kind of recharges my social batteries. I think that really just helps with my anxiety and sense of belonging” (P17, Male, Freshman).

At the same time, students without social support indicated the lack of these supports contributed to isolation and marginalization. One student indicated that all accommodations provided by the DSO are “mostly [for] classes” (P13, Female, Junior but graduating). Another student reported, “So for some campus social stuff it's been harder... always with a combination of being out there and isolated from everyone else, and it was pretty hard for freshman year to meet people and get out more. They [DSO] did not do anything” (P27, Female, Junior). Meanwhile, some students proactively attended social groups organized by DSOs of nearby campuses: “where there's really no group [on this campus]. I actually go to the campus that's near me... to actually talk to other people that are on the spectrum because that's the only group that's available really” (P10, Transgender Male, Freshman).

Interactions with DSOs

In addition to the supports the students were receiving from DSOs, autistic students discussed how interactions with DSO staff members influenced their college experiences.

Students reported that positive and quality relationships with DSO staff members provide them with emotional support and stability. “It...just gives that little extra boost of confidence to know that I have people backing me up and making sure that they have my best interests at heart and they are able to help me succeed.” (P11, Male, 5th-year Senior).

For others, the presence of DSO staff itself served as a support system. “I can talk to them, and I feel comfortable knowing that I'm speaking with them and that they will help me to navigate through” (P9, Female, Freshman).

Students who expressed dissatisfaction about DSOs frequently mentioned inaccessibility of the DSOs in terms of how long it took for them to make an appointment with DSO staff or to get the response in a timely manner. “The process of getting an appointment has been very long, ...I had to wait two weeks to get an appointment” (P25, Female, Senior). Students often attributed the inaccessibility of DSOs to the staffing issues of the DSOs. “They were so inaccessible, and there's really only one or two people actually working in the office, and there's thousands of people on this campus. And so unless it's something that you immediately need, they don't really respond that much... They either don't answer or they have very bland, almost copy and paste kind of answers” (P10, Transgender Male, Freshman). Students also attributed high turn-over rate among DSO staff members to DSOs’ inaccessibility. Because staff members were untrained, students needed to repeatedly explain their needs, and staff members did not efficiently communicate among themselves.

Participants reported mixed perceptions regarding DSO staff members’ knowledge about autism. Almost half of the participants who received DSO supports (n=10) found that the DSO staff was knowledgeable about autism, which contributed to the students feeling understood and accepted. “In the disabilities office, everyone knows what they're doing and it's probably the most understood I felt by people who don't directly experience it” (P17, Male, Freshman). One student particularly valued the ability of DSO staff to know how to talk to her based on her support needs. “They know how to

talk to people with autism. My case is very mild compared to others. They understood quickly and they adjusted properly” (P21, Male, Junior).

However, others (n=7) said their DSO staff lacked an understanding of autism. Participants who articulated the concern mentioned having to teach what autism is and “hold his hands and walk him through it” (P22, Female, Sophomore). They expressed DSO staff members’ knowledge of autism was lower than that of other disabilities like ADHD or learning disabilities. “I don’t think they have much knowledge ... Less population of the people were being serviced for ASD, like, compared to stuff like ADHD” (P27, Female, Junior).

Interestingly, some pointed out their DSO staff were not well aware of the variability of support needs in autism and confused being academically competent with not needing additional supports. “There’s definitely a big misunderstanding because they read through the papers and they said, Oh, you’re on this side. Plus it says on this testing that you score lower versus the fact that [you] also scored high on a lot of other sections. But they still didn’t have an understanding because of the fact that I think they saw me as someone that was quote unquote high functioning, and I hate that label, and they’re like, you don’t need that much support” (P25, Female, Senior).

Participants Who Did Not Receive DSO Accommodations

Interestingly, about one third (n=9) of the participants were either not registered with their respective DSO even though they have an ASD diagnosis or were not getting any accommodations even if they were registered in the DSOs. Additionally, some participants reported experiences of choosing not to receive the accommodations in the beginning and changing their minds later on.

Reasons for Not Receiving Any Services

Some students chose not to receive the supports from DSOs because they believed that not receiving the accommodations would lead to the opportunity to have a ‘normal’ college experience (n=3) or because they thought they would not need support (n=4). However, some students, who were wishing to receive the support from DSOs, were not able to access the support because they were experiencing difficulties with getting the required documents for registrations (n=3).

Some students chose not to receive accommodations because they wanted, “to try to have a normal college experience” (P11, Male, 5th-year Senior). Interestingly, these students all had IEP’s throughout K-12 education and wanted to see how they would do without the accommodations. “When I came here I wanted to see how much I can do independently and normally because college for me was all about learning how to be independent and learning” (P26, Female, Junior).

Other students articulated they did not need the accommodations because they had low support needs and were academically competent without DSO accommodations: “I didn’t need them because I am high functioning” (P2, Genderqueer, Sophomore). Some of these students mentioned that they did not utilize the accommodations during high school as well. “By the time I was a sophomore in high school, I pretty much have tested out of all the accommodations that the state could have offered me” (P11, Male, 5th-year Senior). Some students were not receiving any accommodations because they did not think the DSOs could help them, especially if their difficulties were not academic. For example, one student explained that she did not seek the support of the DSO because “I don't know if there's much they could have done for me in terms of making friends and

stuff” (P26, Female, Junior).

While two previous sections describe participants who chose not to receive accommodations, some participants were unable to get the accommodation because they could not retrieve the relevant documentation needed to be registered with the DSOs. For instance, a DSO staff member asked one student to get a diagnosis from a neuropsychologist even though the student already had a diagnosis from other clinicians. This student said she was not able to register at the DSO because the process of getting another diagnosis was too expensive. “A note from therapist, psychotherapist doesn't count. Apparently, you have to go see a neuropsychologist, and it's prohibitively expensive” (P22, Female, Sophomore).

Students also voiced that they were not able to get registered during the first semester because the registration process took too long, and, therefore, were not supported during the transition period. “I wasn't able to get [registered] until second semester, getting all the different documents from all my high schools and I'm transferring it to [this university] and then having them review it and everything.” (P6, Sophomore, Female).

Consequence of not Receiving Academic Support

The participants who chose not to receive accommodations from the DSOs reported having experienced academic difficulties as a result. “I felt like I didn't need to, I know obviously I went wrong” (P25, Female, Senior). Some students, therefore, changed their minds and decided to request accommodations from the DSOs. “My grades definitely took a hit because of it. I was not in the mental state that I needed to be in to

actually get my work done. So I decided the following semester that I would go seek out accommodations” (P26, Female, Junior).

However, not all students voiced difficulties from not receiving accommodations from DSOs. Some students who chose not to receive the accommodations articulated that they do not experience any difficulties. “I wouldn't really say so. The only difficulties I have is with just, I take hard classes” (P11, Male, 5th-year Senior). It is interesting to note that these students were registered at DSOs despite not currently receiving any accommodations and knew that they could ask for help if they needed. For example, in response to the question regarding whether they experienced any difficulties on campus, one student said, “as of now, no. But next semester I'm taking math, so I'm expecting to utilize the disability resource center a little bit more” (P18, Male, Sophomore).

How Could DSOs Support Autistic Students Better?

Few participants mentioned they were satisfied with the current level of supports they received from the DSOs; however, the majority (n = 21) of the participants articulated the areas that could be improved. In particular, students voiced how DSOs could better collaborate with the campus community to bring more institutional changes and described specific operational changes that would improve service delivery.

Collaboration with Institutions and Campus Community

While none of the students mentioned their DSO took efforts to increase autism or disability awareness on campus, students (n = 3) wished their DSOs could make an effort to increase autism awareness that allows “there to be more education and accessibility on campus and overall” (P10, Transgender Male, Freshman). “I guess do more events and be

more spoken because people think that it [autism] is a disease or a virus you can catch.” (P19, 19, Male, Sophomore).

Along with increasing autism awareness more generally, students (n = 4) also pointed out the need to educate faculty members. This may have stemmed from their perception that DSO staff often were not helpful in facilitating communication with faculty when faculty did not want to follow the accommodations specified by DSO accommodation letters. Many students indicated that instead of only sending an accommodation letter to inform faculty members of accommodations, these individuals should be educated about autism and autistic students’ needs. The participants thought that this would make “professors accountable for how they treat students who have accommodation letters” (P26, Female, Junior), and would prevent situations where autistic students are unfairly treated by faculty members. “It would be nice if they would provide some sort of information to faculty about not just autism and about the fact that faculty members shouldn’t not want to accommodate students with disabilities. Engage with faculty in a way that makes the faculty more knowledgeable and ready to work with students” (P13, Female, Junior but graduating).

Students (n = 3) mentioned how sensory issues were not being attended to by DSOs and acknowledged the lack of spaces to calm down and relieve the stress and anxiety that comes from sensory overload, and wished the DSOs could work to set up a sensory room on campus. Sensory rooms were associated with accessibility on campus because they gave students the opportunity to be present in school buildings without being constantly overwhelmed. “Working with the university more when they build these new buildings to keep accessibility in mind...They should have this particular rooms that

people can go into and chill out and have their own space” (P14, Female, Senior). Some students indicated that separate sensory rooms are needed due to consistent activities on campus that limits the accessibility to those places. For instance, one student mentioned, “If there's a way they can accommodate my comfort on campus because we have indoor events everyday basically in the campus. Very uncomfortable for me to be here” (P12, Genderqueer, Junior taking leave of absence).

Providing Non-academic Services That Cater to Students' Needs.

Students (n = 7) expressed a desire for the DSOs to provide more individualized support to the students, “I would like [them to be] better individualized. Rather than just a general, ‘we can give you more time on tests,’ they can help you create an individual plan and because it really is a spectrum” (P1, Female, Senior). Additionally, some students attributed the lack of involvement with students’ lives to general staffing issues within the DSO and proposed to hire more staff. “They need more staff to be able to have the time to think about training and fully understanding us” (P13, Female, Junior but graduating).

Students (n = 3) also wished the DSOs could create opportunities for “student connection” (P10, Transgender Male, Freshman) by providing community-building resources. Along with seeing the value in developing relationships with autistic peer leaders or autism support groups, students frequently discussed the development of social groups with individuals who have different disabilities or other autistic college students. For instance, a student who wanted the DSO to organize an autism or neurodiversity club said: “Sponsor the autism and neurodiversity alliance. That acts as a social support, you know, supported by an institution” (P13, Female, Junior but graduating).

One student compared the Native American social support group she belongs to with the DSO. She indicated that the Native American support group provides opportunities to make connections with others that the DSO does not provide: “I’m a Native American so our native American club is a social support services... They are better than my disability services... They ground me because my race is part of me and gave me [the] opportunity to interact with people with [the] same religion and good to find people that have similar backgrounds” (P20, Female, Junior).

Discussion

This study explored students’ experiences with support services provided by DSOs of four-year HEIs in the US by examining the autistic students’ perceptions of DSO supports, the reasons that some autistic students did not receive DSO support, and students’ perception of ways that DSOs could support them better.

Perception of DSOs and DSO Support

Participants' responses regarding the support they received from DSOs and their interactions with DSO staff members reflected both positive and negative experiences. Many students appreciated the extended time and alternate testing locations, resembling the findings of Jansen et al. (2017) and Accardo et al. (2019), which found autistic students especially valued academic accommodations. However, students who voiced dissatisfaction with available academic supports (e.g., professors unwilling to grant the accommodations), the negative experiences were frequently connected with the inefficacy of DSO staff members to follow-up and ensure that students appropriately received their academic accommodations. Furthermore, these negative experiences could also be due to the lack of personnel in DSOs who provide students with more sustained

supports, and this may also have led to students' perception that DSO staff members were often inaccessible.

It is noteworthy that very few students were receiving non-academic support from DSOs, while many articulated their institutions did not provide any housing or social support, leaving them distressed and unsure of where to ask for help. Meanwhile, unlike autistic students in Accardo et al. (2019) who believed that they would not benefit from social skills programs organized by DSOs, students in this study indicated that such support allowed them to feel a sense of belonging and wished to have more opportunities to meet other autistic students.

It is possible that students in Accardo et al. (2019) sensed that the purpose of the social skills program was to teach social skills rather than to provide opportunities to form connections with other students. For instance, Bottema-Beutel et al. (2016) reported that autistic youth found social support groups preferable when adults were present to initiate interactions among participants but found their continued presence intrusive when adults controlled discussion topics. The social supports the students in this study received from DSOs were an informal introduction to autistic students or weekly social events to meet other autistic students, which may have felt more conducive to forming naturalistic social networks than a training program.

Finally, similar to the findings of Cai and Richdale (2016), autistic students reported that DSO staff members lack knowledge about ASD. In particular, many indicated that DSO staff often assumed that students who achieved good exam results did not need support, revealing that staff members were not aware of the variety of support needs of autistic students that extend beyond academic supports. As previous studies

have shown, knowledge and attitudes about ASD are significantly associated (Gillespie-Lynch et al., 2019). Inaccurate ASD knowledge held by DSO staff members may be influencing their attitudes toward autistic students. In other words, staff members, who are unaware of the variety of support needs autistic students may have, may become hesitant to provide accommodations to autistic students.

Not Receiving Accommodations

Some students voluntarily chose not to receive the accommodations from DSOs. Marshak et al. (2010) suggest that this initial unwillingness to receive DSO support may stem from students' experiences in K-12 special education, which often involves placement on a "special" track or gives students limited academic options. Yet, some students who initially chose not to receive DSO services reached out for support after experiencing academic difficulties. Interestingly, Anderson, Carter and Stephenson (2018) also found that autistic undergraduate students who delayed their disclosure to DSOs reported less satisfaction compared to those who immediately disclosed their diagnosis to DSOs and received the support.

Additionally, the reports of students who could not register with their DSOs mirror the difficulties reported in Jansen et al. (2014) and suggest the need to streamline the registration process or provide assistance. While some formalized registration procedures and criteria for qualification are inevitable, ways to provide needed support (e.g., pairing students with autistic peer mentors who already underwent the same process) should be discussed in future studies. Such support may be more valuable for students who were recently diagnosed and whose parents cannot provide sufficient help.

Ways for DSOs to Support Students Better

Students' suggestions on ways for DSOs to support them better include such things as increasing autism awareness on campus, communicating with faculty, meeting sensory needs, and providing individualized services and community building resources. While the need for more individualized services confirms the findings of Van Hees et al. (2015) and Accardo et al. (2015), students' suggestions also reflect the importance of institution-wide support and policy. For instance, as the Americans with Disabilities Act (ADA, 1990) requires the minimum standards for accessibility in public institutions, HEIs need to consider that, without quiet places, some areas may be inaccessible to some students due to sensory overload from ongoing activities. Hunger (2011) also highlights that supporting students with disabilities should not be the sole responsibility of DSOs, suggesting that the whole university should collaborate to create a culture shift that promotes accessibility and inclusiveness. Institution-wide intervention programs and diversity awareness events that teach members of the campus community to accommodate people on the spectrum may be a starting point to make the cultural change proposed in Hunger (2011).

Practical Implications

The findings of this study point to several practical implications. First, in addition to providing professors with one accommodation letter, it may be necessary for DSO staff to further explain the importance of specific accommodations for students and follow-up with students in the middle of a semester to make sure they are receiving the support they need. One way to provide such individual support may be to provide more institutional support for DSO staff and allocating more staff to DSOs, especially those with expertise in ASD or in facilitating non-academic support services. We urge DSOs to develop an

appropriate support system that can cater to the varied needs of autistic students. This support system should encompass both academic and non-academic accessibility and should focus on students' socio-emotional well-being as well as academic success.

Moreover, it is also important for HEIs to consider what ASD specific information should be taught to DSO staff members to make meaningful changes in their interactions with autistic students. Staff members need to have accurate knowledge about ASD and the variety of supports these students may need. Finally, to help students make informed decisions regarding whether or not to register with their DSOs, it is important for staff members to provide students with information about the DSO registration process and what it means for their educational experience. For instance, Marshak et al. (2010) suggest that DSO staff members create mailings, brochures, or websites to inform incoming students about the various types of DSO supports and their importance prior to arriving at the university.

Implications for Future Research

Some students in this study received accommodations from the same DSO, but shared a range of positive and negative experiences with the services provided. This calls for the need to investigate potential individual factors that are implicated in students' experiences with DSOs. Demographic factors shown to influence the college experiences of non-disabled students such as socioeconomic status (SES) (Walpole, 2003) and ethnicity (Fischer, 2007) may influence students' experiences. In particular, the intersection between these demographic characteristics and disability may affect the perception of DSOs and college experiences of autistic undergraduate students from minority backgrounds or low SES. This calls for future studies investigating how DSOs

could more effectively address the needs of autistic students who also experience other factors that contribute to marginalization.

Additionally, many participants in this study showed some level of self-determination skills (e.g., articulating what they need from DSOs, proactively seeking to attend social groups at different universities, and registering with the DSO). Higher education research focusing on students with disabilities has repeatedly emphasized the importance of self-determination skills, which include problem-solving skills, learning about one's self and one's disability (Getzel & Thoma, 2008). O'Shea and Meter (2016) contend that the decision of students with disabilities to receive support from DSOs is greatly influenced by awareness and acceptance of their disability and skillset, suggesting an association between self-determination and utilization of DSO support. In other words, students who know what they want and how to achieve their goals may be more apt to attain the resources needed, especially in college settings where students are expected to be more independent compared to K-12 settings. Therefore, more studies examining how self-determination skills are associated with autistic students' perception of DSOs, their relationship with DSO staff members, and general college experience are needed.

However, rather than trying to teach self-determination as another skill for autistic young adults to learn, supporting these students to naturally gain and practice self-determination skills could be more beneficial (Kim, 2019). For instance, effective transition services for autistic high school students need to consider ways to promote awareness of the value of self-determination among family members and educators, who can guide and provide opportunities to exercise self-determination skills to autistic youths.

Limitations

There are several limitations to be considered when interpreting the findings of this study. First, although attempts were made to recruit participants attending various types of HEIs and in different states, because volunteer sampling was utilized in this study, sampling bias may have occurred. For instance, those who felt more strongly about their college experiences either positively or negatively may have been more willing to participate and share their experiences. Also, despite efforts to recruit participants through many routes (e.g., flyers on campus, regional autism advocacy groups, and social support groups) rather than rely solely on DSO networks, it is possible that many or most participants received information about this study via their DSOs. While, regrettably, we did not check how the students learned about the study, the findings suggest that many were registered with DSOs, in which case the study may not accurately represent the experiences of a wide range of autistic students, especially those who chose not to disclose their diagnosis. Therefore, future studies involving a larger number of students including those who are not registered with DSOs need to be conducted to determine whether patterns similar to those in this study emerge.

Finally, approximately 40% of participants did not have Individual Educational Programs (IEP) during their K-12 education. It is possible that the participants included in this study had relatively low support needs compared to the general autistic undergraduate population, resulting in a skewed representation of the experiences of autistic students. Moreover, it is also possible that autistic students in two-year, technical, or community colleges, whom we failed to recruit for this study, were more likely to have IEPs during K-12 and received more intensive supports, than autistic undergraduate students in four-year institutions. Systematic nation-wide research across different

institution types of HEIs needs to be conducted to gather characteristics of the full range of autistic students in HEIs in order to explore how student characteristics and institutional characteristics are related to the students' college experiences.

Conclusion

This study examined US autistic college students' perceptions of their DSOs to explore the associations between DSO support and their college experiences. While students reported appreciation of academic support, social support, and housing accommodations provided by DSOs as well as quality interaction with DSO staff members, they also reported the negative influences of insufficient support in these three areas on their college experiences. Also, some students chose not to register with DSOs or receive accommodations, but not receiving accommodations often resulted in academic difficulties. Finally, students voiced how DSOs could collaborate with institutions to improve how autistic students are considered and supported within the institutions as well as how DSOs could change the service provision system to more comprehensively support the students. Rather than asking DSOs to resolve all these issues by themselves, institution-wide efforts and systemic support systems are needed to target and improve these areas. In addition to appropriate support and resources for DSOs, members of each HEI community, including faculty, staff, and students all need to work together to make the campus both physically and emotionally hospitable to autistic students.

Chapter 5

Implications and Conclusion

Summaries of Findings

The three interrelated studies explored DSOs of US HEIs from three different vantage points. Study 1 studied multimodal semiotic resources employed in DSO websites using discourse analysis. This study found that DSO websites share genre features with advertisements. DSO websites were utilizing the DSOs' services that provide accessibility to students with disabilities as advertisable commodities to attract potential consumers (i.e., prospective students with disabilities). Study 2 showed that the quality of previous contact was shown to be consistently associated with DSO staff members' Social Distance, Openness, and Knowledge about ASD. Institutional factors (i.e., private vs. public status, the size of student body, and average cost of institutions) were also associated with DSO staff members' attitudes and knowledge about ASD.

While Studies 1 and 2 were conducted to investigate the different aspects of DSOs that are likely to influence the decisions and experiences of autistic students, first-person perspectives of autistic students were sought in Study 3 to explore how autistic students actually assessed the DSOs in their institutions and the support they provided. Students expressed appreciation of the academic and non-academic support from their DSOs and considered the presence of and their relationships with their DSO's staff as emotionally supportive. They also reported negative experiences with DSOs for such reasons as a lack of specific ASD knowledge, inaccessibility, and ineffective communication with professors. Students chose not to register with DSOs for various reasons, but not receiving accommodations resulted in academic difficulties for some students. Finally, students emphasized the need for institution-wide efforts to increase autism acceptance on college campuses and for more individualized services.

Synthesis of Findings from Three Studies

A synthesis of emerging patterns across the studies provides a more comprehensive and nuanced understanding of various contexts of DSOs of HEIs. Particularly, juxtaposing the findings from Studies 1 and 2 regarding DSOs' self-presentation and staff members' knowledge and attitudes with the autistic students' perceptions of their DSOs reported in Study 3 may shed light on how DSO supports are enacted and received by autistic undergraduate students.

Training DSO Staff on ASD

First, a lack of ASD knowledge on the part of DSO staff emerged as a major theme among students' responses, and this finding warrants the need to better train DSO staff. However, Study 2 showed that ASD-specific training (i.e., attending conferences and workshops on ASD and having ASD-related MA or PhD degrees) was not significantly associated with the level of knowledge about and positive attitudes toward ASD. This finding warrants the need for the improvement of training about ASD; DSO staff need to be trained on age- and context-appropriate information about ASD and autistic students to better understand and support autistic students.

Disconnect between Website Advertisements and Student Perspectives

Furthermore, Study 1 showed that DSO websites utilize promotional rhetoric to persuade students to believe that DSO supports will help them access social communities on the campus, but the majority of autistic students in Study 3 reported receiving only academic accommodations from DSO. Also, many reported being socially isolated or struggling to find communities on their own and wished for DSOs to provide more community building resources and opportunities to meet other autistic students on

campus. Given this evidence of lack of social support despite enticements conveyed on websites, this finding strongly supports taking active measures to address autistic students' social needs rather than merely alluding to them to *sell* an institution.

Similarly, while Study 1 showed that DSOs' websites are repeatedly promoting accessibility as a central attribute of the services and support their offices can provide to students, autistic students in Study 3 expressed that DSOs themselves are inaccessible – difficult to make appointments with DSO staff and get a response on time. Considering that the DSO websites were not themselves following web accessibility guidelines (e.g., using captions for the images), the findings from Studies 1 and 3 together suggest that changes need to be made so that DSOs are actually providing the support they advertise on their websites.

Importance of Institutional Level Support

Finally, the findings from Studies 1, 2, and 3 together imply that the DSO staff members alone cannot achieve the positive changes by themselves without institutional supports and changes. First, it is likely that staff unconnected with the institution's DSOs made the decisions to present the accessible supports from DSO as advertisements, largely influenced by a general conceptualization of disability of homepage developers and administrators rather than perspectives of DSO staff. Therefore, to make the changes within the DSO websites, the issue at hand should be noticed and considered as important by upper-level administrators within the institution as well as DSO staff.

Also, Study 2 revealed that institutional factors (e.g., institution type, private vs. public status, school size, and average annual costs) accounted for variances in DSO staff members' knowledge about and attitudes toward ASD. It is possible that specific types of

institutions are already providing more resources to help DSO members develop more accurate knowledge and positive attitudes about ASD, or hiring more staff with expertise in ASD or have positive attitudes about ASD. This suggests that each institution may be a unique case requiring its own investigation of staff's needs and ways to address staff education to develop models of best practices relevant to different types of institutions.

Autistic students in Study 3 also attributed negative college experiences to low autism awareness and unwillingness to provide accommodations among faculty members, often citing the ineffectiveness of DSOs to address such issues. Again, given the hierarchy of authority on most campuses, this is a problem beyond the capacity of a DSO to tackle alone. Rather, a systematic, institution-wide program led by upper-level administrators is needed to promote school-wide autism awareness and acceptance.

Conclusion

This dissertation conducted multi-faceted analyses about DSOs of US HEIs by examining DSOs websites, DSO staff members' attitudes and accurate knowledge about ASD, and perspectives of autistic undergraduate students. First, Study 1 showed that DSO websites are within advertisement genre, and the DSO services that provide accessibility were being utilized as a marketable commodity. Future studies are needed to examine how this pattern of marketization is associated with students' decisions to apply, actual experiences with the DSOs, and overall college experiences. Such efforts will aid in designing the DSO websites that are actually accessible for students with disabilities and that allow students to easily obtain the necessary information about the DSOs and DSO supports to make informed decisions about the attendance of the institution and registration with the DSOs.

While highlighting the importance of quality of previous contact on positive attitudes and accurate knowledge about ASD, Study 2 indicated that institutional variables such as whether or not the institution was private vs. public, school size, and average annual cost were associated with DSO staff members' attitudes and accurate knowledge about ASD. These findings warrant the need for further investigation into how staff members' attitudes and knowledge about ASD are associated with the quality of previous contact and different institutional variables. Moreover, more studies examining the kinds of institutional support and training about ASD that will lead to the development of cooperative and positive relationships between DSO staff and autistic students are needed.

Study 3 showed that various aspects of DSOs positively and negatively influenced autistic students' college experiences and decisions to receive DSO supports. Autistic students wanted more comprehensive and individualized supports from DSOs and wished DSOs to more effectively collaborate with institutions and campus communities. The findings suggest that institutional supports and efforts (e.g., allocating more staff members or attempting to make an institution-wide cultural shift that promotes accessibility and inclusiveness) are critical in improving the college experiences of autistic students. Furthermore, autistic students need to be provided with more support when registering at DSOs. For instance, DSOs may develop a more structured support system, which pairs new autistic students autistic peer mentors who already underwent the registration process, to ease the registration process.

Together, the findings of the dissertation inform the work of DSOs in supporting autistic students to make a successful transition into college settings, navigate college

expectations, and graduate. Currently, while DSOs contend that their supports provide access for autistic students on college campuses, DSO supports are primarily focusing on providing academic supports. Also, information about DSO supports was not accurately described in their websites, which were not accessible themselves. Many autistic students thought that their DSOs only provided generic support, were inaccessible, and thus felt unsupported in many areas critical related to their college experiences such as a lack of social support and low autism acceptance on college campuses.

The three studies together suggest that the development of appropriate service provision systems that effectively and comprehensively address these issues reported by autistic students and promote accessibility on campus is not a task only for DSO staff members. Accessibility should be a collective responsibility (Access is Love, n.d). Institutional interest in making online and physical space accessible for autistic students, providing appropriate resources and training for DSO staff, and promoting autism acceptance of members of the campus community is critical in situating DSOs as places where autistic students can rely on receiving the support they need and improving the college experiences of autistic students.

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Appendix

Appendix 3.1

Summary of attitudes about ASD and Knowledge

Item	Percentage of participants who agreed or strongly agreed	Mean (SD)
<i>Social Distance</i>		
How willing would you be to move next door to someone with autism? ^[1] _{SEP}	96.73	4.89 (.48)
How willing would you be to start a collaborative project led by someone with autism? ^[1] _{SEP}	94.77	4.64 (.72)
How willing would you be to share an apartment with someone with autism?	74.51	4.17 (1.05)
How willing would you be to spend an evening socializing with someone with autism?	97.39	4.87 (.48)
How willing would you be to open a business with a person with ASD?	77.12	4.22 (.99)
How willing would you be to go to a formal event with a person with autism?	92.81	4.66 (.74)
How willing would you be to make friends with a person with autism? ^[1] _{SEP}	97.39	4.90 (.46)
How willing would you be to have a person with autism marry into the family? ^[1] _{SEP}	88.89	4.65 (.79)
How willing would you be to marry or date a person with autism?	49.02	3.69 (1.08)
<i>Openness</i>		
This individual makes you afraid.	1.31	4.78 (.45)
This individual is as smart as you.	73.86	4.12 (.89)
I would not mind this person being in my workplace.	94.12	4.52 (.63)
I would hang out with this individual.	75.82	4.01 (.76)
I would feel comfortable being around this individual.	96.08	4.49 (.60)
This individual different from you.	56.86	2.43 (.98)
How much would you think you would like this individual?	72.55	4.11 (.81)
<i>Knowledge about ASD</i>		
Autism is an emotional disorder.	3.27	4.56 (.87)
Vaccines are causing an increase in autism.	4.58	4.52 (.80)
There is a cure for autism.	5.88	4.19 (1.04)
Autism runs in families.	11.76	4.31 (1.05)
All children with autism display poor eye contact.	0	4.88 (.41)

Autism is diagnosed more frequently in males than in females.	58.17	3.73 (1.11)
Changing a child's diet will lessen the severity of autism symptoms.	2.61	4.81 (.70)
There is one intervention that works for all children with autism.	3.27	4.33 (.81)
Children with autism can grow up to live independently.	92.16	4.90 (.36)
Autism is a developmental disorder.	78.43	4.67 (.71)
Autism can be diagnosed as early as 18 months.	90.2	4.63 (.74)
Children with autism are smarter than standardized tests demonstrate.	84.97	4.41 (.90)
It is important that all children with autism receive special education services.	76.47	4.09 (1.02)
With the proper treatment, most children with autism will eventually outgrow it.	1.96	4.62 (.74)

Appendix 4.1

Full Interview Question

Please respond to the following questions about **the disability support office** of your institution.

- Do you know what kinds of supports are being offered by the disability support office of your institution?
- What kinds of services are you receiving from the disability support office of your institution?
- How do you think each type of service influences your college experience?
- Do you experience any difficulties on this campus (e.g., course works, peers, dorm life)?
- What kind of services does the disability service office provide to support each of the difficulties mentioned?
- Could you describe your experience of the first few months as an undergraduate student?
- How services of disability support offices have been critical for you when you made your transition into college? (e.g., in your first semester, or in the first month)
- How services of disability support offices have been critical for you to move toward meeting graduation requirements?
- Do you think you are getting enough support from the disability support office of your institution?
 - o Yes
 - o Uncertain
 - o No
- How could the disability support office do to better support you?

Please respond to the following questions about the **supports from outside of the disability support office**.

1. What other kinds of social or institutional supports do you have on campus besides the disability support office (e.g., counselors, professors)?
2. How do supports on campus besides the disability support office in the previous question influence your college experience?
3. What kinds of social or institutional supports do you have external to the campus (e.g., friends, family, communities doctors, therapists)?
4. How do the supports external to the campus mentioned in the previous question influence your college experience?

I will ask some questions about your **diagnosis**.

1. Have you revealed your autism diagnosis to others on this campus?
 - a. Yes

- b. No
2. If yes, to whom? How do you think revealing diagnosis influences your experience?
 3. If you have revealed your diagnosis to the disability support office, could you describe the process you went through to get registered at disability support office of your institution?
 4. If you have not revealed or do not wish to reveal the diagnosis, why?

Now, I have some questions about **you**.

1. Do you think there is anything about your background that made it easier for you to transition into college? (personal or demographic characteristics)
2. Do you think there is anything about your background that made it harder for you to transition into college? (personal or demographic characteristics)
3. Do you feel like you have adjusted to college life? Why or why not?
4. What motivates you to continue to be in university today?
5. How did you make the decision to go to college?
6. Once you made your decision to go to college, how did you feel about it?

I have some questions about the times when **you feel stressed**.

1. If you feel the stress, anxiety or emotion from academic issues or non-academic issues on campus, what do you do?
2. How effective are you in your current daily management of social issues, grades, schedule, or anxiety?
3. Are there other sources of stress, unrelated to college, present your life?

Finally, could you describe the **greatest/satisfying** moments in college?

Appendix 4.2

Exemplary Quotes

Higher-level themes	Themes	Descriptive codes	Quotes	
Perception of College Experience and DSO Support (23)	Academic Supports (18)	Increasing academic competency (9)	“As far as, like, the last semester, especially, I was able to take my test in a separate room for some of my classes and that helped me focus and be able to be more successful” (P7, Male, Freshman)	
		Reducing stress and anxiety (4)	“I can do isolated testing in the disabilities center, like, a no noise and, like, no people around” (P12, Genderqueer, Junior taking leave of absence).	
		Communicating with professors (7)	“Because the accommodation letters that get emailed to the professors, they don't say what disability it is. They just stay what accommodations I need. So I'm being open with my professors about what exactly I need from them. It helps a lot” (P24, Male, Junior).	
		Negative Experiences from Taking an Exam in an Alternate Location (3)	I'll get emails thing saying that I will get the test here, but I don't get test there. If I show up and they would have it be like, oh yeah, we don't have testing. I made my appointment two months ahead of time (P27, Female, Junior).	
		Non-academic Supports (5)	Housing accommodations (3)	“They had some special devices that they actually put in my dorm. So, like, if somebody knocks on the door, they would let me know. Or if the fire alarm was going off” (P10, Transgender Male, Freshman).
			Social support (3)	“They helped me see how other people with disabilities function. I mean, I think I also made some good friends in there, and I got to meet people from, uh, different areas I mean, I think the bond really helped, but, mostly, it was, like, just figuring out how other students, uh, associate outside their classes” (P5, Male, Senior).
	Interactions with DSOs (11)		Relationship with DSO staff (4)	“They were just being more advocates to other academic advisors” (P5, Male, Senior)
			Inaccessibility of DSO (3)	“We have a high turn over rate... constantly changing systems. I don't think anyone knows what they're doing. They sometimes just don't

		DSO staff members' knowledge about ASD (17)	respond ” (P27, Female, Junior). “I feel like there's still a dynamic I experienced [at this] university? Like Hey, you're a scholarships, we have, like, 99 percentile SAT scores. You took all these college classes in high school. Like, why do you really need the accommodation? So yeah, I feel like if you are so called high functioning, um, you're not going to get help. I am low functioning in some ways sometimes, high functioning and sometimes medium functioning at others, but I think know knowledge and acceptance of just like pretty low, just not much better, much better than the average the rest of the population” (P14, Female, Senior)
Students Who Don't or Didn't Receive DSO Accommodations (9)	Reasons for not receiving any services (9)	Pursuing 'normal' college experiences (3)	I have had this IEP throughout K-12, and I did pretty well, so I wanted to see if I could do like everyone else is doing (P3, Male, Senior)
		Thought DSO support would not be helpful (4)	“I am not really sure. To be honest. because again, like, most of my friends who are on the spectrum, they either need a lot of it or they don't need as much. To me I would consider, like, I'm probably the ones that don't really need as much” (P1, Female, Senior).
		Difficulties with registration (3)	“It's just kind of like you have to have certain of everything a form wise. So it's like if you don't have exactly the wording they are looking for, then they deny any help, completely. And then, uh, I've also seen where, uh, one of my friends has epilepsy and she requested off campus housing basically. Um, apparently to her, she said that they kind of just slapped her face and said she was like the 30th person to say that they need off campus housing for disability and didn't take it seriously. Okay. Yeah, yeah. ridiculous. And they wouldn't take her diagnosis because of the fact that she couldn't get her doctor, just say specifically that what she needed was off campus housing” (P10, Transgender Male, Freshman).
	Consequence of not getting academic	Academic difficulties (3)	“It's all been through professors that have been willing to help out and everything... they, it kind of, again, delegitimizes you and then kind of puts you in a space where you constantly are having to

	support (7)		disclose to anyone, professor yourself constantly instead of just being able to be, like, here I have this from disability office, just read through this. So constantly having to disclose all the time” (P10, Transgender Male, Freshman).
		Doing okay (3)	“I do my homework, she says I am going to correct it so I said fine. I handed in what she didn’t correct, and what I had and in the end I get all hundred.... I am intelligent. They think that just because this disability we are stupid but we aren't. We are very smart actually” (P2, Female, Junior).
Ways for DSOs to Support Autistic Students Better (21)	Collaboration with institutions and campus community (10)	Increasing awareness on campus (3)	“I think they need to move more towards, like, our job is to protect you guys and make you guys accepted, not just write to professors” (P26, Female, Junior)
		Educating and communicating with faculty (4)	Like the professor is doing her own thing. Like, I would talk with her and enforce the law like ADA. But that’s all fallen on me (P16, Male, Junior).
		Meeting sensory needs (3)	“A lot of the sensory issues that can cause problems have to do with being outdoors... I ended up causing headache or a lot of distractions” (P13, Female, Junior but graduating).”
		Providing non-academic services that cater to students’ needs (11)	Involved with students’ experiences (7)
		Providing community building resources (3)	“It would have been nice if there was like a club like that or disability services [that] help them find those certain people” (P1, Female, Senior)

Note. The number in parenthesis indicates the number of participants who voiced each theme.