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Perspectives of Augmentative-Alternative Communication Users Regarding Their Experiences and Perceived Barriers to Engagement in Higher Education

Heather Anderson

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**PERSPECTIVES OF AUGMENTATIVE-ALTERNATIVE
COMMUNICATION USERS REGARDING THEIR
EXPERIENCES AND PERCEIVED
BARRIERS TO ENGAGEMENT
IN HIGHER EDUCATION**

by

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ABSTRACT

This research investigated the higher education experience of students who communicate via augmentative-alternative communication (AAC) due to having severe speech impairments. Research questions addressed how the students interact with others in the higher education setting, and the presence and nature of any barriers to full participation in academic and nonacademic activities. Using a qualitative case study design, data obtained from personal interviews and questionnaires were analyzed and interpreted based on the theoretical perspectives of critical disability theory and Astin's model of student involvement. Key themes included issues with communication; challenges associated with disability; and policy and practice, specifically the role and nature of disability services in student success. Findings were further interpreted relative to implications for higher education leadership, specifically policy and practices related to students with disabilities.

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CHAPTER 1

INTRODUCTION

In September, 1973, the United States Congress enacted the Rehabilitation Act, a law prohibiting discrimination on the basis of disability by federal agencies or agency receiving federal funds, thereby formally establishing the rights of individuals with disabilities to participate in higher education. Seventeen years later, the Americans with Disabilities Act (ADA) further clarified and expanded the rights of individuals with disabilities (Kaplin & Lee, 2014; U.S. Department of Justice, 2009). The establishment of legal protection of the right of students with disabilities (SWD) to participate in higher education (HE) has led to a marked increase in the enrollment of SWD in higher education; enrollment nearly tripled between 1964 and 2004 (Zhang et al., 2009). Colleges and universities have instituted changes in policies and practices in attempts to demonstrate compliance with disability laws and to address the needs of the growing body of students with disabilities, including the addition of dedicated staff, departments and service units for the facilitation and provision of services to these students (Raue, Lewis, & Coopersmith, 2011).

However, despite the increase in enrollment and availability of support services, students with disabilities have not achieved the same HE access and outcomes as non-disabled students. For example, compared to non-disabled peers, students with

disabilities, on average, have lower completion rates and take longer to complete academic programs (National Center for Education Statistics [NCES], 2014; O'Neill, Markward, & French, 2011; Raue et al., 2011; Zhang et al., 2009). Students with disabilities in HE programs face multiple barriers, including reduced physical access to facilities and resources, lack of appropriate supports, and negative attitudes among students, faculty and others people in the HE environment (Liasidou, 2014; Gobbo & Schmulsky, 2014; West et al., 1993), which may account for the difference in achievement. The gap in achievement between SWD and nondisabled peers not only impacts higher education institutions in a practical sense, but also prevents SWD from having equal access to the full range of experiences and benefits of higher education.

This study was designed to address discrepancies in outcomes and access by investigating barriers that hinder participation and engagement in higher education, from the perspective of a specific subset of students with disabilities: individuals who use augmentative-alternative communication (AAC) for face-to-face communication. The goal of this research is ultimately to improve the higher education experience for students with disabilities by adding to the knowledge base regarding disability and higher education, with particular attention to the needs of students with severe communication disorders who use technology to communicate.

Background

Postsecondary education credentials have become increasingly important for employment in the United States since the mid-1900's due to the shift to an increasingly knowledge-based economy (Carnevale & Desrochers, 2003; Carnevale & Fry, 2000, as cited in Newman, Wagner, Cameto, & Knockey, 2009). Completion of a program of

higher education is associated with both higher income and greater quality of life (Newman et al., 2009). Therefore, despite fluctuations in HE enrollment, the demand for HE has increased and remains high. Overall college enrollment rate increased by 26% between 1960 and 2004 (NCES, 2006). These trends reflect the evolution of American HE, and the perceived role of HE, from the earliest days as an elite institution designed to prepare leaders for a new country, to a widely accessible mechanism for increasing economic opportunity and intellectual growth (Mumper, Gladieux, King, & Corrigan, 2016).

Higher Education and Disability

In addition to increased higher education enrollment overall, there has been an increase in enrollment of students with disabilities in recent decades. Since the early 1980s, students with disabilities have enrolled in postsecondary education in steadily increasing numbers, and now comprise approximately 11% of the population of students enrolled in higher education in the United States (Raue et al., 2011; Zhang et al., 2009). This increase has occurred in the context of an overall increase in the diversity of students enrolled in higher education along various dimensions including race, sex, sexual identity, religion, and disability status (Pliner & Johnson, 2004).

Augmentative-Alternative Communication

Along with the emergence of laws guaranteeing access to higher education, the same era of social change brought about new developments in management strategies and resources for individuals with disabilities, including the emergence of the field of augmentative-alternative communication (AAC). The term AAC is defined by the American Speech-Language-Hearing Association (ASHA) as “an integrated group of

components, including the symbols, aids, strategies, and techniques used by individuals to enhance communication” (ASHA, 1991, p. 10). AAC is used by individuals who have expressive communication disorders that are severe enough to prevent or impede successful communication via natural speech. Severe communication disorders may occur due to a variety of conditions, the most common being severe intellectual disability, cerebral palsy, autism, developmental apraxia of speech, amyotrophic lateral sclerosis, multiple sclerosis, stroke, and traumatic brain injury (Buekelman & Mirenda, 2012; Lund & Light, 2007).

In 1975, the Education for All Handicapped Children Act (P.L. 94-142) was passed, mandating the provision of a free and appropriate education to all children, including those in need of special education services. Although the law did not specifically mention AAC, the law led to influx in U.S. public schools of a large number of students who had previously been denied access to education. This influx necessitated the development of new approaches and techniques, and eventually technologies, to manage the education of these students and facilitate their inclusion in the public school environment (Vanderheiden & Yoder, 1986, as cited in Hourcade, Pilotte, West, and Parette, 2004). In 1986, the Education of the Handicapped Act Amendments (P.L. 99-457) included a component that specifically required the promotion of technology for students with disabilities (Dugan, 1986).

Access to and development of AAC was further supported by the passage of the Technology-Related Assistance for Individuals with Disabilities Act (P.L. 100-407) in 1989, also known as the “Tech Act,” which required states to make *every reasonable attempt* to provide assistive technology to citizens with disabilities, regardless of age,

disability or place of residence (Beukelman & Mirenda, 2012). In 1991 and 1997, the reauthorization of the Education for All Handicapped Children Act as the Individuals with Disabilities Education Act (IDEA), and subsequent amendments to the act, mandated individualized assessment of assistive technology needs, including AAC, and consideration of such needs in the development of each student's Individualized Education Plan (IEP) (Beukelman & Mirenda, 2012). The combination of improvement in access to AAC services in early education, improvements in AAC technology, increased availability of funding for devices, and increased emphasis on and availability of early intervention has resulted in increased enrollment in higher education by students who use AAC for communication (Atanasoff, McNaughton, & Light, 1998; Beukelman & Mirenda, 2012; Chung, Behrmann, Bannan, & Thorp, 2016).

AAC in Higher Education

This dissertation research links the field of AAC with the study of higher education leadership. Despite increasing enrollment of AAC users in postsecondary education, research directly addressing the experiences of AAC users in higher education has been limited (Chung et al., 2016). The increasing diversification of the college student population over the past few decades has led to new branches of scholarship focusing on the experiences, needs, and characteristics of various groups of higher education learners, such as minority students, students of nontraditional age, and students with disabilities (Pliner & Johnson, 2004). The needs and characteristics of AAC users place them at risk for struggling with the communication demands of the HE setting. To successfully participate in HE, students must apply receptive and expressive verbal and written communication skills in a variety of contexts. In addition to the basic skills of

reading and writing at a college level, students must be able to manipulate language with sufficient facility as to identify main ideas, summarize information, comprehend and formulate ideas during class discussions, initiate and engage in conversation about course content, and compose written assignments using ideas from multiple sources (Baker & Lombardi, 1985). The potential for AAC users to have difficulty with these tasks is considerable. Furthermore, as noted by Gobbo and Schmulsky (2014), findings regarding students who have one type of learning disability or difference are also have implications for students with overlapping or similar difficulties. In the case of this study, findings regarding students who rely on AAC will have applicability to students with other types of communication or learning disabilities and, as suggested by Gobbo and Schmulsky (2014), students who have undiagnosed disabilities, or those who have other types learning or communication differences, such as non-native speakers of English, first-generation college students, or older students.

Statement of the Problem

Despite increased access in terms of enrollment, higher education policies, practices and culture have not kept pace with increased enrollment of students with disabilities in higher education, as evidenced by differential outcomes for students with disabilities (SWD) compared to nondisabled peers (DeFur, 1996; Harris & Associates, 2000; NCES, 2014; Raue, Lewis, & Coopersmith, 2011; West et al., 1993; Zhang et al., 2009). Existing literature concerning students with disabilities in higher education (e.g., Belch, 2004; Gobbo & Schmulsky, 2014; Liasidou, 2014; NCES, 2014; Raue et al., 2011; O'Neill, Markward, & French, 2012) suggests that SWD encounter barriers to full participation in higher education. As the enrollment of AAC users in HE increases,

students who rely on AAC to communicate in the HE environment are an increasing presence on HE campuses (Atanasoff et al., 1998; Chung et al., 2016; Huer, 1991). More research is needed concerning the experiences and participation of AAC users in higher education programs. This study addresses that need and informs HE policy by providing insight as to the ways in which AAC users navigate higher education, the nature of any barriers encountered by AAC users in HE, and HE policies and practices that are likely to maintain, increase, or decrease those barriers.

Purpose of the Study

The underlying purpose of the study was to increase equity in access to benefits of higher education by developing knowledge that will inform higher education leadership regarding practices and policies that facilitate or hinder participation in higher education by students with disabilities. To that end, the study examined the perspectives of a specific group of students with disabilities, individuals who use AAC to communicate, regarding their own experiences in higher education settings. The goals of the study were to gain knowledge concerning the interactions of AAC users with faculty and other students in academic and non-academic contexts, identify barriers to access and participation, and generate recommendations for changes in policies and practices.

Research Questions

This study was designed to explore both the nature of and barriers to engagement of AAC users in higher education environments, focusing on interactions between AAC users and their instructors and peers in higher education. Because the study was oriented toward informing higher education leadership practices, perspectives of the participants

regarding higher education policy and practices was also investigated. The research questions were as follows:

1. What are the perceptions of AAC users regarding their interactions with faculty and other students during academic activities?
2. What are the perceptions of AAC users regarding their engagement in non-academic activities?
3. What are the perceptions of AAC users regarding barriers, if any, that they encounter, to full participation in academic and/or non-academic activities?
4. What changes in higher education policy and/or practices could facilitate improved participation and outcomes for AAC users enrolled in higher education programs?

Theoretical Framework

The theoretical framework for the study involves two theoretical approaches, Astin's input-out-environment (IEO) model (Astin, 1993) and critical disability theory. Astin's model holds that higher education outcomes are a product of inputs and environment. Inputs refer to characteristics and abilities inherent to the student, as identified by data such as demographics, prior academic achievements, and aptitude test scores. Environment refers to factors in the higher education environment, such as institutional policies and procedures, student services, peers, teaching approaches, extracurricular activities, technology, and student activities. The interaction between inputs and environment leads to outputs, which includes outcomes such as program completion and achievement of learning objectives. The application of the model to this study is that students with disabilities in general, and AAC users in particular, may

interact with the higher education environment differently than non-disabled students, and may therefore have substantially different experiences and/or outcomes. Precedent for employing Astin's IEO model as a theoretical framework has been established in prior HE research, including the study of students with disabilities in HE. For example, O'Neill et al. (2012) applied the model when analyzing predictors of graduation from HE programs among students with disabilities. The IEO model is logically applied to this study of AAC users, who are different from typically functioning peers not only in terms of inputs, or student characteristics (i.e., disability status), but also due to the different manner (i.e., AAC) in which they communicate with others in their environment.

The IEO model will be applied through a critical disability theory lens. Critical disability theory is an emerging branch of critical theory that involves the application of critical theory to the study of disability; that is, the viewing of disability through a social justice lens. The fundamental characteristics of critical disability are as follows:

- Rejection of medical models of disability. Medical models view disability in terms of deficits, emphasizing the contrast between the disabled individual and the idealized "normal" individual (Leake & Stodden, 2014; Liasidou, 2014). The assumptions underlying this contrast are that "normal" is the more desirable status, and that efforts to help disabled people should be targeted at changing their skills or behavior to more closely approximate the norm.
- Favoring of social models of disability. Social models acknowledge the basic differences in function between nondisabled and disabled persons, but hold that the handicapping effects of those differences are, at least in part,

externally imposed. Social models assume that disabled students are fully capable of achieving personal, educational, vocational and practical goals provided they are in circumstances conducive to that achievement. However, those circumstances are not always available due to physical, attitudinal, political, public policy, or other types of barriers that exist in the environment. It is these barriers that hinder the progress and participation of people with disabilities, as much as or more than limitations imposed by the actual disability (Leake & Stodden, 2014; Liasidou, 2014; Meekosa & Shuttleworth, 2009; Rembis, 2010).

- Alignment with postmodernist approaches to scholarship. Critical disability theory, like the broader arena of critical theory, rejects the notion of a permanent, fixed reality, recognizing that the reality of a given individual or group is shaped by context and perspective (Brookfield, 2010). Rather than attempting to impose experimental control to study phenomena separately from their context, critical approaches value alternative, context-rich forms of evidence, such as participant observation, personal narratives and interviews, which allow for a broader, deeper study of the phenomena or “reality” of interest (Bogdan & Biklen, 2007; Brookfield, 2010).
- Scholarship concerning disability should ultimately be aimed at eroding the deeply ingrained prejudices and practices that create barriers for individuals with disabilities. Liasidou (2014), in discussing applications of critical disability theory to higher education, explains that addressing barriers

encountered by students who have disabilities will ultimately reduce barriers for all students.

- Critical disability theory seeks to examine and mitigate the marginalization of individuals with disabilities. A central tenet of critical disability theory is the rejection of medical models of disability, which view disability in terms of deficits compared to idealized norms (Liasidou, 2014).

The link between Astin's model and critical disability theory is the focus on the inequitable access that SWD have to critical factors in the HE environment that would enable them to achieve the same benefit from HE as non-disabled peers.

Importance of the Study

This study provides insight to higher education leaders concerning timely and pressing issues in higher education. Increased demands in recent decades by the public and government agencies for accountability on the part of higher education institutions have led to ever-increasing emphasis on maximizing student persistence and completion. From a practical standpoint, given that students with disabilities now account for more than 10% of higher education enrollment, (NCES, 1999; Raue et al., 2011), identification of factors which facilitate or limit successful participation of these students in higher education can lead to improved persistence and completion. Achievement of desired learning outcomes will also be enhanced. Knowledge regarding how to adapt higher education policies and practices to foster improved learning and development among students who have communication disorders will also allow for improved education of students with other types of communication or learning disabilities or differences.

In addition to practical concerns, this dissertation addresses issues of equity in higher education. While laws and policies have changed in recent decades to allow for participation of students with disabilities in higher education, this does not ensure that higher education culture and practices have adapted to meet the needs of these students. If students with disabilities are prevented from benefitting from higher education to the same extent as nondisabled students, then inequity exists between these two groups. Although scholarship in the fields of education and disability studies has addressed the achievement gap between disabled and nondisabled students, this study will provide deeper insight into why this discrepancy exists and how it may be rectified, by seeking input from the primary stakeholders in higher education: the students themselves.

Delimitations

Participants were AAC users who were either currently enrolled students, HE faculty, or former HE students or graduates who had been enrolled within the past five years. Several delimitations were applied. Participants were required to be, according to self-report, partially or fully dependent on AAC for communication due to a speech or language disorder (i.e., motor speech disorder), able to use an AAC system to compose messages and/or access preprogrammed messages or symbols for the purpose of communicating with others. Participants must have used their current AAC system for at least three months prior to participating in the study, or three months prior to the time period on which their interview responses were based. Because participants had been admitted to postsecondary education programs, it was assumed that they had been identified as being qualified to participate in higher education; that is, they were assumed to have adequate cognitive skills and academic preparation to complete a HE program.

Limitations

One limitation of this study was the small number of participants. Although the number of participants is less of a concern for this qualitative case study than would be the case for quantitative research, ensuring a sufficiently robust pool of data is a concern for any type of research. This limitation was addressed proactively early in the research process through the use of a variety of methods to recruit participants and through the study delimitations. Because AAC users comprise only a small proportion of total HE enrollment (Chung et al., 2016), it was anticipated that obtaining a large amount of interview data from student participants would prove challenging. Therefore, the delimitations of the study were set to include HE faculty in addition to students, as indicated in this discussion. The inclusion of faculty led to the participation of an individual who had considerable relevant experience, having used AAC both as a student and instructor in a HE environment, in turn allowing for a more extensive data set than would have been possible with student participants alone.

Another limitation was the limited base of existing literature addressing the participation of AAC users in HE settings (Atanasoff et al., 1998; Chung et al., 2016), which limits the extent to which the methodology and interpretation are grounded in literature that directly addresses the topic of AAC users in HE. This limitation was addressed by expanding the literature review to include issues affecting the broader population of students with disabilities in HE and giving consideration to this broader literature base in the design and interpretation of this study. Other limitations are inherent to the study design. In-depth interviews comprised the sole data source; therefore, data were based entirely on self-report. It was assumed that the participants

would be truthful and forthcoming during the interviews. Because the study was interview-based, the potential influence of the biases and assumptions of the researcher on the results posed other limitations. Steps taken to reduce the impact of researcher bias, including member checks, supplemental analysis of interview transcripts, and ongoing reflection, are described in Chapter 3.

Summary

Students with disabilities have enrolled in higher education in increasing numbers over the past few decades. This study informs higher education policy and practice regarding persistence and completion among students with disabilities in higher education, and equitable access to higher education benefits for students with disabilities, by developing knowledge concerning the experiences of students with disabilities in higher education settings. This knowledge was developed through examination of the perspectives of a specific group of students with disabilities, AAC users, regarding their experiences in higher education, barriers to participation, and recommendations for policy and practice. A qualitative, interview-based case study approach was chosen to allow for in-depth exploration and interpretation of these perspectives.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter will provide a review of literature related to the study. The first portion of the review will address literature concerning students with disabilities (SWD) in higher education, including the history and status of involvement of SWD in higher education (HE), and factors which facilitate or hinder full participation by SWD in HE. The second part of the review will assess literature specifically related to communication practices, needs, and experiences of young adult AAC users, focusing on postsecondary education settings.

Students with Disabilities in Higher Education

In order to place this research in the context of HE leadership and the HE environment, this section will provide an overview of key changes in the U.S. legal environment that have facilitated increased access and participation of individuals with disabilities in higher education over the past four decades. Prior to the 1970's, the rights of students with disabilities to pursue advanced education were not formally recognized by U.S. law. In fact, students were often denied admission to higher education institutions on the basis of their disability. For example, Angel (1969, as cited in Paul, 2000), through a survey of 92 Midwestern colleges, found that 65 would not accept students who used wheelchairs. Fonosch (1980) surveyed 1000 institutions and found that

18% would not accept blind students, 27% would not accept students in wheelchairs, and 22% would not accept deaf students.

In the 1970's, new laws established the rights of SWD to access appropriate education. In 1973, Section 504 of the Rehabilitation Act was passed. This legislation was referred to by the primary author of the bill, Senator Hubert Humphrey, as the "civil rights declaration of the handicapped" (Hubert Humphrey, as cited in Yell, Rogers, & Rogers, 1998, p. 223). Section 504 protects access by SWD to HE by linking nondiscrimination policy with federal funding. Specifically, the law prohibits discrimination against people with disabilities on the basis of disability by educational institutions receiving federal funding, including higher education institutions (Kaplin & Lee, 2014), stating that "no otherwise qualified handicapped individual in the United States . . . shall solely by reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subject to discrimination under any activity receiving federal financial assistance" (Section 504, 29 U.S.C. § 794(a), as cited in Kaplin & Lee, 2014).

In 1975, Public Law 94-142, known in its present form as the Individuals with Disabilities Education Act (IDEA) was passed, proclaiming the right of all children, including those with disabilities, to a free and appropriate education. (Yell, Rogers, & Rogers, 1998). The IDEA requires that transition planning for students in special education be developed by age 16. The transition plan, as with other educational planning, is to be individualized to the needs of each student. For students who are qualified to pursue HE, the transition plan is therefore required to address transition to higher education; in fact, some type of postsecondary education is now included in over 80% of the transition plans of special education students (Newman et al., 2011). The

IDEA thus established formal mechanisms for facilitating the entry of SWD, including those who require AAC for communication, into higher education settings.

In 1990, access to HE by SWD was further impacted by passage of the Americans with Disabilities Act (ADA), a federal law designed to guard against discrimination on the basis of disability. The ADA has several sections which provide clarification regarding the responsibilities of employers and other institutions regarding individuals with disabilities. Title I of the ADA prohibits employment discrimination against *a qualified individual with a disability*, which is defined as an individual who can perform necessary functions of his or her desired position, to include individuals who can perform job functions with or without reasonable accommodations. (Kaplin & Lee, 2014).

Reasonable accommodations may include such measures as modification of existing facilities to make them usable by employees with disabilities; modification of work schedules; and provision of assistance in the form of trainers, interpreters, or readers. The ADA requires provision of accommodations, unless the accommodation presents an *undue hardship* for the institution, as determined by the nature and costs of the accommodation, available financial resources, and the operational structure of the institution (Kaplin & Lee, 2014).

Title II of the ADA is of particular relevance to public higher education institutions because it explicitly extends these principles of nondiscrimination to higher education settings, by prohibiting discrimination on the basis of disability regarding “participation in” or “benefits of...services, programs, or activities” on the basis of disability by “public entities,” which includes public colleges and universities. Title III of the ADA provides further clarification as to the circumstances under which

accommodations are required. Of particular interest to this study is the requirement that employers or institutions provide accommodations unless it “can demonstrate that taking those steps would fundamentally alter the nature of the goods, services, facilities, privileges, advantages, or accommodations being offered or would result in an undue burden, *i.e.*, significant difficulty or expense.” (United States Department of Justice, n.d.). The implication of this requirement for HE leadership is that HE institutions, including faculty, staff, and administration, must provide reasonable accommodations to students with disabilities, provided the nature of the educational program or activity is not fundamentally altered; that is, the student with disabilities is expected to meet the same standards and outcomes as students without disabilities.

The reduction in legal barriers to HE for SWD has allowed increased HE enrollment rates for SWD in the years since the enactment of the ADA and Section 504. The enrollment rate for SWD does remain lower than that of non-disabled individuals. Blackorby and Wagner (1996), in a longitudinal study of postsecondary activities of students with disabilities, found that, by five years post-high school graduation, only 37% of participants with disabilities had enrolled in higher education, compared to 78% of non-disabled students of the same age. A similar, though smaller, enrollment gap was found in a 1999 study by the National Center for Education Statistics (NCES), which revealed that 63% of all high school graduates with disabilities enrolled in postsecondary education, compared to 70% of nondisabled students of the same age.

However, despite this gap, the HE enrollment of students with disabilities has steadily increased over the past three decades (NCES, 1999; NCES, 2006). In the 1995-1996 academic year, 6% of college students self-identified as disabled (Henderson,

1995). By the 1999-2000 academic year, 9% of undergraduate students reported having disabilities (NCES, 2003), and by 2003-2004, this percentage had increased to 11.3% of undergraduates (NCES, 2006; Raue et al., 2011). The significance of this increase in enrollment for my study is that research such as this, designed to impact students with disabilities, has the potential to impact an increasingly large proportion of the population of students enrolled in HE.

However, while SWD constitute a greater presence on HE campuses than in prior decades, as a group SWD have not attained equivalent outcomes to nondisabled students. SWD, on average, have lower completion rates and take longer to complete degrees compared to their nondisabled peers (NCES, 1999; Raue et al., 2011). The cause of this difference is likely multifactorial. Belch (2004), based on analysis of factors leading to student attrition, noted that the reasons why students fail to complete degree programs are often complex. However, even considering the multiple factors that may contribute to student attrition, the chances of completing a degree program, in general, are reduced by the presence of a disability (DeFur, 1996; Harris & Associates, 2000; Harris & Associates, 2010).

The relevance of the apparent achievement gap between college students who have disabilities, versus those who do not, to my research is twofold. First, in a practical sense, with increased public demands for accountability on the part of HE institutions and HE leadership (Mumper, Gladieux, King, & Corrigan, 2016), the importance of studying such trends in student completion rates is greater in the 21st century than has been the case in any other period in HE in the United States. Second, the fact that discrepancies exist leads logically to the question of why they exist. In terms of Astin's model,

differences in outcomes (O) requires consideration of inputs and environment; in this study, both the input (I) and environment (E) components of higher education will be considered in terms of how students with a particular input factor (AAC user) experience the higher education environment.

Facilitators and Predictors of Success

The next section of the review will address factors impacting the success of SWD in HE. A critical factor impacting the success of SWD is availability of sufficient, appropriate support (Getzel, 2008; Raue et al., 2011). Increased availability and specialization of support for SWD has accompanied the development of increased opportunities for participation in HE. Unlike K-12 educational settings, in which schools are required to provide the necessary supports to ensure a free and appropriate education for SWD, in higher education settings the responsibility for initiating and arranging disability-related services lies with the student (Getzel, 2008; U.S. Department of Education, Office of Civil Rights [U.S. DOE, OCR], 2011). Typically, services are coordinated by disability offices or service units of colleges and universities. The disability service unit may support students in a variety of ways, such as functioning as a liaison between SWD and faculty members, providing counseling or mentoring programs, and coordinating access to necessary equipment (U.S.DOE, OCR, 2011). The provision of accommodations is not mandated in every circumstance in which SWD are enrolled in HE. Disability laws only require that SWD have equal access to resources and programs, which may or may not involve accommodations (Grasgreen, 2014; Grossman & Colker, 2015; Kaplin & Lee, 2014).

In order to receive accommodations, students are typically required to provide evidence of the disability. Many institutions require that students register with campus disability services in order to receive accommodations and many also require students to provide medical documentation of the disabling condition (U.S.DOE, OCR, 2011), although these practices are not fully supported by current disability laws (Grasgreen, 2014; Grossman & Colker, 2015). Raue et al. (2011) found that 92% of institutions who enrolled SWD required verification of student disabilities for some purpose. Of those who imposed the requirement, 44% accepted an Individualized Education Plan (IEP) from a secondary school as sufficient documentation, 44% accepted a secondary school 504 plan, and 80% accepted results of a comprehensive evaluation by a vocational rehabilitation agency (Raue et al., 2011).

The nature of the support provided to students with disabilities is diverse, just as the nature of disabilities themselves is quite diverse. Common types of support include modification of the physical environment, provision of specialized equipment, or modification of learning activities or assessment procedures. For example, architectural modifications, such as ramps, wheelchairs, and doorways wide enough to accommodate wheelchairs, may be made to improve physical access for students who have limitations in mobility (Scott, McGuire, & Shaw, 2003). For other types of disabilities, a variety of procedural modifications and auxiliary aids may be employed, depending on student's needs and institutional resources. Examples of procedural modifications include testing time, alternate test format, alternative testing environment, breaks during instruction or testing (U.S. Government Accountability Office, 2011), provision of supplemental

printed materials to accompany lectures preferential seating and preferential scheduling (Raue et al., 2011).

Regarding auxiliary aids, the U.S. DOE, OCR (2011) provides several examples of auxiliary aids that may be required, such as electronic devices and Braille materials to support access to printed materials for visual impairment, telecommunications devices for deaf students, voice synthesizers, note takers, electronic readers, and interpreter services, among others. Students with certain medical or psychiatric conditions may require still other types of accommodations, such as flexibility in class attendance (Collins & Mowbray, 2005). According to Raue et al. (2011), during the 2008-2009 academic year, 93% of institutions that enrolled students with disabilities provided additional testing time as an accommodation; 72% reported accommodations provided directly faculty, such as copies of lecture notes; 77% provided classroom note takers; 72% provided assistance with study skills or learning strategies; 72% provided alternative exam formats; and 70% provided adaptive equipment and technology (Raue et al., 2011).

Closely related to the provision of accommodations is the assistance provided by disability service units to SWD in making the transition from secondary to postsecondary education. Janiga and Costenbader (2002) investigated factors related to successful transition of students learning disabilities from high school to college from the perspective of disability services coordinators. Coordinators of 74 colleges and universities responded to a survey designed to measure their level of satisfaction with transition practices provided for students with learning disabilities. Results indicated low to neutral levels of satisfaction overall, with lowest levels of satisfaction associated with student self-advocacy skills, student and family awareness of available services, and

willingness of students to seek assistance from disability service units. It is anticipated that self-advocacy skills and awareness of available services may also play a role in the HE experiences of the participants in the current study.

The benefits of appropriate support in fostering achievement of educational goals by SWD is illustrated in a study by Hendrickson, Therrien, Weeden, Pascarella, and Hosp (2015). Researchers investigated the first-year experiences of non-degree-seeking students with intellectual disabilities who were enrolled in a specialized, immersive on-campus program of study designed to provide comprehensive support. Participants completed selected scales from the National Survey of Student Engagement (NSSE) (Indiana University, 2015), a national survey used to measure student involvement. Results showed that the first-year experiences of participants were comparable to that of non-disabled peers in terms of perceived learning gains and quality of interactions with faculty and peers. Although the study does not address degree completion among traditionally “qualified” HE students, the results do support the notion, as advocated by Liasidou (2014), that students with disabilities can glean benefits from the HE setting, if supports are in place to facilitate full participation in both academic and social aspects of the HE experience.

The availability and use of available support SWD was also addressed by O’Neill, Markward, and French (2012), in a retrospective study designed to identify the nature of services used and predictors of success among 1289 students from three universities. Researchers analyzed relationships among student characteristics, the types of services for which students qualified, graduation rates, disability type, and predictors of graduation. Results indicated that students qualified for a variety of services, most

commonly extended testing time and use of note taking services. The strongest demographic predictors of graduation were age (older than 23 years), sex (female), and having a physical disability rather than cognitive or mental disability. The forms of accommodation or assistance that most strongly predicted graduation were alternative format tests, flexibility in assignment and test dates, assistance with learning strategies/study skills, and physical therapy/functional training. Students who used note taking services, classroom assistants, and assistive technology were less likely to graduate. The authors proposed, as a potential explanation for the latter finding, that students who used these particular services tended to have multiple or more severe disabilities (O'Neill et al., 2012), and therefore more complex needs and barriers to completing their programs. These findings, applied to the current study, suggest that AAC users may be among the highest-risk SWD in terms of attrition. Because AAC is a form of assistive technology, and because AAC users frequently have coexisting motor impairments that require the use of personal assistants (Beukelman & Mirenda, 2014), AAC users belong to at least one and possibly two categories of students found by O'Neill et al. to be least likely to graduate.

In addition to availability of appropriate supports, another factor that has been found to support success of SWD in HE is self-determination. Sarver (2000) investigated the relationship between self-determination and academic success, as measured by grade point average, in 88 participants with learning disabilities who were registered with the disability services unit in a four-year institution. Higher total scores on the Self-Determination Student Scale (Hoffman, Field, & Sawilowsky, 2004) were significantly correlated with college GPA. Getzel and Thoma (2008) conducted a qualitative study

involving focus groups with 34 undergraduate students. Results indicated that participants considered self-determination skills to be very important to their success in higher education. Four main components of self-determination skills were identified: problem solving, self-awareness, goal setting, and self-management. Participants noted the importance of self-advocacy skills such as seeking services on campus, forming relationships with professors and instructors, developing support systems on campus, and self-awareness. The authors recommended further research on self-determination and strategies to increase the retention rate of SWD enrolled in postsecondary education programs, especially research that incorporates the perspectives of SWD.

Barriers to Success for SWD

While the previous section addressed factors associated with success in HE for SWD, the next section will address barriers to success. Despite legal requirements and availability of services and equipment for provision of accommodations, SWD continue to encounter obstacles to successful participation in HE. Hadley (2011) discusses such obstacles in terms of equality between educational opportunities provided for SWD versus opportunities provided for nondisabled students. Hadley explains that for SWD, as for non-disabled students, the value of the college experience lies in the fostering of multiple aspects of development. The benefit of the intellectual, social, emotional and psychological development that college provides is one of the key assumptions underlying student participation in HE. SWD face greater challenges in attaining this development, both inside and outside the classroom, than do nondisabled students. Some of these challenges stem from the effects of the disability itself (Hadley, 2011) as may be the case with participants in the current study, whose disabilities may hinder both

interactions with others and access to locations or activities (Black, Vahratian, & Hoffman, 2015). Another type of challenge involves the navigation of the logistics of disability service, such as accessing needed supports, self-advocacy skills, and communicating openly with others concerning one's disability (Hadley, 2011).

The additional challenges and barriers to participation faced by SWD in HE raise a specific issue concerning equity in opportunity for SWD: the notion of inequality in the level of effort and capability required to be considered qualified for higher education. For the purposes of my research, participants were assumed to be qualified for higher education because they had met admission requirements for a higher education institution. However, as Hadley (2011), proposes, it is reasonable to postulate that students with disabilities, given the extra challenges they face, must actually exceed the efforts and/or capabilities of their nondisabled peers in order to achieve the same level of "qualification." In other words, to obtain the same opportunity afforded to "average" performing non-disabled students, a disabled student must out of necessity be "above average" in some aspect of performance, effort, and/or ability to compensate for the challenges posed by the disability.

The nature of challenges and obstacles faced by SWD has been addressed in several studies. West, Kregel, Getzel, Zhu, Ipsin, and Martin (1993) investigated the perceptions of SWD regarding satisfaction with services and accommodations, perceived barriers, and recommendations for improvements in accessibility. The 761 participants, who were enrolled in multiple HE institutions, responded to a survey which included both closed-ended and open-ended questions. While most indicated moderate to high levels of satisfaction, various barriers to full participation and achievement were identified,

including: (a) physical barriers, such as inaccessibility of facilities; (b) policy and procedural barriers, namely failure of institutions to provide requested accommodations; and (c) attitudinal barriers in the form of stigmatization and discrimination by faculty, staff, and peers. The current study, while focusing on AAC users, will allow for exploration of how students experience and manage these barriers in even more depth, through personal interviews.

Dowrick, Anderson, Heyer, and Acosta (2005) conducted a more recent study concerning barriers faced by SWD in HE. This qualitative study, employing focus groups on 10 different campuses, was designed to characterize perceptions of students with disabilities regarding their experiences with access and barriers to participation in higher education. Participants valued the services provided by the campus disability services units, but voiced a need for improvement in coordination of support services. Findings also included a perceived gap between institutional policies and actual practices concerning disability; for example, participants reported that they struggled to obtain needed equipment, physical access to facilities, and accommodations to which they were entitled per institutional policy. Participants also sensed that non-disabled people had negative attitudes and assumptions about SWD, which impacted both the HE experience and subsequent employment. The authors recommended that additional research be conducted using the perspectives of disabled students as an evidence source. (Dowrick, Anderson, Heyer, & Acosta, 2005).

Hong (2015) conducted a qualitative study to increase understanding of factors that affect postsecondary outcomes for SWD by examining the perceptions of students regarding transition into postsecondary settings and barriers to participation. As in the

current study, Hong (2015) gave consideration in the study design to Astin's (1993) premise that high levels of engagement yield greater learning. Participants were 16 students with various types of disabilities and medical diagnoses, who were enrolled in four-year and two-year programs. Analysis of data from reflective journaling, conducted over a period of 10 weeks, revealed that students experienced barriers to participation in four main areas: (a) faculty perceptions, including lower expectations by faculty for SWD, and negative past experiences with requesting accommodations; (b) fit of advisors, which involved lack of knowledge or unresponsiveness of academic advisors, sometimes to the detriment of student progress; (c) general stressors such as physical demands, mental/emotional struggles, and social stigmatization; and (d) quality of support services, including discomfort and a sense of intimidation when dealing with disability services staff (Hong, 2015). These results, accompanied by illustrative excerpts from students' writings, suggest that SWD have obstacles to participation in HE that stem from both internal factors (e.g., the disability itself) and perhaps even more from factors in their environment. The results not only appear to confirm findings in the literature regarding varying degrees of negativity in faculty attitudes regarding SWD, but also convey the magnitude of the negative impact that poor support and stressors can have on the experience of SWD.

Denhart (2008) also addressed barriers to participation in HE, specifically students with learning disabilities, regarding general experiences in HE, experiences with assessment and accommodations and barriers to access, in a qualitative study. As in my study, the Denhart study employed a critical disability theory framework. One of the strongest findings was that participants were reluctant to ask for accommodations. Given

the more visible nature of disabilities that lead to AAC use, this may less of an issue for AAC users, because the basis for accommodations may be more apparent to faculty and administrators. A sense of marginalization, of being “different,” was another recurring theme. Results echoed Hadley (2011), in that participants expressed the belief that they had to work harder than their non-disabled peers to complete the same work, and were not consistently able to achieve a product reflective of the amount of time effort expended (Denhart, 2008).

A sense of marginalization among SWD in higher education was also found by Hutcheon and Wolbring (2012). The researchers investigated the impact of disability on self-perceptions and identity development among SWD at a four-year Canadian university, focusing on the impact of medical models of disability on higher education policy. Semi-structured interviews were conducted with seven participants, who had different types of disabilities, including motor, speech, and mental health concerns. Participants indicated a perceived status of being different from “normal” functioning, which had strongly impacted their sense of identity; they recognized positive as well as negative effects of their disabilities and coping strategies in their daily lives. Participants advocated changes in higher education culture and policy, particularly increased awareness of disability issues, embracing of individual differences in both disabled and non-disabled populations, and making the process of obtaining accommodations less cumbersome and adversarial (Hutcheon & Wolbring, 2012).

The authors also analyzed the linguistic features of the disability policies of selected American and Canadian universities to investigate the impact on HE policy of medical models of disability, in which disability is viewed based on deficits in function

rather than as a dimension of diversity. Compared to policies related to other types of differences, such as sexual identity, disability policies contained stronger and more frequent negative language, connoting disability as a burden, a hindrance to normal operations, which the researchers interpreted as evidence of the influence of medical models, which view disability as deficit-based rather than as a dimension of diversity (Hutcheon & Wolbring, 2012). These findings support the need for additional policy-oriented disability research. Findings regarding the negative connotations of policies related to disability, and the participants' call for policy changes, are directly addressed by one of the research questions for the current study: "What changes in higher education policy and/or practices do AAC users recommend to improve HE outcomes?"

Faculty Attitudes

An aspect of higher education that has received increased attention in recent years as a potential barrier to the success of SWD is faculty attitudes and practices concerning education of SWD, especially regarding provision of accommodations. The rationale for investigating faculty attitudes in this context is that impact of student-faculty interactions on student learning and satisfaction has been well documented in the higher education literature. Wilson (1975, as cited in Cuseo, 1998) conducted surveys and interviews with 4,815 students and 1,472 college faculty over a period of four years, and found that faculty members who were rated as students and colleagues as being excellent instructors and having the greatest impact on student learning were those who interacted the most frequently with students outside of class. Kuh (1981), in an extensive review of the literature related to institutional quality, found considerable empirical support for the impact of non-classroom interactions on the quality of the educational experience.

Likewise, in an analysis of data collected from over 500,000 students over 25 years, Astin (1993) found that interactions with faculty had a significant impact on student retention; students who spent more hours per week interacting both formally and informally with faculty members had higher retention rates. Student-faculty interactions also impacted other indicators of student achievement, including college GPA, degree attainment, graduating with honors, and enrollment in graduate or professional school, as well as student attitudes toward the purpose of education: students who spent fewer hours per week talking with faculty outside of class were more likely to see increased earnings as the primary purpose of their education, rather than learning or personal development (Astin, 1993).

Given the impact of faculty-student interactions on multiple aspects of student development, the literature on faculty attitudes toward SWD is of concern relative to the current study. Several studies have identified generally positive or at least neutral attitudes among university faculty toward providing accommodations for SWD, depending on the specific research question (e.g., Cook, Hennessy, Cook, & Rumrill, 2011; Cook, Rumrill, & Tankersly, 2009; Skinner, 2007; Zhang et al., 2009). However, there is evidence in the literature of discrepancy between the degree to which faculty express support for SWD in the abstract, versus provision support in actual practice. Cook, Rumrill, and Tankersly (2009), in a study involving a survey of 307 faculty members, found that that faculty ratings of the degree to which certain practices (universal design, knowledge of legal issues, and knowledge of disability characteristics) were actually being implemented within their institution were significantly lower than ratings of the importance of these practices, indicating a gap between beliefs and practice.

Furthermore, ratings became more negative as the specificity of the question (e.g., providing specific examples of scenarios involving SWD) increased (Cook, Rumrill, & Tankersly, 2009). This finding supports the inclusion of specific questions about student-faculty interactions in the current study, because one implication of this belief-practice gap is that faculty, even if they do not actively or consciously object to accommodating SWD, may fail to provide adequate support or provide optimal opportunities for interaction.

A consistent finding across studies of faculty attitudes toward SWD is that faculty attitudes vary depending on the nature of the accommodation provided or requested. Despite overall positive ratings of support for accommodations, Cook, Rumrill, and Tankersly (2009) found variability among subscales in regard to agreement between agreement and implementation ratings. Sweener, Kundert, May, and Quinn (2002) also found variability according to accommodation type in an investigation of self-reported levels of comfort with provision of accommodations among faculty members at a two-year college. Respondents were most comfortable providing accommodations requiring provision of extra time, extra space, or use of auxiliary aids, and were least comfortable with course substitutions, increasing frequency of exams, allowing late withdrawal from a course, and allowing extra credit assignments for SWD. Similarly, Skinner (2007), based on a survey of 438 HE faculty, found that disability accommodations receiving the lowest ratings of support were alternate assignment format, extended deadlines, extra credit assignments, and providing a copy of the instructor's notes.

Sweener, Kundert, May, and Quinn (2002) and Skinner (2007) concluded, based on their respective results, that faculty were more supportive of certain accommodations

because these accommodations were the least demanding for the faculty members to provide. However, this conclusion is not fully supported by the data in either study, as some of the lowest-supported accommodations in both studies were also some of the least labor-intensive. An equally plausible conclusion is that faculty were less likely to support accommodations that would require the greatest divergence from course requirements or activities, perhaps due to questions about academic integrity. Artiles (1998) described a “dilemma of difference,” which refers to a perceived conflict between the need and/or desire to facilitate access for SWDs and the need to ensure course outcomes are met.

Concerns among college faculty regarding academic integrity and fairness relative to students with disability are related to the “fundamental alteration” element of the ADA, as referenced in the previous section. Instructors are not required to provide accommodations that would fundamentally alter instruction or content (U.S. Department of Justice, n.d.); however, there is no universal standard as to exactly what constitutes fundamental alteration. Instructors must determine whether the nature of proposed accommodations is likely to substantially change course outcomes (Kaplin & Lee, 2014). Skinner’s observation of the potential for conflict between accommodations and “discipline-specific outcomes” (p.33) illustrates the dilemma of difference, and the difficulty academic faculty may perceive in reconciling the mandate to accommodate with the need to ensure outcomes are achieved. This difficulty, in turn, could potentially negatively impact attitudes toward providing accommodation.

In addition to concerns related to maintaining expectations regarding course outcomes, there is also evidence to suggest that faculty members have concerns regarding

fairness of accommodations. One of the lowest-rated items in the Cook, Rumrill, and Tankersly (2009) study was the item, “Faculty members at my institution understand that reasonable accommodations do not give students with disabilities an unfair advantage” (p.90), indicating that respondents tended to perceive accommodations as unfair, and/or to believe that their colleagues perceived accommodations as unfair. Concerns regarding fairness were also reported by faculty participants in a qualitative study by L. Cook, Hennessey, P. Cook, and Rumrill (2011). The participants themselves, who had all recently undergone training related to SWD, tended to express a belief that accommodations were fair and necessary, but reported that many of their colleagues perceived accommodations as giving SWD an unfair advantage (Cook, Hennessey, Cook, & Rumrill, 2011). This attitude may occur more frequently toward students with certain types of disabilities; in the Cook, Rumrill, and Tankersly (2009) study, for example, ratings for both importance and agreement ratings were generally higher for disabilities with more obvious visual features, and lower for “invisible” disabilities, such as learning disabilities (LD), attention deficit hyperactivity disorder (ADHD), chronic medical conditions, and psychiatric conditions.

In addition to findings regarding the nature of faculty attitudes and beliefs, higher education research has also addressed benefits associated with the cultivation of positive attitudes and practices among faculty regarding SWD. These benefits apply not only to those students who have requested accommodations, but also to students who have undiagnosed or undeclared learning disabilities, or other students at risk for academic difficulty, such as first-generation college students (Gobbo & Schmulsky, 2014). An example of a supportive practice that benefits all students is universal design. The

concept of universal design originally developed the 1970's in the fields of architecture and interior design. In that context, universal design refers to the integrating features into the design of the building, that allow access by a wide range of individuals, rather than modifying or adding features at a later time. For example, a ramp might be incorporated into the design, which would allow access for individuals using wheelchairs, strollers, or other equipment (Scott, McGuire, & Shaw, 2003). Universal design for instruction (UDI) applies the concept of universal usability to the educational setting, creating a "ground-up" approach in which universal access is built into the design, in contrast to service delivery models that focus on remediating or accommodating disabilities (Pliner, 2004; Scott, McGuire, & Shaw, 2003). Given concerns regarding the level of time, effort, and support involved in provision of accommodations (e.g., Skinner, 2007), universal design warrants consideration as an approach to instruction that is efficient and accessible.

However, universal design may represent a departure from established methods of instruction for many faculty members. Lombardi, Murray, and Gerdes (2011) measured self-reported faculty attitudes and actions related to three aspects of universal design in education: universal design for instruction (UDI), universal design for learning (UDL), and universal design for assessment (UDA). Positive attitudes were associated with the Inclusive Lecture Strategies, Accommodations, and Accessible Course Materials subscales, with more ambivalent responses occurring on the Multiple Means of Presentation, Campus Resources, and Inclusive Assessment subscales. Comparison of results for attitudes versus actions revealed some discrepancies. On the Accommodations and Inclusive Assessments subscales, respondents tended to give positive responses for the attitude items, but neutral or negative responses for the action items, suggesting that

respondents see value in these aspects of universal design but are not consistently implementing them, similar to results found by Cook, Rumrill, & Tankersly (2009). The authors of the Lombardi et al. (2011) suggest that the items on the Accommodations and Inclusive Assessment subscales represent practices that are more substantially different from traditional practices compared to items from the other subscales. Therefore, the gap between attitude and action in this study may reflect perceived difficulty on the part of the faculty with incorporating those actions in a way that does not substantially alter course material or standards, as discussed regarding the Sweener (2002) and Skinner (2007) studies. Lombardi, Murray and Gerdes (2011) also found that on the Multiple Means of Presentation, Inclusive Lecture Strategies, and Accessible Course Materials subscales, the action items generated more positive responses than the attitude items, indicating a greater tendency to engage in these practices than to agree with them, which may be due either to characteristics inherent in the design of the survey instrument, or awareness among respondents of the necessity of engaging in such practices to meet legal or departmental guidelines, regardless of personal beliefs about the practices.

Several studies have addressed factors that impact faculty attitudes toward SWD. Rao (2003) analyzed the extent to which several different factors impact faculty members' willingness to provide accommodations, based on responses to a questionnaire by 245 university faculty. The factors identified as having the greatest impact were department affiliation, with faculty in the colleges of education and health professions showing the highest level of willingness; previous teaching experience, and knowledge of legislation related to SWD.

Nelson, Dodd, and Smith (2001) also found differences among academic divisions in a study of faculty willingness to provide accommodations to students with learning disabilities. The 107 respondents generally indicated willingness to provide accommodations, with the exception of two low-rated items: allowing extra credit assignments to SWD when such an option was not available to all students, and allowing for misspellings, incorrect punctuation and poor grammar on examinations without penalty. College of Education faculty were more likely to give positive responses regarding the provision of a variety of accommodations. Bourke, Strehorn, and Silver (2000) found that the willingness of faculty to provide accommodations to SWD was impacted by the following factors: (a) class size, with an inverse relationship noted between class size and positive disposition toward provision of accommodations; (b) belief that the accommodations would help students succeed academically; and (c) perception of support from the academic department and from the disability services unit. The relevance of these findings to my study is that the participants have disabilities that affected their ability to participate in classroom activities, to the extent that the ability and willingness of their instructors to provide accommodations potentially had a major impact on the degree to which these participants can, or have been, successful in HE. The body of research on faculty attitudes provides insight regarding factors that may impact the manner in which faculty-student interaction, a critical component of HE learning, occurs for SWD. My study more directly examined the impact of those factors by investigating the nature of these interactions from the perspective of a specific group of SWD.

In summary, the factors that characterize the experiences of SWD in HE and impact their successful participation and completion have been studied using a variety of research questions, methods, and perspectives. A common thread among the studies reviewed in this section is the consistent recommendation for continued research in this area, particularly a call for additional research that includes the voices of students with disabilities. My study is aligned with these recommendations, in that this research aimed to give a figurative “voice” to AAC users enrolled in higher education, as a means of contributing to the body of knowledge concerning SWD in HE.

AAC Users in Higher Education

While the previous section addressed literature on the broader population of SWD in HE, this portion of the review will include research related to AAC users in higher education settings. Although few studies have directly studied this topic, several studies are found in the AAC literature that are relevant to my research in terms of research questions, findings, participant population, or applicability to AAC user in HE settings. This section of the literature review will include literature related to demographics of AAC users in higher education, issues affecting young adult AAC users, and experiences of AAC users in HE.

Characterizing the demographics of AAC users in HE is less straightforward compared to those of other disability categories. One of the limitations identified by O’Neill et al. (2012) in their study serves to illustrate the difficulty. When examining records of SWD to determine predictors of success, the authors noted that available data allowed for classification of students only by primary disability; the presence or impact of any secondary disability was unknown. The authors cited this as a limitation of the

study, because the impact of student or institutional characteristics on HE experiences could be very different for someone with multiple types of disabilities or diagnoses than for someone with a single diagnosis (O'Neill et al., 2012). AAC use is not a primary diagnosis or disability category; rather, AAC is a type of communication used by individuals who have speech impairments, and often have motor impairments as well. Therefore, it cannot be assumed that AAC users would be categorized consistently or accurately across studies of demographics of SWD in HE.

AAC users, by definition, have communication disorders; however, even demographic information concerning broader category of individuals with communication disorders is also limited. Hoffman, Li, Losonczy, Chiu, Lucas, and St. Louis (2014) estimated the prevalence of voice, speech and language disorders in adults to be 7.0% (16.5 million adults in the U.S. had had a communication disorder of more than one-week duration during the past 12 months), while prevalence in children age 3-17, calculated to include swallowing disorders in addition to speech and language disorders, has been estimated at 7.7%, with 24% of cases involving multiple disorders (Black et al., 2015). However, AAC is not required for all individuals with speech or language disorders; it is used by those with more severe communication impairments, which may occur due to a variety of conditions, both congenital and acquired. Buekelman and Mirenda (2012) identified the most common congenital etiologies of severe communication disorders as severe intellectual disability, cerebral palsy, autism, and developmental apraxia of speech, and the most common acquired conditions that lead to AAC use are amyotrophic lateral sclerosis, multiple sclerosis, traumatic brain injury, and stroke. Huer (1991), in an effort to collect demographic information specific to the

AAC population on college campuses, conducted a national survey of HE disability services units regarding the representation among the student population of individuals with conditions commonly associated with severe speech impairments. Percentages of respondents reporting enrollment of students with disorders associated with AAC use were as follows: 82.7% had students with cerebral palsy; 67.3% had students with multiple sclerosis; 62.2% had students with closed head injury; 52% had students with muscular dystrophy. All of these conditions are also likely to cause motor deficits affecting other types of movements in addition to those required for speech production. This is consistent with the status of the participants in my study, who had both communication impairments and mobility impairments. The fact that AAC users share characteristics and diagnoses with SWD of various disability types supports the applicability of findings regarding AAC users to a broader range of individuals.

Beyond demographics, another category of research related to my research is studies that address aspects of AAC that are relevant to AAC users in HE settings. Clarke (2001) conducted research involving participants of similar chronological age to the participants in the current study. The study investigated the attitudes of 17 British children and six young adults concerning AAC use. Results from semi-structured interviews were analyzed according to categories based on four components of communicative competence described by Light (1989). Positive attitudes were associated with the usefulness of the AAC device as a tool for interaction; a key theme was that AAC devices affirmed identity and self-image by giving participants “a voice.” Negative attitudes were associated with operational difficulties, issues with self-image and the sense of being “different,” and difficulties encountered during social interactions. These

findings could certainly have implications for young adults in postsecondary education settings; however, because the study did not separate the data on child participants from young adult participants, or provide information regarding the educational status of adult participants, concerns specific to educational versus vocational settings were not identified.

Bryen (2008) also conducted AAC research that included participants with some similarity to those in the current study, but with focus was on AAC technology rather than attitudes. The study used input from adult AAC users and professionals to create lists of vocabulary in several different categories relevant to adult roles, one of which was college life, and analyzed extent to which the vocabulary was available in the three most widely used commercially available AAC symbol sets. The first group of participants, AAC users who were at least 18 years old, were recruited via an invitation posted on ACOUG, a strategy which I also employed in my methodology. Besides age, other delimitations were that the participants used an AAC device and had current or recent involvement in activities related to the focus categories of the study, one of which was college life. The second group consisted of professionals who were invited to participate based on their areas of expertise. After generating vocabulary lists based on the input from the 61 participants, the three symbol sets were analyzed to determine the representation of vocabulary from the generated lists in each one. Vocabulary for college life was one of the most poorly represented categories; of the 325 vocabulary words in the college life category, the three symbol sets contained 35%, 51%, and 48% of the lists, respectively; mean percentage was 48%. The ramification of these findings for AAC users in college settings who rely on any of these three widely used software programs

for communication is that only half of the vocabulary that they are likely to need will be available on their device, which places them at a disadvantage in a setting where communication is vital to success. Even if the user has a device with the capability for manual composition outside of the symbol set (e.g., keyboard spelling), this adds to the time required for device programming, and more critically, adds to the time required to compose responses during verbal exchange, which could seriously hinder the ability of these students to participate in class discussions or to interact with faculty, if they are not given sufficient time to respond.

Another area of related research concerns how AAC users are viewed by potential communication partners in a higher education setting. Achmadi et al. (2015) investigated the perceptions of typically functioning undergraduate students in a New Zealand university regarding three communication modes commonly used for AAC: speech-generating device (SGD), manual signing, and picture exchange. The 104 participants rated the SGD highest in terms of intelligibility, ease of acquisition, effectiveness and acceptability and overall preference. Manual signing was rated as more difficult to learn but was preferred over the third option, picture exchange. Applicability of results was limited due to the fact that ratings were based on video clips of monologue style speech, rather than communication exchanges, and the fact that the person demonstrating the AAC methods on the video was a non-disabled volunteer, rather than an authentic user. Hoag and Bedrosian (1992) investigated perceptions of AAC in a more direct manner by using videos of an actual AAC user engaging in scripted interactions with a peer in order to compare ratings of communicative competence by 48 undergraduates across various conditions. Ratings were higher when the AAC method involved speech output (digitized

or synthesized speech); when the message was phrase-length, rather than single words; and with reauditorization (repetition of the message) by a communication partner. An unpublished doctoral dissertation by Hyppa-Martin (2016), found similar results regarding reauditorization; ratings by 64 undergraduate student participants in this study were higher for attitudes toward AAC use, ease of understanding, and willingness to interact with an AAC user when reauditorization was used. Collectively, these findings suggest that young adults in a higher education setting who are not AAC users are likely to interact more readily and comfortably with peers who do communicate via AAC when the AAC method involves some form of speech output, whether from the device or from a partner. In terms of Astin's (1993) model, the AAC method is an input factor, in that it is a characteristic of how the student communicates; however, this input factor directly impacts the environment factor, because the mode of communication influences how the student interacts with the environment.

In addition to interactions with faculty members, the environment component of Astin's input-environment-output model includes interactions with other students. The AAC literature includes several studies which address how AAC and AAC users are perceived by typically functioning individuals. Gorenflo and Gorenflo (1991) examined the impact of three different AAC techniques, and the impact of having background knowledge concerning the disability of an AAC user, among 151 nondisabled university students. Participants viewed videotaped interactions between a nondisabled individual and an AAC user who employed unaided techniques, an alphabet board, and a speech generating device. Half of the participants also received factual information about the

AAC user's disability. Results indicated more favorable attitudes associated with the speech-generating device and with having the factual information about the AAC user.

Ray (2015) investigated challenges associated with using AAC in daily life in an interview-based case study that examined the experiences of an individual with amyotrophic lateral sclerosis (ALS) and the individuals' spouse. Although the AAC user in the Ray (2015) study was not in a higher education setting, several of the conclusions were relevant to the present study. The author stressed the need for AAC users to be allowed time to decide upon and formulate messages and responses. Minimizing environmental obstacles and having supportive communication partners available were also identified as important factors in successful communication via AAC.

Research has also been conducted which more directly addresses the topic of higher education experiences of AAC users. McNaughton and Nelson (2007) conducted a review of existing published research in order to devise recommendations regarding AAC technology needs specific to AAC in different settings, including postsecondary education. Findings suggested that that AAC users were historically less likely to enter postsecondary programs than students with other common types of disabilities, perhaps due to the challenge of having multiple disabilities, poor support for AAC use and transition planning at the high school level, or a combination of these factors. Key technology needs identified for postsecondary settings were quick access to a wide range of vocabulary; devices capable of handling multiple functions; and availability of "integrated cognitive tools" (p. 219) such as electronic calendars. The authors also identified general technology needs that would be applicable across settings: enhanced interconnectivity of AAC technology with distance communication technology,

enhancing portability and cosmetic appeal of devices, and improved control of visual, auditory, and privacy settings. Although the review encompassed a broad scope of literature and employed a systematic method of analysis, a limitation of the review is that findings regarding technology needs were not corroborated through comparison with input from actual AAC users.

The impact of the use of a speech-generating device (SGD) on major life activities, including postsecondary education as well as other types of activities, was a major focus of the development of Augmentative Communication and Empowerment Supports (ACES), an initiative begun in 1995 at Temple University. Bryen, Slesaransky, and Baker (1995) investigated the perspectives of 17 AAC users who participated in the program during the first year of implementation. Participants attended a two-week on-campus immersion program and remained engaged in a one-year follow-up assistance program designed to assist AAC users in becoming competent communicators by assisting them with obtaining and/or mastering speech-generating devices (SGD), developing strategies for optimal use, and learning how to use the device to effectively communicate in daily life. The majority of participants indicated that the use of a speech-generating device helped them substantially with learning new skills and communicating in daily life. In response to open-ended questions regarding AAC impact, participants provided various examples of how the device would impact learning and communication, such as communicating with peers in class, communicating with a wide variety of people, expressing opinions, talking on the telephone, completing homework assignments, and giving presentation. One participant indicated that his new AAC device was “the missing link to help me secure my college degree” (p. 84).

Atanasoff, McNaughton, and Light (1998) conducted a later study involving seven participants in the same program, ACES, which investigated the perspectives of AAC users, who all had diagnoses of cerebral palsy and were enrolled in a four-year university program, regarding their daily communication needs. The goal of the research was to characterize the nature of communication demands the students encountered, what communication techniques or strategies the students used, and how effectively these strategies met their communication demands. Participants were recruited through ACES. In response to a survey that included both closed-ended and open-ended questions, participants provided demographic information, rated the frequency with which they encountered various communication situations and the effectiveness of their AAC systems and strategies in those situations, and described interactions with faculty and other students. Results indicated that the participants were required to engage in a wide variety of written and verbal forms of communication, including classroom interactions with instructors and other students, asking questions, small group discussions, completing written assignments, note taking, distance communication methods such as telephone and email. AAC users were generally successful with a wide variety of both topics and strategies, but reported the greatest success being understood by others when using email to communicate. The authors recommended that future research continue to examine features of the environment, disability services, and education most conducive to the success of individuals with severe disabilities in college settings (Atanasoff et al., 1998).

A limitation concerning these findings as applied to current AAC users in higher education settings is that communication technology and its applications have undergone considerable changes since the Atanasoff et al. study was conducted in 1998, such as

increased use of text messaging (Snowden, 2002), development of social media applications, and growth in distance education models in higher education. Multiple developments in AAC technology have also occurred within the same time frame, including expanded device input options (e.g., eye gaze, Morse code), improved coordination of AAC with other functions, such as environmental controls and internet use; improvements in voice synthesis, and improved access due to insurance coverage for devices (Beukelman & Mirenda, 2012). The present study will address research needs identified by Atanasoff et al. (1998) in the context of newer communication and AAC technologies.

Ashby and Causton-Theoharis (2012) conducted a more recent study of the perspectives of AAC users, as well as barriers and strategies for success in higher education, but limited the study to facilitated communicators. Facilitated communication is a form of AAC which differs from conventional AAC methods in terms of access: instead of using a system configured to allow the user to independently control messages, the facilitated communicator is instead dependent on a facilitator, who provides physical assistance, such as stabilizing the arm, while the communicator types out messages. The qualitative study by Ashby and Causton-Theoharis used in-depth interviews with 14 facilitated communicators in HE settings, all of whom had been diagnosed with autism spectrum disorder, and with other stakeholders, including facilitators. Major themes identified through analysis of responses included the need for a variety of forms of support, particularly visual material; the value of working with other students in small groups; importance of communicating with faculty regarding specific accommodation needs; and a frequent sense of social disconnection from peers. The authors concluded

that the findings supported the need for modification of existing expectations, biases, and physical barriers that perpetuate unequal access to higher education by preventing full inclusion of students with significant disabilities. This study and my research share both a social justice orientation and an interest in the experiences of AAC users, although my participants were conventional AAC users rather than facilitated communicators.

More recently, Chung, Behrmann, and Thorp (2016) conducted a qualitative study investigating the perspectives of five high-tech AAC users on their current or prior experiences in post-secondary education programs, focusing on the nature of, benefits to, and barriers associated with using high-tech AAC. Participants consistently indicated that their AAC device enabled them to communicate in a variety of circumstances and for multiple purposes, much more so than low-tech (i.e., gesture- or paper-based systems). Barriers most frequently identified by the participants were related to characteristics of the AAC devices and logistics of AAC use. External attitudinal barriers were also identified, though less consistently; some participants felt that non-disabled people often misunderstood their disability and underestimated their capabilities. Despite the overlap in subject matter with my study, the Chung, Behrman, and Thorp study is more practical in nature, in that findings are interpreted in light of support for the benefits of AAC use in general, and specific strategies that can be used by AAC users to enhance AAC use. The present study, in contrast, seeks interpretation of participants' experiences relative to how being an AAC user impacts access to the "environment" (Astin, 1993) component of a student's higher education, and implications of for higher education policy.

The experiences of AAC users are important not only for the sake of AAC users themselves, but also for the sake of the implications such knowledge has for other

individuals with disabilities. In the Atanasoff et al. (1998) study, for example, in addition to the finding that AAC users were strongest with written, electronic forms of communication (email), another result of the research was participants' recommendations for behaviors on the part of their communication partners that would facilitate successful communication: slowing down, listening carefully, and giving honest feedback as to their understanding of the AAC user's message. These recommendations would also apply to individuals who have communication barriers of a different nature, such as nonnative English speakers and students with other types of communication disorders, such as stuttering, expressive language disorders, or autism spectrum disorders.

Summary

This literature review examined literature relevant to experiences of AAC users in HE settings. Passage of the Rehabilitation Act, ADA, and IDEA established legal protection of the rights of SWD to participate in HE; however, SWD continue to encounter obstacles that hinder attainment of equivalent HE outcomes to those attained by non-disabled students. These obstacles stem from student characteristics, such as the nature of the disability and level of self-determination skills, and from factors in the HE environment, particularly faculty attitudes toward SWD and difficulties associated with accessing and using appropriate services. A limited number of studies have directly concerned AAC users in HE settings. Other studies in the AAC literature have addressed issues related to AAC use by adults, such as available technologies and challenges and benefits of using AAC, that are relevant to the young adult participants in the current study. A common conclusion among the authors of the studies included in this literature review is that more research is needed concerning factors that hinder or facilitate

achievement of desired HE outcomes among AAC users and students with other types of disabilities, particularly research that includes the perspectives of the students themselves. This study will address identified research needs by investigating the perspectives of AAC users concerning their experiences in HE, barriers to participation in HE, and recommendations for changes in HE policy or practices.

CHAPTER 3

METHODOLOGY

This study investigated the perspectives of individuals who use AAC regarding their experiences in HE, barriers that they have encountered to participation in higher education (HE), and HE policies and practices that facilitate or hinder participation. Findings were interpreted relative to critical disability theory and Astin's (1993) input-environment-output (IEO) model of student development in HE. This study contributes to the development of knowledge concerning two aspects of higher education leadership: maximizing persistence and achievement in an increasingly diverse population of students, and ensuring equal access to higher education benefits by all qualified students.

Research Design

This study was designed to seek answers to the research questions stated in Chapter 1, by conducting an in-depth investigation of perspectives of AAC users concerning their HE experiences. To that end, a qualitative case study design was employed, using participant interviews as the primary data source. According to Yin (2013), case study research is the method of choice when the researcher "desire [s] to understand complex social phenomena." (p. 5). This case study examined relationships between two complex phenomena: (a) disability, specifically severe speech impairment;

and (b) student engagement with the HE environment. A qualitative, interview-based approach was chosen for this case study for two reasons. First, a qualitative, interview-based approach facilitates in-depth investigation of personal experiences of this heterogeneous group of participants more effectively than quantitative methods. Second, this approach is more aligned with the critical disability theoretical framework, in which personal interviews and individual perspectives are considered valuable data sources for gaining deeper understanding of social phenomena (Seidman, 2013).

Participants

Participants were four individuals who use AAC to communicate due to motor speech impairments. Three were students who had completed or had been enrolled a higher education program within the past two years, two at institutions within the United States and one in New Zealand. Prior to recruiting participants, the maximum number of participants was set at fifteen, based on criteria of sufficiency and saturation of information, as described by Seidman (2013), consistent with the number of participants in other studies involving AAC users in HE settings (Atanasoff, McNaughton, & Light, 1998; Chung, Behrmann, & Thorp, 2016). No minimum number of participants was established; however, participant recruitment efforts were employed to ensure an adequate data set, in the Procedures section. Because only three current students elected to participate, a faculty participant, who has used AAC while attending college and as a HE instructor, was also included. Characteristics of the four participants are described in this section.

Michael is a disability advocate, public speaker, and instructor at a large research university in the United States. He holds degrees in business administration, city

planning, and public health, and has taught part-time at the university for ten years.

Michael has cerebral palsy and uses AAC for all communication. Due to significant motor impairment, he also has personal assistants to support activities of daily living. For oral communication, Michael typically uses a head pointer to select letters and words on a communication board to compose messages, which are then revoiced (i.e., spoken aloud, also referred to as reauditorization) by another individual. For longer presentations, environmental controls, and written communication, he uses an iPad with eye gaze and a speech generating application.

Gillian, an Early Childhood major, has cerebral palsy. She communicates using a speech-generating device (SGD), which she activates using a scanning method with a switch. At the time of the interview, Gillian was enrolled part-time in a two-year program at a public community college in the western United States, having started back after a break in enrollment. She receives assistance with basic daily activities and mobility from a personal assistant.

Mary has cerebral palsy. At the time of her participation in the study, she was very near the end of a master's degree program, and would soon start a new job related to her major field of study, which was communication. Mary uses AAC for all verbal communication. Her communication device is a dedicated SGD based on Minspeak, a unique, semantically compact symbol set designed to streamline movements required for access. Mary uses her device by directly selecting items with her toe.

Will has cerebral palsy. At the time he participated in the study, he was temporarily unenrolled, having most recently enrolled as a part-time student during the prior semester at a public two-year community college. Will uses both a paper-based

communication board and speech-generating application on an iPad, which he operates via direct selection using his finger. Will did not indicate a major field of study.

Instrumentation

Instrumentation consisted of two components. The first component was a questionnaire containing closed-ended questions concerning participant demographics and basic information about each participant's AAC use and HE enrollment (Appendix A). Michael responded to the questionnaire as part of the live interview; the other three participants completed the questionnaire electronically. The second component was a series of interview questions planned for semi-structured participant interviews (Appendix A). Both instruments were designed specifically for this study based on findings in the AAC and higher education literature (Astin, 1993; Astin, 1998; Atanasoff et al., 1998; Bryen, 2008; Huer, 1991; Liasidou, 2014).

The dissertation proposal was submitted to the Louisiana Tech University Institutional Review Board (IRB) for approval. After IRB approval was obtained, alpha testing was completed on the data collection instruments. The term alpha testing in this context refers to internal testing of an instrument for the purpose of improving and refining the instrument prior to wider use ("Alpha testing," 2006). Alpha testing was accomplished by first submitting the instruments to a key informant, a volunteer who is an experienced AAC user and disability advocate, in order to obtain feedback regarding the content and phrasing of the questions, the time required to respond to the questions, and any other considerations warranting modification of the questions prior to use in the study. The key informant did not suggest modifications to the instrument. She did suggest that the participants who chose to participate in the interview would likely be

more successful responding to the questions if they were given the questions prior to the interview to allow them to type and save some or all responses beforehand. The key informant estimated that participants who responded electronically to all questions, rather than participating in a live interview, could complete the responses in approximately one to two hours, depending on the level of detail in the responses and the speech at which the participant was able to type. Because no modifications were suggested, beta testing the instrument by revising and resubmitting it to the informant was not possible. Therefore, in order to obtain a second assessment, the questions were also submitted to a second key informant, an experienced adult AAC user who completed a bachelor's degree over 10 years ago. This informant did not suggest any modifications to the questions.

Data Collection Procedures

Participants were initially recruited by sending information about the study, along with requests to distribute the information to potential participants, to three potential distribution sources. One was the Augmentative Communication Online User's Group (ACOLUG), a listserv developed for the purpose of creating an online community of AAC users. Following guidelines posted on the ACOLUG website (Bryen & Rackensperger, 2012), permission was obtained from the moderator to post information about the research on the listserv, as in Bryen (2008). Information about the research and contact information for researcher were posted on three occasions. Information about the study and requests for distribution were also sent to state-level assistive technology access networks and affiliates of the Association for Higher Education and Disability (AHEAD) via publicly available contact information (AHEAD, 2017; Association of

Assistive Technology Act Programs, 2016). Participants were also sought through email contacts with members of the American Speech-Language-Hearing Association (ASHA), whose professional profiles on the ASHA website indicated AAC as an area of expertise, and with sales departments and representative for major vendors of AAC equipment. Information was also shared with social media groups involving AAC users and professionals by performing searches on Facebook using the key words “AAC,” “augmentative communication,” and “augmentative alternative communication,” as well as Facebook pages for major vendors of AAC devices.

Data collection involved several stages of contact with participants. First, participants who responded to the initial email contact were provided with detailed information about the study, along with the researcher’s contact information and a request to contact the researcher to indicate their interest in participating. Respondents were then provided with an overview of the study, which included a summary of the research purpose, brief description of the questionnaire and interview process, estimated time requirements, and assurance of confidentiality (Appendix C). After participants were identified, additional contact was made to arrange the logistics of the interview process.

Although qualitative interviews are most often conducted face to face (Seidman, 2013), for this case study, participants were given a choice as to how they would prefer to be interviewed, either live (in person, if possible, or using a computer program such as FaceTime) or via email. The rationale for granting this flexibility was that participants would, according to the delimitations of the study, communicate via AAC rather than natural speech. Because communication via AAC involves more time and physical effort

than communication using natural speech, allowing adequate response time was a concern. It was anticipated that some participants might have more difficulty responding as freely and completely during a live interview than would be the case if they were given unlimited time to respond, which would have negatively impacted both the amount of detail and depth of discussion. Concern regarding response time was supported by feedback provided to the investigators by participants in the Atanasoff et al. (1998) study, in which participants indicated that their participation required a substantially greater investment of time than the investigators had estimated. Also, participants in a study by Ashby and Theoharis (2012) involving AAC users, participants indicated that receiving questions ahead of time facilitated their participation in group discussions.

Live interviews were conducted using Face Time (Version 3.0; Apple, Inc., 2014) and Skype (Version 7.59; Microsoft, 2017), as chosen by the participants. The interviews designed to be semi-structured, as described by Seidman (2013). The same set of pre-planned questions was used with each participant (Appendix A); however, for the live interviews, discussion included additional topics or details related to the experiences of the participants, as dictated by the actual contents of responses and the interests of the participants. Additional questions were introduced as needed to obtain or provide clarification or to further explore topics relevant to the research questions. The participant who opted for an electronic-only interview sent responses to the questions by email.

Confidentiality

Several measures were taken to ensure confidentiality of all participant data and interview transcripts. All electronic records (e.g., interview transcripts and audio files)

were given an additional level of password protection using the “Protect Document” feature in Microsoft Office, in addition to the password protection used for any computers or removable drives. Prior to transcription of the audio files, the recording device was kept in a secure area. Recordings of the interviews were kept in a locked area when not in use. Names and other identifying information were not included in the interview transcripts, and pseudonyms were used in the research report. The research report was reviewed prior to submission to ensure that the report did not contain information which could lead to identification of participants. As a result of this review, modifications were made to selected interview quotes from one participant to further reduce the possibility that the institution could be identified.

Data Analysis and Interpretation Procedures

Data analysis involved several stages, based on procedures described by Creswell (2003), Miles and Huberman (2013), Bogdan and Biklen (2007), and Miles, Huberman and Saldana (2014). During the first stage, data preparation, interviews were transcribed verbatim, except for the elimination of all identifying information concerning the participants or any person or HE institution mentioned during the interviews. Transcription was completed manually; that is, the researcher reviewed the audio recordings and type the transcripts using a word processing program. The second stage, which was completed after each interview, involved reading through the entire interview transcript, as recommended by Creswell (2003) and Bogdan and Biklen (2007) to develop familiarity with the transcripts and a general impression of the data. During this stage, notes and questions were added to the transcripts in preparation for coding and analysis of information in subsequent stages. The third stage was initial analysis of the

data through coding. In this stage, referred to by Miles, Huberman and Saldana as “first cycle” coding (p. 71), “chunks” (p.71-72) of data are labeled with codes for the purpose of organizing the data into categories. The research questions (see Chapter 1) were as a provisional coding scheme. As described by Miles et al. (2014), this provisional scheme was used as a starting point, which was later modified as themes were identified during analysis.

The next (fourth) stage, described by Miles et al. (2014, p. 80) as “second cycle coding,” involved refinement of codes used in the first cycle coding, with further analysis and processing of the data. Analysis was completed for each interview and across interviews to identify commonalities and contrasts among the data and generate categories and principal themes pertaining to the research questions. In the next stage, findings were organized by creating tables to display findings specific to each participant for each of the identified themes, to facilitate the final stage, interpretation of findings.

Interpretation is a means of framing the findings in terms of answers to the research questions, the theoretical framework of the study, and/or how the findings relate to existing literature (Creswell, 2003). Although qualitative research often involves some level of interpretation simultaneously with data analysis, as patterns and themes among the data are identified and refined (Bogdan & Biklen, 2007), the interpretation stage described in this section refers to purposeful consideration of how the findings answered the research questions and, as suggested by Bogdan and Biklen (2007), consideration of findings relative to a broader theoretical context.

The research questions, as stated in Chapter 1, concerned the perceptions of AAC users regarding their interactions with faculty and other students during academic

activities, their engagement in student life, barriers they encountered to full participation in academic and nonacademic activities, and recommended policy or practice changes.

Therefore, the initial step in interpretation was to examine what answers have been gleaned from the experiences of the participants, and the analysis of the data, to each of these questions. Determination of answers to the research questions were shaped by the two components of the theoretical framework, critical disability theory and Astin's IEO model of student development. As suggested by Bogdan and Biklen (2007), major tenets of the theoretical framework were used to guide interpretation. This was accomplished by developing a series of guiding questions based on major principles of both components of the theoretical framework. The guiding questions for critical disability theory were as follows:

- How do the findings relate to social or medical models of disability? How do participants' described experiences align with either model?
- What is the reality of the higher education experience from the perspective of the participants? How might this reality differ from that of nondisabled students, or from participants' prior expectations of that experience?
- In what ways, if any, do the experiences of the participants suggest that they do not have the same degree and ease of access to expected HE experiences? In what ways, if any, have participants experienced a sense of marginalization, and how did this impact their development in the HE setting?
- How can the findings from this study be applied to reduce or eliminate barriers to participation in HE for AAC users in terms of policies or actions?

What can be done to ensure AAC users are able to achieve their best learning outcomes from HE?

Findings were also interpreted relative to the second theoretical framework, IEO model of student development in HE. According to the model, the HE environment, and the student's interaction with that environment, are equally as important as inputs (student characteristics) in determining HE outcomes. Guiding questions for interpretation relative to the IEO model were as follows:

- How do AAC users experience and interact with the physical environment of the HE institution, such as classrooms, dining facilities, libraries, or dormitories?
- How does using AAC impact interactions with peers, faculty, and staff in the HE environment? Did participants identify strategies or actions that improve interactions?
- To what extent do AAC users experience difficulty accessing and using technology or other resources for academics or other activities?
- In what ways might institutional policies or practices be hindering or facilitating these participants' ability to perform well academically or engage in other campus activities?

In addition to the theoretical framework, findings were interpreted in light of implications for higher education leadership. This research links the fields of AAC and higher education; however, the underlying purpose of this study was to develop knowledge that informs the practice of educational leadership. Therefore, interpretation addressed how HE leaders can apply these findings in higher education leadership roles and functions.

Role of the Researcher

The choice of a qualitative research approach necessitates consideration of the role of the researcher. The identification and analysis of the role, inevitable biases and potential influence of the researcher constitute a fundamental component of qualitative research (Guba & Lincoln, 1994). Creswell (2000) refers to the process of self-disclosure of the biases, assumptions, and perspectives of the researcher as “researcher reflexivity” (p. 127), and asserts that such reflexivity contributes to the establishment of validity in qualitative research. Because the majority of the data was collected through personal interviews, I, the researcher, was the primary channel through which data were gathered, a circumstance that created the potential for my own assumptions to impact each stage of the research.

One basic distinction to be made when analyzing the role of the researcher is emic versus etic relationships between the researcher and the phenomena of interest. Emic refers to that which is derived directly from the original source, from an internal perspective; that is, from participants who are directly affected by the phenomena of interest, i.e., members of the population being studied. Critical research is often, but not necessarily, conducted by emic researchers, those who are part of the same community or share the same experience with participants (Guba & Lincoln, 1994; Liasidou, 2014). In this study, my perspective was not emic, but etic; that is, from the outside. As a nondisabled, nontraditional student, I was outside the population of undergraduate students with communication disorders to which my participants belonged, and therefore had a different perspective on both disability and HE. It is for this reason that I worked with key informants when preparing to conduct the research.

My professional and personal experiences have led to assumptions and beliefs that were relevant to this study. In my present professional position, I have a dual role as an instructor in higher education and as a speech-language pathologist. During my 24 years practicing as a speech-language pathologist, I have worked with many individuals with communication disorders, including multiple AAC users, most of whom had significant motor impairments in addition to speech impairments. Although recent years have brought about development of new theoretical leanings in the field, particularly within the subspecialty of AAC (Light & McNaughton, 2014), most of my professional training and experience have been oriented toward a medical model of disability. As a result, I have developed a strong tendency to view communication disorders in terms of problems or deficits, and to automatically begin devising a plan of instruction or treatment to remediate or compensate for those problems. My underlying assumption in doing so is that most problems can be “fixed,” at least when the “client” (i.e. the disabled individual) has the necessary support. While this has in many ways been a useful approach as a service provider, it has not necessarily facilitated understanding of the full impact of a communication disorder on one’s daily life. For example, as a service provider involved in working with AAC, I may be fluent in programming a speech-generating device and training someone in how to use it, but I am not the person who relies on the device for communication, nor do I typically witness the daily use of the device in settings other than the speech and hearing center.

I have also developed certain beliefs related to disability and higher education stemming from personal and professional experiences, such as advocating for clients in need of equipment and services, listening to the stories of clients and their families,

observing the experiences friends and co-workers who have or had disabilities. These experiences have led to an increased sensitivity to the challenges that accompany disability, and the negative attitudes and behavior that are often directed toward people who have disabilities. This sensitivity may translate into a hyperawareness of the negative aspects of disability. In my role as a researcher, this could potentially result into a tendency to project an assumption of struggles or injustice onto the experiences of the participants.

My perspective on higher education has also been shaped by both personal and professional factors. I was raised in an environment in which a very high value was placed on a college education. This early environment, as well as positive learning experiences at the undergraduate and graduate level, contributed to a deep conviction that no student who has the necessary cognitive skills to benefit from higher education should be denied the right to do so. My role as a faculty member in a graduate degree program also no doubt impacts my role as a researcher. Not only do I benefit financially from this position by earning a salary, but the amount of time and effort I have invested in my work also contributes to my sense of its value.

In the qualitative research tradition, the researcher is not expected to remain detached from the subject of the research. However, the researcher must also guard against allowing one's own biases to intrude to the point of compromising the integrity of the research process findings and processes. As a precaution against this imposition of bias, and as an additional means of supporting the validity of study, as suggested by Creswell (2003), following each interview, I engaged in purposeful reflection, by keeping a written journal, on how my own assumptions had been challenged, as well as the extent

to which my biases or assumptions may have influenced my interaction with the participant.

During the initial review of the transcripts, additional consideration of my role and potential biases became necessary when the contrast between my language and that of the participant became apparent, particularly for Gillian's interview and the follow-up interview with Mary, both of which were conducted live. The most obvious difference was that my sentences were considerably longer in many instances. Upon further examination, a second observation, closely related to length, was that sentences produced by both participants tended to have simpler syntax and to be more concise in the expression of ideas, compared to my own sentences. These contrasts were less apparent in Michael's interview. These differences were at least partially attributable to the differences between our communication modalities (i.e., my typical communication versus the participants' AAC). However, because interviews, whether in electronic or live form, comprised the primary data source for my study, further analysis of these communication patterns was warranted to support validity of the findings. For the two sets of written interview responses provided by Mary and William, there was no verbal exchange; therefore, the participants' language could be compared only to the language I used in the semi-structured interview questions, which were the same for all participants (Appendix A). Mary's syntax and variety of vocabulary, on initial inspection, appeared similar to that of the questions, while William's were considerably shorter.

To facilitate more systematic analysis of these observed differences in communication styles, two language measures were completed on the interview transcripts: mean length of utterance and type token ratio using Systematic Analysis of

Language Transcripts (SALT). Mean Length of Utterance (MLU) and Type-Token Ratio (TTR) are typically used to assess the language of children by comparing the measures to expectations for chronological age (e.g., Miller & Chapman, 1981; Rice, Redman, & Hoffman, 2005; Richards, 2009), but were used in this case study as a tool to assist with characterizing observed differences between the sentences I produced and those produced by the participants.

MLU refers to the average number of morphemes per sentence in a set of written or spoken sentences. For the live interviews, the MLU of both interviewer and participant were measured. For the two electronic “interviews,” in which questions were answered by email, only the participant MLU was analyzed, because my questions were presented only as a predetermined set, without any spontaneous sentences. Mary’s spoken and written MLU were measured separately. The results are shown in Table 1.

Table 1

Researcher and Participant Mean Length of Utterance (MLU)

Participant and interview description	Researcher MLU	Participant MLU
William, written responses only	n/a	7.4
Gillian, live interview, questions sent beforehand	11.7	6.6
Mary, electronic (questions and written responses)	n/a	14.89
Mary, live interview, follow-up to answers sent electronically	10.7	5.2
Michael, live interview; no questions sent beforehand	9.9	9.0

TTR is commonly used in language analysis as an estimate of lexical diversity (e.g., Richards, 1987). The number of unique words spoken or written by an individual within a sample is divided by the total number of words, yielding a ratio. As with the

MLU measures, TTR was determined for participant and researcher in each combination, as indicated in Table 2.

Table 2

Researcher and Participant Type-Token Ratio (TTR)

Participant and interview description	Researcher TTR	Participant TTR
William, written responses only	n/a	0.48
Gillian, live interview, questions sent beforehand	0.45	0.62
Mary, electronic (questions and written responses)	n/a	0.44
Mary, live interview, follow-up to answers sent electronically	0.63	0.35
Michael, live interview; no questions sent beforehand	0.57	0.55

As shown in the table, both the length (MLU) and specificity (TTR) of my sentences were very similar to results for those that Michael produced during his live interview. Compared to Will's electronic responses, my MLU, in general, was longer, while TTR was similar. Results for TTR were mixed for the responses and live interviews with Mary and Gillian. The most striking difference was my MLU compared to that of Mary (live interview) and Gillian; in both cases, my sentences were approximately twice as long as the participant's sentences. This observation led to me to examine the content of my speech compared to theirs, particularly in light of my role as an etic researcher. I realized that in several instances, my sentences were longer than those of the participant because I had unconsciously used an augmentative communication strategy, modifying my statements to offer choices or yes/no responses, rather than waiting for spontaneous responses, which allowed my conversational partner (participant) to produce a shorter, simpler response, as in the following examples, in

which I am represented as Heather and the participants are represented by their pseudonyms.

Heather: Would you say that you had to compose a lot of Novel in classes, or just occasionally, or did it just depend on the situation?

Mary: It depended.

Heather: What [communication method] do you prefer?

Gillian: Email.

Heather: Why, is that related to the time for composing your responses?

As shown in these examples, the result of my unintentional modification of questions was that several of my questions were more closed-ended than intended for a semi-structured interview. In my professional role as a speech-language pathologist, I have often used this type of communication strategy and have also recommended it to family members of people with communication disorders, as a means of facilitating communication with someone who has limited or no ability to speak. While accommodating the needs of an individual with a speech impairment is often appropriate, the fact that I used these strategies unintentionally alerted me to my own tendency to intervene to ease the burden on the participants, even when this was not clearly necessary. Also of note was that I tended to use this communication pattern in the interviews with Gillian and Mary, but did not use this pattern with Michael, the participant with whom I interacted most comfortably. This difference in both communication style and comfort level may have been due to Michael's ability to compose messages much more rapidly than Gillian or Mary, which allowed for easier maintenance of the momentum of conversation, but also due to the fact that Michael was

more similar to me in age and role (HE faculty) than the other participants. Because of these additional analyses and reflections, I was able to maintain a greater awareness of the influence of my background and biases, and to more consciously attempt to avoid allowing them to unduly influence data analysis and interpretation.

Member Checks

Following data collection and analysis, member checks were conducted via electronic communication. Member checks are used in qualitative research to support internal validity of the research by allowing participants to evaluate whether the findings authentically represent their perspectives, feelings, and experiences (Creswell, 2003). A summary of the findings was sent to each participant, with a request to review the information and provide any clarifications or additional information if needed. The participants did not suggest any modifications to the information.

Summary

Participants included three AAC users currently or recently enrolled in HE programs, and one AAC user currently serving as a HE instructor. Participants were recruited by distribution of research information via a listserv, email contacts with agencies and vendors serving AAC users, and social media. Interviews were conducted using a combination of email contacts and live interviews via video applications, FaceTime (Version 3.0; Apple, Inc., 2014) and Skype (Version 7.59; Microsoft, 2017). Transcribed interview data was analyzed using primary and secondary coding procedures. Member checks and ongoing reflection, including supplemental analysis of my language and that of participants, were conducted to support internal validity of the

study. Findings were interpreted relative to critical disability theory, Astin's input-environment-output model of HE student development, and implications for HE leadership.

CHAPTER 4

RESULTS

This study examined the perspectives of augmentative-alternative communication (AAC) users on their experiences in higher education (HE) through questionnaires and personal interviews using a qualitative case study design. Interviews were conducted live and via email. Interview transcripts were analyzed in several stages based on procedures described by Miles, Huberman and Saldana (2014), Creswell (2003), and Bogdan and Biklen (2007). The research questions were used as an initial coding scheme, which was modified upon identification of major themes and subthemes within and across interviews.

Analysis

The first stage of data analysis, as described in Chapter 3, was organization of interview transcripts. Because participants were given the option of either participating in a live interview or answering the interview questions electronically, data included both written and oral responses. Two participants, Mary and Gillian, were interviewed live; one participant, Will, answered all questions electronically; and the fourth participant, Mary, answered the questions electronically, then also participated in a follow-up live interview. Except for removal of the names of participants and HE

institutions, transcripts from the live interviews were transcribed verbatim by the researcher by reviewing audio recordings and typing the contents using a word processing program (Microsoft Word). For the purpose of coding, Mary's responses were combined by pasting the transcript of her oral responses into the same document as her written responses. Responses submitted electronically were used in their original form, except for removal of identifying information, by copying the responses and pasting them from an email into a word processing document. Materials were prepared for coding by formatting the electronic copies of the transcripts to allow spaces for manual coding of the material. No computer software was used for the analysis.

The second stage of analysis involved reading through the entire interview transcript in preparation for coding and analysis of information in subsequent stages. Although the data were not formally coded during this stage, occasional notes were recorded concerning initial impressions and observations. For example, early on in the process, I began to note the brevity of some of the participants' statements, especially compared to some of the longer utterances and interview questions I produced. This difference was particularly apparent during the live interviews with the participants using SGD, as in the following examples, in which I am represented as "Heather" and participants are represented by their pseudonyms:

Heather: Would you say that you had to compose a lot of novel messages in classes, or just occasionally, or did it just depend on the situation?

Mary: It depended.

Heather: Tell me about speaking with your professors – for example, when speaking in class, meeting outside of class, how often do you do this, how comfortable this is.

Gillian: We email.

I eventually analyzed these responses further, as described in Chapter 3, as an exploration of my role and potential biases.

Another example of an early, recurring impression was the high level of effort that would have been required to complete coursework in manner described by the participant. This concept also surfaced in the reflective journal, which I wrote following each interview as a means of checking bias, as the “awe” factor. I occasionally used this term in the reflective journal to refer to the admiration I felt for the participants for persisting in completing their courses and programs despite the fact that the acts of speaking and writing, so basic to participation in higher education, obviously required much more effort on the part of these participants compared to the average college student. One instance in which I recorded this impression was when Michael recounted his experience typing papers as a young undergraduate student:

Michael: Would set up with a keyboard and activate with head pointer. Took a long time.

Heather: I can’t imagine writing a paper one letter at a time like that.

Michael: If it was a really long paper I would have to have a person type it for me with talking through it. Because I’m so much faster on my board. I could just say it and have them type it.

During the next stage, “first cycle coding” (Miles et al., 2014), transcripts were coded using the research questions as a provisional coding scheme. The research questions yielded four initial categories: interactions during academic activities; interactions during non-academic activities; barriers; and institutional policies and/or practices. The fourth category, institutional policies and/or practices, was based on the research question concerning changes in policies/practices. However, during this first cycle coding phase, only a small number of responses, all from Michael’s interview, were found to be directly related to policy; in fact, when directly asked whether they had suggestions or considerations for HE leaders, three of the four participants indicated that they had none. Based on the content of the interviews, this Policy/Practice category was broadened to include items more generally related to policies and practices, such as available disability support services and use of accommodations. For example, all of the following items were included in this category:

Michael: People with disabilities understand it is not typical. But people with disabilities just want a chance with the proper supports. I don’t know what I need. So we need to figure it out. That’s one of the reasons I started the conversation early.

Gillian: At [my] college, they have [Disability Services] and it has helped me a lot. I would suggest to a first time college student that they access those services.

Mary: There was one exam I went into, knowing that my communication device was going to malfunction. So, I asked the disability service to provide me with a piece of paper with A, B, C, D on it. I answered all the open questions first, when my communication device was still working. When my communication device

malfunctioned, I was able to use the piece of paper to use the multiple choice questions.

Because some exchanges were not found to clearly align with any of these four categories, a fifth category, Other, was added. Examples of topics initially assigned to this category included discussion of participants' academic or personal strengths or interests, such as the following statements:

Mary: The most memorable class I took during my Bachelor of Communication was Communication Technology. The lecturer had an interesting personality.

People either hated or loved him. I loved him, I understood his sense of humour.

Gillian: Right now I'm taking English reading 116, but the most memorable class I ever taken was the history of rock and roll, last fall.

Michael [via revoicing]: Michael is very stubborn. But it has helped his life tremendously.

Transcripts were coded manually according to this categorization scheme. For data that aligned with one more categories, all applicable codes were assigned. An example of a statement assigned multiple codes was Mary's statement, "The biggest thing is that people around campus would often walk away before I could converse with them." This statement was initially coded in the Barriers category. However, because this situation was directly related to Mary's interactions with other students outside the classroom, the category Non-academic Interaction was also assigned.

The next (fourth) stage, described by Miles et al. (2014) as "second cycle coding," involved refinement and modification of the basic categorization scheme used in the prior stage, with the identification of common themes within and across interviews. The

interview responses, research questions, and impressions recorded during the initial review of the transcripts were considered during this stage. During the initial review of the transcripts, the contrast between my language and that of the participant became apparent, particularly for Gillian’s interview and the follow-up interview with Mary, both of which were conducted live. At this point, I engaged in further reflection on the manner in which I conversed with the participants, as described in the discussion of my role as a researcher.

The second-cycle coding stage involved further analysis and refinement of themes, and identification of commonalities and contrasts among the data across interviews. Initially, information and input concerning each participant was visually organized separately for each participant, using tables, as displayed in Table 3.

Table 3

Coding Example. Participant: Gillian

Impressions	Initial coding	Sub-themes Alternate themes
<p>She would have had to master the course content well to figure out what to program in.</p> <p>Email preference – not so different from typical student?</p>	<p>Academic interactions</p> <p>81-82 Preprogrammed messages, some typing out</p> <p>87 “Of course” (difficult)</p> <p>98, 102 Prefers email communication</p> <p>110 Professors get to know her with time.</p> <p>117 Interaction with peers depends on situation</p>	<p>Preprogramming – preparation-time</p> <p>Difficulty communicating with device</p> <p>Successful/preference for electronic communication</p> <p>Successful interaction</p> <p>Success varies with context</p>
	Non-academic	

<p>Lack of involvement; This is one of the few parts where our sentence length matches.</p>	<p>21 More time alone now than when first started 22 Sometimes visits coffee shop 36 Hang out with staff 123 (“Same”) Interaction with peers depends on situation</p>	<p>Lack of extracurricular activities Success varies with context.</p>
<p>Awe factor. Most students would likely not try this hard to write a paper. Wants to communicate but not given the chance.</p>	<p>Barriers 52 Workload difficult 56 Especially writing 62-64 two days to write paper 66-68 Time investment 91 Lack of patience/understanding re: device</p>	<p>Managing workload Time consuming nature of writing Lack of understanding</p>
	<p>Policy/practice 60 Writes on home computer</p>	<p>Need for customized accommodations</p>
<p>G. would have had to put so much more time in than the average student just to get one paper done. Sounds frustrating. But maybe would lead to a better paper? My sentences versus hers.</p>	<p>Other 43: Enjoys “just getting out of the house and learning something” 9-13 Favorite course history of rock& roll; Elvis 52 Workload difficult 56 Especially writing 60 Writes on home computer 62-64 two days to write paper 66-68 Time investment</p>	<p>Desire to interact Desire to learn Time consuming workload-time Self-provided accommodations</p>

During this stage of coding, data corresponding to each of the four provisional categories (academic interactions, extracurricular engagement, barriers, policy/practice) were further analyzed to identify principal recurring themes occurring across these four categories, and across participants. Topics and statements that lacked apparent relevance

to any of the research questions were excluded from this stage of analysis. Major themes identified during this stage included: communication between participants and others in their environment; perceived attitudes of other students and faculty; disability services; barriers and challenges; and personal and academic strengths.

The first of these themes was Communication, referring to the nature of communication between participants and others in the higher education environment. This theme included two major subthemes: (a) Electronic Communication and (b) degree of ease and success with face to face communication in the academic environment, designated Success in Communication. Regarding electronic communication, three of the participants expressed greater preference for and/or success with electronic communication compared to face-to-face communication when communicating with instructors. For example, Will, in his emailed written response, stated, "I didn't really talk to my professors unless I had to and I always emailed them." Likewise, Gillian, when asked about communicating with instructors, replied, "We email," and responded, "Email" when asked about her preferred mode of communication, adding, "They will get to know me with time." Mary's written response indicated a high level of success with email communication:

The two supervisors I had for my Master's thesis, agreed to be my supervisors, without having worked with me previously, and without having met me. I explained my entire situation via email.

The second communication subtheme, Success in Communication, recurred across three of the four provisional categories: academic interactions, extracurricular engagement, and barriers to participation. The extent to which participants perceived that

they were able to successfully and completely convey conversational responses and ideas to others appeared to vary with the context and conversational partner. Will directly expressed this idea: in response to the written interview question, “How about communicating with other students about things related to school (for example, class discussions, group projects, study groups)?” he indicated, “Depends on the students.” The exact phrase, “depends on the students,” was echoed in Gillian’s response to the same question during her live interview. Despite this suggestion of variability, responses suggested that participants were able to achieve, at least to some degree, successful communication beyond email contacts. Mary reported successful communication with professors in multiple modalities, stating, “I am quite comfortable corresponding with my professors via email, Skype, in person.” Michael described successful verbal communication when teaching students, in one instance noting that he “likes to have shock value on the very first day. Go up and start teaching on the very first day.” In fact, when asked about his greatest challenge in teaching, he responded, “grading,” rather than verbal communication. However, participants also described considerable challenges associated with communicating via AAC. For Mary and Gillian, the time required to compose spontaneous messages on and SGD was disruptive to conversational exchange, both in and outside of class. Both indicated that preprogramming messages into their SGDs helped them to communicate more easily; however, in circumstances requiring more spontaneous communication, breakdowns in communication occurred:

Mary, written response: The biggest thing is that people around campus would often walk away before I could converse with them....When I don’t understand something, more often than not, I struggle to communicate. I feel so confused

and I don't know how to word my thoughts. So, there were times during my Master's degree, I just gave up because I felt that the lecturers and I couldn't get anywhere, with my communication.

Mary, interview: Sometimes I'm not able to get out what I'm saying before they are moving on to another topic.

Gillian described similar difficulties:

Heather: Have you had any problems communicating with your device at school?

Gillian: Of course.

Heather: For example?

Gillian: People not being patient and not understanding my device.

Michael's description of his experiences as an undergraduate reflected a communication breakdown of a different nature, stating, "Yes, it drove me crazy because most of my professors would not read my board." While this description differed from those provided by Mary and Gillian, the result of the communication breakdown in each case was limitation or elimination of the ability to participate in conversation or class discussion.

The second major theme, perceived attitudes of other students and faculty members, designated Perceived Attitudes, was particularly evident in discussions concerning interactions and policy/practice issues. One subtheme related to perceived attitudes was Positive Attitudes, the general perception on the part of participants that at least some faculty and peers showed willingness to accept the disability and interact with someone who communicated via AAC. For example, Michael stated, "[faculty] here

have been wonderful. They do wait for me to revoice.” The other three participants made similar statements. Responses to the question, “How do others seem to react to you using your device to communicate with them,” included the following:

Gillian: Good.

Will: They reacted like I was a normal student...I feel comfortable while talking to other peers.

In contrast to the first subtheme, Positive Attitudes, a second subtheme was Negative Attitudes. This subtheme included lack of inclusion and preconceived notions about the participant or his/her disability, overlapping to some extent with the subtheme of communication breakdowns. In some instances, lack of acceptance or inclusion was implied by the content of the response, without being directly stated. For example, when asked about activities outside of class, Gillian’s statements implied a lack of interactions with other students, despite visiting areas frequented by students on campus:

When I first started college, there were friends that went with me, and would hang out and have lunch, but now since I started back, I am alone more. I sometimes get a coffee...They have Starbucks. Hang out with my staff.

In contrast, Michael made a more overt statement concerning lack of full inclusion on campus: “I feel like a token.”

Michael and Mary described specific experiences with behaviors reflecting negative attitudes and stereotyping. One such statement concerned the unwillingness of Michael’s undergraduate professors to read his communication board. Michael commented, “I would think they are professors at [university], they can read!” Mary expressed a similar notion:

I think I struggle when people, like my Masters supervisor, say things like: ‘How are you going to lecture?’ I don’t know how to respond, as one of the most intelligent people with Stephen Hawking, who used a communication device. Yet, there is still the assumption that people with communication devices can’t lecture.”

Another subtheme related to perceived attitudes was the notion that changes could be effected in perceptions or attitudes, designated Changes in Perceptions. Michael, the made several statements that conveyed overt intent to effect such change; for example, when he referred to the “shock value” of his initial lecture, stating, “I need to start changing perspectives on the very first day.” Michael also described an activity that he had implemented with his students, which had led to perceived changes in attitudes:

I make my students meet with me three on one, for 30 minutes outside class. At first everyone is so scared. But after they are like, this is easy.

He also recalled an experience during his master’s program in which he actively attempted to change the perceptions of an instructor:

In my masters of city planning, there was a class that was required. It had a lot of drawing. And you had to go to San Francisco a lot. So before the class started I get this note in my mailbox saying the professor wanted to talk to me. So I went to his office, and he tried to get me to waive the class, but I thought, but if it’s required, I probably should take it. And so I said no, please let me try. So you know what I did? I just hired someone who knew how to draw and I just told them what to draw. And at the end of the class, the professor said he was so happy that I did not listen to him.

Michael expressed a similar desire to impact faculty attitudes in his current position: “I think the faculty need to meet me and know I’m there.”

In her written responses, Mary described an activity designed to influence perceptions, which was implemented by one of her professors:

In the communication technology class, I mentioned earlier, the lecturer organized for one of the classes, everyone had to communicate with technology. That meant they understood how I felt, not being able to join in a conversation immediately.

The third major theme identified during second-phase coding was Disability Services, specifically the need for accommodations or modifications to be available, appropriate and individualized to students’ needs. Gillian mentioned the disability services at her college, noting, “it has helped me a lot. I would suggest to a first time college student that they access those services.” Regarding the nature of accommodations, participants benefitted from some typically accommodations. For example, Gillian reported using extended test taking “in a room” and note taking assistance. In response to questions concerning what had helped him to be successful, Will responded, “Just the people who help other students,” suggesting peer tutoring and/or note taking assistance. Michael reported that he “usually” had extended testing time and that he sometimes had note taking assistance, although indicated this was not always a useful accommodation: “I did get notes from other students. And most of the time, that did help. But I had some notes that I could not read at times.” Mary described more customized accommodations:

For the first semester of my undergrad degree, the disability support service introduced me to the lectures beforehand. Then I just winged it from

there...When I was doing my Bachelor of Communication degree, I had exams. One of the exam reader/writers noticed that I was slower and less accurate using my Communication device in the afternoon, compared to the morning. Subsequently, the disability service ensured that I did my exams in the morning from then on.

Mary also described in an instance in which accommodations were successfully modified in response to a problem specific to her communication device:

There was one exam I went into, knowing that my communication device was going to malfunction. So, I asked the disability service to provide me with a piece of paper with A, B, C, D on it. I answered all the open questions first, while my communication device was still working. When my communication device malfunctioned, I was able to use the piece of paper to use the multiple choice questions.

While the examples were related to successful implementation of accommodations through disability services, interview responses also suggested that participants also devised and provided their own strategies or provided their own supports. Gillian and Mary both indicated that they wrote papers on their home computers, with assistance from caregivers. Michael described strategies for completing written assignments, including the use of an “outside hire,” an assistant not provided by the university:

Would set up with a keyboard and activate with head pointer...If it was a really long paper I would have to have a person type it for me with me talking through

it. Because I'm so much faster on my board. I could just say it and have them type it.

Michael summarized his concerns when responding to a question about what he would want policy makers to know about him and his disability:

The need to work with me. They don't understand how to support me. And I understand that I am very unique. Like I knew [my co-instructor] was retiring in two years. So I went to and started a case on what supports I would need to take over. One being a new eye gaze system that was quicker. And if I did not do that, they would just hire someone else. That drives me crazy...Just work with the person. People with disabilities understand it is not typical. But people with disabilities just want a chance with the proper supports. I don't know what I need. So we need to figure it out.

The fourth major theme from this stage of coding was barriers and challenges associated with participation in academic and extracurricular activities, designated Barriers and Challenges. This category included two sub-themes, Extracurricular participation and Workload issues. Barriers specific to face-to-face communication (i.e., with AAC device) were included in the communication subtheme. Regarding extracurricular activities, interview responses indicated that participants had limited or no participation in campus-based activities. Will indicated that he communicated successfully with other students on campus, but did not mention any specific activities in which he was involved. Similarly, Gillian did not describe specific activities, other than occasional trips to the coffee shop.

Mary noted:

I didn't really do any extracurricular activities, as part of my university life.

Outside university, I am involved with disability sailing and I took up going to the gym, a few months before I completed my Masters.

In a subsequent response, Mary explained, "I commuted from my home to the university, so I didn't have time to be involved in activities," suggesting the lack of involvement was due to logistical factors.

The other subtheme related to Barriers and Challenges was Workload Issues. Participants identified completion of written assignments as major, sometimes overwhelming challenge. In response to a question about least favorite parts about attending college, Will responded, "The work." Michael noted that both of his methods for writing papers during his undergraduate program "took a long time." Gillian also expressed concern about getting work done in the following example:

Heather: What were your least favorite parts [about college]?

Gillian: The work. It gets so much for me sometimes, and that's my least favorite part about college.

Heather: Anything in particular that's more difficult about the work?

Gillian: The writing.

Heather: Do you compose the writing in a similar way that you do your speech?

Gillian: Write on my computer at home.

Heather: About how long does it take you to write a paper?

Gillian: Two days. Maybe more.

Heather: So you're really looking at a big investment of time.

Gillian: [Nods yes].

In addition to the extended time required for completion of assignments, challenges specific to AAC were apparent. During the three live interviews, I observed that using their respective AAC systems required the participants to engage in nearly constant, effortful movements, particularly Mary and Gillian, who used SGDs, suggesting fatigue could be a factor when using the AAC device for extended periods of time. Mary and Gillian also indicated that they created many stored messages on their SGDs ahead of time to facilitate participation in class. Mary noted that “it took a long time to input what was needed.” When asked if they felt it would be fair to say that they had to work longer or harder to complete academic requirements compared to typically functioning students, Mary, Michael and Gillian all responded affirmatively.

Related to the idea that these participants had to put in more effort to complete academic requirements than the average HE student was another subtheme, designated Strengths, which included personal characteristics conducive to achievement and learning in a HE environment. While none of the participants initiated statements about their own personal strengths, such characteristics were evident in their responses. One strength common to the participants was preparing in advance for classes. For Mary and Gillian, advanced preparation was logically inferred from their discussion of programming messages. Both indicated that they preprogrammed messages into their devices specifically for communication during classes. Gillian stated, “I have a lot of preprogrammed phrases to make communicating go faster. And I could type new things too.” Mary stated, “I used a mixture of preprogrammed messages, when I knew that I had something to say ahead of class, and messages I wrote spontaneously.” Upon further

discussion, she indicated that in order to program the messages, “it took a long time to put in what was needed.” The preprogramming of messages for verbal communication in a specific environment would necessitate giving special consideration ahead of time as to what questions or discussion topics might be introduced in class and generating appropriate responses, which could not be accomplished without developing familiarity with the subject matter. Another example of preparation was Michael’s advance planning for how he would manage classes in the future: “Like I knew [my colleague] was retiring in two years. So I went to [the administration] and started a case on what supports I would need to take over.... I don’t know what I need. So we need to figure it out. That’s one of the reasons I started the conversation early.”

Participants also shared their perceptions of their own strengths more directly when questioned. When asked if she felt her experience with AAC had been an advantage, Mary replied, “Yes, with my lectures,” indicating she had received “positive feedback” on her presentation skills. Gillian responded as follows:

Heather: Have you ever thought that maybe knowing how to use AAC has given you some strengths, an advantage?

Gillian [Nodding]: I’m more patient.

Heather: Compared to your classmates?

Gillian: [Nods affirmatively]

In response to a similar question, Michael indicated that the fact that he is “stubborn” has “helped him tremendously in life,” implying a tendency to persevere in pursuing goals or achievements.

Summary

Data obtained from live and electronic personal interviews were analyzed using procedures described by Creswell (2003), Miles et al. (2014), and Bogdan and Biklen (2007). Using the research questions as the basis for an initial coding theme, data were analyzed to identify recurrent themes among the interview data. Four major themes were identified: Communication, Perceived Attitudes, Disability Services, Barriers and Challenges, and Strengths. Under the Communication theme, sub-themes of Electronic Communication and Success in Communication were identified. Sub-themes under Perceived Attitudes included Positive Attitudes, Negative Attitudes, and Changes in Perceptions. The Barriers and Challenges theme included two sub-themes, Extracurricular Activities and Workload Issues.

CHAPTER 5

DISCUSSION

This case study investigated the perspectives of students who use augmentative-alternative communication (AAC) to communicate regarding their experiences in higher education and barriers to full participation. Data obtained through analysis of personal interview data were interpreted relative to a theoretical framework that included critical disability theory and Astin's input-environment-output (IEO) model of student development (Astin, 1993). Critical disability theory is a branch of scholarship which applies traditional critical theory to the notion of disability, exploring the definition of disability, relationships between disabled and nondisabled groups of people, and social justice issues affecting people with disabilities (Leake & Stodden, 2014; Liasidou, 2014). Astin's IEO model of student development holds that student outcomes in higher education (HE) are dependent not only on student characteristics (inputs), but are equally dependent on the interaction between the student and the HE environment. To facilitate interpretation relative to this dual theoretical framework, a series of guiding questions was developed, as described in Chapter 3, based on the key components of critical disability theory and Astin's model. Because the central purpose of this study was to inform higher education leadership concerning HE experiences of students with disabilities (SWD), findings are also interpreted in terms of implications for higher education decision making, administration, and practices.

Critical Disability Theory

The first two guiding questions concerned how the findings relate to social or medical models of disability and how experienced described by the participants align with either model. A fundamental component of critical disability theory is the rejection of a medical model of disability in favor of social model. In the medical model, disability is viewed as a deficit that causes performance or function to be deviant from an ideal, “normal” condition. The model emphasizes conformity to the ideal, holding that the individual who has a disability should strive to attain function that is closer to normal; therefore, efforts to help people with disabilities should be aimed at remediation of or compensation for identified deficits (Leake & Stodden, 2014; Liasidou, 2014). In contrast, the social model of disability, while recognizing differences in function, holds that handicapping effects of disability are partly or fully imposed by some aspect of the individual’s environment such as legal, cultural, attitudinal, physical, or other types of barriers. Rather than remediation of deficits, this model emphasizes modification of some aspect of the environment to reduce or eliminate barriers (Leake & Stodden, 2014; Liasidou, 2014; Meekosa & Shuttleworth, 2009; Rembis, 2010).

Responses related to the Communication theme, particularly the Success in Communication subtheme, suggest that these participants’ experiences have in many instances been aligned with a medical model. Michael’s recollection of undergraduate professors refusing to read his communication board was one example. During the live interview with Michael, I observed that his facility and speed in spelling out messages with his communication board was such that he could participate in discussions with minimal to no disruption to the flow of the discussion. This would also be possible

without revoicing, if the listener were willing to take the apparently straightforward step of reading the messages from the board. The unwillingness of his instructors to take this step effectively gave Michael sole responsibility for remedying communication breakdowns, rather than allowing the communication partner (instructor) to assume part of that responsibility. This scenario is consistent with the view of disability as a deficit which must be remedied or compensated for by the person with the impairment, a view which characterizes the medical model.

Also included in the subtheme of Success in Communication were Mary's and Gillian's descriptions of communication breakdowns. Gillian's reference to "people not being patient and not understanding my device" parallels Michael's experience in the implication that communication partners, whether instructors or peers, were unwilling to make adjustments to facilitate communication. Mary conveyed this unwillingness even more explicitly. At times, she was unable to keep up with discussions, because "sometimes I'm not able to get out what I'm saying before they are moving on to another topic." At other times, potential conversation partners moved on in a more literal sense: "...people around campus would often walk away before I could converse with them." Absent from the scenarios Mary described are attempts by anyone other than Mary to facilitate communication by modifying their own behaviors. Viewed through the social model of disability, this lack of flexibility contributed as much to the communication barrier as Mary's inability to speak. The combination of Mary's "deficit," as her lack of speech would be designated in the medical model, with the lack of any attempts on the part of others to deviate from the "normal" mode of communication resulted in Mary

being excluded from full participation in class discussions and from spontaneous interactions around the campus.

The next guiding questions for interpretation relative to critical disability theory dealt with higher education experience from the perspective of the participants, specifically how that experience might differ from that of nondisabled students. First, in what ways, if any, do the experiences of the participants suggest that they do not have the same degree and ease of access to expected HE experiences? Mary's and Gillian's struggles communicating with people around them are also relevant to this question. The fact that some of the people in their respective environments were apparently unwilling to engage in conversation with them would logically impose limitations on opportunities for social interactions. This type of limitation is consistent with findings by Cooper, Balandin and Trembath (2009) that young adult AAC users with cerebral palsy often experience loneliness due to having limited or difficult interaction with peers. Loneliness is not unique to AAC users; however, reduced opportunity for social interactions in the HE environment constitutes a difference in HE experience for these participants, compared to students who do not experience such limitations.

One of the most conspicuous ways in which these participants' experiences likely differed from their typically functioning peers appears in the Extracurricular Activities subtheme of the major theme Barriers and Challenges. For example, Mary did report being involved in disability sailing outside of school, but "didn't really do any extracurricular activities," similar to the other participants. Even Michael, who conveyed a belief that it was "important for the faculty to meet me and know that I'm here," did not report being involved in events or gatherings involving other faculty on a regular basis.

Part of the reason for the lack of involvement was attributable to logistical factors involved with commuting and attending class; for example, Mary indicated that the time consuming nature of her commute affected her involvement in campus based activities. Another important factor potentially impacting participation was mobility. Based on the experience of watching these participants during the live interviews and their descriptions of the nature and extent of their physical disabilities, attending meetings of student organizations or engaging in other types of extracurricular activities could well be physically exhausting, especially after attending class. This likelihood that physical fatigue played a role in low involvement is supported by findings by McNaughton, Light and Arnold (2009) that fatigue was a significant challenge for AAC users during full-time employment. Another potential complication impacting their participation in extracurricular activities was that Mary, Gillian, and Michael all indicated their disabilities were severe enough to require support from personal assistants, which means that costs and scheduling needs related to these paid caregivers could also factor into decisions about involvement in activities. These issues are not unexpected for students with severe disabilities; however, viewing the issues from a critical disability standpoint raises the question of whether some aspect of offered activities, such as scheduling, location, physical requirements, or adaptability, impeded or discouraged participation by these participants or others with significant disabilities. While the scope and accessibility of extracurricular activities offered by these participants' respective institutions was not addressed in this case study, it is a reasonable possibility that the lack of involvement may have been due to the fact that activities were simply inaccessible.

The next guiding question related to critical disability theory was: In what ways, if any, have participants experienced a sense of marginalization, and how did this impact their development in the HE setting? The Extracurricular Activities subtheme, discussed relative to the question, is also relevant to the question of marginalization. Logistical factors appeared to have played a role in this lack of involvement for these participants, and the participants did not convey a sense of overt or deliberate exclusion from student organizations. However, whatever the reasons, the result was lack of participation in mainstream student organizations and activities.

The Perceived Attitudes theme is directly related to the issue of marginalization. Two contrasting subthemes were identified for the major theme of Perceived Attitudes. The first, Positive Attitudes, indicates the participants perceived that in some circumstances, they were accepted and included by faculty and/or peers. For example, Will's statement that others "reacted like I was a normal student" suggests a sense of inclusion. However, the contrasting subtheme, Negative Attitudes, provides evidence that the participants did have experiences consistent with marginalization from the mainstream group, nondisabled students. One notable example was Gillian's description of her experience being "alone more" since returning to school and "hanging out" in the coffee shop with paid caregivers, rather than friends. This description conveyed a particularly powerful image of a student isolated from peers. The circumstance of spending more time with paid staff is addressed by the Circle of Communication Partners (CCP) paradigm described by Blackstone et al. (2001). The CCP paradigm identifies different types of people with whom an augmentative communicator will interact: life partners (e.g., spouse, sibling, parent), good friends, acquaintances, paid partners (e.g.,

therapists, staff), and unfamiliar persons. According to Blackstone et al., AAC users tend to have a greater proportion of life partners and paid partners, and a smaller proportion of communication partners in the other categories, compared to typical communicators.

Therefore, Gillian's isolation was consistent with a broader trend of isolation experienced by AAC users across settings. Another memorable response related to marginalization was Michael's statement, "I feel like a token," which conveyed an acute awareness of separation from the mainstream group, which in his case, was the full-time, nondisabled faculty at his university.

Other guiding questions for the application of critical disability therapy concerned higher education policy, specifically what can be done to ensure AAC users are able to achieve their best learning outcomes from HE. The theme most directly related to this question was Disability Services. Interview responses conveyed recognition of the value of support provided by disability service units in their respective institutions. Gillian's statements, "[Disability support] has helped me a lot. I would suggest to a first time college student that access those services," identified disability services as a fundamental part of what allowed her to function in a HE setting. Mary's statement, "the disability service ensured that I did my exams in the morning from then on," implies a sense of being supported, of having an advocate to pave the way for her academic success. Will also stated that he valued "the people who help other students."

The Disability Services theme illustrated the importance of having a robust program of disability support services for SWD. Having access to disability services and accommodations clearly played a vital role in facilitating the successful participation of these participants in HE. However, in addition to the availability of services, an equally

important point to consider is the nature of those accommodations. While there is no standard set of accommodations, Raue et al. (2011) identified the most commonly used accommodations as extended testing time, copies of lecture notes, note takers, assistance with study or learning strategies, alternative exam formats, and provision of adaptive equipment and technology. The participants in my study did benefit from some of these commonly used accommodations; however, their experiences also demonstrated that they often required alternative and/or more customized accommodations. Michael reported that note taking assistance, for example, was not always helpful. Mary described successful customization of her accommodations by the disability support service at her institution, including ensuring she took exams early in the day to manage fatigue, and rearranging the order of questions on an exam to manage a malfunction with her communication device. However, even with availability of disability services, the participants were required to use their own resources, effectively creating their own supports, as with the case of Michael providing his own assistants to manage the physical demands of academic work, such as typing and drawing.

The need to customize accommodations for SWD relates to an issue discussed in the literature review (Chapter II): distinguishing between reasonable accommodations and fundamental alterations to learning activities. Title III of the ADA requires that qualified students with disabilities be provided reasonable accommodations, unless the accommodation can be shown to “fundamentally alter” the nature of goods or services, or, as applied to HE, the nature of the learning activity. Negative faculty attitudes toward SWD and provision of accommodations, identified in the professional literature via studies such as Skinner (2007), Sweener et al. (2002), and Cook, Rumrill and Tankersly

(2009), appeared to stem at least partially from beliefs that provision of accommodations could alter learning outcomes or reduce academic rigor. Certainly, maintaining appropriate academic rigor to ensure that students meet learning outcomes is a valid concern for both educational leaders and faculty. However, reduction of academic rigor is not necessary or expected for compliance with Title III, as this would contradict the provision against fundamental alteration of activities. It is reasonable to acknowledge that not every student will be successful in any given field; there are some activities or fields which a student may not be successful, because of a physical limitation or some other personal characteristic. However, it is not reasonable to assume that modifying the format of an activity, or allowing the student to meet the learning objectives in a different manner, constitutes a lowering of standards. Michael's experience with this city planning course provides an example:

...So before the class started I get this note in my mailbox saying the professor wanted to talk to me. So I went to his office, and he tried to get me to waive the class, but I thought, but if it's required, I probably should take it. And so I said no, please let me try. So you know what I did? I just hired someone who knew how to draw and I just told them what to draw. And at the end of the class, the professor said he was so happy that I did not listen to him.

Michael's instructor was willing to waive the course, but was initially resistant to the notion that the course activities could or should be modified to the extent necessary for Michael to participate. Key questions to be considered relative to this example are: What should a city planner be able to do? Is it absolutely necessary for a city planner to be able to physically draw a picture of what he/she proposes, or could his/her expertise be

conveyed another way, in this case by describing concepts to another person, who renders the drawing? Does a lack of ability to draw preclude mastery of the underlying concepts? On the contrary, translating those concepts into verbal directions sufficient for another person to render the drawing would have required Michael to first achieve a level of understanding equal to, or perhaps greater than what would have been needed had he been drawing the plans himself. In another example, Mary was required to give lectures during her Master's program. Her supervisor questioned her ability to complete the requirement; however, Mary reported that she received positive feedback from her audience, suggesting that, contrary to the supervisor's expectations, the process of preparing and presenting the lectures using her SGD, although unconventional, resulted in an equally effective or even more effective presentation. These scenarios are examples of how the essential content and purpose of an assignment can be maintained when the student is allowed to complete the assignment in a different way, although in both cases, faculty expressed reservations about accommodations or modifications.

Faculty beliefs concerning accommodations relate to the next guiding question for interpretation according to critical disability theory, which concerns how the findings from this study can be applied to reduce or eliminate barriers to participation in HE for AAC users in terms of policies or actions. Attitudes toward accommodations, and toward SWD in general, are a critical aspect of minimizing barriers for SWD. Interactions with faculty, outside as well as inside the classroom, have been found to significantly impact student learning, achievement, and persistence (Astin, 1993; Kuh, 1981; Wilson, 1975). However, negative faculty attitudes toward SWD persist, which may hamper these interactions. Likewise, faculty beliefs that accommodations compromise academic

integrity (Skinner, 2007) may result in lack of willingness to consider the customized accommodations needed by qualified students who have significant disabilities. Negative peer attitudes can also hinder opportunities for social interactions. Therefore, elimination of barriers requires taking steps to modify negative attitudes, which aligns with the Changes in Perception subtheme identified in my study. Michael, in stating how important it was for his fellow faculty members to know about him, conveyed the belief that this exposure could effect change in attitudes, a belief he has also acted on in his role as an advocate and public speaker on matters related to disability. He also described the changes he witnessed in how his students acted toward him once they became accustomed to interacting with him. The expectation that attitudes could be influenced was also reflected in the actions of the professor who required Mary's classmates to communicate as she did, via technology. Beyond individual efforts such as these, there is evidence in the professional literature (Getzel, 2008; Park, Roberts, & Stodden, 2012) that faculty development programs focused on issues related to disability can lead to better understanding and increased willingness to support SWD. Therefore, specific actions that can be taken by HE leaders to reduce barriers, in addition to ensuring availability of disability support services, are ensuring that faculty development programs address issues affecting SWD and planning educational programs for students to increase awareness and understanding of disability.

Astin's Model

The other component of the theoretical framework for my research was Astin's model of student development. According to the model, higher education outcomes for any student are a product of inputs and environment. Inputs refer to characteristics of

the student, the personal attributes and prior experiences influence the HE experience, such as academic achievements, and aptitude test scores. Environment refers to factors in the higher education environment that influence the student's experience, such as institutional policies and procedures, student activities, teaching approaches, extracurricular activities, technology, faculty, and peers. According to the model, the HE environment, and the student's interaction with that environment, are equally as important as inputs in determining HE outcomes.

The first guiding questions for interpretation relative to the IEO model concerned how using AAC impacted the participants' interactions with peers, faculty, and staff in the HE environment, and whether the participants identified strategies or actions that improved interactions. The Communication theme, specifically the Success in Communication subtheme, provides insight as to the answers to these questions. While participants described examples of successful face-to-face communication, such as Michael's communication with his students and Will's interactions with other students on campus, they also encountered significant communication breakdowns that hindered their ability to interact with others, as illustrated by Mary's telling observation that "people around campus would often walk away before I could converse with them." Lacking the ability to communicate at the same rate or in the same manner as those around them had a negative impact on interactions. As Gillian noted, "people not being patient and not understanding" led to considerable problems creating connections with others. Communication breakdowns occurred not only during informal conversation, but also during class, as evidenced by Mary's statement, that she simply "gave up" trying to keep pace with the discussion. Regarding strategies for improving interactions, the

preprogramming of messages into the SGD in anticipation of what messages could be needed in class was the primary strategy identified in terms of what the students themselves could do. The participants' experiences did not imply implementation of specific strategies by peers or instructors to improve communication. However, given that the root of the problem appears to have been insufficient time to respond, strategies that logically might have helped were purposefully giving more time to respond, an action that could have been modeled by the instructor for the other students, and giving the student some sort of signal as to when he/she might be called upon to respond, to allow composition of a response. These strategies are not among the most commonly used (Raue et al, 2011), relates to the need for customized accommodations, and the implementation of such customized strategies is, of course, dependent on the ability willingness of faculty and peers to use them.

The next guiding question related to Astin's model concerned the extent to which participants had difficulty accessing and using technology and other resources. Technology was the main resource addressed in the personal interviews. The availability and use of technology was evident in the participants' responses, as was their considerable knowledge and skill relative to certain aspects of technology. The participants did not make direct statements describing their skill in using technology. In fact, Mary, when asked if she thought using AAC had led her to be better at using technology than her peers, replied, "I'm not sure." However, the ability to manage technology was logically inferred from the participants' circumstances and experiences. Mary, Gillian and Will rely on high-tech speech generating devices (SGDs) for their daily communication needs. Michael, although favoring low-tech methods for much of his

daily communication, also uses a high-tech device for some communication as well as other functions, such as environmental controls. These circumstances necessitate mastery of specialized hardware and software. Even if assistance is provided by paid staff or family members, it is the individual with the speech impairment who must use the device to communicate. Ideally, as in the experiences of these participants, it is also the user who makes decisions about what content should be programmed into the device; these decisions require understanding of the capabilities and features of the device. Therefore, an experienced AAC user, out of necessity, becomes, at the very least, a technology consumer, and perhaps an expert, at least pertaining to certain functions. In addition to using SGDs, the participants were also able to access and competently use email applications on a regular basis, as indicated by their strong preference for email communication.

However, having the ability to learn and use these applications does not necessarily translate into full access to technology required for academic work. In terms of basic physical access, the participants all had regular use of some type of computer, as evidenced by consistent references to using iPads and word processing programs. The fact that the computers, at least for three participants, were in their homes, rather than provided by the HE institution, is consistent with trends in recent years for college students to own their own computers (Harris Poll, 2015) and does not necessarily imply a lack of access to campus-based computer technology. Clearly, the participants could and did use computers. However, in another sense, their access to appropriate technology was compromised, because the technology they used did not match the requirements with which they were faced. The subtheme of Workload Issues revealed that participants

struggled with completion of longer written assignments, namely using a computer to type out the assignments. Michael described typing out papers during his undergraduate studies by using a head pointer to press one letter at time. I identified the persistence and determination implied by this action as part of Michael's personal strengths. However, as admirable as this persistence may have been, the fact remains that the technology to which Michael had access for this task was inadequate to allow him to complete the task within a time frame close to expectations for nondisabled peers. Gillian experienced similar struggles, as she conveyed by indicating it takes "two days" for her to write a paper, while Will indicated "the work," presumably completing course assignments, was his least favorite aspect of his HE experience. Mary's responses did not convey the same sense of struggle completing assignments; however, from her statement, "I compose papers on my communication device and then transfer the files," two inferences are made. First, extra steps are needed to coordinate technology she uses for communication with the technology she needs for composing written assignments. Second, given that Mary activates her SGD by direct selection with her toe, it is likely that typing out long assignments is a time-consuming process, even if not to the same extent as the other participants. Therefore, while participants had access to technology and were well versed in using certain aspects of it, accessibility was compromised in that the technology did not meet the demands of their academic workloads.

The next guiding question for interpretation concerned ways in which institutional policies or practices could be hindering or facilitating these participants' ability to perform well academically or engage in other campus activities. The participants, for the most part, did not identify barriers clearly attributable to problems at a policy level. Even

in respect to direct questions aimed at eliciting responses concerning institutional policies and practices, Michael was the only participant to directly address the issue in his responses, and his statements were related to practices and attitudes, rather than official policy: “[The administration] need to work with me. They don’t understand how to support me... So I went to them and started a case on what supports [I] would need to take over...And if I did not do that, they would just hire someone else. And that drives me crazy.” It is reasonable to assume that Michael’s employer, a large state research university, has nondiscrimination policies in place concerning employees with disabilities. However, his statements show HE administrators, through their actions, or in this case inaction, can promote a situation where people with disabilities do not have the same opportunities as nondisabled people, even if their actions do not technically violate nondiscrimination laws or policies.

The themes of Communication and Barriers and Challenges also revealed the effects of other practices, specifically faculty practices, on the academic experiences of SWD. Not surprisingly, the experiences of these participants with faculty were varied. Some were positive. For example, the activity Mary described, in which her professor required the other students to communicate using technology, is an example of an action that supported her participation in class, rather than hindering it. Gillian’s statement, “They will get to know me with time,” conveyed a sense that her instructors eventually became more comfortable or adept at interacting with her. However, the answer to the question of whether practices hindered participation was, in some instances, yes. Michaels’s undergraduate professor, by refusing to read his communication board during class discussions, excluded Michael from participating, signaling a lack of value for

Michael's contributions. While the other participants did not identify instances of exclusion so explicitly, Mary and Gillian reported being left out of conversations and discussions due to the time required for them to formulate responses: by the time they were able to respond in discussions and conversations, the topic had changed, to the point where Mary, a graduate-level student, would sometimes "give up," even becoming "confused" at times. Neither Mary nor Gillian gave the sense that they were excluded deliberately; however, the fact that they could not keep up with the flow of discussion does indicate that the environment was not conducive to their participation. There were no accommodations, or at least no effective accommodations, in place to facilitate inclusion, such as ensuring Mary or Gillian had sufficient time to respond. Similar to the administrators at Michael's institution, the inaction of the faculty members in these scenarios resulted in the loss of opportunity for Mary and Gillian to participate in class to the same extent as their peers. There is evidence in the literature, from studies such as Hendrickson, Therrien, Weeden, Pascarella, and Hosp (2015), which supports the notion that students with significant disability can achieve desired outcomes from HE when provided with appropriate supports. However, results from my study suggest that practices have not yet adapted to meet the needs of the increasing numbers of SWD on college campuses by ensuring those supports are consistently in place.

Implications for Higher Education Leadership

This study aimed to inform HE leadership regarding the experiences and needs of students with disabilities, through the perspectives of a specific group of students, those who use AAC to communicate. One application of these results is maximizing persistence and completion, particularly given the increasing presence of SWD in HE

(Raue et al., 2011; Zhang et al., 2009). While formal nondiscrimination policies protect access to HE in terms of admission to an institution, being admitted does not ensure students have access the support they need to persist and complete a program of study. A key implication for higher education leaders is that ensuring adequate resources for disability services is essential. While these participants spoke positively of their experiences with disability services, and benefitted from some of the most typically offered accommodations, it was also clear that more customized, creative accommodations were warranted, as would be the case with students who have other types of disabilities. In order to provide these accommodations, giving adequate financial resources to ensure adequate staffing and training for disability service departments should be given appropriate priority in institutional budgets. Also, because the implementation of disability supports is carried out in large part instructors, another priority for funding is faculty development. Although individual faculty members will vary in their views toward disability and accommodations, providing training and support for faculty is an important step toward ensuring students receive the support they need to persist in higher education programs.

In addition to supporting disability service units and faculty, another area in which higher education leadership can influence the environment in a manner conducive to learning for all students is through promotion of universal design. In its original sense, applied to interior design and architecture, universal design involves creating an environment, starting with the design phase, that is equally accessible to people with varying physical needs (reference). Mary mentioned coping with mobility issues by “driv[ing] diagonally” on her campus. In an ideal application of universal design, Mary

and others with mobility impairments would have less need to modify the way they navigate the environment, because the environment would have been designed to accommodate them. Universal design principles are also applicable to instruction. Course activities and materials designed to accommodate a range of student abilities and need may reduce the need for individual accommodations, just as universal design in construction can reduce the need for retroactive modification of structures to improve accessibility. Given possible concerns regarding the level of time, effort, and support involved in provision of accommodations (e.g., Skinner, 2007), universal design warrants serious consideration as an approach to instruction that is efficient and accessible. However, universal design may represent a departure from established methods of instruction for many of the members, who would be responsible for implementing it. Therefore, faculty training would be essential. Academic officers and other administrators may promote implementation of universal design through faculty development programs and departmental or institution policies. Likewise, those who make or influence decisions about new construction have the opportunity to promote universal design in terms of the physical environment.

While persistence and completion are valid reasons for ensuring support for SWD, this support is also critical from a social justice standpoint. This study concerned the issue of equity in access to HE. An important question for higher education leadership is: Do students have equal access to the benefits of higher education, regardless of disability status? Based on the results of my research, the answer is no. The participants in my study, when given the opportunity to express themselves, thoughtfully described their experiences and revealed themselves to be intelligent,

hardworking students and faculty who value learning. In fact, they were required to expend considerably more effort to complete academic requirements compared to typically functioning peers, as evidenced by the subtheme of Workload Issues. These are attributes that educational leaders should value in their students and graduates; yet these individuals' participation in HE was hindered not only by the fact of their disability, but by a variety of factors, including a lack of willingness or ability of their instructors and peers to take the steps needed to fully include them in all the potential benefits higher education can offer.

Leake and Stodden (2014) and Liasidou (2014), propose that the culture of higher education has not yet caught up with the needs of students with disabilities, a notion which is supported by my research. The need for culture change applies to disability as much as it applies differences along the dimension of race, socioeconomic status, family background, English language proficiency, nationality, culture, age, or other factors. Higher education institutions have become and are becoming increasingly diverse along all of these dimensions (Pliner & Johnson, 2004). Ultimately, higher education leaders bear the responsibility for promoting a culture that will allow students who differ from mainstream groups, including students with disabilities, to have equal opportunities to benefit from higher education.

Limitations

One potential limitation of this study was researcher bias. As discussed in Chapter III, my status as an etic researcher created the potential for my background and experience to influence my interactions with the participants and interpretation. In fact, careful review of interview data suggested that my experience as a speech-language

pathologist did appear to impact my interactions with the participants, as evidenced by my unintentional use of phrasing more conducive to yes/no responses or binary choice than the more open-ended responses I had intended. I addressed this concern by engaging in additional analysis and reflection on the interview data and adhering to systematic processes for analysis and interpretation. This tendency occurred less as the interviews progressed, suggesting that the additional reflection, as well as gaining experienced, served to mitigate this limitation. Member checks were also used as a means of ensuring that the interview transcripts were accurate and complete from the perspective of the participants.

Another limitation was the amount of data obtained. Having a small number of participants is not automatically considered concern with a qualitative case study design. However, because two of the participants communicated by composing messages on SGDs during the live interview, more time was required for them to answer interview questions, resulting in a slower pace, longer time frame, and shorter conversational exchanges than might be expected during typical semi-structured interviews. Providing the option of answering the questions by email rather than via personal interview posed a similar limitation, in that there was no conversational exchange with the participant who chose this option. These limitations resulted in a smaller pool of interview data than originally intended. This was addressed by allowing the inclusion of a participant who was not a student, but who had experience using AAC in a higher education setting as student and was currently using AAC as a HE faculty member. For future studies of this nature, it is recommended that broader delimitations be considered, such as recruiting participants who attended or completed HE programs within the past 10 years, rather than

the past five years. It is also recommended that additional input be sought from AAC users themselves as to the most effective ways to recruit participants who use AAC, to allow for recruitment of as many participants as possible to ensure that the data pool for analysis is as robust as possible.

Finally, data concerning the participants' input regarding higher education were limited. This was partly due simply to the nature of their responses, as three of the four indicated they had no suggestions for policy changes or anything specific they would like to HE leaders to know about them. However, further probing or rephrasing of the questions might have yielded additional input from the participants. For future studies involving student perspectives on HE policy, it is recommended that additional examples or questions be provided to stimulate conversation about the topic in a way that is relevant and meaningful to the student.

Areas for Further Research

Based on the results of this research, several areas are identified for further study. One is the relative benefits of different course delivery models for students who have disabilities. Some of the challenges encountered by my participants were related to the severity of the physical aspects of their disability. It is possible that taking some of their courses online, or in a hybrid format, involving a blend of face-to-face and online formats, could address some of those difficulties. However, it is possible that a heavier reliance on technology for coursework could create additional problems, such as integration of assistive technology, such as SGDs, with the computer interface for online courses. Research questions could address questions such as which course delivery

systems facilitate better access and outcomes for students with disabilities, and how different disabilities impact participation in online courses.

Given the important role of HE faculty in providing appropriate support to SWD, and the importance of student-faculty interactions in student development, further research is warranted concerning faculty development programs and faculty aptitudes and practices. For example, Park, Roberts, & Stodden (2012) found that an intensive faculty training effort, accomplished over the course of several days, yielded greater knowledge and more favorable attitudes concerning accommodations and disability. Additional research questions include how different models of training, such as online training versus live training, impact attitudes, knowledge, and practices, as well as the effects of different amounts, frequency or intensity of training. Also, review of relevant literature for my study revealed that research on faculty attitudes and practices has consistently relied on a wide variety of self-report measures, such as surveys. The variety of measures used hinders comparison across studies or institutions, and the reliance on self-report measures creates the potential for bias in results. Research involving more consistent data collection methods, direct comparison of faculty perceptions with that of their students, and direct observations of faculty-student interactions could facilitate identification and characterization of best practices concerning students with disabilities.

Another area potential area research, specific to AAC needs in a HE setting, is the development of a core set of messages related to HE, to assist AAC users in identifying pre-stored messages that are likely to be useful in the HE setting. This concept is similar to the Generic Message List for AAC Users with ALS, created by Beukelman and Gutmann (1999). The generic message list provides a starting point for programming

messages into a speech generating device. The messages can then be modified as needed, according to the individual needs of the user. The list created by Beukelman and Gutmann is based on the anticipated communication needs of adult users who have amyotrophic lateral sclerosis (ALS). Having a similar list available based on anticipated communication needs of college students would facilitate programming of messages related to HE as early as possible, even before beginning the HE program, which would help to facilitate easier face-to-face interaction early on in the HE program. Research efforts would need to address the content and style of language used by typically functioning students in HE settings for various purposes, such as class participation, navigating the campus and facilities, and interacting with peers.

Another area for further research concerns the notion that students with significant disabilities, such as these participants, must be exceptional in some way to achieve the same results as nondisabled peers. This idea was reflected in findings by Hadley (2011) and Denhart (2008), and was also supported by results of my research. This certainly raises the issue of equality: if a student who has disability has to have some exceptional attribute, such as a high level of self-determination or intelligence, in order to succeed, while a student who does not have a disability can be successful without possessing such attributes, does equality exist in terms of their opportunities and learning? Suggested topics for future research include methods for defining and measuring different types of exceptionality among young adults and students who have disabilities, exploring how students and faculty may be able to capitalize on the personal strengths of SWD in terms of courses of study and career options, and how personal

strengths conducive to success in HE programs can be identified and considered relative to admissions and recruitment efforts.

Summary

This qualitative case study was designed to investigate the perspectives of students who use AAC to communicate in HE settings regarding their interactions and engagement with the HE environment and barriers to full participation in HE. Themes identified among personal interview during the analysis stage were interpreted relative to Astin's IEO model for student development (Astin, 1993) and critical disability theory using a series of guiding questions based on the major tenets of these two approaches. Interpretation relative to critical disability theory revealed that the participants experienced, to some extent, negative attitudes and marginalization in the higher education environment, and that they did not have comparable engagement in activities social interactions comparable to their nondisabled peers. Interpretation relative to Astin's model revealed that the participants, despite having similar inputs (qualifications) to typical college students, had very different experiences in terms of interactions with peers and faculty and engagement in HE activities. Implications for HE leadership included the need to ensure availability of adequate disability services, promote universal design efforts, and implement faculty development programs designed to positively impact faculty attitudes concerning students with disabilities. Limitations of this research included research bias, limited data pool, and limited data concerning HE policy. Suggestions for future research include relative benefits of course delivery models for students with different types of disabilities, effectiveness of different models of faculty development, alternate means of assessing attitudes and practices, and development of a

core set of messages related to the higher education environment to assist AAC users with programming their AAC devices with the most useful phrases to enhance interactions in the higher education setting.

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APPENDIX A

INTERVIEW QUESTIONS AND QUESTIONNAIRE

Position Description

Interview Questions and Questionnaire

I would like to hear about your experiences at [institution]. Tell me about the classes you're taking this semester.

Tell me about some things that you do at school when you're not in class.

What are the best parts of going to college?

What are your least favorite parts?

The next questions are about communication and using your AAC device. First, how do you use your device in different situations? (Frequency, prestored messages).

Have you had any problems communicating with your device? (Describe)

Tell me about speaking with your professors. (Examples: speaking in class, meeting outside of class, advising. Prompt: frequency, how comfortable do you feel, what kind of things do you talk about)

How about communicating with other students about things related to school? (Prompt: For example, class discussions, group projects, study groups,).

How about communicating with others about things that aren't about classes? (Prompt: specific to things mentioned in #2; other examples are going to different places around or near campus, attending special events, talking with friends, student activities)

How do others (students, faculty, staff) seem to react to you using your device to communicate with them? (If not already addressed).

The next questions are about things that work or don't work for someone using an AAC device in college. Are there things you or someone at your college/university have done that help/have helped you to be successful in college?

Is there anything that you wish could be different, or done differently, by your college/university that would make it easier for you to do your best in classes and do the things you want to do? (Tell me about that).

Is there anything that you wish the faculty or administration (Dean, etc.) at your college/university knew about you, or about other students who use AAC?

Is there anything else you would like to share about being in college and using AAC?

Questionnaire

Thank you for participating in this research study. Please answer the following questions. Some of them will require a short answer; others will require you to select one of several choices. Your answers will be kept confidential. Nothing that could identify you (such as your name or the name of your school) will be mentioned in the research report.

1. What is your name?
2. Are you enrolled in college right now? yes no
 - 2a. If yes, how long have you been enrolled?
 - 2b. If no, when did you graduate?
3. What college/university do you/did you attend?
4. Is this a two-year or four-year program? two-year four-year
5. What is your major?
6. What is/was your college GPA?
 2.0-2.5 2.6-3.0 3.1-3.5 3.6-4.0
7. During most semesters, have you enrolled...
 part time (less than 12 hours) or full time (12 or more hours)
8. What type of AAC device do you use?
 Cell phone (What app?) _____
 Tablet (What app?) _____
 Dedicated speech device (What brand/model?) _____
9. How do you access your device? (Select all that apply).
 Direct select
 How? hand/finger Head pointer
 Other: _____
 Eye gaze
 Scanning: 1 switch 2 switches Morse code
 Switch type/name: _____
 Head mouse
 Other: _____
10. What is your medical diagnosis? (Select all that apply; only those that directly affect your ability to produce speech)
 Traumatic brain injury
 Stroke
 Cerebral palsy
 Multiple sclerosis
 Muscular dystrophy
 Autism spectrum disorder
 Other: _____
11. How long have you used your current AAC device?

APPENDIX B

CALL FOR PARTICIPANTS

Perceived Supervisor Support Scale

Call for participants

Subject: Participants sought for research study – college students and recent graduates

Participants are sought for a research study for a doctoral dissertation concerning high-tech AAC use in college and university settings. Participants must meet the following requirements: Age 18 or older, able to compose and/or select their own messages on an AAC device, have at least six months' experience with their current device, and be enrolled in a 2-year or 4-year degree program or have graduated within the past two years. The study will involve completing a questionnaire and participating in a live or electronically (email-based) interview. Participants should expect to spend a total of up to approximately two hours on the project. If you are interested in participating and/or receiving more information about the study, please contact Heather Anderson at (318) 572-0415) or by email at hka005@latech.edu.

APPENDIX C

DETAILED INFORMATION AND INFORMED CONSENT

Detailed Information and Informed Consent

Dear (Name),

Thank you for your interest in the research study called “Perspectives of Augmentative-Alternative Communication Users Regarding Their Experiences and Perceived Barriers to Engagement in Higher Education.” You are invited to participate in the study as described below. Please read the following information carefully.

This study is being conducted as part of the requirements for the Doctor of Education (Ed.D.) degree. The purpose of this study is to explore experiences of college students who use high-tech augmentative/alternative communication (AAC) to communicate. Specifically, the research is designed to investigate how AAC users interact with faculty, fellow students, and other people in their college environment; how they participate in classes and other activities; and any barriers they have encountered to interaction and participation in college. The research also seeks the perspectives of AAC users concerning policies that affect students with disabilities in colleges and universities.

The study consists of three parts. For the first part, you be asked to choose or provide answers to several questions related to basic information, such as your age, type of AAC used, reasons for using AAC (nature of speech/language disability), field of study, number of terms completed, and college GPA. This may be done through Survey Monkey (instructions will be provided), or by sending response via return email. It is expected that this will take 20-30 minutes.

The second part of the study will involve participation in an interview with the researcher. You will have a choice of interview format. One option is to participate in a live interview, which may be in person (depending on your geographical location), or, more likely, via communication technology such as Face Time or Skype. If you prefer, the questions may be sent to you in advance so that you may prepare responses. It is expected that the live interviews will last approximately one to one-and-a-half hours. However, additional time will be taken with the interview if needed. The goal will be to allow you to participate without feeling rushed when answering the questions.

The second option is to complete the interview electronically; that is, through email correspondence with the researcher. With this option, you would send your answers to the questions by email. The researcher might then send a few follow-up questions for clarification or further discussion, and you would send email responses to those follow-up questions. You are encouraged to choose the interview format (live or electronic) with which you are most comfortable. If you choose to participate in a live interview, the researcher will work with your schedule to arrange this at a time that is convenient for you.

The third part of the study will be member checks. This is a “double checking” of the information obtained from the interviews. After results are compiled, a summary of the findings will be sent to you, and you will be invited to provide corrections, clarification, or additional input if you choose.

The responses that you provide for all three parts of the study will be kept confidential. Your real name, the name of your college or university, and any other information that might reveal your identify will not be included in the write-up of results. All materials related to the study will be kept in a locked file cabinet and password-protected electronic files.

Participation in the study is voluntary. Participants will not receive any payment for participating. There is no physical risk associated with participation. It is possible that the discussion of personal experiences during the interview questions could cause you to feel uncomfortable. You are free to decline to answer any question during the interview or withdraw from the study at any time if you choose.

If you choose to participate, please complete and return the attached consent form. The form may be sent by return email to hka005@latech.edu, faxed to the attention of Heather Anderson at (318)-632-2003, or sent by regular mail to the following address: Heather Anderson, 572 Ockley Drive, Shreveport, LA 71106. Once the form is received, you will be contacted to make arrangements for your interview. Please check your availability between __ (date) __ and __ (date) __. Interviews will be scheduled prior to __ (date) __.

Please feel free to contact the researcher at any time if you have questions about the study using the contact information above. This study has been approved by the Louisiana Tech University Institutional Review Board (IRB). You may contact the IRB with any questions or concerns about the study by calling _____ or sending an email to _____ (email address _____).

Thank you for your time, your consideration of this information, and your willingness to participate in research.

Sample Consent Form

Please provide your signature or mark indicating your agreement with the following statement.

I agree to participate in the research study, “”. I have reviewed the description of the study and understand that all identifying information will be kept confidential. I understand that my participation is voluntary I may withdraw from the study at any time. I understand that I will not receive any payment for participating in the study.

Full name (printed or typed) _____

Signature _____

(Electronic signature permitted. If using an electronic signature, please check the box below).

_____ I agree that the name entered above will serve as my electronic signature.

APPENDIX D

FOLLOW-UP CONTACT FOR MEMBER CHECK

Follow-up contact for Member Check

Dear Participant,

Thanks you for participating in the research study, “Perspectives of Augmentative-Alternative Communication Users Regarding Their Experiences and Perceived Barriers to Engagement in Higher Education.” Attached is a summary of findings based on the input you provided during your interview. It is the intent of the researcher to provide an accurate account of participants’ interview responses. You are welcome to provide any clarification or additional information you feel is necessary. If you wish to provide such information, please do so by return email or phone (see contact information below) no later than ____date____. Please let me know if you have additional questions or concerns.

Sincerely,

Heather Anderson

Doctoral Candidate, Louisiana Tech University

Phone: (318)572-0415

Email: hka005@latech.edu

APPENDIX E

HUMAN USE APPROVAL LETTER



LOUISIANA TECH
UNIVERSITY

MEMORANDUM

OFFICE OF SPONSORED PROJECTS

TO: Dr. Bryan McCoy and Ms. Heather Anderson *RK*
 FROM: Dr. Richard Kordal, Director of Intellectual Properties
rkordal@latech.edu
 SUBJECT: HUMAN USE COMMITTEE REVIEW
 DATE: October 27, 2017

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

**“Perspective of Augmentative-Alternative Communication Users Regarding
 Their Experiences and Perceived Barriers to Engagement in Higher Education”**

HUC 18-047

The proposed study’s revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on October 26, 2017 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond October 26, 2018.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

Please be aware that you are responsible for reporting any adverse events or unanticipated problems.

A MEMBER OF THE UNIVERSITY OF LOUISIANA SYSTEM

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