Augmentative and Alternative Communication Continuing Education in the Schools: A National Survey

By

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Abstract

This study examined the continuing education obtained by speech-language pathologists working in a school setting in the area of augmentative and alternative communication (AAC), and the factors that influenced continuing education decisions. A survey entitled "AAC Continuing Education in the Schools: A National Survey" was hosted online. Speech-language pathologists' participation was solicited through school districts selected at random, state speech-language pathology associations, online community boards, and various speech-language pathology Facebook groups and pages. A total of 232 individuals participated in this study and provided demographic information, information about their school, information about their caseloads, their knowledge and experience with augmentative and alternative communication, as well as information about the continuing education they had obtained in the last five years.

The results from this study revealed that 66% of participants obtained augmentative and alternative communication continuing education within the last five years. Participants cited the needs of students on their caseloads and the need to update or maintain knowledge as reasons for obtaining continuing education. In addition, participants reported price and location as factors influencing where they obtain continuing education.

Implications for speech-language pathologists who work in a school setting include the need to effectively examine their knowledge and skills in the area of AAC, the needs of students on their caseload, and anticipate future needs to identify and obtain AAC continuing education. In addition, speech-language pathologists should advocate for the continuing education needs within their school district. Implications for continuing education providers include examining the needs of speech-language pathologists in the field to guide creation of continuing education opportunities. Identified areas of need include AAC assessment and clarifying erroneous belief.

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Chapter I

Introduction

The last several decades have brought forth considerable advancement in technology and increased availability for the everyday consumer. This technology has significantly impacted fields such as medicine, health care, and education. The same is true for the allied health field of speech-language pathology. Developments in technology allow speech-language pathologists to provide services that were not possible some 30 years ago. Augmentative and alternative communication is an area within the speech-language pathology field that is expanded and continuously shaped by changes in technology. Through the use of augmentative and alternative communication, speech-language pathologists are able to provide increased opportunities to individuals with complex communication needs.

Augmentative and Alternative Communication

Augmentative and alternative communication or AAC, as defined by the American Speech-Language-Hearing Association (ASHA) is "an area of clinical practice that addresses the needs of individuals with significant and complex communication disorders" (ASHA, n.d.-b para. 1). According to ASHA, the area of AAC "uses a variety of techniques and tools, including picture communication boards, line drawings, speech-generating devices (SGDs), tangible objects, manual signs, gestures, and finger spelling, to help the individual express thoughts, wants and needs, feelings, and ideas" (ASHA, n.d.-b para. 2). By this definition, AAC encompasses all forms of communication other than oral speech.

There are many different types of augmentative and alternative communication. AAC systems are often divided into unaided and aided forms. Unaided forms of AAC do not require

an external support, while aided forms AAC require some type of external support (ASHA, n.d.-b). The external support varies in the amount of technology involved. Unaided AAC requires no external support, outside of the communicator him or herself. Unaided AAC is often referred to as a no-tech option due to the lack of technology required. Facial expressions, gestures, body language, and sign language are examples of no-tech, or unaided AAC options (ASHA, n.d.-b). Aided AAC requires external support. Aided AAC that utilizes an external support that is non-electronic is referred to as a low-tech option. Pictures, symbols, physical objects, writing, and communication boards or books are all examples of low-tech AAC options (ASHA, n.d.-b). Aided AAC that utilizes an external support that is fully electronic is referred to as a high-tech option. High-tech AAC devices are computerized systems that utilize voice output technology with digitized or synthesized speech and a dynamic screen display. As technology has expanded, there is often a third category of aided AAC recognized in order to distinguish among electronic systems. It is referred to as mid-tech AAC. Mid-tech AAC systems employ an electronic component, but do not require the use of a dynamic display or a computer screen like those in high-tech AAC systems (Downey, 2003). In addition, mid-tech AAC devices often provide voice output that utilizes prerecorded messages. Examples of mid-tech AAC systems include single-message voice output buttons or switches, and static display voice output communication boards.

Outside of developments in technology, there are other factors that are increasing the prevalence of AAC. These include changes in the demographics of individuals who require AAC, changes in theory surrounding AAC and its benefits, and increased awareness and acceptance of AAC. In 2013, Beukelman and Mirenda estimated that over 1% of the population or 4 million Americans may require AAC (ASHA, n.d.-b). Over the years, the demographics of individuals who require AAC has changed and increased. The population of individuals who

require AAC is diverse across gender, age, race, ethnicity, culture, socioeconomic status and disability (Light & McNaughton, 2014). Individuals may require AAC because of congenital or acquired disabilities that impact their ability to meet their daily communication needs using verbal speech alone. Common congenital disabilities that may impact communication include autism spectrum disorder (ASD), cerebral palsy, developmental disabilities, intellectual disabilities, developmental apraxia of speech and various genetic disorders (ASHA, n.d.-b). The incidence of ASD alone has increased significantly in recent years. According to the Centers for Disease Control and Prevention (CDC), approximately 1 in 68 children has been identified with ASD (Christensen et al., 2016). Common acquired disabilities that may impact communication include cerebrovascular accident (CVA), traumatic brain injury (TBI), neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS), Alzheimer's disease, dementia, and primary progressive aphasia (PPA), and disabilities following surgeries (ASHA, n.d.-b). Advancements in medicine have increased the survival rates and life expectancy of these individuals with congenital and acquired disabilities (Light & McNaughton, 2012). This ultimately results in more individuals requiring and using AAC.

Historically, AAC was viewed as a "last resort" for individuals in which other interventions for the development of oral speech failed (Romski & Sevcik, 2005). Due to research findings, this is no longer believed to be true. A previous emphasis of AAC was often to provide individuals the ability to express wants and needs (De Leo, Lubas, & Mitchell, 2012). However, in recent years, there has been increased recognition of the importance of a wide variety of communication functions (Light & McNaughton, 2014). The field of AAC and its knowledge base is expanding to provide individuals with complex communication needs the ability to access all communicative functions. These communicative functions include asking

questions, requesting, rejecting, protesting, commenting, describing, and building social relationships. In addition, there was once believed to be several prerequisites in order to benefit from AAC (Romski & Sevcik, 2005). These included cognitive prerequisites determined by assessed intelligence levels, and sensorimotor prerequisites. They also included various language or system prerequisites, such that an individual must progress through a hierarchy of symbols (Romski & Sevcik, 2005) or demonstrate mastery of a low-tech device before obtaining a high-tech device. Unfortunately, some professionals in the field may still hold these beliefs today and use perquisites as a basis for exclusion despite research findings and opposition from professional bodies (Iacono & Cameron, 2009).

Augmentative and Alternative Communication in the Schools

The number of students in the general education setting with AAC needs continue to increase (Light & McNaughton, 2012). This is due to increased prevalence and survival rates discussed above, as well as changes in education legislation, AAC awareness and availability and education service delivery.

AAC has not always been readily available to students with complex communication needs. Over the years, changes in legislation have mandated the consideration and implementation of assistive technology (AT), which encompasses AAC for students with disabilities. The Individuals with Disabilities Education Act (IDEA) is such legislation. In 1990, the Education for All Handicapped Children Act (EHA) was reauthorized as IDEA. IDEA was amended in 1997, and re-authorized again in 2004, and is now known as The Individuals with Disabilities Education Improvement Act of 2004. The purpose of IDEA is:

> To ensure that all children with disabilities have available to them a free appropriate public education that emphasizes special education and related services designed to meet

their unique needs and prepare them for further education, employment, and independent living (U.S. Department of Education, n.d. Sec. 300.1a).

IDEA defines assistive technology as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability" ("Individuals with Disabilities Education Act," 2004 Sec 300.5).

IDEA, along with other education legislation, has led to changes in education service delivery. IDEA mandates that individuals with disabilities be educated in the least restrictive environment appropriate ("Individuals with Disabilities Education Act," 2004). While the term least restrictive environment is broad, its interpretation has led to the inclusion of individuals with disabilities. Inclusive education is an umbrella term referring to practices within the general education classroom and curriculum. According to Beukelman and Mirenda (2013), there are requirements for education to be considered inclusive. These requirements include that the student must be a member of the general education class, the student must actively participate in all social and academic activities within the classroom, and the student must acquire skills that are meaningful and relevant across all academic areas (Beukelman & Mirenda, 2013). Inclusive education may result in increased opportunities for social interaction, higher academic achievement, and improved communication skills for children with disabilities (Soto, 2004).

SLP Roles and Responsibilities

Due to the increased prevalence of individuals who use AAC, the continued need to increase awareness, and to advocate for these individuals, speech-language pathologists have many roles and responsibilities in the schools. It is within the scope of practice of a speech-language pathologist to provide services to individuals who require AAC. Speech-language

pathologists are central in the screening, assessment, diagnosis, and treatment of persons requiring AAC (ASHA, n.d.-b). Although team approaches are often utilized, speech-language pathologists are usually the professionals responsible for the overall management of AAC systems (Balandin & Iacono, 1998).

According to ASHA, appropriate roles for speech-language pathologists in regards to AAC assessment include determining the need for AAC assessment or referral and conducting a comprehensive transdisciplinary, and culturally and linguistically appropriate AAC assessment (ASHA, n.d.-b). The goal of an AAC assessment is to observe an individual's current modes of communication and communication potential to determine a system that will meet their daily communication needs. AAC assessment is an ongoing process that must incorporate all stakeholders. The assessment process should take into consideration the needs of the individual, and whether the AAC system will augment or replace existing communication, the need for AAC, whether it be temporary or permanent, and means of communication to facilitate more appropriate alternative behaviors (ASHA, n.d.-b). Comprehensive and quality assessments are critical in the success and continued use of an AAC system (Johnson, Inglebret, Jones, & Ray, 2006).

According to ASHA, speech-language pathologists have multiple roles regarding AAC intervention. Speech-language pathologists develop and implement intervention plans to maximize effective communication between individuals who use AAC and their communication partners across the lifespan, document progress, and determine appropriate AAC modifications. In addition, speech-language pathologists in a school setting must ensure that AAC goals and AAC use are included in a student's IEP. All speech-language pathologists should remain

informed of research in the area of AAC and provide services that respect the cultural and linguistic differences of their clients (ASHA, n.d.-b).

Not only is it within the scope of practice and an important role for speech-language pathologists to provide AAC services, it is highly likely that a speech-language pathologist in a school setting will encounter students with complex communication needs who may benefit from AAC. Silverman and Bady (1978) estimated that more than 50% of speech-language pathologists would provide services to individuals who use AAC. This estimate is similar to recent data in the field. According to the 2016 Schools Survey, 55.1% of speech-language pathologists in the schools regularly serve students in the area of nonverbal/AAC (ASHA, 2016a). Marvin et al. (2003) surveyed 71 speech-language pathologists, 36 of which worked in a school setting, and found that half of SLPs in the schools reported supporting students who use AAC on a daily or almost daily basis.

Preprofessional Education, Certification, and Licensure

It is well-established that preprofessional education and training in AAC is essential to service delivery and clinical decision making across disabilities and ages (Dietz, Quach, Lund, & McKelvey, 2012). In fact, a lack of knowledge and training in AAC may adversely impact the quality of services provided to individuals with complex communication needs. Delaying AAC implementation for adults with neurologic impairments may result in a lack of progress and increased frustration with inability to communicate with friends and family as well as increased communication breakdowns (Costigan & Light, 2010). Kent-Walsh, Stark, and Binger (2008) found that Florida speech-language pathologists reported 83% of their students could perform better academically if provided additional supports and services to facilitate consistent AAC use in the classroom. Lack of time and knowledge and skills were cited as limitations to providing

additional supports and services (Kent-Walsh et al., 2008). Similar findings were reported with children with cerebral palsy (CP) who require AAC. Hustad and Miles (2010) analyzed the speech and language services provided to 22 children with CP. The children were classified into groups according to their need for AAC, 21 children were identified as needing some form of AAC. They found that just over half of children with CP who required AAC had speech-language goals or objectives in their IEPs, suggesting that this population is underserved in regard to AAC (Hustad & Miles, 2010).

In 2005, ASHA identified 'communication modalities" as one of nine content areas in which speech-language pathologists must demonstrate knowledge and skills (ASHA, 2005a). In 2014, ASHA revised this content area to be titled "augmentative and alternative communication" (ASHA, 2014). This revision was made in order to "provide clarification and be more specific regarding the standard's intent" (ASHA, 2012). Through the content areas, ASHA sets the knowledge and skills requirements for accredited preprofessional programs throughout the United States. Prior to being a required content area, preprofessional education in AAC was variable and often sparse. In 1982, ASHA found that only 32.3% of the speech-language pathology programs offered at least one complete course in AAC (as cited in (Koul & Lloyd, 1994). In 1994, Koul and Lloyd found that 62% of responding speech-language pathology programs had at least one course in AAC, many of which were introductory. Similarly, in 1995, Ratcliff and Beukelman reported that 67% of responding programs offered a course in AAC.

Since being identified as a content area, preprofessional education in AAC has increased in general. In 2008, Ratcliff, Koul, and Lloyd found that 73% of responding programs offered one or more separate courses in AAC. In this same survey, just over half (52%) of respondents reported that a separate AAC course was required, with the remainder reporting it as an elective

(Ratcliff, Koul, & Lloyd, 2008). While the number of courses in AAC has increased over the years, AAC content is not always required and is frequently included within other courses. This content is frequently embedded in separate, but related courses (i.e., language disorders), combined with other topic areas in multi-topic courses, or reduced in the number of credits dedicated to AAC (Fallon, 2008). Ratcliff, Koul, and Lloyd (2008) found that of the programs that did not offer a dedicated course in AAC, 87% infused AAC content in other courses.

Overall increases in AAC coursework availability do not appear to be translating to increased confidence in providing AAC services. In a survey of speech-language pathologists, Marvin, Montano, Fusco, and Gould (2003) found that 83% of respondents reported fair to poor preprofessional education on AAC. Fewer than 25% of these respondents reported receiving adequate preprofessional education in order to meet their needs in providing AAC services (Marvin et al., 2003). In the same survey, 63% of respondents reported a poor to limited comfort level in working with AAC (Marvin et al., 2003). Kent-Walsh, Stark, and Binger (2008) reported lack of perceived levels of expertise to provide AAC services in general, as well as lack of perceived expertise to provide services in the areas of literacy and language to individuals who use AAC. Speech-language pathology programs also report a lack of confidence in their graduates in providing AAC services. Ratcliff, Koul, and Lloyd (2008) found that only 33% of responding programs felt that the majority of their students were prepared to provide AAC services.

Despite overall increases in AAC coursework, without additional experiences such as advanced seminars, independent studies, or hands-on experience such as practicums and field studies, speech-language pathologists may graduate unprepared to provide AAC services (Dietz et al., 2012). Ratcliff, Koul, and Lloyd (2008) found that just over half (53%) of programs that

offered a separate course in AAC also provided laboratory instruction that required students to demonstrate AAC competencies. This lack of hands on experience has been reported in the research for years. In 1995, Ratcliff and Beukelman stated "students do not appear to be obtaining an appreciable number of clinical clock hours in AAC, hands-on training with AAC technology, or exposure to the interdisciplinary nature of AAC" (p. 70).

Although AAC is now recognized as a required content area for accredited programs, many programs continue to vary widely in the amount and type of AAC coursework and experiences provided. This variability may be due to a shortage of professionals trained in AAC at the university level. Due to a shortage of PhD level educators, finding individuals to teach and supervise students can be a challenge for graduate programs (Fallon, 2008). In addition, program length, a high number of required courses, and the rising cost of education could help explain why many speech-language pathology students graduate without adequate coursework or experience in AAC (Kennedy & Shiller, 2004). Varied availability of AAC courses and lack of perceived confidence in providing AAC services could negatively impact the speech-language pathology services for individuals who require AAC.

In addition to obtaining a degree from a preprofessional program, speech language pathologists may choose to obtain a Certificate of Clinical Competence (CCC) from ASHA. The ASHA CCC is “a voluntary certification showing that you have met rigorous academic and professional standards, and have the knowledge, skills, and expertise to provide high quality clinical services” (ASHA, n.d.-c). Certification provides internal professional recognition and external accountability. By holding CCCs through ASHA, a speech-language pathologist agrees to adhere to a code of ethics and obtain continuing education to remain current and knowledgeable in the field. These standards provide professional credibility to speech-language

pathologists and assurance to consumers and clients. In addition, in order to educate or supervise students, a speech-language pathologist must hold his or her CCCs.

Speech-language pathologists may also be required to be licensed in the state or states in which they practice. State licensure is different from ASHA's certification. Not all states require state-specific licensure. Some states require speech-language pathologists to hold ASHA's CCCs to practice, as opposed to a separate license, or in addition to a separate state license. State licensure provides individual states with the authority to regulate speech-language pathology services across settings. According to ASHA, 22 states require licensure for school-based speech-language pathologists, and 9 states allow licensure for school-based speech-language pathologists (ASHA, n.d.-d).

Evidence-Based Practice

Evidence-based practice (EBP) as originally defined by Sackett et al. (2000, p.1) is "the integration of best research evidence with clinical expertise and patient values." Schlosser (2006) provides a similar definition for the field of speech-language pathology, stating, "The three cornerstones of EBP (best and current research evidence, clinical/educational expertise, and relevant stakeholder perspectives) need to be integrated to arrive at decision-making consistent with EBP" (p. 8). EBP is not simply an action, but rather a process and method of practice. Schlosser and Raghavendra (2004) explain this process as several steps, including asking well-built questions, selecting evidence sources and searching for evidence, appraising and synthesizing the evidence, applying the evidence, evaluating this application, and disseminating the findings. Four major sources have been identified as influencing the use of EBP. These include consumer demand for high quality services, increased research volume and availability,

desire to reduce variability in services, and the use of scarce resources (Schlosser & Raghavendra, 2004).

Speech-language pathologists are expected to utilize evidence-based practice (Bernstein-Ratner, 2006). When implemented in the field of speech-language pathology, EBP may improve services, hold speech-language pathologists accountable the services they provide, reduce disconnect between research and practice, and provide increased stability in service provision (Schlosser, 2003). EBP as defined for the area AAC is the "integration of best and current research evidence with clinical/educational expertise and relevant stakeholder perspectives, in order to facilitate decisions about assessment and intervention that are deemed effective and efficient for a given direct stakeholder" (Schlosser & Raghavendra, 2004 p. 3).

Not only is EBP considered best practice; it is required in the field of speech-language pathology. In 2005, ASHA issued a position statement developed by the Joint Coordinating Committee on Evidence-Based Practice, stating that audiologists and speech-language pathologist must incorporate the principles of evidence-based practice into the clinical decision-making process (ASHA, 2005b). Speech-language pathologists are required to implement EBP to abide by the ASHA Code of Ethics and maintain their CCCs. Item "M" in the first section of ASHA's principles of ethics states that "individuals who hold the Certificate of Clinical Competence shall use independent and evidence-based clinical judgment, keeping paramount the best interests of those being served" (ASHA, 2016b Principle IV, Rule M).

Additional requirements for EBP exist for speech-language pathologists who work in school settings. The use of EBP aligns with existing requirements in education legislation, such as IDEA (Hoffman, Ireland, Hall-Mills, & Flynn, 2013). IDEA mandates implementation of all three components of EBP for services provided within the school setting. For the first component

of EBP, research evidence, IDEA mandates that the service provider utilize scientifically based and peer-reviewed research to the maximum extent possible (Hoffman et al., 2013; "Individuals with Disabilities Education Act," 2004). The second component of EBP, clinical expertise, aligns with IDEA's mandates of evaluation and participation of qualified personnel for the determination of eligibility (Hoffman et al., 2013). The third component of EBP, patient values, aligns with IDEA's mandates that the IEP team include and consider the concerns of a parent or guardian of the student, and whenever appropriate, the student with a disability (Hoffman et al., 2013).

Research shows that there is an overall agreement on the importance of EBP within the field of speech-language pathology (Metcalfe et al., 2001). In a survey of 39 Irish speech-language pathologists regarding the barriers perceived to prevent the successful implementation of evidence-based practice, O'Connor and Pettigrew (2009) found that only 6.3% of respondents did not see the value of research in practice. In addition, speech-language pathologists generally have positive attitudes toward EBP (Zipoli & Kennedy, 2005). Zipoli and Kennedy (2005) found that two variables, exposure to research and EBP during graduate training and during the clinical fellowship year (CFY) predicted speech-language pathologists' attitudes towards research and EBP.

Despite requirements, demonstrated benefits, and perceived value, research shows that EBP continues to be implemented in a less than ideal manner in the field of speech-language pathology. Bernstein-Ratner (2006) reported that speech-language pathologists are more likely to make clinical decisions using clinical experience, opinions from other professionals, old texts, or general Internet searches than journal articles. This is supported by a study by Nail-Chiwetalu and Ratner (2007). In a survey of 208 speech-language pathologists, respondents reported that

they most often consulted personal contacts, followed by Internet searches, continuing education experiences, and libraries as opposed to implementing EBP when confronted with a clinical question (Nail-Chiwetalu & Bernstein Ratner, 2007).

Research has been conducted to understand how speech-language pathologists make clinical decisions and implement the EBP process. The first step in the EBP process is to ask well-built questions. A survey by Hoffman et al. in 2013 found a lack of well-built questions being asked by speech-language pathologists in the schools. Almost half of respondents reported that they posed and researched no EBP questions during the school year (Hoffman et al., 2013).

When confronted with a clinical question, speech-language pathologists often fail to seek out appropriate evidence sources (Iacono & Cameron, 2009; Nail-Chiwetalu & Bernstein Ratner, 2007; O'Connor & Pettigrew, 2009). The best and most current available research is published in peer-reviewed journals. However, speech-language pathologists don't always turn to journals when attempting to answer a clinical question. Through a survey of speech-language pathologists, Nail-Chiwetalu and Bernstein Ratner (2007) found that very few respondents rely on journal publications when attempting to answer clinical questions. This finding is similar to that reported for Australian speech-language pathologists with less than half of respondents seeking professional journals for patient-related information (Vallino-Napoli & Reilly, 2004). Hoffman et al. (2013) found that 84% of responding school speech-language pathologists reported reading only four or fewer journal articles during a school year. Speech-language pathologists may also use information from the open Internet when answering clinical questions (Hoffman et al., 2013; Vallino-Napoli & Reilly, 2004). In addition, speech-language pathologists have been found to seek the opinion of colleagues when attempting to answer clinical questions (Nail-Chiwetalu & Bernstein Ratner, 2007). Zipoli and Kennedy (2005) found that opinions of

colleagues were the most frequently used source of information for speech-language pathologists behind clinical experience. The same is found to be true for other health professionals, including physicians, nurses, and allied health professionals (Nail-Chiwetalu & Bernstein Ratner, 2007). This lack of development of clinical questions, and integration of evidence-based articles and resources negatively impacts the EBP process and the services delivered to clients.

Continuing Education

Another source of information that can help speech-language pathologists stay up to date on recent research in the field and current in their practice is continuing education. Continuing education is intended to educate speech-language pathologists working in the field and provide information on new assessment and intervention strategies or build upon existing knowledge. Continuing education may be obtained through events such as webinars, conferences, conventions, local workshops or programs, self-studies and independent studies. Continuing education is required for speech-language pathologists. Speech-language pathologists who hold their CCCs are required to obtain 30 continuing education units (CEUs) during each 3-year interval to maintain certification. The ASHA CEU is a unit of measurement for continuing education participation. It is defined as:

> Ten contact hours of participation in an organized CE experience offered by a provider, excluding meals and breaks. The contact hour is defined as 1 clock hour (60 minutes) of interaction between a learner and instructor or between learner and materials that have been prepared to facilitate learning (ASHA, n.d.-e ASHA CEU Sentence Key, Item 1).

In addition, speech-language pathologists are required to complete continuing education to maintain licensure in their respective states. The number of continuing education hours required per licensure period varies by state.

Continuing education may be an important mode of disseminating information and shaping practice, especially in areas in which professionals obtain little preprofessional education. As a newly recognized content area that is continuously changed by advancements in technology, the field of AAC may benefit from continuing education. Kent-Walsh, Stark, and Binger (2008) found that speech-language pathologists reported a lack of knowledge and skill in AAC as one of their greatest barrier to service provision. In order to reduce this barrier and increase knowledge, continuing education appears to be a preferred means of obtaining current information in the field of speech-language pathology (Nail-Chiwetalu & Bernstein Ratner, 2007). A survey of Florida speech-language pathologists revealed the preferences for training. These preferences included AAC interventions, language development supports, literacy development supports, and AAC in the classroom. Baladin and Iacono (1998) found that while many Australian speech-language pathologists indicated a desire for further information on AAC, as many as one-third failed to specify the type of information they would prefer. This suggests that although speech-language pathologists may want to increase their knowledge in the area, many may be unaware of available information and training.

Unlike peer-reviewed journals, the content of continuing education events are not always exhaustively reviewed prior to approval (Nail-Chiwetalu & Bernstein Ratner, 2007). In addition, it is the responsibility of speech-language pathologists to recognize their own need for information and independently seek out appropriate continuing education opportunities to fulfill this need (Fallon, 2008). Overall, there are relatively few studies examining the amount and type of continuing education obtained by speech-language pathologists in the area of AAC.

Purpose

The purpose of this research was to examine the amount and type of AAC continuing education obtained by speech-language pathologists working within a school setting in the area of augmentative and alternative communication. Specifically, the researcher inquired about the factors that influenced continuing education obtained by practicing speech-language pathologists as well as what types of continuing education were considered beneficial in supporting their practice.

Chapter II

Method

This research sought to identify the factors influencing selection of continuing education opportunities by speech-language pathologists who work in a school setting, the amount and type of AAC continuing education obtained, and whether speech-language pathologists viewed the opportunities as beneficial.

Participants

Two hundred and sixty-two individuals responded to the survey. However, 34 responses were not analyzed because the participants did not consent to the study, were not speech-language pathologists or did not work in the school setting. The participants in this study were 232 speech-language pathologists who were employed in the schools. Additional information about participants will be presented in the results chapter of this document.

Demographic information obtained throughout the survey included certification, licensure, highest level of education, current employment setting, state of employment, and length of speech-language pathology career. Two hundred and sixteen of 232 participants reported that they were an American Speech-Language-Hearing Association (ASHA) certified speech-language pathologist (CCC-SLP). Two hundred and nineteen of the 232 participants reported that they were a licensed speech-language pathologist in their respective state. Regarding their highest level of education, six participants reported a bachelor's degree, 211 participants reported a master's degree, one participant reported a clinical doctorate in speech-language pathology, one participant reported a Doctor of Philosophy, and 13 participants selected "other." These other degrees included a sixth-year certificate, a master's degree and a supervisor certificate, a master's degree and an advanced certificate of education, a master's

degree plus 30 credit hours, two master's degrees, three master's degrees, education specialist, Doctor of Education, and a Doctor of Philosophy, all but dissertation.

Participants provided their current employment setting. All 232 participants included in the analysis practiced in a school setting. Of the participants working in a school setting, 40 respondents reported working in an additional setting. Six participants reported working in a hospital, 10 participants reported working in a private clinic, 11 participants reported working in a skilled nursing facility, and 13 respondents selected "other." These other additional settings included a university, private practice, home health, early intervention, and telepractice. In addition, participants were asked to provide the state in which their school is located. Participants from 40 states and one participant from outside of the United States were represented in this study.

Survey

The researcher developed a survey through Qualtrics, online data collection software. Prior to finalizing and distributing the survey, a pilot version was sent to three speech-language pathologists of differing levels of experience with augmentative and alternative communication who were practicing in a school setting. The researcher compiled the feedback obtained from the speech-language pathologists. Using the feedback, the researcher made necessary modifications to the survey questions.

The survey titled, "AAC Continuing Education in the Schools: A National Survey," was a 58-question online questionnaire. See Appendix A. The survey utilized several different question types to obtain intended information. Question types included: multiple-choice, Likert-type scales, and open-ended questions. In addition, the survey utilized a skip logic pattern to guide participants through the survey. Participants were guided to questions depending on their

response to the previous question. This ensured that participants weren't presented with questions that were not applicable to their experiences. Due to the skip logic pattern, no single participant was presented with or required to answer all 58 questions in the survey.

The first portion of the survey obtained demographic information including certification, licensure, highest level of education, years of experience, and setting of practice. The second portion of the survey obtained more specific information regarding the school setting, including years of experience specific to the schools, school district location, school district size, school district setting, and availability or presence of an augmentative and alternative communication or assistive technology specialist and team in the school district. The third portion of the survey obtained information about the speech-language pathologists' caseloads, including size, ages served, prevalence of augmentative and alternative communication, type of augmentative and alternative communication, and perceived need for augmentative and alternative communication. The fourth portion of the survey obtained information regarding the speech-language pathologists' knowledge of augmentative and alternative communication assessment and intervention, including comfort in supporting students who use AAC, and where they acquired and maintain these knowledge and skills. Finally, the last portion of the survey obtained information about continuing education, including funding, areas, and factors influencing decision-making, amount, type and focus.

Procedure

The researcher used several different methods to distribute the survey to practicing speech-language pathologists. First, the researcher emailed the survey to randomly selected school districts across the United States. A list of school districts was generated for each state from the National Center for Education Statistics (NCES). This list was downloaded as an Excel

sheet where it was randomized. The researcher selected approximately 1% of school districts at random for inclusion in the study. NCES utilized information from the Common Core of Data (CCD) public school district data for the 2014-2015, 2016-2017 school years. The data included 18,403 school districts in the United States, including the District of Colombia. Based on total number of school districts in the state, a sample was selected from the randomized list of districts for each state. One hundred and ninety-one school districts were included in this study. Distribution was designed to ensure that at least one school district per state was selected for inclusion in the study. The researcher conducted a web search to obtain contact information for the selected school districts. To ensure participants remained anonymous, the researcher gathered contact information for someone other than the speech-language pathologists themselves. The researcher then sent the online survey to the identified contact person for the school district via email, requesting them to forward it on to all speech-language pathologists in their school district. Various contacts included Director of Special Education, Special Education Coordinator, Special Education Secretary, Director of Exceptional Student Services, Exceptional Student Services Coordinator, Director of Special Services, Director of Pupil Services, Director of Student Support Services, and Superintendent.

Second, the researcher contacted all 50-state speech-language pathology organizations via email requesting assistance with survey distribution. Six state speech-language pathology organizations responded to this email, confirming that they would be willing to distribute the survey to their members. These states included Connecticut, Idaho, Kansas, South Dakota, Washington, and West Virginia. In addition, the researcher posted the survey within the ASHA Community pages for the following ASHA Special Interest Groups (SIGs): SIG 12 Augmentative and Alternative Communication, and SIG 16 School-Based Issues.

Finally, the researcher utilized social media (Facebook) to distribute the survey on various speech-language pathology groups and pages.

The survey was distributed with a description of the study and a link to the survey. Upon activating the link, participants were directed to an Information Statement for the study. The Information Statement informed participants of the purpose of the study, anticipated benefits, and potential risks for participants. Participants were informed that completion of the survey indicated willingness to participate. In addition, participants were required to answer a consent question prior to advancing to subsequent survey questions. Participation remained anonymous throughout completion of the survey. Neither the survey itself nor Qualtrics software collected any identifiable information.

At the beginning of the survey, participants were asked to identify where or how they learned about the survey. All 232 participants provided this information. Table 1 presents where or how the participants learned of the survey.

Table 1

Where Participants Learned of Survey

Where Participants Learned of Survey	Number of Participants	Percentage of Participants
Facebook	67	28.9%
ASHA Special Interest Group (SIG)	75	32.3%
State Speech-Language-Hearing Association	45	19.4%
Email from special education director or coordinator in school district	44	19.0%
Other	1	0.4%

Chapter III

Results

This study examined the continuing education that speech-language pathologists working in a school setting obtain in the area of augmentative alternative communication, as well as the factors influence their decisions in regard to continuing education. To participate in the study, speech-language pathologists completed an online survey. This chapter will present data representing participants' survey responses. Although 262 participants were involved in the study, only 228 surveys were fully completed, resulting in a completion rate of 87% for the entire survey. Two out of the 262 participants selected that they did not wish to participate in the study. Of the participants who chose to participate in the study, 246 indicated that they were speech-language pathologists. Of the 246 speech-language pathologists, 232 reported currently practicing in a school setting. These 232 responses of speech-language pathologists working in the school were used as the database for analysis.

The survey utilized skip pattern logic to present questions according to the responses provided by the participants. This resulted in participants not being presented with and therefore not answering all 58 questions in the survey. However, when participants were presented with a question, validation was used to force respondents to answer a question before moving on. Validation was utilized for all questions except for open-ended questions that required text entry. Participation in the survey generally decreased as the respondents progressed through the survey, and specifically on open-ended questions that required the participant to type a response. The percentages reported in this study have been calculated using the number of respondents to a particular question, rather than the number of respondents who completed the survey in its entirety.

This survey gathered information on five main topics. These main topics included demographic information, school information, caseload information, information regarding the participants' knowledge of AAC, and information on continuing education.

Demographic Information

At the beginning of the survey, participants were asked to indicate the state(s) in which they practiced. Two hundred and thirty participants provided this information. Table 2 presents the participants' states of practice.

Table 2

Participants' State(s) of Practice

State of Practice	Number of Participants	Percentage of Participants	State of Practice	Number of Participants	Percentage of Participants
Alaska	2	0.9%	Mississippi	2	0.9%
Arizona	2	0.9%	Montana	1	0.4%
California	12	5.2%	Nebraska	3	1.3%
Colorado	1	0.4%	New Hampshire	3	1.3%
Connecticut	8	3.4%	New Jersey	5	2.2%
Delaware	1	0.4%	New York	15	6.5%
Florida	3	1.3%	North Carolina	5	2.2%
Georgia	3	1.3%	North Dakota	5	2.2%
Hawaii	1	0.4%	Ohio	6	2.6%
Idaho	3	1.3%	Oklahoma	2	0.9%
Illinois	10	4.3%	Oregon	4	1.7%
Indiana	4	1.7%	Pennsylvania	9	3.9%
Iowa	1	0.4%	South Dakota	10	4.3%
Kansas	11	4.7%	Tennessee	1	0.4%
Kentucky	1	0.4%	Texas	7	3.0%
Louisiana	14	6.0%	Vermont	1	0.4%
Maine	7	3.0%	Virginia	1	0.4%
Maryland	9	3.9%	Washington	33	14.2%

Massachusetts	10	4.3%	Wisconsin	5	2.2%
Michigan	5	4.3%	Outside of the U.S.	1	0.4%
Minnesota	3	2.2%			

Participants provided the number of years they had practiced as a speech-language pathologist. Two hundred and thirty-two participants provided this information. Table 3 presents of the participants' number of years as a speech-language pathologist.

Table 3

Years as a Speech-Language Pathologist

Number of Years Practicing as a Speech-Language Pathologist	Number of Participants	Percentage of Participants
Less than 1 year	5	2.2%
1-5 years	45	19.4%
6-10 years	31	13.4%
11-15 years	27	11.6%
16-20 years	30	12.9%
21-25 years	30	12.9%
26-30 years	27	11.6%
More than 30 years	37	15.9%

Participants also provided the number of years they had practiced as a speech-language pathologist specifically in a school setting. Two hundred and thirty participants provided this information. Table 4 presents the participants' number of years practicing as a speech-language pathologist in a school setting.

Table 4

Years as a Speech-Language Pathologist in a School Setting

Number of Years	Number of Participants	Percentage of Participants
Less than 1 year	8	3.5%
1-5 years	55	23.9%
6-10 years	39	17.0%
11-15 years	29	12.6%
16-20 years	29	12.6%
21-25 years	25	10.9%
25-30 years	17	7.4%
More than 30 years	28	12.2%

Participants who reported that they worked in a school were asked about the setting(s) of the school(s) in which they practiced as a speech-language pathologist. Two hundred and thirty participants provided this information. Table 5 presents the setting(s) of the participants' school(s).

Table 5

Setting(s) of Participants' School(s)

Setting	Number of Participants	Percentage of Participants
Urban	65	28.0%
Suburban	123	53.0%
Rural	74	31.9%
Other	4	1.7%

School Information

Participants reported the approximate enrollment of the school district(s) in which they practiced as a speech-language pathologist. Two hundred and thirty participants provided this

information. Table 6 presents the approximate enrollment of the speech-language pathologists' school district(s).

Table 6

Approximate Enrollment of School District of Practice

	Number of Participants	Percentage of Participants
Less than 250	13	5.7%
251-999	27	11.7%
1,000 – 1,999	21	9.1%
2,000 – 4,999	47	20.4%
5,000 – 9,999	46	20.0%
10,000 or more	76	33.0%

Of the two hundred and thirty participants that responded to the question, 106 participants reported that their school district employed an AAC or an AT specialist. One hundred and twenty participants reported that their school district did not employ an AAC or an AT specialist. The remaining four participants indicated that they did not know whether their school district employed an AAC or an AT specialist. Of the 106 participants who indicated their school district employed an AAC or an AT specialist, 14 reported their school district employed an AAC specialist, 38 reported their school district employed an AT specialist, 45 indicated their school district employed both an AAC and an AT specialist, and nine participants were unsure which their school district employed. Of the 59 participants who indicated their district employed an AAC specialist, 18 reported they were employed as an AAC specialist in their district. Of the 83 participants who indicated their district employed an AT specialist, 14 reported they were employed as an AT specialist in their district.

Participants also reported whether their school district had an AAC or an AT team. Two hundred and thirty participants provided this information. Eighty-three participants reported their

school district had an AAC or an AT team, 136 participants reported their school district did not have an AAC or an AT team, and 11 participants indicated that they did not know whether their school district had an AAC or an AT team. Of the 83 participants who reported their school district had an AAC or an AT team, 28 reported they were a member of such team.

Caseload Information

Two hundred and thirty-two participants reported the age range(s) of the students that they served in a school setting. Table 7 presents the age ranges of students served by participants.

Table 7

Age Range(s) of Students Served by Participants

Ages Ranges	Number of Participants	Percentage of Participants
Birth to 3	19	8.2%
Preschool	117	50.4%
Kindergarten – 2nd Grade	162	69.8%
3rd – 5th Grade	162	69.8%
6th – 8th Grade	112	48.3%
9th – 12th Grade	84	36.2%
18 – 21 years old (i.e., transition program)	48	20.7%

Participants provided information about their caseload sizes. Two hundred and twenty-seven participants provided this information. Table 8 presents the number of students on the speech-language pathologists' caseloads in the schools.

Table 8

Participants' Caseload Size

Number of Students on Caseload	Number of Participants	Percentage of Participants
Less than 15 students	12	5.3%
15-30 students	41	18.1%
31-45 students	65	28.6%
46-60 students	76	33.5%
61-75 students	19	8.4%
76 or more students	14	6.2%

Participants also reported the number of students on their caseloads that use AAC. Two hundred and twenty-seven participants provided this information. Table 9 presents the number of students on the speech-language pathologists' caseloads that used AAC.

Table 9

Number of Students Who Used AAC

Number of Students Who Use AAC	Number of Participants	Percentage of Participants
0 students	61	26.9%
1-3 students	82	36.1%
4-6 students	40	17.6%
7-9 students	15	6.5%
10-12 students	12	5.2%
13-15 students	4	1.8%
More than 16 students	13	5.7%

The survey also inquired about the number of students on the speech-language pathologists' caseloads who did not use AAC but may benefit from it. Two hundred and twenty-seven participants provided this information. Table 10 presents the number of students on the speech-language pathologists' caseloads that did not use AAC but may benefit from it.

Table 10

Number of Students Who May Benefit from AAC

Number of Students Who May Benefit from AAC	Number of Participants	Percentage of Participants
0 students	77	33.9%
1-3 students	88	38.8%
4-6 students	33	14.5%
7-9 students	7	3.1%
10-12 students	2	0.9%
13-15 students	3	1.3%
More than 16 students	6	2.6%
Not sure	11	4.8%

Participants who reported that they served students who used AAC provided information about the type(s) of AAC used by the students on their caseload. One hundred and sixty-six participants provided this information. Table 11 presents the type(s) of AAC used by students on participants' caseloads.

Table 11

Type(s) of AAC Used by Students

Type of AAC Used by Students	Number of Participants	Percentage of Participants
No-tech	110	66.3%
Low-tech	139	83.7%
Mid-tech	79	47.6%
High-tech	137	82.5%

For participants who reported each type of AAC (i.e., no-tech, low-tech, mid-tech, and high-tech), they were asked to identify the specific system utilized by their student(s). One hundred and ten participants reported that students on their caseload used no-tech AAC. Table 12 presents the type of no-tech AAC used by students on participants' caseloads.

Table 12

Type(s) of No-tech AAC Used by Students

Type of No-Tech AAC Used by Students	Number of Participants	Percentage of Participants
Sign language	95	86.3%
Gestures	91	82.7%
Facial expressions	75	68.2%
Other	7	6.4%

One hundred and thirty-nine participants reported that students on their caseload used low-tech AAC. Table 13 presents the type of low-tech AAC used by students on participants' caseloads.

Table 13

Type(s) of Low-tech AAC Used by Students

Type of Low-Tech AAC Used by Students	Number of Participants	Percentage of Participants
PECS	94	67.6%
PODD	25	18.0%
Picture communication board	109	78.4%
Other	18	12.9%

Seventy-nine participants reported that students on their caseload used mid-tech AAC. Table 14 presents the type of mid-tech AAC used by students on participants' caseloads.

Table 14

Type(s) of Mid-tech AAC Used by Students

Type of Mid-Tech AAC Used by Students	Number of Participants	Percentage of Participants
GoTalk	59	74.7%
QuickTalk	11	13.9%
SuperTalker	8	10.1%
Tech Talk/ Tech Chat/ Tech Speak	16	20.3%
BigMack	58	73.4%
Other	8	10.1%

One hundred and thirty-seven participants reported that students on their caseload used high-tech AAC. Table 15 presents the type of high-tech AAC used by students on participants' caseloads.

Table 15

Type(s) of High-tech AAC Used by Students

Type of High-Tech AAC Used by Students	Number of Participants	Percentage of Participants
Accent	31	22.6%
Tobii-Dynavox	39	28.5%
Saltillo	19	13.9%
iPad/Tablet application	123	89.8%
Other	7	5.1%

The participants who reported that their students utilized an iPad or tablet were asked to identify the specific communication application that their students utilized. One hundred and twenty-three participants provided this information. Table 16 presents the iPad and/or tablet applications used by students on participants' caseloads.

Table 16

iPad and/or Tablet Application(s) Used by Students

iPad/Tablet Application	Number of Participants	Percentage of Participants
Alexicom AAC	2	1.6%
Avaz	5	4.1%
Bridge Communication	1	0.8%
Compass	17	13.8%
CoughDrop AAC	2	1.6%
GoTalk Now	29	23.6%
LAMP Words for Life	44	35.8%
My First AAC	3	2.4%
PODD with Compass	9	7.3%
Predictable	3	2.4%
ProLoQuo2Go	82	66.7%
ProLoQuo4Text	7	5.7%
Snap + Core First	5	4.1%
Speak for Yourself	13	10.6%
Total Talk – AAC	2	1.6%
TouchChat	48	39.0%
Verbally	10	8.1%
Other	13	10.6%

AAC Knowledge

Participants were asked to rate the degree to which they were knowledgeable about augmentative and alternative communication intervention. Two hundred and sixteen participants provided this information. Table 17 presents the participants' ratings.

Table 17

Participants' Knowledge of AAC Intervention

Knowledge of AAC Intervention	Number of Participants	Percentage of Participants
Extremely knowledgeable	12	5.6%
Very knowledgeable	44	20.4%
Moderately knowledgeable	107	49.5%
Slightly knowledgeable	49	22.7%
Not knowledgeable at all	4	1.9%

Participants were also asked to rate the degree to which they were knowledgeable about augmentative and alternative communication assessment. Two hundred and sixteen participants provided this information. Table 18 presents the participants' ratings.

Table 18

Participants' Knowledge of AAC Assessment

Knowledge of AAC Assessment	Number of Participants	Percentage of Participants
Extremely knowledgeable	10	4.6%
Very knowledgeable	25	11.6%
Moderately knowledgeable	69	31.9%
Slightly knowledgeable	88	40.7%
Not knowledgeable at all	24	11.1%

In addition to being asked about their knowledge of augmentative and alternative communication intervention and assessment, participants were asked to rate the degree to which they were comfortable in their ability to serve students who use augmentative and alternative communication. Two hundred and sixteen participants provided this information. Table 19 presents the participants' ratings.

Table 19

Participants' Comfort in Serving Students Who Use AAC

Comfort in Serving Students Who Use AAC	Number of Participants	Percentage of Participants
Extremely comfortable	39	8.1%
Moderately comfortable	80	37.0%
Slightly comfortable	33	15.3%
Neither comfortable nor uncomfortable	13	6.0%
Slightly uncomfortable	24	11.1%
Moderately uncomfortable	17	7.9%
Extremely uncomfortable	10	4.6%

The survey inquired about the degree to which various preprofessional education opportunities prepared participants to serve students who use augmentative and alternative communication. Two hundred and sixteen participants provided this information. Table 20 presents the participants' ratings.

Table 20

Preprofessional Education in AAC

Statement	N/A	Strongly Agree	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat disagree	Disagree	Strongly Disagree
Courses in my undergraduate program prepared me to serve students who use AAC.	7.4%	3.2%	7.4%	7.9%	2.8%	13.0%	23.1%	35.2%
Clinical experiences in my undergraduate program prepared me to serve students who use AAC.	10.2%	3.2%	6.0%	10.6%	3.2%	7.9%	23.6%	35.2%
Courses in my graduate program prepared me to serve students who use AAC.	3.2%	9.3%	12.5%	16.7%	3.2%	13.4%	18.1%	23.6%
Clinical experiences in my graduate program prepared me to serve students who use AAC.	4.6%	9.3%	11.6%	14.4%	3.7%	12.5%	18.5%	25.5%
Field studies or externships in my graduate program prepared me to serve students who use AAC.	5.1%	10.2%	9.3%	17.6%	6.0%	11.1%	16.7%	24.1%
My clinical fellowship year (CFY) prepared me to serve students who use AAC.	6.0%	9.7%	13.0%	16.2%	5.6%	11.1%	16.7%	21.8%

The survey also inquired about the degree to which various post certification education opportunities supported participants in serving students who use augmentative and alternative communication. Two hundred and sixteen participants provided this information. Table 21 presents the participants' ratings.

Table 21

Post Certification Preparation in AAC

Statement	N/A	Strongly Agree	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat disagree	Disagree	Strongly Disagree
On-the-job training supports me in serving students who use AAC.	1.9%	22.2%	20.4%	22.7%	6.0%	7.4%	13.4%	6.0%
In-service or professional development supports me in serving students who use AAC.	0.5%	24.5%	23.1%	18.5%	6.0%	9.3%	10.2%	7.9%
Continuing education opportunities support me in serving students who use AAC.	1.4%	28.2%	30.6%	19.9%	5.6%	6.0%	6.5%	1.9%
Colleagues support me in serving students who use AAC.	1.4%	27.3%	31.5%	24.1%	6.0%	4.6%	2.3%	2.8%
Online resources support me in serving students who use AAC.	1.4%	26.9%	41.7%	17.1%	6.9%	5.1%	0.9%	0%
Books and textbooks support me in serving students who use AAC.	3.2%	7.9%	17.6%	23.6%	20.8%	11.1%	11.6%	4.2%
Journal articles support me in serving students who use AAC.	1.4%	11.1%	24.1%	24.1%	22.7%	5.6%	8.3%	2.8%
ASHA resources support me in serving students who use AAC.	2.3%	7.4%	28.7%	25.5%	21.3%	6.5%	6.0%	2.3%

Continuing Education

Participants were asked to indicate who paid for their continuing education units. Two hundred and sixteen participants answered this question. Table 22 presents the participants' responses.

Table 22

Who Pays for CEUs

Source	Number of Participants	Percentage of Participants
School district	65	30.1%
Contracting company	3	1.4%
Special education cooperation	4	1.9%
Speech-language pathologist	113	52.3%
Both school district and speech-language pathologist	30	13.9%
Other	1	0.4%

Participants were asked to specify if their employer provided CEUs through in-service trainings and/or if their employer paid for them to attend continuing education experiences. Two hundred and sixteen participants provided this information. Table 23 presents this information.

Table 23

Availability and Funding of CEUs

Source	Provided CEUs Through In-Service	Paid for Participant to Attend CEUs
School district	44	56
Contracting company	3	2
Special education cooperation	1	4
Speech-language pathologist	50	N/A
Other	10	N/A

If participants indicated that their employer paid for them to attend continuing education experiences, they were asked to provide the annual budget allotted toward their CEUs. Seventy-two participants were presented this question. Reported budgets ranged from $200 to $2000. Other participants reported that they were unsure of the budget, and others reported that there

wasn't a specific budget for CEUs, but continuing education opportunities were approved on a case-by-case basis.

Participants reported the area(s) in which they obtained continuing education units within the last five years. Two hundred and thirty-two participants provided this information. Table 24 presents the area(s) in which participants obtained CEUs.

Table 24

Area(s) Participants Obtained CEUs Within the Last 5 Years

Area	Number of Participants	Percentage of Participants
Articulation	156	67.2%
Augmentative and alternative communication	154	66.4%
Cognitive aspects of communication	94	40.5%
Fluency	98	42.2%
Hearing	45	19.4%
Social aspects of communication	167	72.0%
Swallowing	45	19.4%
Receptive and expressive language	187	80.6%
Voice and resonance	20	8.6%

Participants progressed through the remainder of the survey according to whether or not they selected augmentative and alternative communication as an area in which they had obtained CEUs within the last five years. For the purposes of this research study, these results will be differentiated.

No CEUs in AAC. The 78 participants who did not obtain CEUs in the area of augmentative and alternative communication within the last five years were asked to rate the degree to which various factors influenced the areas in which they obtained CEUs. Table 25 presents their responses.

Table 25

No AAC CEUs – Factors Influencing CEU Areas

Statement	N/A	Extremely Important	Very Important	Moderately Important	Slightly Important	Not at all Important
Clinical problem or question	1.6%	39.3%	41.0%	18.0%	0%	0%
Lack of confidence	6.6%	34.4%	29.5%	18.0%	9.8%	1.6%
Maintain or update knowledge	1.6%	36.1%	36.1%	24.6%	1.6%	0%
Needs of student(s) on my caseload	1.6%	67.2%	23.0%	8.2%	0%	0%
Personal interest	1.6%	32.8%	29.5%	26.2%	8.2%	1.6%
Other	82.0%	3.3%	1.6%	3.3%	0%	9.8%

The 78 participants who did not obtain CEUs in the area of augmentative and alternative communication within the last five years were asked to indicate where they obtained CEUs. Table 26 presents where participants obtained CEUs within the last five years, for those who reported obtaining no augmentative and alternative communication CEUs.

Table 26

No AAC CEUs – Where Participants Obtained CEUs

Where Participants Obtained CEUs	Number of Participants	Percentage of Participants
ASHA Connect	5	4.6%
ASHA convention	13	12.0%
ASHA approved self-study	11	10.2%
ASHA approved independent study	5	4.6%
In-person workshop or program	42	38.9%
Local or regional conference	32	29.6%
National convention	3	2.8%
Online conference	19	17.6%
Online webinar	51	47.2%
State conference	20	18.5%
Other	4	3.7%

The 78 participants who did not obtain CEUs in the area of augmentative and alternative communication within the last five years were asked to rate the degree to which various factors influenced where they obtained CEUs within the last 5 years. Table 27 presents the factors that influenced where these participants obtained CEUs.

Table 27

No AAC CEUs – Factors Influencing CEU Location

	N/A	Extremely Important	Very Important	Moderately Important	Slightly Important	Not at all Important
Location	0%	62.3%	27.9%	8.2%	0%	1.6%
Price	0%	70.5%	19.7%	6.6%	1.6%	1.6%
Provider	1.6%	23.0%	26.2%	26.2%	6.6%	16.4%
Speaker/presenter	1.6%	31.1%	24.6%	27.9%	8.2%	6.6%
Other	83.6%	3.3%	1.6%	1.6%	0%	9.8%

Participants who did not obtain CEUs in the area of augmentative and alternative communication were asked if they had ever considered doing so. Sixty participants answered this question. Of those participants, 52 reported they have considered obtaining continuing education in the area of augmentative and alternative communication and the remaining 8 reported they have not considered doing so. These 60 participants were then asked to rate the degree to which they agree with various statements regarding augmentative and alternative communication. Table 28 presents the participants' perspectives.

Table 28

No AAC CEUs – Participant Perspectives on AAC

Statement	N/A	Strongly Agree	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat disagree	Disagree	Strongly Disagree
I am confident in my abilities to serve a student who uses AAC.	0%	5.0%	15.0 %	28.3%	5.0%	21.7%	6.7%	18.3%
I don't have any students who need AAC on my caseload.	1.7 %	21.7%	13.3 %	5.0%	5.0%	3.3%	21.7%	28.3%
I don't have any students who use AAC on my caseload.	1.7 %	30.0%	13.3 %	1.7%	1.7%	0%	25.0%	26.7%
I prefer to focus on verbal speech instead of AAC.	1.7 %	5.0%	8.3%	13.3%	25.0%	10.0%	16.7%	20.0%
I refer students on my caseload to other SLPs in the district or area for AAC assessment.	15. 0%	8.3%	6.7%	8.3%	10.0%	3.3%	30.0%	18.3%
I seek information on AAC elsewhere in order to support my students.	11. 7%	16.7%	35.0 %	16.7%	15.0%	3.3%	0%	1.7%
My school district does not have adequate funding to support students who need AAC.	1.7 %	8.3%	20.0 %	13.3%	15.0%	10.0%	16.7%	15.0%
The students on my caseload have not met prerequisites for AAC.	18. 3%	6.7%	11.7 %	10.0%	11.7%	5.0%	18.3%	18.3%
Other	88. 3%	1.7%	0%	0%	5.0%	0%	1.7%	3.3%

CEUs in AAC. The 154 participants who obtained CEUs in the area of augmentative and alternative communication within the last five years were asked to indicate the number of continuing education experiences (i.e., courses, classes, sessions, webinars, etc.) they had obtained in the area of AAC. One hundred and forty-seven participants answered this question.

Table 29 presents the number of AAC continuing education experiences participants participated in within the last five years.

Table 29

Number of AAC Continuing Education Experiences

Number of AAC Continuing Education Experiences	Number of Participants	Percentage of Participants
1	19	12.9%
2	39	26.5%
3	27	18.4%
4	11	7.5%
5	18	12.2%
6	3	2.0%
7	4	2.7%
8	4	2.7%
10	11	7.5%
12	1	0.7%
15	1	0.7%
20	4	2.7%
30	2	1.4%
35	1	0.7%
50	2	1.4%

Participants who obtained CEUs in the area of augmentative and alternative communication continuing education were asked to rate the degree to which various factors influenced the area(s) in which they obtained CEUs. One hundred and forty-seven participants answered this question. Table 30 presents participants responses.

Table 30

AAC CEUs - Factors Influencing CEU Area

Statement	N/A	Extremely Important	Very Important	Moderately Important	Slightly Important	Not at all Important
Clinical problem or question	5.4%	39.5%	25.2%	20.4%	6.8%	2.7%
Lack of confidence	6.1%	29.9%	28.6%	19.0%	11.6%	4.8%
Maintain or update knowledge	2.0%	55.8%	28.6%	11.6%	2.0%	0%
Needs of student(s) on my caseload	4.1%	59.9%	24.5%	5.4%	4.8%	1.4%
Personal interest	2.7%	36.7%	29.3%	18.4%	10.9%	2.0%
Other	73.5%	9.5%	4.1%	2.0%	0.7%	10.2%

Participants who obtained CEUs in the area of augmentative and alternative communication within the last five years were asked to indicate where they obtained CEUs. One hundred and forty-seven participants answered this question. Table 31 presents where these participants obtained CEUs within the last five years.

Table 31

AAC CEUs - Where Participants Obtained CEUs

Where Participants Obtained CEUs	Number of Participants	Percentage of Participants
ASHA Connect	10	6.8%
ASHA convention	22	15.0%
ASHA approved self-study	16	10.9%
ASHA approved independent study	4	2.7%
In-person workshop or program	87	59.2%
Local or regional conference	61	41.5%
National convention	14	9.5%
Online conference	35	23.8%
Online webinar	80	54.4%
State conference	39	26.5%
Other	13	8.8%

Participants who obtained CEUs in the area of augmentative and alternative communication were asked to rate their perceived benefit of the continuing education. One hundred and forty-five participants answered this question. Table 32 presents participants responses.

Table 32

Participants' Perceived Benefit of AAC Continuing Education

Statement	N/A	Strongly Agree	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat disagree	Disagree	Strongly Disagree
The CEU increased my knowledge of AAC.	0%	32.4%	45.5%	18.6%	1.7%	0.4%	0%	0%
I obtained valuable information to incorporate into AAC intervention from the CEU.	0%	27.6%	46.9%	19.3%	4.8%	1.4%	0%	0%
I obtained valuable information to incorporate in to AAC assessment from the CEU.	0%	13.8%	39.3%	22.8%	9.7%	6.2%	6.2%	2.1%
The CEU made me more confident in my ability to support a student who uses AAC.	0%	22.1%	44.1%	23.4%	6.2%	2.8%	1.4%	0%

To further describe the relationship between participants' comfort in supporting students who use AAC and caseload characteristics, a cross tabulation was formulated between the questions "Please rate the degree to which you are comfortable in your ability to serve students who use augmentative and alternative communication (AAC)." and "How many students on your current caseload use augmentative and alternative communication (AAC)?" The results are displayed in Table 33.

Table 33

Comfort in AAC and Students Who Use AAC Cross Tabulation

		Students Who Use AAC							
		0	1-3	4-6	7-9	10-12	13-15	16+	Total
AAC Comfort	Extremely comfortable	5	6	9	5	6	0	8	39
	Moderately comfortable	14	28	20	5	6	3	4	80
	Slightly comfortable	9	16	5	3	0	0	0	33
	Neither comfortable nor uncomfortable	3	8	2	0	0	0	0	13
	Slightly uncomfortable	10	7	3	2	0	1	1	24
	Moderately uncomfortable	11	5	1	0	0	0	0	17
	Extremely uncomfortable	4	6	0	0	0	0	0	10
Total		56	76	40	15	12	4	13	216

To further describe the relationship between participants' comfort in supporting students who use AAC and caseload characteristics, a cross tabulation was formulated between the questions "Please rate the degree to which you are comfortable in your ability to serve students who use augmentative and alternative communication (AAC)." and "How many students on your current caseload do not use augmentative and alternative communication (AAC) but may benefit from it?". The results are displayed in Table 34.

Table 34

Comfort in AAC and Students Who May Benefit from AAC Cross Tabulation

		Students Who May Benefit from AAC								
		0	1-3	4-6	7-9	10-12	13-15	16+	Not Sure	Total
AAC Comfort	Extremely comfortable	11	17	5	1	0	0	2	3	39
	Moderately comfortable	28	26	14	4	1	1	2	4	80
	Slightly comfortable	12	15	1	1	0	0	1	3	33
	Neither comfortable nor uncomfortable	3	7	2	0	0	0	1	0	13
	Slightly uncomfortable	7	9	5	1	0	2	0	0	24
	Moderately uncomfortable	7	7	2	0	1	0	0	0	17
	Extremely uncomfortable	5	2	3	0	0	0	0	0	10
Total		73	83	32	7	2	3	6	10	216

To further describe the relationship between participants' comfort in supporting students who use AAC and AAC continuing education, a cross tabulation was formulated between the questions "Please rate the degree to which you are comfortable in your ability to serve students who use augmentative and alternative communication (AAC)." and "Within the last 5 years, in what area(s) have you obtained continuing education units (CEUs)?". The results are displayed in Table 35.

Table 35

Comfort in AAC and AAC Continuing Education Cross Tabulation

		AAC Continuing Education	
		Selected	Not Selected
AAC Comfort	Extremely comfortable	34	5
	Moderately comfortable	65	15
	Slightly comfortable	24	9
	Neither comfortable nor uncomfortable	5	8
	Slightly uncomfortable	14	10
	Moderately uncomfortable	10	7
	Extremely uncomfortable	2	8
Total		154	78

To further describe the relationship between AAC continuing education and caseload characteristics, a cross tabulation was formulated between the questions "Within the last 5 years, in what area(s) have you obtained continuing education units (CEUs)?" and "How many students on your current caseload use augmentative and alternative communication (AAC)?". The results are displayed in Table 36.

Table 36

AAC Continuing Education and Students Who Use AAC Cross Tabulation

	Number of Students Who Use AAC							
	0	1-3	4-6	7-9	10-12	13-15	16+	Total
AAC CEUs	30	52	33	13	10	3	13	154

To further describe the relationship between type of continuing education obtained and location, a cross tabulation was formulated between the questions "Within the last 5 years, where did you obtain continuing education units (CEUs)?" and the question "What is the setting of your school(s)?" The results are displayed in Table 37.

Table 37

Continuing Education Location and School Setting Cross Tabulation

		School Setting			
		Urban	Suburban	Rural	Total
Continuing Education	ASHA Connect	4	3	1	8
	ASHA convention	5	5	4	14
	ASHA approved self-study	5	6	3	14
	ASHA approved independent study	5	2	1	8
	In-person workshop or program	19	15	9	43
	Local or regional conference	16	17	6	39
	National convention	1	3	1	5
	Online conference	7	11	4	22
	Online webinar	21	28	11	60
	State conference	11	8	5	24
Total		94	98	25	237

To further describe the relationship between type of AAC continuing education obtained and location, a cross tabulation was formulated between the questions “Within the last 5 years, where did you obtain AAC continuing education units (CEUs)?” and the question “What is the setting of your school(s)?” The results are displayed in Table 38.

Table 38

AAC Continuing Education Location and School Setting Cross Tabulation

		School Setting			
		Urban	Suburban	Rural	Total
AAC Continuing Education	ASHA Connect	4	7	2	13
	ASHA convention	4	12	8	24
	ASHA approved self-study	3	9	5	17
	ASHA approved independent study	1	3	2	6
	In-person workshop or program	22	48	30	100
	Local or regional conference	16	29	24	69
	National convention	1	8	7	16
	Online conference	10	17	11	38
	Online webinar	16	43	24	83
	State conference	9	23	18	50
Total		86	199	131	416

To further describe the relationship between type of continuing education obtained and funding for continuing education, a cross tabulation was formulated between the questions "Within the last 5 years, where did you obtain continuing education units (CEUs)?" and the question "Who pays for your continuing education units (CEUs)?". The results are displayed in Table 39.

Table 39

Continuing Education Location and Funding Cross Tabulation

		Who Pays for CEUs				
		School district	Contracting company	Special education cooperation	SLP	Other
Continuing Education	ASHA Connect	1	-	-	4	-
	ASHA convention	3	1	-	8	1
	ASHA approved self-study	1	1	-	8	1
	ASHA approved independent study	-	-	-	5	-
	In-person workshop or program	8	-	1	28	5
	Local or regional conference	7	1	-	20	3
	National convention	2	-	-	1	-
	Online conference	3	1	-	14	1
	Online webinar	11	1	1	31	5
	State conference	3	-	-	13	3
Total		39	5	2	132	19

To further describe the relationship between type of AAC continuing education obtained and funding for continuing education, a cross tabulation was formulated between the questions "Within the last 5 years, where did you obtain AAC continuing education units (CEUs)?" and the question "Who pays for your continuing education units (CEUs)?". The results are displayed in Table 40.

Table 40

AAC Continuing Education Location and Funding Cross Tabulation

		Who Pays for CEUs				
		School district	Contracting company	Special education cooperation	SLP	Other
AAC Continuing Education	ASHA Connect	2	-	-	6	2
	ASHA convention	5	1	2	11	3
	ASHA approved self-study	3	-	-	11	2
	ASHA approved independent study	-	-	-	2	2
	In-person workshop or program	28	2	2	40	15
	Local or regional conference	21	-	3	27	10
	National convention	4	-	1	6	3
	Online conference	14	1	-	15	5
	Online webinar	25	1	1	33	20
	State conference	11	-	1	17	10
Total		113	5	10	168	72

Chapter IV

Discussion

The purpose of this study was to examine the amount and type of AAC continuing education obtained by speech-language pathologists working within a school. Data were collected via an online survey and analyzed to provide an understanding of the factors that influence decisions regarding continuing education.

Experience, Expertise, and Comfort Level of Speech-Language Pathologists with AAC

Historically, speech-language pathologists may enter the field without sufficient knowledge and experience to support students who use AAC (Dietz et al., 2012; Hustad & Miles, 2010; Light & McNaughton, 2012; Thistle & Wilkinson, 2015). The results from this study suggest that the majority of participants felt their graduate programs did not prepare them to support students who use AAC. Only 38% of participants agreed that courses in their graduate program prepared them to serve students who use AAC. Similarly, 35% of participants agreed that clinical experiences in their graduate program prepared them to serve students who use AAC. Although a majority of participants perceived their graduate studies to be inadequate in preparing them to serve students who use AAC, the results from this study indicate a slight increase over previous findings. Marvin et al., (2003) found that fewer than 25% of speech-language pathologists felt the AAC education received from their graduate programs was adequate for their needs. This slight increase in preprofessional preparation in the area of AAC may be a result of the youth of the sample and reflect the impact of ASHA's knowledge standards for graduate programs. In 2005, ASHA identified communication modalities, later renamed augmentative and alternative communication, as a content area in which knowledge and skills were required. This change required accredited programs to provide education to speech-

language pathology students in this area. In the current study, 35% of participants reported practicing as a speech-language pathologist for 10 years or less. This portion of respondents graduated after 2005, and therefore were required to obtain some amount of knowledge and experience in the area of augmentative and alternative communication prior to graduating with their master's degree. In addition, results from the current study may be impacted by the survey recruitment process, and therefore influenced by participants' interest in augmentative and alternative communication. Speech-language pathologists may have decided to complete the survey based on their existing interest and knowledge of augmentative and alternative communication. Alternatively, speech-language pathologists who decided not to participate in the study, may have done so based on their disinterest or lack of knowledge of augmentative and alternative communication.

Speech-language pathologists were asked to rate their knowledge of AAC assessment and intervention. Seventy-four percent of participants reported that they were moderately, very or extremely knowledgeable about AAC intervention. However, only 48% of participants reported that they were moderately, very, or extremely knowledgeable about AAC assessment. This discrepancy indicates that speech-language pathologists may be gaining more information and possibly expereience with AAC intervention over AAC assessment. This may be due to the introductory nature of AAC preprofessional preparation. If speech-language pathologists only complete one introductory AAC course, or AAC coursework is infused into other courses as research suggests (Ratcliff et al., 2008), speech-language pathologist may not receive adequate education on AAC assessment. Speech-language pathologists in the schools could lack AAC assessment knowledge as they may not receive experience in conducting AAC assessments, both preprofessional clinical experience and on-the-job experience. School speech-language

pathologists may not be the one's conducting AAC assessments. These may be completed by outside providers, or by an AAC or AT specialist within the school district. Considering a lack of knowledge, it is necessary to examine the possibility that AAC assessment may not be completed at all in some schools. In these situations, students are not evaluated and therefore would not receive AAC.

In regard to comfort with AAC, 55% of participants in this study reported they were moderately or extremly comfortable in their ability to provide services to students who use augmentative and alternative communication. Of respondents who had praticed as a speech-language pathologist for 10 years or less, 66% reported that they were moderately or extremely comfortable in their ability to provide services to students who use AAC. Meanwhile, 46% of participants who had practiced as a speech-language pathologist for 11 years or more reported that they were moderately or extremely comfortable in their ability to provide services to students who use AAC. This data may suggest improvements in graduate program education in the area of augmentative and alternative communication. Ratcliff et al. (2008), found that a majority of graduate programs (73%) offered one or more separate courses in AAC. This is an increase compared to the previous findings that 63% of graduate programs offered a separate course in AAC (Koul & Lloyd, 1994). It is positive to see that a majority of participants in this study, especially those who had graduated in the last 10 years felt comfortable in their abilities in the area of AAC.

While 55% of participants in this study reported they were comfortable in their ability to provide AAC services, and 74% reported they were knowledgeable in AAC intervention, only 38% of participants felt courses in their graduate program prepared them to provide these services. This indicates a discrepancy between respondents' satisfaction with preprofessional

education in the area of augmentative and alternative communication and their comfort level with providing these services. Less than 25% of respondents reported they were comfortable in their ability to serve students who use AAC and felt that courses and clinical experiences in their graduate program prepared them to serve students who use AAC. This discrepancy may be attributed to the introductory focus of most AAC courses (Koul & Lloyd, 1994). In addition, it may be attributed to AAC content being infused into other related courses as opposed to a dedicated AAC course being offered. Ratcliff et al., (2008) found that 80% of graduate programs reported infusing AAC content into other courses and only 33% of programs felt their students were prepared to provide services to AAC clients. While a majority of programs provided AAC education in some form, there is still a need for clinical experience in AAC. Graduate programs reported that a majority of students graduate without any appreciable clinical experience in the area of AAC (Ratcliff et al., 2008). This may explain why only 35% of participants in this study felt that the clinical experiences in their graduate program prepared them to serve students who use AAC. It is a positive indicator that although speech-language pathologists may have graduated with a lack of knowledge and skills in the area of AAC, they apparently found other means in which to increase their confidence in providing these services.

In addition to rating their knowledge in AAC assessment and intervention, participants also identified if they serve as an AAC or AT specialist or on an AAC or AT team in their district. Some school districts employ an AAC or AT specialist, or both, to support professionals in their district. The specialists may work alongside speech-language pathologists to conduct AAC assessments and provide access to AAC for students. In some cases, the AAC specialist may be the only one to conduct AAC assessments. This may be standard protocol, or it may be provided for speech-language pathologists who do not feel comfortable in their ability to conduct

the assessment themselves. For the purpose of this study, speech-language pathologists were asked to identify whether they are an AAC or AT specialist or serve on an AAC or AT team as these individuals may possess more knowledge and experience with AAC. In addition, these individuals may have stronger interest in AAC.

In this study, 18 participants were employed as an AAC specialist, and 14 participants were employed as an AT specialist. In addition, 28 participants served on their school district's AAC or AT team. The participants employed as an AAC specialist reported that they were moderately or extremely comfortable in their ability to serve students who use AAC. Twelve AAC specialists reported that they were extremely comfortable, and five reported that they were moderately comfortable. The remaining participant dropped out of the survey before answering this question. It was expected that an AAC specialist would feel more comfortable in supporting students who use AAC. However, it is concerning that not all AAC specialists felt extremely comfortable in their ability to serve students who use AAC. An AAC specialists' caseload may include more students who use AAC. In addition, these individuals may serve as a resource for other speech-language pathologists in the district by sharing information and conducting AAC assessments. Therefore, these individuals should be extremely knowledgeable and comfortable in the area. All AAC specialists obtained AAC continuing education within the last five years. The AAC specialists attended an average of nine AAC continuing education opportunities within the last five years. This is greater than the average of six continuing education opportunities for all participants who obtained AAC CEUs as a whole.

As with the AAC specialists, the participants employed as an AT specialist also reported that they were moderately or extremely comfortable in their ability to serve students who use AAC. Eleven AT specialists reported that they were extremely comfortable, and the remaining

three participants reported that they were moderately comfortable. Like an AAC specialist, and AT specialist should be knowledgeable and comfortable in AAC given that they may have a caseload consisting of students who use AAC, and they may conduct AAC assessments. However, AT encompasses AAC as well as other products, equipment, and systems that enhance learning for students. Therefore, AT is broader than AAC and goes beyond communication. All AT specialists obtained AAC continuing education within the last five years. The AT specialists attended an average of 16 AAC continuing education opportunities within the last five years. Again, this is greater than the average of all participants as a whole. It must be noted that nine participants reported that they were employed as both an AAC and AT specialist in their school district. These participants reported their school district employed both an AAC and an AT specialist. It could be that their job title and duties encompassed both roles. This may be especially true for smaller school districts. In addition, one participant reported that he or she attended 50 AAC continuing education opportunities within the last five years. While this is highly likely as the participant reported being employed as an AT specialist and appeared to have a small caseload that consisted primarily of students who use AAC, it is important to note that this participant was an outlier. Excluding this participant's 50 AAC continuing education opportunities, the average of the remaining AT specialists was 13, still greater than the average of all participants as a whole. In addition, another participant reported attending 50 AAC continuing education opportunities. This is a seemingly large number of continuing education opportunities, especially in comparison to those obtained by other participants. It is possible that these two participants did not understand the question and reflected on the number of continuing education units they obtained in the area of AAC or otherwise or over the last 5 years. However, it is also possible that this was an area of focus for the participants.

Cross tabulation data regarding the participants' comfort with AAC and caseload characteristics were considered. These data revealed that participants who were more comfortable in their ability to support students who use AAC also reported having more students on their caseload who use AAC. For example, 82% of participants who reported being extremely or moderately comfortable in supporting students who use AAC reported that they had at least one student on their caseload who use AAC. In comparison, only 44% of participants who reported being extremely or moderately uncomfortable in their abilities to support students who use AAC reported that they had at least one student on their caseload who use AAC. Sixty one percent of participants who felt extremely or moderately comfortable in supporting students who use AAC reported that they had at least one student on their caseload that may benefit from AAC. In comparison, 56% of participants who felt extremely or moderately uncomfortable in supporting students who use AAC reported having at least one student on their caseload that may benefit from AAC. These results do not suggest a substantial difference between the two groups in terms of the numbers of students who may benefit from AAC on their caseload. A speech-language pathologist who identifies students who may benefit from AAC should provide some form of AAC, especially those who are comfortable in their abilities. In addition, the speech-language pathologist should conduct a comprehensive assessment to identify the AAC system that will best meet the child's needs. In this study, numerous participants who were comfortable in their ability to serve students who use AAC identified multiple students who may benefit from AAC, some selected more than 16 students. In addition, 6% of participants who were comfortable in their ability to serve students who use AAC reported that they were not sure of how many students on their caseload may benefit from AAC. This is concerning given their perceived confidence in the area of AAC. Thirty-three percent of participants who reported being

comfortable in serving students who use AAC reported no students who do not use AAC but may benefit from it. This is compared to 44% of participants who were uncomfortable in supporting students who use AAC. These results may reflect participants' increased knowledge and skills. For example, participants who are knowledgeable in AAC may have fewer students who need AAC as they have already provided AAC to these students. Participants who are not as knowledgeable in AAC may not identify students who use AAC. These results may also reflect participant's interests in this area. Participants who are more comfortable in supporting students who use AAC may possess an interest and seek out jobs that allow them to work with this population.

Continuing Education

The discrepency between comfort in providing services and satisfaction with graduate program curriculum in the area of AAC suggests that participants obtain the majority of their knowledge of AAC from other sources. This is supported by previous research findings. Marvin et al., (2003) found that speech-language pathologists cited a variety of sources for their AAC knowledge including on-the-job training, self-education, and seminars. One source of information is continuing education. In this study, 66% of participants obtained contiuing education in the area of augmentative and alternative communication. Of the participants who obtained continuing education in the area of AAC, 80% reported that they were at least slightly comfortable in their ability to provide services to students who use AAC. Meanwhile, 3% reported that they were neither comfortable nor uncomfortable, and the remaining 17% reported that they were at least slightly uncomfortable in their ability to provide service to students who use AAC. Of the participants who did not obtain continuing education in the area of AAC, 37% reported that they were at least slightly comfortable in their ability to provide services to students

who use AAC. An additional 10% reported that they were neither comfortable nor uncomfortable, and 32% reported that they were at least slightly uncomfortable in their ability to provide services to students who use AAC. Results from this study do not support the idea that speech-language pathologists who are not comfortable in their ability to provide AAC services would seek continuing eduction in this area. However, it is important to note that participants may have reported higher levels of comfort in supporting students who use AAC due to continuing education they already obtained.

Of participants who obtained AAC continuing education, a majority reported being satisfied with the continuing education and the knowledge they gained. In fact, 97% of participants at least somewhat agreed that the AAC continuing eduction they obtained increased their knowledge of AAC. In addition, 94% of participants felt they obtained valuable information to incorporate into AAC intervention from the continuing education. However, only 76% of participants felt they obtained valuable information to incorporate into AAC assessment from the continuing education experience. Overall, 90% of participants who obtained AAC CEUs felt that the continuing education made them more confident in their ability to support a student who uses AAC. The perceived satisfacation of AAC continuing education by speech-language pathologists is very promising. This indicates that speech-lanugage pathologists feel that AAC continuing education was beneficial and applicable in their practice in the school. However, it is important to note that fewer participants felt information obtained from continuing education was applicable for assessment than intervention. This could be because fewer participants attended continuing education focusing on AAC assessment. It could also be that participants were less satisified with the information presented regarding AAC assessment.

It is concerning to note that 32% of participants who did not obtain CEUs in the area of AAC reported that they were slighlty, moderately, or extremely uncomfortable in their ability to provide services to students who use AAC. Of these 25 participants, 13 reported having no students on their current caseload who use AAC, 10 reported one to three students who use AAC, one participant reported four to six students who use AAC, and one participant reported seven to nine participants who use AAC. It is concerning that these participants reported obtaining no AAC continuing education within the last five years despite feeling uncomfortable in their abilities to provide services and having one or more students on their caseload who use AAC. Many of these participants also reported students on their caseloads who do not use AAC but may benefit from it. Ten participants reported no students on their caseload who do not use AAC but may benefit from it, seven participants reported one to three students on their caseload may benefit from AAC, seven participants reported four to six students, and one participant reported 13 to 15 students on their caseload may benefit from AAC. Research shows that more than half of school-based speech-language pathologists regularly serve students who use AAC (ASHA, 2016a; Fallon, 2008), and many do so on a daily or almost daily basis (Marvin et al., 2003). Therefore, is possible that these participants may not have had any students on their caseload who use AAC or may benefit from AAC, but it is also possible that due to their lack of knowledge in the area of AAC they did not identify the students who may require AAC. It is concerning that these participants have students who use AAC, and students who may benefit from AAC but are not comfortable in providing AAC services and decided not to obtain continuing education to enhance their knowledge.

Participants who did not obtain continuing education in the area of AAC were asked their perspectives about various aspects of AAC in an attempt to identify reasons why they did not

obtain CEUs. When asked again, 48% of these participants reported that they were confident in their ability to serve students who use AAC. However, this does not entirely agree with data collected at the beginning of the survey when participants were asked to rate how comfortable they were in serving students who use AAC. Seven of the 29 participants who reported that they did not obtain AAC CEUs because they were confident in their abilities reported that they were neither comfortable nor uncomfortable or slightly uncomfortable in their ability to serve students who use AAC at the beginning of the survey. Forty percent of participants who did not obtain AAC CEUs reported that they did not have AAC needs on their caseloads. Again, this does not entirely agree with data collected at the beginning of the survey when participants were asked to report caseload characteristics. One out of the 24 participants who reported no AAC needs on their caseload reported having one to three students who use AAC at the beginning of the survey. In addition, six out of the 24 participants who reported no AAC needs on their caseload reported having at least one student who does not use AAC but may benefit from it at the beginning of the survey. In fact, one particpant reported having more than 16 students who do not use AAC but may benefit from it.

When asked to rate the statement "I prefer to focus on verbal speech." 27% of participants who did not obtain AAC CEUs at least slightly agreed. An additional 25% reported that they neither agreed nor disagreed. These results are concerning as they demonstrate that speech-language pathologists in the field may still hold the belief that AAC is a "last resort" when other interventions for the development of oral speech fail. The population of speech-language pathologists hold this belief despite evidence that the use of AAC should not be contingent on failure to develop speech skills as AAC can support and enhance communication development, including the development of verbal speech itself (Kaspari et al., 2014; Millar,

2006). In addition, AAC systems may be temporary or long-term and they should be viewed as a communication tool (Blackstone, 2006; Romski & Sevcik, 2005).

When asked to rate the degree to which they agree with the statement "The students on my caseload have not met prerequisites for AAC." Twenty eight percent of participants who did not obtain AAC CEUs at least slightly agreed. An additional 12% reported that they neither agree nor disagree. These results are concerning as they demonstrate that speech-language pathologists in the field may still require students to display prerequisite skills before providing AAC. There are various factors that some may hold as prequisities to AAC, including age, cognition, sensorimotor ability, language, understanding of cause and effect, symbolic representation, and motivation and interst, all of which have been proven invalid by research (Romski & Sevcik, 2005).

When asked to rate the degree to which they agree with the statement "My school district does not have adequate funding to support students who need AAC." Forty two percent of participants who did not obtain AAC CEUs agreed. This identifies a barrier to services in the school setting, one that has been cited in previous research (Soto, Müller, Hunt, & Goetz, 2001). According to IDEA, students are entitled to "free appropriate public education" (U.S. Department of Education, n.d. Sec. 611e). Therefore, school districts are a possible funding source for AAC needs. However, the district is not the only available funding source. Other possible funding sources include private health insurance, Medicaid, state grants, and local funding. The results from this study indicate that speech-language pathologists may need more education on the AAC funding process as well as possible funding sources.

When asked to rate the degree to which they agree with the statement "I refer students on my caseload to other SLPs in the district or area for AAC assessment," 23% of participants

agreed. This is beneficial as although the participants do not feel confident in their abilities in AAC, they are seeking support of another professional to conduct AAC assessments and identify appropriate AAC systems for their students. However, these speech-language pathologists will ultimately be the ones implementing intervention and providing regular services to the students who use AAC. Therefore, they should still obtain continuing education in the area of AAC in order to develop the knowledge and skills to provide intervention. In addition, these speech-language pathologists should be obtaining continuing education and learning to conduct AAC assessments themselves. This may be beneficial to their students as the speech-language pathologists already knows the students on their caseload, and therefore have an understanding of their strengths and weaknesses. This information can be incorporated in the assessment plan and evaluation report. The existing rapport can positively impact the assessment process.

Finally, 68% of participants reported that they seek information on AAC elsewhere to support their students. This is promising as 44% of participants in this study did not obtain AAC continuing education. However, it is important to consider how speech-language pathologists obtain information about AAC. Peer-reviewed journal articles are a valuable method of expanding knowledge. However, results from this study and previous research demonstrate that this may not be the way in which speech-language pathologists are obtaining knowledge (Nail-Chiwetalu & Bernstein Ratner, 2007; O'Connor & Pettigrew, 2009). If speech-language pathologists obtain their knowledge from the open Internet, colleagues, or clinical experience, they are not effectively practicing evidence-based practice.

A lack of knowledge and skills in the area of AAC can negatively impact the outcomes for students with complex communication needs (Dietz et al., 2012). Without AAC, students with complex communication do not possess a robust language system and are unable to develop

functional communication skills (Drager, Light, & McNaughton, 2010). Students with complex communication needs may be unable to communicate for a variety communication functions including asking questions, requesting, rejecting, protesting, commenting, describing, and building social relationships. AAC allows students to access social language functions and build social relationships with peers. In addition, AAC can reduce challenging behaviors (Mirenda, 2009). A lack of knowledge and skills in both AAC assessment and intervention can negatively impact these areas of development as well as academic performance (Iacono, Trembath, & Erickson, 2016) for children with complex communication needs. Speech-language pathologists who lack knowledge and skills in AAC assessment may be unable to identify the need for AAC, conduct a comprehensive assessment and provide an AAC system. Speech-language pathologists who lack knowledge and skills in AAC intervention may be unable to effectively support students in utilizing their device, expanding language, and communicating with others.

Participants who obtained continuing education in the area of AAC reported attending an average of six AAC continuing education experiences within the last five years. This is promising, as not only did participants choose to obtain AAC continuing education, but the majority attended multiple sessions or learning opportunities. Participants reported the focus of the AAC continuing education they obtained in an open-ended question. Participants most frequently reported introductory or overview AAC courses, followed by general assessment and general intervention courses. Core vocabulary was the next common focus of continuing education. Core vocabulary is an intervention approach that focuses on exposing and teaching the individual who uses AAC a relatively small set of words that are used with high frequency (Witkowski & Baker, 2012). Participants also commonly reported continuing education focusing on providing support within the classroom and educating and training others to use and

implement AAC. Finally participants reported obtaining continuing eductation that focused on specific systems including iPad applications, LAMP, PECS, and PODD, as well as courses that focused on AAC for specific populations. While introductory and overview courses were the most commonly reported, it is promising that speech-language pathologists reported a wide variety of cotininuing education courses, including those that focused on more in-depth aspects of AAC assessment and implementation.

For participants who obtained continuing education in the area of AAC, the most selected source of continuing education in the area of AAC was in-person workshops or programs, followed by online webinars, and local or regional conferences. However, for participants who did not obtain continuing education in the area of AAC, the most selected source of continuing education was online webinars, followed by in-person workshops or programs, and local or regional conferences. While both groups reported the same top three means of obtaining continuing education, the difference in order is interesting. Speech-language pathologists who obtained AAC continuing education via an in-person workshop or program while speech-language pathologists who did not obtain AAC continuing education were more likely to watch online webinars. This may because in-person workshops and programs often provide hands-on experience and exposure to various AAC systems and assessment or intervention techniques, strategies and teaching methods and the SLPs may want more specific training. This cannot be obtained through an online webinar. Such experience has been proven to be valuable in effectively disseminating information regarding AAC practices (DePaepe & Wood, 2001; Siegel, Maddox, Ogletree, & Westling, 2010). The difference in the way the two groups obtain continuing education may also be due to factors such as price, location, or convenience.

ASHA approved independent studies, ASHA Connect, and national conventions were among the least selected sources for participants who obtained AAC CEUs. This was also true for particiapants who did not obtain continuing education in the area of AAC. This may be because ASHA-approved indpendent studies require the speech-language pathologists to develop and submit a learning plan through an ASHA Approved Independent Study Provider. Speech-language pathologists may be unaware of this continuing education opportunity and the activities that are suitable for an independent study or unwilling to devote the time to developing and submitting a learning plan. In addition, speech-language pathologists may not possess knowledge and skills in the area of AAC and therefore may not know how to develop an independent study plan to meet their needs. ASHA Connect and other national conventions may not be selected as popular ways to obtain AAC continuing education due to cost of registration and travel. ASHA Connect is held once a year in a major U.S. city and the registration fee is $399 for ASHA members who register early (ASHA, n.d.-a). A national convention such as that of the Interantional Society for Augmenative and Alternative Communication (ISAAC) is held once a year in an international city. The registration fee is $600 for an ISAAC member who registers early (ISAAC, n.d.). In addition to registration fees speech-language pathologists must also consider travel, food and lodging expenses. This may not be feasible for many speech-language pathologists, especially those who do not receive any funding for continuing education. In addition, speech-language pathologists may be unaware of these conferences and conventions or the opportunity for continuing education units. Regarding ASHA Connect, speech-language pathologists may choose to attend the ASHA Convention instead. Although the same amount of continuing education units are available, the ASHA Convention is much larger than ASHA Connect.

There is little research on the amount and type of continuing education obtained by speech-language pathologists. Iacono and Cameron (2009) found that Australian speech-language pathologists appeared to rely on other more experienced colleagues, attendance at conferences, and other forms of professional development (Iacono & Cameron, 2009). Results from the current study support this research. Overall, more speech-language pathologists felt online resources (86%), colleagues (82%), and continuing education (79%) support them in providing AAC services. Fewer speech-language pathologists felt that textbooks (49%), journal articles (59%), and ASHA resources (62%) supported them in providing AAC services. These results also align with previous research studies. In regard to evidence-based practice, Vallino-Napoli and Reilly (2004) found that very few speech-language pathologists relied on professional journals in making clinical decisions or in answering professonal information needs. Speech-language pathologists often turn to open Internet for information about their services (Nail-Chiwetalu & Ratner, 2006). This may be a result of a lack of time in the work schedule to read journal articles (Hoffman et al., 2013; Zipoli & Kennedy, 2005). Previous research also demonstrates a lack of information literacy skills, resulting in a difficulty in reading, and understanding the research presented in journal articles (O'Connor & Pettigrew, 2009; Ratcliff, Swartz, & Ivanitskaya, 2013; Swartz). Regardless, all may be reasons why more participants in this study felt that continuing education among other sources support them in providing AAC services. In addition, more speech-language pathologists may seek continuing education opportunities as opposed to other sources of information simply because continuing education is required to maintain licensure and certification.

Factors Influencing Continuing Education

Speech-language pathologists in this study were asked to rate and identify factors that influenced the area in which they obtained CEUs. Cross tabulation of data was completed to explore the possible impact of other factors on the speech-language pathologists' decisions. A majority of speech-language pathologists in this study identified the needs of student(s) on their caseload as an extremely important factor when considering the area in which they obtain CEUs. This was true for participants who obtained CEUs in the area of AAC and those who did not. This is supported by the participant's responses to other questions in the survey. Cross tabulation data revealed that 62% of speech-language pathologists with students who use AAC on their caseload obtained continuing education in the area of AAC. In addition, 58% of participants with students who do not use AAC but may benefit from it on their caseload obtained continuing education in the area of AAC. The need to maintain or update knowledge was the second most selected factor for participants who obtained AAC CEUs. This differed from speech-language pathologists who did not obtain AAC CEUs, as a clinical problem or question was the second most selected factor for this group. However, all of the remaining factors were almost equal as they were considered extremely important by 33% to 39% of participants. It is interesting to note that for participants who obtained continuing education in the area of AAC, needs of students on the caseload and the need to maintain or update knowledge was rated extremely important by 56% and 60% of participants respectively. The remaining factors were considered extremely important by 30% to 39% of participants who obtained AAC CEUs.

In this study, in-person workshops or programs were the most selected means of continuing education for participants who obtained AAC CEUs and online webinars were the most selected means of obtaining continuing education for participants who did not obtain AAC

CEUs. Over half of participants reported that they personally pay for their continuing education. Interestingly, participants working for smaller school districts were slightly more likely to receive funding for continuing education that participants working for larger school districts. An average of 44% of participants working for a district with an enrollment of less than 250 to 1,999 students reported that their district paid for their continuing education. This is compared to an average of 24% of participants working for a district with an enrollment of 2,000 to 10,000 or more students. It could be that smaller school districts are more likely to provide funding for continuing education as they employ fewer speech-language pathologists. It may also be that this benefit is offered so as to retain speech-language pathologists. However, it is possible that schools provide funds to cover a portion of a speech-language pathologist's continuing education and the speech-language pathologist is responsible for the remainder. Approximately 14% of participants reported "other" and described this scenario in the comment box. Therefore, it is possible that speech-language pathologists interpreted this question differently. Speech-language pathologists who reported that their employer provides funding for their continuing education identified a range of $200 to $2000 in available funds. Others reported that their continuing education is approved on a case-by-case basis. It is also possible that school districts or other employers provide continuing education opportunities for speech-language pathologists internally and that respondents interpreted this as their employer funding CEUs. In order to clarify, participants reported if their employer pays for them to attend continuing education opportunities and if their employer provides continuing education within in-service training. Eighty six percent of participants reported that their school district paid for them to attend continuing education opportunities and 68% of participants reported that their school district provided continuing education within in-service opportunities. It is possible that school districts

may organize in-person workshops or programs for their speech-language pathologists to obtain continuing education. This may contribute to in-person workshops or programs being the most selected type of continuing education for participants who obtained AAC CEUs. In fact, in-person workshops or programs and online webinars were the most selected way to obtain CEUs among participants who reported that their school district paid for them to attend continuing education opportunities.

Cross tabulation data were considered regarding participants' school district setting (i.e., urban, suburban, rural) and the ways in which participants obtained continuing education. More participants working in an urban setting selected online webinar, followed by in-person workshops or programs. More participants working in a suburban setting selected in-person workshops or programs than other types of continuing education opportunities. Participants working in a rural setting almost equally selected in-person workshops or programs, local or regional conference and online webinars. Cross tabulation data were considered regarding how participants who pay for their own continuing education obtain CEUs when compared to how participants who receive at least some funding from their school district obtain CEUs. The groups were very similar in the ways in which they obtain CEUs. In both groups, more participants selected in-person workshops or programs, online webinars, followed by local or regional conferences.

When considering factors that influence where participants obtain CEUs, 55% of participants who did not obtain AAC CEUs cited price as an extremely important factor. Location was reported by 49% of these participants to be an extremely important in influencing their decisions. It is important to note that this data was not collected for participants who obtained AAC CEUs due to an error in the survey. They were not asked this question. In

addition, numerous participants reported in open-ended questions that cost was the most important factor regarding where they obtained CEUs. This may explain why online webinars and in-person workshops or programs were the most popular means to obtain CEUs by all participants. There are many online continuing education opportunities available to speech-language pathologists free or at low cost. In addition, online webinars allow speech-language pathologists to obtain continuing education when their schedule allows and in the comfort of their own home or work. Three participants specifically noted in a comment box that their school district pays for their subscription to speechpathology.com. This subscription is $99 per year and allows speech-language pathologists to access online courses and attend unlimited webinars. This continuing education option may explain why more speech-language pathologists who do not pay for their own continuing education reported attending online webinars.

Implications

Speech-Language Pathologists. This study was designed to examine amount and type of AAC continuing education obtained by speech-language pathologists working within a school setting in the area of AAC as well as the various factors that influence these decisions. Speech-language pathologists are required to possess knowledge and skills in the area of augmentative and alternative communication. This present study revealed that many speech-language pathologists in the school setting have some training in AAC. However, a majority of participants did not feel that their preprofessional programs sufficiently prepared them to support students who use AAC. Therefore, speech-language pathologists must assess their knowledge and skills in this area and determine if they are sufficient enough to effectively support students who use AAC. This requires that speech-language pathologists examine their confidence in supporting students who use AAC, and the needs of students on their caseloads. In addition,

given the prevalence of AAC, speech-language pathologists working in a school setting are likely to encounter and provide services to students who require AAC. Therefore, speech-language pathologists must also consider the possible needs of future students and develop knowledge and skills to be sufficiently prepared to provide appropriate services. If speech-language pathologists recognize an area of weakness, they should identify ways in which to address this. The ability to effectively assess one's knowledge in various areas of practice is critical in the field of speech-language pathology. Although continuing education is required for certification and licensure maintenance, there are few requirements regarding the specific areas that speech-language pathologists must obtain continuing education. Some requirements exist for ASHA certified speech-language pathologists wishing to supervise speech-language pathology assistants or students. In addition, some states require speech-language pathologists to obtain continuing education in the areas of supervision and ethics. ASHA certified speech-language pathologists agree to abide by the Code of Ethics and hold an ethical responsibility to only provide services within the scope of their knowledge. The ASHA code of ethics states "Individuals who hold the Certificate of Clinical Competence shall engage in only those aspects of the professions that are within the scope of their professional practice and competence, considering their certification status, education, training, and experience" (ASHA, 2016b Principle II, Rule A). Therefore, it is the sole responsibility of the speech-language pathologist to identify and obtain continuing education in order to maintain current in the field and meet the needs of their clients. A lack of knowledge and confidence in the area of AAC can negatively impact the services a speech-language pathologist provides (Fallon, 2008; Hustad & Miles, 2010).

In addition to identifying and obtaining necessary continuing education, speech-language pathologists should advocate for themselves in the workplace. Less than half of participants in this study reported receiving at least some funding for continuing education. Speech-language pathologists should advocate for funding for continuing education when possible. In addition, speech-language pathologists can advocate for their school districts to provide continuing education. This may be included as part of professional development or in-service training. Speech-language pathologists should provide input regarding the type of continuing education or professional development that would be beneficial. Finally, speech-language pathologists can reach out to various AAC providers to arrange education and training in their district. Hands-on experience with AAC devices may be beneficial in supporting knowledge and skills.

Continuing Education Providers. This study and future research may guide the continuing education provided to speech-language pathologists. More participants in this study reported obtaining AAC continuing education through in-person workshops or programs followed by online webinars, and local or regional conferences. Therefore, continuing education providers can provide continuing education opportunities via these means to meet the needs of professionals in the field.

In addition, providers should consider the specific needs and factors that influence speech-language pathologist's decisions regarding continuing education. Speech-language pathologists in this study identified the needs of students on their caseload and the need to maintain or update knowledge. Speech-language pathologists in this study also reported a lack of knowledge in AAC assessment as well as a lack of satisfaction with previous continuing education in supporting this area. Continuing education providers should examine this area of practice and create continuing education to increase knowledge in AAC assessment. By gaining

perspectives of speech-language pathologists practicing in the field, continuing education providers could design continuing education opportunities to meet the specific needs of professionals working in a school setting. Continuing education should move beyond an introductory focus to encompass all areas of AAC practice including intervention techniques and strategies, assessment, literacy, social development, classroom participation, and collaboration with family and other professionals.

This study, along with previous research, identified that some speech-language pathologists in the field may still hold erroneous beliefs about AAC in general. Although it may already be present, it is important that continuing education providers include this information in general AAC courses. Specifically, information about the impact of AAC on verbal speech, the use of AAC as a communication tool, providing that it is not a "last resort" and information clarifying that there are no prerequisites to AAC. In addition, speech-language pathologists in this study identified a possible need for education regarding funding for AAC devices in a school setting.

Finally, this and previous research identify that speech-language pathologists may seek other sources of information to guide their practice or answer a clinical question. In addition to designing continuing education to meet the specific needs of speech-language pathologists, continuing education providers can increase awareness and availability of such continuing education opportunities.

Preprofessional Programs. Preprofessional programs should work to continue to improve preprofessional education in the area of AAC. AAC education has improved over the years, especially since AAC was identified as an ASHA knowledge and skills area. However, there are more improvements to be made, especially considering the lack of satisfaction that

professionals in the field report for the area of AAC. Preprofessional programs can continue to make improvements by providing adequate coursework and clinical opportunities. Since not all speech-language pathologists obtain AAC continuing education, preprofessional programs should share responsibility for providing accurate information about AAC in general. This may help reduce the number of professionals that enter the field with erroneous beliefs as discussed above.

Limitations

Limitations of the study include speech-language pathologists not providing information for all questions, lack of specific questions, and inability to generalize results to all school-based speech-language pathologists. While the completion rate of the survey was high at 87%, due to organization of the survey, participants who dropped out of the survey were more likely to provide demographic information rather than information about their knowledge of AAC and the continuing education they obtained in this area. In addition, the survey solicited information about the continuing education that speech-language pathologists have obtained in the area of AAC within the last five years. This presents a limitation as speech-language pathologists may not have been able to accurately recall the continuing education they obtained during such a long period of time. On open-ended questions, several respondents reported that they estimated the number of AAC continuing education they have attended within the last five years and summarized or were unsure of the focus as it was difficult to recall.

After the survey was distributed, the researcher determined a few questions included errors and some areas were not solicited in the survey. For example, the question regarding the number of years speech-language pathologists had worked in a school setting included answer options that were not mutually exclusive. This may have created discrepancies between the

participants' responses to the number of years they had worked as a speech-language pathologist, and the number of years they have worked specifically in a school setting. Ultimately this affected the demographic information obtained. In addition, the survey did not correctly solicit information regarding the factors that influenced where participants obtain continuing education for those who obtained AAC CEUs. This information was appropriately collected for participants who did not obtain AAC CEUs. However, the answer options that were displayed for the participants who reported obtaining AAC CEUs were different. Participants who did not obtain AAC CEUs were presented with options such as price, location, presenter, etc. Participants who obtained AAC CEUs were presented with options such as clinical problem or question, the needs of students on my caseload, need to update or maintain knowledge, etc., The answer options for this group were incorrectly duplicated and were therefore the same as the answer options presented for the question soliciting information about the factors influencing the area in which participants obtain continuing education.

Finally, the sample of participants in this study may negatively affect the ability to generalize the information obtained to all school-based speech-language pathologists. The speech-language pathologists who participated in this study may represent a participation bias. Since the survey was distributed through online means with AAC continuing education described as the focus of the survey, this may have affected speech-language pathologist's decisions to participate in the study. Speech-language pathologists may have decided to participate in this study based on their interest or expertise in AAC. Alternatively, speech-language pathologists may have decided not to participate in this study based on their lack of interest or expertise in AAC. This bias may have skewed the data regarding the continuing education speech-language pathologists obtained. It may reflect a greater interest in AAC and therefore more AAC

continuing education than the average school speech-language pathologist. Therefore, this data may not appropriately represent school-based speech-language pathologists as a whole.

Future Research

Future research on continuing education in the area of AAC should include a larger sample of speech-language pathologists. This sample should include a more diverse sample of speech-language pathologists collected by means that may introduce less bias. The sample could also include speech-language pathologists working in various settings, rather than only those working in a school setting. In addition, this research can be expanded to include the teaching strategies, and assessment methods that speech-language pathologists in the schools are using to support students who use AAC. Future research may also focus on the specific areas of needs that speech-language pathologists may identify regarding AAC. In addition, future research could be expanded to examine the continuing education obtained by speech-language pathologists in other areas of practice as well as how this compares to those obtained in the area of AAC. It will likely be beneficial to continue to assess speech-language pathologists' knowledge and skills in the area of AAC as well as the ways in which they are obtaining and maintaining this knowledge.

This research can also be expanded to include the ways in which continuing education can be changed to further support speech-language pathologists in AAC. For example, considering the source of continuing education and the specific focus of AAC continuing education. In addition, consideration should be given to the limitations speech-language pathologists face in obtaining AAC knowledge not only through continuing education but preprofessional education, and evidence-based practice. It would also be important to consider the barriers school speech-language pathologists face in evaluating and implementing AAC.

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Appendix A

AAC Continuing Education in the Schools: A National Survey

Consent

The Department of Speech-Language-Hearing at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty.

We are conducting this study to better understand augmentative and alternative communication (AAC) continuing education units obtained by speech-language pathologists working in a school setting. This will entail your completion of a survey. Your participation is expected to take approximately 15 minutes to complete. The content of the survey should cause no more discomfort than you would experience in your everyday life. You may leave and return to complete the survey, however the survey will close on March 1st 2018.

Although participation may not benefit you directly, we believe that the information obtained from this study will help us gain a better understanding of the continuing education needs in regards to augmentative and alternative communication (AAC). Your participation is solicited, although strictly voluntary. Your name will not be associated in any way with the research findings. No identifiable information will be provided in this study. It is possible, however, with Internet communications, that through intent or accident someone other than the intended recipient may see your response.

After you begin this survey, you will advance through the questions. Due to the nature of the survey, once you answer a question, you may not return to it. If you leave the survey at any time, you will have the opportunity to return and complete it at any time before March 1, 2018. On this date, your survey will close and your response will be recorded.

If you would like additional information concerning this study before or after it is completed, please feel free to contact us by phone or email.

Completion of the survey indicates your willingness to take part in this study and that you are at least 18 years old. If you have any additional questions about your rights as a research participant, you may call (785) 864-7429 or write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, email irb@ku.edu.

Sincerely,

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- ◯ I am at least 18 years old and I understand the risks and benefits of this study. I am willing to take part in this study.
- ◯ I am not 18 years old.
- ◯ I do not wish to take part in this study.

Demographics

How did you learn about this survey?

- ◯ Facebook

- ASHA Special Interest Group (SIG)
- State Speech-Language-Hearing Association
- Email from special education director or coordinator in my school district
- Other, please specify:

On which Facebook group or page did you hear about this survey?

- AAC for the SLP
- AAC Language Lab
- AAC - Alternative Awesome Communicators
- ASHA Advocacy
- PRESCHOOL Speech-Language Pathologists
- School-Based SLP
- School-Based SLPs: For Professionals Only
- SLPs for Evidence Based Practice
- Speech-Language Pathologists
- Speech-Language Pathologists and Autism Spectrum Disorder
- Speech Pathologists at Large
- Speech Therapy Ideas
- The American Speech Language Hearing Association
- Other, please specify:

On which special interest group (SIG) did you hear about this survey?

- SIG 12: Augmentative and Alternative Communication
- SIG 16: School-Based Issues
- Other, please specify:

Professional Background

Are you a speech-language pathologist?

- Yes
- No

Are you an American Speech-Language-Hearing Association (ASHA) certified speech-language pathologist (CCC-SLP)?

- Yes
- No

Are you a licensed speech-language pathologist in your state?

- Yes

- ◯ No

What is the highest level of education you have received?

- ◯ Bachelor's Degree
- ◯ Master's Degree
- ◯ Clinical Doctorate in Speech-Language-Pathology
- ◯ Doctor of Philosophy (PhD)
- ◯ Other, please specify

How many years have you worked as a speech-language pathologist?

- ◯ Less than 1 year
- ◯ 1-5 years
- ◯ 6-10 years
- ◯ 11-15 years
- ◯ 16-20 years
- ◯ 21-25 years
- ◯ 26-30 years
- ◯ More than 30 years

In what setting(s) are you currently employed? Select all that apply.

- ☐ Hospital
- ☐ Private Clinic
- ☐ School
- ☐ Skilled Nursing Facility
- ☐ Other, please specify

School Information

How many years have you worked as speech-language pathologist in a school setting?

- ◯ Less than 1 year
- ◯ 1-5 years
- ◯ 6-10 years
- ◯ 11-15 years
- ◯ 16-20 years
- ◯ 21-25 years
- ◯ 25-30 years
- ◯ More than 30 years

In which state is your school district located?

What is the approximate enrollment of your school district?

- ◯ Less than 250
- ◯ 251 - 999
- ◯ 1,000 - 1,999
- ◯ 2,000 - 4,999
- ◯ 5,000 - 9,999
- ◯ 10,000 or more

What is the setting of your school(s)? Select all that apply.

- ☐ Urban
- ☐ Suburban
- ☐ Rural
- ☐ Other, please specify

Does your school district employ an augmentative and alternative communication (AAC) or assistive technology (AT) specialist?

- ◯ Yes
- ◯ No
- ◯ I don't know

Which does your school district employ?

- ◯ Augmentative and alternative communication (AAC) specialist
- ◯ Assistive technology (AT) specialist
- ◯ Both
- ◯ I don't know

Are you an augmentative and alternative communication (AAC) specialist for your school district?

- ◯ Yes
- ◯ No

Are you an assistive technology (AT) specialist for your school district?

- ◯ Yes
- ◯ No

Does your school district have an augmentative and alternative communication (AAC) or assistive technology (AT) team?

- ◯ Yes

- ◯ No
- ◯ I don't know

Are you a member of your school district's augmentative and alternative communication (AAC) or assistive technology (AT) team?

- ◯ Yes
- ◯ No

Caseload Information

How many students are on your current caseload?

- ◯ Less than 15 students
- ◯ 15 - 30 students
- ◯ 31 - 45 students
- ◯ 46 - 60 students
- ◯ 61 - 75 students
- ◯ 76 or more students

What age range of students do you serve? Select all that apply.

- ☐ Birth to 3
- ☐ Preschool
- ☐ Kindergarten - 2nd grade
- ☐ 3rd - 5th grade
- ☐ 6th - 8th grade
- ☐ 9th - 12th grade
- ☐ 18 to 21 years old (i.e., transition program)

How many students on your current caseload use augmentative and alternative communication (AAC)?

- ◯ 0
- ◯ 1 - 3
- ◯ 4 - 6
- ◯ 7 - 9
- ◯ 10 - 12
- ◯ 13 - 15
- ◯ More than 16

How many students on your current caseload do not use augmentative and alternative communication (AAC) but may benefit from it?

- ◯ 0
- ◯ 1 - 3
- ◯ 4 - 6

- ○ 7 - 9
- ○ 10 - 12
- ○ 13 - 15
- ○ More than 16
- ○ Not sure

What type of augmentative and alternative communication (AAC) do the student(s) on your caseload use? Select all that apply.

- ☐ No tech (e.g., sign language, gestures, facial expression, etc.)
- ☐ Low-tech (e.g., picture communication board, PECS, PODD book, etc.)
- ☐ Mid-tech (e.g., Big Mac, Step-by-step, GoTalk, etc.)
- ☐ High-tech (e.g., Accent, Tobii-Dynavox, Saltillo, iPad app, etc.).

What type of no-tech augmentative and alternative communication (AAC) do the student(s) on your caseload use? Select all that apply.

- ☐ Sign language
- ☐ Gestures
- ☐ Facial expressions
- ☐ Other, please specify:

What type of low-tech augmentative and alternative communication (AAC) do the student(s) on your caseload use? Select all that apply.

- ☐ Picture Exchange Communication System (PECS)
- ☐ Pragmatic Organisation Dynamic Display (PODD) Communication Book
- ☐ Picture communication board
- ☐ Other, please specify:

What type of mid-tech augmentative and alternative communication (AAC) do the student(s) on your caseload use? Select all that apply.

- ☐ GoTalk
- ☐ QuickTalk
- ☐ SuperTalker
- ☐ Tech Talk/Tech Chat/Tech Speak
- ☐ BIGmack (Single message device with voice output)
- ☐ Other, please specify:

What type of high-tech augmentative and alternative communication (AAC) do the student(s) on your caseload use? Select all that apply.

- ☐ Accent
- ☐ Tobii-Dynavox
- ☐ Saltillo

- [ ] iPad/tablet application
- [ ] Other, please specify:

What type of augmentative and alternative communication (AAC) iPad/tablet application(s) do the student(s) on your caseload use? Select all that apply.

- [ ] aacorn AAC
- [ ] Alexicom AAC
- [ ] Avaz
- [ ] Bridge Communication
- [ ] Compass
- [ ] CoughDrop AAC
- [ ] GoTalk NOW
- [ ] LAMP Words for Life
- [ ] My First AAC
- [ ] PODD with Compass
- [ ] Predictable
- [ ] Proloquo2Go
- [ ] Proloquo4Text
- [ ] QuickType AAC
- [ ] Speak for Yourself
- [ ] Total Talk - AAC
- [ ] TouchChat
- [ ] Verbally
- [ ] Other, please specify:

AAC Knowledge

Please rate the degree to which you are knowledgeable about augmentative and alternative communication (AAC) intervention.

- ○ Extremely knowledgeable
- ○ Very knowledgeable
- ○ Moderately knowledgeable
- ○ Slightly knowledgeable
- ○ Not knowledgeable at all

Please rate the degree to which you are knowledgeable about augmentative and alternative communication (AAC) assessment.

- ○ Extremely knowledgeable
- ○ Very knowledgeable
- ○ Moderately knowledgeable
- ○ Slightly knowledgeable

- ◯ Not knowledgeable at all

Please rate the degree to which you are comfortable in your ability to serve students who use augmentative and alternative communication (AAC).

- ◯ Extremely comfortable
- ◯ Moderately comfortable
- ◯ Slightly comfortable
- ◯ Neither comfortable nor uncomfortable
- ◯ Slightly uncomfortable
- ◯ Moderately uncomfortable
- ◯ Extremely uncomfortable

Please rate the degree to which you agree or disagree with the following statements regarding pre-professional preparation in the area of augmentative and alternative communication (AAC):

	N/A	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Courses in my undergraduate program prepared me to serve students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯
Clinical experiences in my undergraduate program prepared me to serve students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯
Courses in my graduate program prepared me to serve students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯
Clinical experiences in my graduate program prepared me to serve students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯
Field studies/externships in my graduate program prepared me to serve students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯
My clinical fellowship year (CFY) prepared me to serve students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯

Please rate the degree to which you agree or disagree with the following statements regarding post-certification education in the area of augmentative and alternative communication (AAC):

	N/A	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
On-the-job training supports me in serving students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯
In-service or professional development supports me in serving students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯
Continuing education opportunities support me in serving students who use AAC.	◯	◯	◯	◯	◯	◯	◯	◯

	N/A	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Colleagues support me in serving students who use AAC.	○	○	○	○	○	○	○	○
Online resources support me in serving students who use AAC.	○	○	○	○	○	○	○	○
Books and textbooks support me in serving students who use AAC.	○	○	○	○	○	○	○	○
Journal articles support me in serving students who use AAC.	○	○	○	○	○	○	○	○
ASHA resources support me in serving students who use AAC.	○	○	○	○	○	○	○	○

Continuing Education Funding

Who pays for your continuing education units (CEUs)?

- ○ School district
- ○ Contracting company
- ○ Special education cooperation
- ○ I personally pay for my CEUs
- ○ Other, please specify:

Does your school district provide continuing education units (CEUs) within in-service training?

- ○ Yes
- ○ No

Does your school district pay for you to attend continuing education experiences?

- ○ Yes
- ○ No

Does your contracting company provide continuing education units (CEUs) within in-service training?

- ○ Yes
- ○ No

Does your contracting company pay for you to attend continuing education experiences?

- ○ Yes
- ○ No

Does your special education cooperation provide continuing education units (CEUs) within in-service training?

- ○ Yes

- ○ No

Does your special education cooperation pay for you to attend continuing education experiences?

- ○ Yes
- ○ No

Does your employer provide continuing education units (CEUs) within in-service training?

- ○ Yes
- ○ No

What is the annual budget, if any, allotted toward your continuing education units (CEUs)?

Continuing Education

Within the last 5 years, in what area(s) have you obtained continuing education units (CEUs)? Select all that apply.

- ☐ Articulation
- ☐ Augmentative and alternative communication
- ☐ Cognitive aspects of communication
- ☐ Fluency
- ☐ Hearing
- ☐ Social aspects of communication
- ☐ Swallowing
- ☐ Receptive and expressive language
- ☐ Voice and resonance

Please rate the degree to which the following factors influence the area(s) (i.e., voice, articulation, fluency, etc.) in which you obtain continuing education units (CEUs):

	N/A	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Clinical problem or question	○	○	○	○	○	○
Lack of confidence	○	○	○	○	○	○
Maintain or update knowledge	○	○	○	○	○	○
Needs of student(s) on my caseload	○	○	○	○	○	○
Personal interest	○	○	○	○	○	○
Other, please explain:	○	○	○	○	○	○

Within the last 5 years, where did you obtain continuing education units (CEUs)? Select all that apply.

- ☐ ASHA Connect
- ☐ ASHA Convention

- [ ] ASHA approved self-study
- [ ] ASHA approved independent study
- [ ] In-person workshop or program
- [ ] Local or regional conference
- [ ] National convention (i.e., professional organization, non-profit, etc.)
- [ ] Online conference
- [ ] Online webinar
- [ ] State conference
- [ ] Other, please specify:

Please rate the degree to which the following factors influence where you obtain continuing education units (CEUs):

	N/A	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Location	○	○	○	○	○	○
Price	○	○	○	○	○	○
Provider	○	○	○	○	○	○
Speaker/presenter	○	○	○	○	○	○
Other, please specify:	○	○	○	○	○	○

Within the last 5 years, how many augmentative and alternative communication (AAC) continuing education experiences (i.e., courses, classes, sessions, webinars, etc.) did you attend?

Please rate the degree to which the following factors influenced your decision to obtain continuing education units (CEUs) in the area of augmentative and alternative communication (AAC):

	N/A	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Clinical problem or question	○	○	○	○	○	○
Lack of confidence	○	○	○	○	○	○
Maintain or update knowledge	○	○	○	○	○	○
Needs of student(s) on my caseload	○	○	○	○	○	○
Personal interest	○	○	○	○	○	○
Other, please explain:	○	○	○	○	○	○

Within the last 5 years, where did you obtain your augmentative and alternative communication (AAC) continuing education experience(s)? Select all that apply.

- [ ] ASHA Connect
- [ ] ASHA Convention
- [ ] ASHA approved self-study
- [ ] ASHA approved independent study

- [ ] In-person workshop or program
- [ ] Local or regional conference
- [ ] National convention (i.e., professional organization, non-profit, etc.)
- [ ] Online conference
- [ ] Online webinar
- [ ] State conference
- [ ] Other, please specify:

Please rate the degree to which the following factors influenced where you obtained continuing education units (CEUs) in the area of augmentative and alternative communication (AAC):

	N/A	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Clinical problem or question	○	○	○	○	○	○
Lack of confidence	○	○	○	○	○	○
Maintain or update knowledge	○	○	○	○	○	○
Needs of student(s) on my caseload	○	○	○	○	○	○
Personal interest	○	○	○	○	○	○
Other, please explain:	○	○	○	○	○	○

What was the focus the augmentative and alternative communication (AAC) continuing education experience(s) you attended?

Satisifaction

Please rate the degree to which you agree or disagree with the following statements regarding the augmentative and alternative communication (AAC) continuing education units (CEUs) you obtained:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
The CEU increased my knowledge of AAC.	○	○	○	○	○	○	○
I obtained valuable information to incorporate into AAC intervention from the CEU.	○	○	○	○	○	○	○

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
I obtained valuable information to incorporate into AAC assessment from the CEU.	○	○	○	○	○	○	○
The CEU made me more confident in my ability to support a student who uses AAC.	○	○	○	○	○	○	○

Comments

If you have any additional comments about augmentative and alternative communication (AAC) continuing education, please provide them in the box below:

No AAC

Have you ever considered obtaining continuing education units (CEUs) in the area of augmentative and alternative communication (AAC)?

- ○ Yes
- ○ No

Please rate the degree to which you agree or disagree with the following statements:

	N/A	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
I am confident in my abilities to serve a student who uses AAC	○	○	○	○	○	○	○	○
I don't have any students who need AAC on my caseload	○	○	○	○	○	○	○	○
I don't have any students who use AAC on my caseload	○	○	○	○	○	○	○	○
I prefer to focus on verbal speech instead of AAC	○	○	○	○	○	○	○	○
I refer students on my caseload to other SLPs in the district or area for AAC assessment	○	○	○	○	○	○	○	○
I seek information on AAC elsewhere in order to support my students	○	○	○	○	○	○	○	○

	N/A	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
My school district does not have adequate funding to support students who need AAC	○	○	○	○	○	○	○	○
The students on my caseload have not met prerequisites for AAC	○	○	○	○	○	○	○	○
Other, please specify:	○	○	○	○	○	○	○	○

If you have any additional comments about augmentative and alternative communication (AAC) continuing education, please provide them in the box below: