AUGMENTATIVE AND ALTERNATIVE COMMUNICATION ASSESSMENT PROCESS IN THE SCHOOLS: A NATIONAL SURVEY

By

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Rachel Anne Broom
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Chair: Jane R. Wegner

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Nancy Brady

_____

Julie Gatts

Date Defended: April 13, 2017

The Thesis Committee for Rachel Anne Broom

certifies that this is the approved version of the following thesis:

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Chair: Jane R. Wegner

Date approved: April 13, 2017

Abstract

This study assessed the procedures and methods of AAC assessments in the school setting and roles of speech-language pathologists in this process. A survey entitled "AAC Assessment Procedures in the Schools: A National Survey" was hosted online. Speech-language pathologists' participation was solicited with assistance from state speech-language pathology organizations, various speech-language pathology Facebook groups, online community boards, and personal contacts of the researcher. A total of 109 individuals participated in this survey and provided demographic information, information about their involvement in the AAC assessment process in the school, information about the AAC assessment, their proficiency and experience with AAC, as well as the results of AAC assessments in their schools.

The data from the survey revealed that less than half of speech-language pathologists working in the schools conduct AAC assessments. Participants reported that most assessments involve a team of individuals assessing the student for AAC. In addition, many participants reported that use of various systematic frameworks and tools to guide the AAC assessment process.

Clinical implications for speech-language pathologists working in an educational setting include the need for speech-language pathologists to have the appropriate knowledge and skills required to provide AAC services. These speech-language pathologists especially need to be current in their knowledge of AAC systems as well as research pertaining to AAC.

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Introduction

With the rapid development of new technologies, many changes have occurred throughout various fields including medicine, speech-language pathology, and education. This development of technology has provided the field of medicine with the ability to serve individuals with disabilities in a way that previously was not possible. Because of this, many more individuals with disabilities are surviving birth and living longer. This greatly affects the fields of speech-language pathology and education. In addition to these technological advancements in medicine, advances in technology have also expanded the field of augmentative and alternative communication. With this expansion, speech-language pathologists, professionals in education, individuals with disabilities, and the services provided to these individuals have been impacted.

Augmentative and Alternative Communication

Augmentative and alternative communication, or AAC, is defined by the American Speech-Language-Hearing Association (ASHA) to be "all forms of communication (other than oral speech) that are used to express thoughts, needs, wants, and ideas" (ASHA, n.d.). Light (1988) concluded, from AAC research, four purposes of communicative interaction: communicating wants and/or needs, conveying information, personal relationships, and social protocol. Beukelman and Mirenda (2013) suggest an addition purpose, "to communicate with oneself or conduct an internal dialogue" (pg. 8). AAC can allow and encourage an individual to communicate for these different purposes which supports their ability to communicate and interact with the world. Light and McNaughton (2014) state that augmentative and alternative communication is the first step for an individual in developing communicative competence.

Augmentative and alternative communication is a broad term that describes the many forms of communication other than speech that an individual can use to communicate. AAC options differ according to various aspects. One of these aspects includes whether the AAC option is aided or unaided. Unaided forms of AAC do not involve any external tool which means many of these require some use of the individual's motor skills. Sign language, gestures, body language, body position, or vocalizations are examples of unaided forms of AAC (ASHA, n.d.). Aided forms of AAC involve an external tool such as a communication board, button, speech generating device (SGD), or tablet (ASHA, n.d.). AAC can differ according to level of technology. Unaided forms of AAC are considered to be no-tech options as no external technology is needed. These no-tech options include gestures, manual signs, facial expressions, body language, and vocalizations (ASHA, n.d.). Aided forms of AAC can either be low-tech or high-tech. Low-tech options are non-electronic and can included pictures, objects, communication books, and communication boards. High-tech devices include SGDs, iPads or tablets with a communication application, and single message devices (ASHA, n.d.). AAC options can also differ by the way information is displayed. There are four display types: fixed, dynamic, hybrid, and visual scene display. Fixed displays include displays in which the symbols and items remain in the same position. Typically these displays are found on low-tech devices and some SGDs. Dynamic displays involve a screen display that allows for the symbols to change when selections on the display are made. Hybrid displays are a combination of fixed electronic displays that are dynamic in that these displays make predictions on what may be selected next (Beukelman & Mirenda, 2013). An example of a hybrid display is a keyboard with word prediction, like seen on SMART cell phones (ASHA, n.d.). The final display type, visual scene display, involves a picture, photograph, or image in which vocabulary regarding the scene

and/or topic is embedded in the visual scene or is provided around the visual scene (Beukelman & Mirenda, 2013).

When considering AAC for an individual, the method of selecting messages or symbols is known as a selection technique (ASHA, n.d.). The two main selection techniques are direct selection and indirect selection. Direct selection involves the individual using AAC to directly select the symbol from the selection set. Indirect selection, also known as scanning, involves each item in the selection set being presented until the target is accessible at which point the target can then be selected by the individual (ASHA, n.d.).

The population of individuals who use AAC to communicate is diverse across disability, ethnicity, socioeconomic status, cognitive ability, race, and age. Individuals using AAC may have a congenital condition or an acquired condition that inhibits or limits their ability to communicate using speech. Common congenital conditions that may cause a severe communication disorder include autism, cerebral palsy, developmental apraxia of speech, and intellectual disability (Beukelman & Mirenda, 2013). Common acquired conditions that may cause a severe communication disorder include strokes, traumatic brain injuries, amyotrophic lateral sclerosis, and primary progressive aphasia (ASHA, n.d.). The number of people who use AAC, or who have need for AAC, has increased to an estimated number of four million people in the United States (Beukelman & Mirenda, 2013) caused by higher survival rates due to advances in technology and medicine (Dodd, Schaefer, & Aaron, 2015). These individuals, because of their complex communication needs, may be unable to effectively and efficiently communicate their daily needs or let others know about their medical concerns. In addition, they may be unable to participate in social activities due to their communication barrier (Light & McNaughton, 2015). However, AAC can provide a way for individuals with complex

communication needs to have their needs met and to participate in society. Because of this, as well as the increase of individuals who use and need AAC, speech-language pathologists should be well trained in the area of AAC.

Variety of AAC Options and Changing Technology

In addition to augmentative and alternative communication differing according to technology and modality, AAC options differ according to technology and presentation of language. There has been a rapid change in technology which has transformed and significantly influenced AAC (Deruyter, McNaughton, Caves, Bryen, & Williams, 2007; McNaughton & Light 2013). Many high-tech devices, such as the Prentke Romich Company Accent and the Tobii-Dynavox T-10, have become more advanced and have had many additional technological options have been added to them. In addition to advancement in this technology, applications on iPads and other tablet devices are continually being created. This development is extremely rapid (Bradshaw, 2013). Due to the significant prevalence of iPads and other tablets throughout society, this change in technology can have a positive influence on individuals with AAC (McNaughton & Light, 2013). Use of these widely used devices more easily allows individuals who need AAC to access mainstream technologies but also helps to increase the public's awareness about AAC as well as their acceptance of AAC (McNaughton & Light, 2013).

While having many options can be positive, these many options available to speech-language pathologists and families of individuals with complex communication needs can be overwhelming and make the assessment process more difficult. When selecting a form of AAC, it is important to consider current technology as well as the function and benefit AAC system (Gosnell, Costello, & Shane, 2013). For example, a device may provide the ability to add photographs to the device, access to email, or may include many store messages. These factors

can significantly affect professionals', including speech-language pathologists, skills and knowledge of AAC.

Speech-Language Pathologist's Roles and Responsibilities in AAC

The American Speech-Language-Hearing Association, ASHA, outlined their position in regards to a speech-language pathologist's role in AAC in the document *Roles and Responsibilities of Speech-Language Pathologists with Respect to Augmentative and Alternative Communication: Position Statement (2005).* In this document, ASHA states that AAC services are within a speech-language pathologist's scope of practice and describes the various roles and responsibilities of speech-language pathologists (ASHA, 2005). Speech-language pathologists are involved in the screening, assessment, diagnosis, and treatment of individuals who have need of AAC for communication (ASHA, n.d.). Within these areas of service, roles and responsibilities of speech-language pathologists include considering the needs and desires of the individual who may need AAC, implementing a multimodal approach to communication, seeking out and maintaining knowledge and skills, considering perspectives, facilitating use of AAC, as well as assessing, intervening, and evaluating using the principles of evidence-based practice (ASHA, 2005).

ASHA outlined, in a document titled *Augmentative and Alternative Communication: Knowledge and Skills for Service Delivery* (2002), the knowledge, responsibilities, and skills speech-language pathologists must possess in the area of AAC. The specific roles identified in the document include assessing the individual for AAC, assessing the individual's communication partners and communication environments, assessing the AAC methods, strategies, and components to promote the utmost functional communication for the individual as possible, as well as developing and implementing a plan for intervention for individuals with

AAC. Other roles defined in this document include use of evidence-based practice to evaluate outcomes for the individual, evaluating the current form of AAC's effectiveness, considering benefits or limitations of other forms of AAC, coordinating AAC services and collaborating with other team members, educating and training communication partners about AAC to enhance quality of life, and advocating for the individual in the community in regards to the individual's communication needs and needs for funding (ASHA, 2002). In addition to these roles outlined, ASHA recently has identified additional roles of speech-language pathologists on the Augmentative and Alternative Communication Practice Portal (n.d.). Roles identified include training other professionals about AAC, involving the individual and family members in making decisions throughout the assessment and intervention process, counseling individuals with AAC and their families regarding communication and other issues regarding AAC, and to be informed of current research in the area of AAC (ASHA, n.d). Within all of these roles, specific proficiencies, knowledge, and skills necessary for a speech-language pathologist to provide AAC services are outlined in these documents. It should be noted, however, that ASHA does not expect all speech-language pathologists to possess all of this knowledge and all of these skills or to adequately play all of these roles. In the Knowledge and Skills document (2002) ASHA notes that "all speech-language pathologists are expected to recognize situations in which mentoring, consultation, and/or referral to another professional are necessary to provide quality services to individuals who may benefit from AAC" (Background section, para. 3).

Speech-Language Pathologist's Knowledge of AAC

The American Speech-Language-Hearing Association has identified the skills and knowledge that speech-language pathologists need in order to provide AAC services to individuals. While AAC is part of a speech-language pathologist's scope of practice, not all

speech-language pathologists possess the knowledge and skills to do so. From a survey completed by ASHA-certified speech-language pathologists, the number of speech-language pathologists with an expertise in AAC increased 9 percent from 2006 to 2014 (ASHA, 2015). Despite this revealing an increase in knowledge of AAC, expertise and knowledge in AAC is lacking among speech-language pathologists. Koul and Lloyd (1994), researched speech-language pathology programs and their clinical and academic opportunities provided for students to learn about AAC. Results from this study found that while many programs had AAC courses, many of these programs did not require students to take these courses. In addition, these courses offered were introductory in nature. Additional courses focusing on more specific areas of AAC were not provided by many programs (Koul & Lloyd, 1994).

In 2013, Ratcliff, Koul, and Lloyd re-visited this topic by gathering information via a survey which sought to obtain information regarding the academic and clinical education in AAC in the United States compared to previous findings in this area. The population targeted was individuals associated with preprofesional training programs in communication disorders/speech-language pathology in the United States who could provide information regarding AAC curriculum and training. From the results of 168 completed surveys, they found that there has been an increase in AAC education/training for speech-language pathologists since 1994. However, Ratcliffe and colleagues noted that there is still a shortage of education and clinical training for speech-language pathologists in the area of augmentative and alternative communication. They reported that speech-language pathology students still did not feel prepared in the area of AAC when they graduated. In addition, it was noted that about half of speech-language pathologists need to be trained in AAC on-site during their jobs due to lack of knowledge and experience when they graduate (Ratcliffe, Koul, & Lloyd, 2013).

Marvin, Montano, Fusco, and Gould (2003) also found that many SLPs are receiving their training on-site. Marvin and colleagues conducted research using a survey that considered speech-language pathologists' perspectives of their trainings in AAC. This survey was administered to 71 speech-language pathologists. Thirty-seven percent of the participants in this study reported that they felt a "good or very good level of comfort" in regards to use of AAC while 63% reported a "poor to limited comfort level." When asked about training and education regarding AAC systems, less than half of the participants reported adequate training. More than 75% of participants noted that the preparation provided at the graduate level was limited or poor. Results from this survey also noted that speech-language pathologists who worked in the schools for more the 21 years reported lower levels of competence with AAC than speech-language pathologists working in the schools less than 21 years. Many participants noted a desire for more extensive education at the graduate level in AAC (Marvin, Montano, Fusco, & Gould, 2003).

Costigan and Light (2010) had similar findings to Marvin and colleagues (2003) and Ratcliffe and colleagues (2013). Costigan and Light (2010) reviewed research involving surveys regarding preservice training in AAC and effectiveness of this training completed by personnel at university preservice programs for speech-language pathologists, special education teachers, and occupational therapists. Costigan and Light (2010) found that many speech-language pathologists felt that they received little to no training in AAC prior to working. In this review of preservice training, they also found that fieldwork in AAC is not a common opportunity provided in the graduate programs resulting in less than one-half of graduate students being competent to provide AAC services after graduation (Costigan & Light, 2010).

This lack of knowledge, expertise, and comfort level can become a concern for speech-language pathologists because lack of education and training can result in a decrease in quality of

services provided (Ratcliffe, Koul, & Lloyd, 2013). In addition, due to the many factors involved with AAC and the extensive technology options, it can be challenging for speech-language pathologists to maintain or gain this knowledge without education and training provided, especially in a master's level programs.

Along with differing level of expertise and level of comfort in the area of AAC for speech-language pathologists, differences in methods of practice may be observed. Dietz and colleagues (2012) interviewed 25 speech-language pathologists of different levels of expertise in AAC about assessment and decision making. Participants who were speech-language pathologists who provide a range of service including AAC, however, were not specialized in AAC, were identified in this study as general practice speech-language pathologists. Participants who were considered specialists in AAC were categorized in two ways. One group was speech-language pathologists who spent at least 50% of their job duties with AAC related tasks. The other group considered to be specialists in AAC conducted research, provided preprofessional education, developed policy, or provided evidence base practice for assessment in the area of AAC.

From these interviews by Dietz and colleagues (2012), it was found that speech-language pathologists considered to be general practice speech-language pathologists were more linear when considering the AAC assessment process and consider the AAC assessment to be a two-step process involving assessment of language and assessment of symbols. These speech-language pathologists often used standardized methods and expressed the idea that they were to make the decision about what form of AAC should be chosen rather than what is the most appropriate for the individual. From this study it was also found that these general practice speech-language pathologists tended to focus on the underlying impairment of the individual.

Speech-language pathologists considered to be specialists in AAC reported in the interviews that they tend to approach the assessment with a holistic view and personalize the assessment to each individual. These speech-language pathologists tended to focus on how AAC can allow the individual to communicate meaningfully (Dietz, Quach, Lund, & McKelvey, 2012). These differences in practice as well as the differences in knowledge and experience can greatly impact services to individuals requiring AAC, especially in the school setting.

Augmentative and Alternative Communication in the School Setting

Speech-language pathologists in the schools are working with students who have need of AAC to communicate. According to ASHA's 2015 year end membership counts, speech-language pathologists with expertise in AAC are most largely found working in an educational setting. Sixty-one percent of the ASHA-certified speech-language pathologists with expertise in AAC reported working in a school setting (ASHA, 2015). While most of these speech-language pathologists are found in educational settings, this does not account for all speech-language pathologists working in an educational setting. For this reason, not all speech-language pathologists working in schools have the knowledge they need to assess and treat students who have a complex communication needs and who require AAC to communicate. However, it is important that speech-language pathologists have some knowledge of AAC as according to the *2016 Schools Survey Report: SLP Caseload Characteristics* (2016), 55.1% of speech-language pathologists regularly provide intervention to students who are nonverbal and/or use AAC. This survey also found that a mean of 4.8 students who are nonverbal and/or use AAC are on a speech-language pathologist's caseload in the schools (ASHA, 2016).

For individuals with disabilities, especially those with complex communication needs, tools for communication and engagement in society have not always been provided. In the past

few decades, changes in legislation have enforced and regulated the right for students to not only have access to education but to also have access to AAC (Robinson & Soto, 2013). In the school setting, there are many laws and regulations that enforce the provision of services to individuals with disabilities including AAC services. One federal law that requires consideration of AAC for a child to fit within an Individual Education Plan (IEP) is the Individuals with Disabilities Education Act, IDEA, 2004. IDEA states in section 602 that "the term `assistive technology device' means 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." IDEA also describes the assistive technology services that may be provided to a student who needs assistive technology which includes assessing the student's needs, providing access to the assistive technology, coordinating academics and other activities to include the device, as well as training family and professionals (IDEA 2004). These laws regarding AAC services to students in the educational setting as well as the requirement for AAC to be considered for each student additional who requires special education services, greatly impacts speech-language pathologists' practice within the school setting.

Within the educational setting, speech-language pathologists work on a team of individuals to provide AAC services (ASHA, n.d.). The speech-language pathologist has many roles in the AAC services for students. These roles include completing the speech-language evaluation, considering need of AAC, providing trial periods of AAC systems, collecting data, and providing a variety of AAC systems. In addition, the school-based speech-language pathologist is involved in writing and implementing goals, following through with the recommendations, ensuring the student's needs are met by not only the speech-language pathologist, but all individuals on the team as well as providing training to the student, family,

and other professionals (ASHA, n.d.). When speech-language pathologists are involved in intervention with AAC, the clinician should consider the support the student will need, the vocabulary most appropriate for the student, how to provide the student with the ability to communicate needs as well as how this will allow the child to access the general education curriculum and participate in social interaction (ASHA, n.d.).

With the many roles and responsibilities of school-based speech-language pathologists in AAC services, various factors regarding AAC must be considered by speech-language pathologists (Zangari, 2016). Zangari noted that individuals who have complex communication needs may not get the appropriate AAC tools until the age of 4 or later. While this occurs for these students, their peers who are developing typically and use speech for communication have acquired verbal expression in early childhood and are continuing to adjust as they grow. The children with complex communication needs also have less control of their communication as they often have additional disabilities that cause them to have limited control of their communication aid. In addition, it is common for individuals using AAC to switch forms of AAC over time. This causes a delay for these students as they are required to learn different forms of communication and language each time a new method is presented to the student (Zangari, 2016). To avoid many of these issues that may limit a student's ability to communicate, speech-language pathologists need to know the research about AAC and have the skills to provide services in these areas. All of these issues not only reveal the importance of AAC for students with severe communication disorders, but also reveals the importance of speech-language pathologists in the schools having the knowledge to provide the most appropriate AAC services for these students, especially in the area of AAC assessments as the decisions made during an assessment impact the intervention to follow.

Augmentative and Alternative Communication Assessment

The main goal of an AAC assessment is to elicit behaviors that allow the individual's communication potential to be seen (ASHA, n.d.). Helling and colleagues (2014) suggest that from the assessment of behaviors, the team should be able to identify AAC tools and strategies that will provide a means for individuals to communicate in various settings, in various contexts, and with a variety of communication partners. To obtain this information, Beukelman and Mirenda (2013) recommend various assessment strategies that include collecting and analyzing information to make decisions about the current communication, the communication needs of the individual, the AAC system that may be the best fit, and how to evaluate this fit. Binger and colleagues (2012) outlined steps of the AAC assessment to obtain all of this information to include the referral process, collecting case history, asking diagnostic questions, completing evaluation procedures, identifying AAC form, providing recommendations, obtaining funding, and re-evaluating. Within this process, many professional are involved in the AAC assessment. Binger et al. (2012) developed an AAC Assessment Personnel Framework based on the initial work of Beukelman, Ball, and Fager (2008). Within this framework are AAC finders, general practice speech-language pathologists, AAC clinical specialists, AAC facilitators and communication partners, AAC research/policy specialists, collaborating professionals, AAC manufacturers/vendors, AAC funding agency/personnel, and AAC/assistive technology agency and personnel.

An AAC assessment involves many individuals including the individual with a complex communication need, their family and/or caregivers, and various professionals. Professionals that may be a part of an AAC assessment team include a speech-language pathologist, a physician, an occupational therapist, a physical therapist, a general education teacher, a special education

teacher, an AAC specialist, an assistive technology professional, and other professionals. It is important that experts in AAC are involved in this process to guide and to support use of AAC (Beukelman & Mirenda, 2013). With many members on the assessment team, Binger and colleagues (2012) note the importance of all members being assigned a role in this complicated process allowing the process to be more efficient and effective.

AAC assessments differ from other speech and language assessments because many of the assessment tools often used by speech-language pathologists cannot be used with individuals who have limited to no verbal communication skills. In addition, many of these standardized assessment tools have not been normed for individuals with complex communication needs thus these results would not be reliable (Mercurio-Standridge, 2004). In addition to lack of standardized assessment tools, it is a challenge for assessment tools to be created for this population due to its heterogeneity resulting in the need for each assessment to be individualized (Helling & Minga, 2014). While this poses a challenge for speech-language pathologists, many tools and methods have been recommended and created to guide the assessment process of individuals with complex communication needs who may require AAC to communicate. ASHA recommends that AAC assessments include aspects of dynamic assessment and other informal assessments (ASHA, n.d.). Informal assessments may include direct observation in various contexts or an analysis of behaviors. Dynamic assessment is a way to assess an individual by identifying their skills as well as their ability and potential to learn. This dynamic assessment process is not static; rather the assessment is very interactive which allows the assessment to be more individualized (ASHA, “Dynamic Assessment”, n.d.). There have been several approaches suggested to guide the AAC assessment process (Geirach, 2009; Helling, 2009).

Various approaches or frameworks have been designed to guide AAC assessment. Beukelman & Mirenda (2013) have described a framework, known as the Participation Model, to guide an AAC evaluation. This model is described often in the literature for use during an AAC assessment (ASHA, 2004; Lund, Quach, Weissling, McKelvey, & Dietz, 2017). This model provides a systematic way to conduct the evaluation and to design an intervention plan for an individual. The Participation Model includes identifying communication needs and the individual's participation in various settings and activities, assessing barriers, and planning for implementation (Beukelman & Mirenda, 2013).

In addition to the Participation Model, the SETT framework, created by Joy Zabala, is a widely used framework that can be used when developing an education plan for a student using AAC. This framework focuses on the student, the environment, tasks, and tools. When planning for the student using the SETT framework, various aspects are considered including the student's strengths and weaknesses, current ability, interests, and special needs. The environment portion of SETT looks at the individual as well as the setting around the student where the AAC system is to be used. Tasks portion looks at what the student will be asked to do within these environments. The final aspect of SETT considers the tools that the student will need to perform the tasks required of them in these environments identified. Using this framework can guide the educational team's decisions regarding a student's participation in the general education classroom using an AAC system (Zabala, 2005). In addition to the Participation Model and the SETT framework, many other frameworks and methods have been used when assessing individuals with complex communication needs for augmentative and alternative communication (Geirach 2009; Helling, 2009).

These and other frameworks, available to speech-language pathologists have similarities and differences but many of them are similar in the areas they recommend to be assessed. Areas to assess include receptive/expressive language, cognition, motor skills, sensory skills (i.e. vision and hearing), social communication, communication partners, and communication environments. Other areas that may be considered during the assessment include ability to learn, ability to adapt, ability to use the mode of AAC, as well as family and/or caregiver ability and engagement (Beukelman & Mirenda, 2013; ASHA, n.d.).

Evaluation of an individual with limited to no verbal output is complex due to many factors affecting appropriateness of an AAC system due to each individual strengths and weaknesses, monetary factors, as well as other factors including ease of use and caregiver support. Successful evaluation is essential because selecting an inappropriate form of AAC may lead to abandonment which can lead to an individual being unable to communicate basic needs and wants (Johnson, Inglebret, Jones, & Ray, 2009). To decrease selection of inappropriate AAC systems, feature matching can be used to select an AAC form that best fits each individual (Gosnell, Costello, & Shane, 2011). In addition, assessing or considering various forms of AAC, whether a low-tech option such as sign language or a high-tech option such as a SGD device, is essential for selecting the best AAC form for the individual (Dietz, Quach, Lund, & McKelvey, 2012; Higdon & Hill, 2015).

Lund and colleagues (2017) studied the clinical decisions of specialists in AAC regarding assessments. Participants in this study included eight certified speech-language pathologists, four AAC research specialists, and four AAC clinical specialists. The participants were provided with case studies and then were asked what they would do for an AAC assessment for these individuals. Two case studies were provided to the participants. The first case study involved a

four year old with athetoid cerebral palsy who used speech, vocalizations, manual signs, and facial expressions to communicate. Her speech was understood by with close family however not by others. The second case study involved a five year old boy with autism spectrum disorder, apraxia of speech, and a receptive/expressive language disorder who did not communicate verbally but vocalized, used manual signs, and used gestures. Both of these children were exposed to some forms of AAC previously. Four major themes were observed in the data collected in this study including area of assessment, method of assessment, preparation for the assessment, and education of parents. Areas to assess identified by more than 50% of the specialists included language, current communication skills, symbol representation, vision, motor access/positioning vocabulary, cognition, array size, layout-organization, navigation, portability, and comparison. Methods of assessment identified by more than 50% of the participants included case history information, observation, interview, dynamic assessment, and collaboration with other professionals. Use of formal assessment was identified by three of the eight speech-language pathologists. While trends in the clinical decision making process were found, there were differences in the assessment decision for each child. Lund and colleagues concluded that this could mean that general outlines for AAC assessments may not be appropriate for every individual (2017). It was noted by Lund and colleagues that many of the areas the specialists described in the assessments are aspects of the Participation Model (2017).

Research regarding the AAC assessment methods and procedures, specifically in the school setting, is currently lacking; however, various professionals in the field have detailed what assessments should include in the schools. A primary role of all speech-language pathologists in the school setting for AAC services is being able to identify individuals with complex communication needs who need or would benefit from AAC (Dodd, Schaefer, &

Rothbart, 2015). These are the finders as described by Binger and colleagues (2012). Proctor and Oswalt (2008) described the roles and responsibilities of the speech-language pathologist as well as the assessment procedures and tools used for AAC assessments in the schools. The speech-language pathologist in the school will determine current status of the student with respect to speech, language, and communication and determine how this affects academic participation and success (Proctor & Oswalt, 2008). The importance of a team based approach to educational AAC assessments is described not only in assessing various areas such as vision, hearing, communication, positioning, and motor skills, but also in funding and feature matching (Proctor & Oswalt, 2008; Dodd, Schaefer, & Rothbart, 2015). Within the educational setting, funding for AAC can be a complex and time consuming process which necessitates the team approach (Dodd, Schaefer, & Rothbart, 2015). Areas assessed in an educational AAC assessment include expressive language, receptive language, speech intelligibility, academic and social participation, and literacy. Providing students an opportunity to use AAC systems for comparison is an important aspect of the AAC assessment. This process, according to Dodd, Schaefer, and Rothbart (2015), can take about two to four weeks to complete. During this time, all support personnel and professionals working with the student as well as the parents should receive training (Dodd, Schaefer, & Rothbart, 2015). An additional role for speech-language pathologists in the schools is writing goals for the Individual Education Plan (IEP) for the student (Proctor & Oswalt, 2008). With the many roles and responsibilities of the school based speech-language pathologist in the AAC assessment come many challenges that may adversely affect this process.

Issues Regarding Educational AAC Assessments

There are many differences, within the educational setting across schools, districts, and states. This is true for the AAC assessment process and procedures in that they can differ across

states, districts, and schools (Robinson & Soto, 2013). AAC assessments are not standardized due to the heterogeneity of the students being evaluated and because the students have limited to no verbal output, standardized assessments typically used by speech-language pathologists to assess expressive and receptive language may not be appropriate to use for AAC assessments (Mercurio-Standridge, 2004; Helling & Minga, 2014). Given these factors, assessment methods and procedures for AAC differ across the United States.

In addition to lack of standardization of AAC assessments across schools, additional issues can impact AAC assessments in the education setting. Use of AAC can be controversial for individuals who may have been provided information about AAC that is not based on research (ASHA, n.d.). One of these issues is that some professionals and support personnel believe that using AAC will keep an individual from potentially using or improving their natural speech thus impeding their communication and language development (ASHA, n.d.). However, research has shown that AAC does not impede potential growth in natural speech skills, but rather, when treatment focuses on both speech and AAC, natural speech can be improved (Millar, Light, & Schlosser, 2006). Another issue that may be encountered is the idea that younger children are not prepared for AAC and that AAC should not be considered until they are school aged. This, however, has been refuted by research that shows that early implementation of AAC can assist in language development and speech development (Lüke, 2014; Romski et al., 2010; Wright, Kaiser, Reikowsky, & Roberts, 2013). In addition, early use of AAC can aid receptive language growth (Brady, 2000; Drager, Postal, Carroulus, Castellano, Gagliano, & Glynn, 2006). A final issue often discussed is that students must possess and demonstrate specific skills before AAC can be an option. Research demonstrates, however, that AAC intervention for children with complex communication needs can help support language

development as well as cognitive development (Drager, Light, & McNaughton, 2010). It is important for school-based speech-language pathologists to initially discuss with parents/guardians and other members of the student's team (Dodd, Schaefer, & Rothbart, 2008) the potential benefits of AAC for the student and to share the evidence to refute the misconceptions held.

In addition to these myths regarding AAC, there are additional issues that may affect the educational AAC assessment. Bailey and colleagues (2006) interviewed six special educators and one speech language pathologist regarding their perceptions of AAC use in junior high and high school settings. Barriers noted by these professionals included time constraints and difficulties with SGDs. Time constraints included limited time to collaborate with other team members and little time for programming the SGD. Difficulties with the SGD included issues with portability, durability, lack of training, and variability in SGDs used by students (Bailey, Stoner, Parette, & Angell, 2006). Soto and colleagues (2001) also noted barriers to AAC that may be present in an educational setting. Barriers to AAC included lack of training for speech-language pathologists and other professionals, lack of support from administration, lack of time to collaborate with teams, increased caseloads, lack of funding, as well as lack of AAC forms to use in assessment. Additional barriers include lack of buy-in by the family or members of the team, poor attendance of students, inconsistent use of the AAC system at school and home, and team members reluctance or fear of technology (Soto, Müller, Hunt, & Goetz, 2001; Chung & Stoner, 2016; ASHA, n.d.). All of these barriers can play a role in AAC educational assessments.

Another issue that has been reported regarding AAC assessment in the school setting is that of AAC specialists conducting the assessment and providing recommendations for treatment

rather than the school speech-language pathologist (Helling & Minga, 2014). While it is best practice to have an expert involved, it is also not ideal because the speech-language pathologist working with a student in the school after the assessment may question the decision made by the specialists which could affect intervention (Helling & Minga, 2014). If the speech-language pathologist in the school does not have knowledge and skills in AAC, they may not be able to implement the recommendations provided by the AAC specialist. Helling and Minga (2014) recommend that all speech-language pathologists should have the foundation for AAC assessment. This allows the speech-language pathologist, who is the main therapist for the student, to not only be more engaged in the assessment and intervention process, but to provide higher quality services.

Today in the schools, there are more options for AAC and there is a need for speech-language pathologists to be more active in assessment and intervention. The importance of AAC assessments to determine AAC systems that best support students with complex communication needs is vital. To date, the empirical research assessing the AAC assessment processes and procedures used in the school setting is minimal. Additional information about the educational AAC assessment process and procedures is needed to promote best practice and educational access for students with complex communication needs.

Purpose

The purpose of this study was to gain understanding of the assessment process that occurs in the school setting for students who require augmentative and alternative communication to meet their daily communication needs. As speech-language pathologists are experts in communication, it is within their scope of practice to assess individuals for AAC. This study

examined the roles of speech-language pathologists in this process as well as the methods and strategies they use for AAC assessments.

Chapter II

Method

This research sought to obtain information regarding assessments for augmentative and alternative communication in the school setting. Specifically, the role of speech-language pathologists in this process and the methods being used in the school setting for these assessments was investigated.

Participants

One hundred and twenty-two individuals responded to the survey, however, thirteen surveys were not analyzed because these participants were either not speech-language pathologists or they did not work in the school setting. The participants in this study were 109 speech-language pathologists who were employed in the schools.

Demographic information obtained throughout the survey included the certification information, highest level of education, gender, length of speech-language pathology career, and setting of practice. Ninety nine of 109 participants reported that they were certified by the American Speech-Language-Hearing Association (ASHA). In regards to highest level of education, one participant reported a bachelor's degree, 105 participants reported master's degree, one participant reported doctor of philosophy degrees, and two participants selected "other". These other degrees included master's degree plus 48 credit hours and doctor of education in special education.

Participants were also asked to provide their gender, of the 108 participants who answered this question, 103 participants reported that they were female while two reported that they were male. Three participants selected "choose not to respond". The researcher also asked the participants to provide the number of years they have practiced as a speech-language

pathologist. Table 1 presents 103 of the participants' number of years practicing as a speech-language pathologist.

Table 1

Participants' Number of Years Practicing as a Speech-Language Pathologist

Number of Years Practicing as a Speech-Language Pathologist	Percentage of Participants	Number of Participants
Less than 1 year	10.68%	11
1-5 years	26.21%	27
6-10 years	17.46%	18
11-15 years	10.68%	11
16-20 years	7.77%	8
21-25 years	10.68%	11
25-30 years	6.79%	7
More than 30 years	9.71%	10

Participants provided their settings of practice as a speech-language pathologist. All 109 participants work in the school setting. Twenty-six participants reported working in an additional setting: 14 participants reported working in reported working in private clinics, 2 reported working in hospitals, 6 reported working in skilled nursing facilities, and 8 reported other locations of practice including home health services and early intervention.

Location of participants was determined from the latitude and longitude information provided from the Qualtrics survey. Participants from 23 states were represented in this survey. Latitude and longitude information was not provided for 17 participants. Table 1 presents the participants' states of residence.

Table 2

Participants' State of Residence in the United States

Participant's Sate of Resident	Number of Participants	Participant's Sate of Resident	Number of Participants
Arizona	1	New York	2
California	6	North Dakota	5
Idaho	1	Ohio	1
Illinois	7	Oklahoma	1
Iowa	2	Oregon	1
Kansas	2	Pennsylvania	1
Louisiana	1	South Carolina	1
Massachusetts	7	South Dakota	9
Missouri	26	Tennessee	2
Montana	4	Texas	4
New Jersey	4	Virginia	1
New Mexico	2		

Survey

The investigator created the research survey using the Qualtrics website (https://www.qualtrics.com/). Before sending out the survey for research, a pilot version was sent to five speech-language pathologists of differing experience with augmentative and alternative communication for feedback. The investigator compiled the feedback received from the speech-language pathologists. From this feedback, questions were modified and questions were added to the survey.

The research survey, "AAC Assessment Process in the Schools: A National Survey" was used for this investigation. See Appendix A. The survey was a 41 question, online questionnaire designed to obtain information about augmentative and alternative communication assessment methods and procedures used in the schools by speech-language pathologists. In addition, this questionnaire was designed to obtain information about the speech-language pathologist's role in this assessment as well as the role of additional members of the assessment team.

The survey used a variety of question types to obtain information including multiple choice questions, free response questions, and rating scales. The online survey began with an informative statement and a question of consent of the individual to continue on to the survey. The researcher used skip pattern logic in this survey. Because of the skip pattern logic, the participants progressed through the survey according to their answers, thus some participants did not answer all 41 questions of this survey. The first portion of the survey involved demographic information including certification, setting of practice, years of experience, size of school district, caseload, and population of students served. The next portion of the survey involved questions regarding the participant's experience and training with AAC. The third portion of the survey involved information regarding the SLP's involvement in the assessment process, other members on the team, the tools used during the assessment, location of the assessment, the devices trialed, and where devices are obtained from. The final portion of the survey involved assessment results, specifically, who makes the decision regarding AAC chosen, what is the most common results, and what factors play a role in the decision.

Procedure

The researcher contacted one national organization, the American Speech-Language-Hearing Association, and 50 state speech-language pathology organizations through email to assist with survey distribution. Personal associates of the researcher were also contacted by the researcher via email or Facebook recruiting speech-language pathologists to take the survey. In addition, the investigator recruited participants by posting to the following Facebook groups, "School-Based Speech and Language Therapy" and "The Informed SLP: Speech and Language" as well as the Facebook page "The American Speech-Language-Hearing Association." The survey was posted on community boards of the following organizations: the Communication

Matrix, ASHA Special Interest Group (SIG) 12, and ASHA SIG 16. The following state speech-language organizations aided in distributing the survey and survey information: Alaska Speech-Language-Hearing Association, Missouri Speech-Language-Hearing Association, New Mexico Speech and Hearing Association, New York State Speech-Language-Hearing Association, North Dakota Speech-Language-Hearing Association, Tennessee Association of Audiologists and Speech-Language Pathologists, and West Virginia Speech Language and Hearing Association.

The survey was distributed with a brief description of the survey well as a link to the survey. The description of the survey provided the purpose of the study to the potential participants. From the link, participants were directed to an Information Statement about the survey, which explained the purpose, procedures, and risks to the participants. The Information Statement informed the participants that selecting that they choose to participate in the study and continuing to take the survey provided the subject's consent to participate in the research. All participants' identities remained confidential throughout their participation in the research as no personal identifiers were obtained in this survey.

Chapter III

Results

This study assessed the methods and procedures of augmentative and alternative assessments in the school setting and the role of the speech-language pathologists in this process. Participation in this study involved completion of an online survey. This section will present the data representing the participants' survey responses. Although 109 participants were involved in this study, only 96 surveys were fully completed, resulting in a completion rate of 88% for the entire survey. Participants had the option to skip most questions in the survey and continue on through the survey. In addition, this survey used skip pattern logic so that information could be gained according to the responses provided by the participants which resulted in many participants not answering all questions in the survey. Participation generally decreased as participants continued through the survey especially on free response questions.

It should be assumed for each question that the number of responses provided or the percentages provided have been calculated by the number of participants that answer that specific question.

This survey asked questions with regard to four main topics. These main topics included demographic information, information regarding the participant's proficiency and experience with AAC, the procedures and methods of school-based AAC assessments, and results of the AAC assessments.

Demographic Information

At the beginning of the survey, one hundred and nine participants provided the setting(s) in which they practice as a speech-language pathologist. Table 3 presents the participant's settings of practice.

Table 3

Participants' Setting(s) of Practice

Settings of Practice	Percentage of Participants	Number of Participants
School	100%	109
Private clinic	12.84%	14
Hospital	1.83%	2
Skilled nursing facility	5.50%	6
Other	7.34%	8

The one hundred and nine participants who reported that they practice in a school, were asked the type(s) of school(s) in which they practice as a speech-language pathologist. Table 4 presents the type(s) of school(s) in which participants practice.

Table 4

Type(s) of School(s) of Practice

Type(s) of School(s)	Percentage of Participants	Number of Participants
Private	8.26%	9
Public	98.17%	107
Charter	0.92%	1

Participants were asked what the relative size of the school district in which they practiced. One hundred and five participants responded to this question. Three options were provided including a small school district, a medium school district, and a large school district. The researcher defined these districts. A small school district was defined as a district with less than 8,000 students enrolled. A medium school district was defined as having 8,000 to 22,000 students enrolled. A large school district was defined as having 22,000 or more students enrolled. Thirty-four participants reported that they worked in a small school district. Forty-five

participants reported that they worked in medium school district and twenty-six participants reported that they practiced in a large school district.

Participants also reported the setting of their school(s) of practice. One hundred and three participants reported this information. Table 5 presents the participants' setting of the schools in which they practiced.

Table 5

Setting of School(s) of Practice

Setting of School	Percentage of Participants	Number of Participants
Urban	25.24%	26
Suburban	59.22%	61
Rural	23.30%	24
Other	0.97%	1

The participants' years of experience working in the school setting was solicited. One hundred and five participants provided this information. Table 6 presents the participants' years of experience working in the school setting.

Table 6

Participants' Years of Experience Working in the School Setting

Years of Experience	Percentage of Participants	Number of Participants
less than 1 year	11.43%	12
1-5 years	30.48%	32
6-10 years	18.10%	19
11-15 years	9.52%	10
16-20 years	13.33%	14
more than 21 years	17.14%	18

One hundred and five participants reported the age group(s) of students whom they served in the school setting. Table 7 presents the age groups of students served in the school.

Table 7

Age Group(s) of Students Served by Participants

Age Group of Students Served	Percentage of Participants	Number of Participants
Early childhood	47.62%	50
Elementary	73.33%	77
Secondary	45.71%	48
High School	39.05%	41

The number of students on the participants' caseload was provided by one hundred and four participants. Table 8 presents the number of student on the participants' caseloads.

Table 8

Number of Students on Participants' Caseload

Number of Students on Caseload	Number of Participants
Less than 15 students	5
15 to 30 students	15
31 to 45 students	35
46 to 60 students	39
61 to 75 students	4
76 or more students	6

In addition to being asked the total number of students on their caseload, the participants were asked how many students using augmentative and alternative communication were on their caseload. One hundred and four participants provided this information. Table 9 presents this data.

Table 9

Number of Students Using AAC on Participants' Caseload

Number of Students Using AAC on Caseload	Number of Participants
0	14
1-3	41
4-6	16
7-9	7
10-12	11
13-15	3
16+	12

The participants were asked where the students using AAC they served spent more than 50% of their day. They were asked to select all that applied. Ninety-eight participants reported this information. Table 10 presents the responses.

Table 10

Location of Students Using AAC For More Than 50% of the Day

Location of Students Using AAC	Percentage of Participants	Number of Participants
Inclusive General Education Classroom	19.39%	19
Special Education Classroom	51.02%	50
Resource Room	9.18%	9
Self-Contained Classroom	51.02%	50
Other	10.20%	10

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

Participants were asked if they received training in augmentative and alternative communication. One hundred and nine participants responded to this question. One hundred and five participants reported that they had received training and four participants reported that they had not received training. The participants who responded that they had received training were asked what types of training they received. The participants were asked to select all answers that

applied. One hundred of these participants reported this information. Table 11 presents the type(s) of AAC trainings the participants received.

Table 11

Type(s) of AAC Training

AAC Training	Percentage of Participants	Number of Participants
An AAC Course taken Prior to Providing Services	72.00%	72
A Convention	55.00%	55
Practicum Experience	44.00%	44
Manufacturer Presentation	44.00%	44
Webinar	51.00%	51
In-Service/Training Provided by your School	44.00%	44
Other in-Service/Training	38.00%	38
Other	15.00%	15

All participants were asked what they thought their level of proficiency was in regards to AAC. One hundred and three participants responded. Table 12 presents the participants' perceptions of their proficiency in AAC.

Table 12

Participants' Proficiency in Augmentative and Alternative Communication

Level of Proficiency in AAC	Number of Participants
an expert	10
proficient	33
an intermediate	33
a beginner	26
other	1

Eighty-nine participants rated their knowledge of AAC options. Table 13 presents the participants' ratings.

Table 13

Participants' Knowledge of AAC Options

Knowledge of AAC Options	Percentage of Participants	Number of Participants
No knowledge of AAC options	1.12%	1
Limited knowledge of AAC options	16.85%	15
Some knowledge of AAC options	37.08%	33
Wide knowledge of AAC options	35.96%	32
Extensive knowledge of AAC options	8.99%	8

Participants were also asked to rate their skills in additional areas including knowledge of when to assess a student for AAC. In addition, they were asked to rate whether they agreed or disagreed with statements provided. These statements included "I believe AAC is important for students who may need it or many benefit from it" and "I am comfortable in knowing when AAC is a good match for a student." Ninety participants provided responses to these prompts. Table 14 provides this data.

Table 14

Participants' Ratings of Beliefs Regarding AAC

	Participants' Responses				
Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I am clinically comfortable in knowing when to assess a student for AAC.	2	8	10	44	26
I believe AAC is important for students who may need it or may benefit from it.	1	0	0	12	77
I am comfortable in knowing when AAC is a good match for a student.	2	7	13	43	25

AAC Assessments in the School Setting

One hundred and five participants reported whether they conducted assessments for augmentative and alternative communication in their school(s). Sixty of the one hundred and five participants reported that they did not conduct the AAC assessments in their schools. Forty-five of the one hundred and five participants reported that they conducted the AAC assessments in their schools. Cross tabulations revealed the level of expertise in AAC in regards to whether the participant conducts AAC assessments. Table 15 presents the participant's level of expertise correlated to whether they conduct AAC assessments.

Table 15

Level of Expertise and Conducting AAC Assessments

Level of Expertise	Participants Who Conducted AAC Assessments	Participants Who Did Not Conduct AAC Assessments
an expert	10	0
proficient	23	10
an intermediate	6	27
a beginner	5	21

The sixty participants who reported that they did not conduct the AAC assessments were asked who conducted the assessment in their school(s). The participants were asked to select all choices that applied. Table 16 presents the individuals and/or teams that conducted AAC assessments at the schools in which these participants practice.

Table 16

Individuals/Teams that Conduct the AAC Assessment in the Schools

Individuals/Teams that Conduct the AAC Assessments	Percentage of Participants	Number of Participants
Assistive Technology (AT) Team	48.33%	29
Another SLP in the district	26.67%	16
SLP on consult	15.00%	9
Other	25.00%	15

Participants who reported that assistive technology (AT) teams conducted the AAC assessments at their schools were asked to provide the members of the AT team. Twenty-eight participants reported this information. Table 17 provides the members of the AT teams.

Table 17

Members of the Assistive Technology Team

Members of the Assistive Technology Team	Percentage of Participants	Number of Participants
Speech-language pathologist	78.57%	22
Occupational therapist	53.57%	15
Physical therapist	21.43%	6
Administrators/coordinators	10.71%	3
General Education Teacher	0.00%	0
Special Education Teacher	35.71%	10
Technology Specialist	32.14%	9
Teaching Assistance or Paraprofessional	10.71%	3
The Student's parent(s)/guardian(s)	17.86%	5
Other	10.71%	3

Participants who reported that they conducted AAC assessments in their schools were asked if they were a member of a team for the AAC assessment. Forty-five participants provided this information. Twenty-nine participants reported that they were a member of a team for the AAC assessment while sixteen reported they were not a member of the team. The twenty-nine participants who reported that they were a member of the team were asked what additional members were on the AAC assessment team. Twenty-seven participants responded to this question. Table 18 presents the additional members of the AAC assessment team.

Table 18

Additional Members of the AAC Assessment Team

Additional Members of the Team	Percentage of Participants	Number of Participants
Speech-Language Pathologist	77.78%	21
Occupational Therapist	66.67%	18
Physical Therapist	44.44%	12
Administrators/Coordinators	33.33%	9
Teacher	29.63%	8
Special Education Teacher	85.19%	23
Technology Specialist	25.93%	7
Teaching Assistant or Paraprofessional	29.63%	8
The Student's Parent(s)/Guardian(s)	70.37%	19
The Student	55.56%	15
Other	14.81%	4

The participants who reported they were a member of the AAC assessment team were asked if they were the team leader. Twenty-seven participants reported this information. Twenty of the participants reported that they were the team leader while seven said they were not the team leader.

The researcher solicited information regarding the location(s) of the AAC assessment. Forty participants who reported they conduct AAC assessments, provided this information. Table 19 presents the locations of the AAC assessments.

Table 19

Setting of the AAC Assessment

Setting of the AAC Assessment	Number of Participants
The Student's classroom	33
The SLP's room	30
The Special Education room	29
The Student's home	7
Other	5

Forty participants who conducted AAC assessments reported the average length of time it took to complete an AAC assessment. Table 20 presents the average length of time reported to complete AAC assessments.

Table 20

Average Length of Time to Complete AAC Assessment

Length of Time to Complete AAC Assessment	Percentage of Participants	Number of Participants
1-3 days	17.50%	7
4-7 days	5.00%	2
7-10 days	10.00%	4
11-14 days	5.00%	2
15-18 days	7.50%	3
19-23 days	0.00%	0
24 days or more	55.00%	22

AAC Assessment Tools

Participants were asked if they used systematic evaluation procedures or evaluations tools for AAC assessments at their schools. Forty-four participants responded to this question. Thirty-one participants reported that they used systematic evaluation procedures or evaluations tools for AAC assessments at their school. Nine participants reported that they did not use any systematic evaluation procedures or evaluation tools. Four participants reported ‘other’. Participants who reported that they used systematic evaluation procedures and/or evaluation tools were asked to provide these procedures and/or tools. Twenty-eight of the participants provided this information. Table 21 presents systematic evaluations procedures and evaluation tools reported. Other systematic evaluation procedures and tools identified by the participants are the AAC Planning Tool, the Dynamic AAC Goals Grid, and the Iowa Comprehensive AAC Planning and Implementation: Assessment Guide.

Table 21

Systematic Evaluation Procedures and Tools Used During the AAC Assessment

Systematic Evaluation Procedures and/or Evaluation Tools	**Percentage of Participants**	**Number of Participants**
SETT (Student, Environments, Tasks, and Tools) Framework	66.67%	20
Wisconsin Assistive Technology Initiative (WATI)	23.33%	7
The Participation Model	13.33%	4
The SCERTS Model (Social Communication/Emotional Regulation/Transactional Support)	20.00%	6
The Communication Matrix	80.00%	24
The Source for Augmentative and Alternative Communication	16.67%	5
Augmentative Communication Evaluation Simplified—AAC TECH Connect (ACES)	6.67%	2
University of Kentucky Assistive Technology Toolkit (UKAT)	0.00%	0
Functional Evaluation for Assistive Technology (FEAT)	0.00%	0
Test of Early Communication and Emerging Language (TECEL)	6.67%	2
School-Based AAC Evaluation: Choosing Effective Assistive Technology Strategies for Students with Complex Communication Needs	3.33%	1
Social Networks: A Communication Inventory for Individuals with Complex Communication Needs and Their Communication Partners	6.67%	2
Test of Aided Communication Symbol Performance (TASP)	50.00%	15
Triple C-Checklist of Communications Competencies	0.00%	0
Assessing Students' Needs for Assistive Technology (ASNAT)	3.33%	1
A Communication Independence Model: For People with Severe Communication Disabilities	0.00%	0
Augmentative and Alternative Communication Profile: A Continuum of Learning Communication Matrix	36.67%	11
AAC Evaluation Genie	40.00%	12
Inventory of Symbolic Functions	0.00%	0
Other	23.33%	7

Information regarding of the use of standardized assessments during the AAC assessment was solicited. Forty-three participants responded to this question. Twenty-one participants reported they used standardized assessments while twenty-two participants reported that they did not use standardized assessments. Participants who reported that they used standardized assessments were asked to provide the standardized assessments they typically use for an AAC assessment. The most common assessments provided include the Preschool Language Scales

Fifth Edition (PLS-5), the Peabody Picture Vocabulary Test Fourth Edition (PPVT-IV), the Clinical Evaluation of Language Fundamentals Fifth Edition (CELF-5), and Comprehensive Assessment of Spoken Language (CASL).

Areas of communication assessed during the AAC assessment by the participant or any other professional on the team was obtained from 42 participants. Table 22 presents the areas assessed during AAC assessments.

Table 22

Areas Assessed During the AAC Assessment

Area Assessed	Percentage of Participants	Number of Participants
Expressive Language	100.00%	42
Receptive Language	97.62%	41
Literacy	61.90%	26
Hearing	45.24%	19
Pragmatics	71.43%	30
Speech (articulation and voice)	73.81%	31
Cognition	59.52%	25
Sensory	47.62%	20
Other	14.29%	6
Total	100%	42

Trials with AAC Systems

The participants were asked about availability of AAC devices for trial use during the AAC assessment. Of the forty-three participants who responded, thirty-eight reported that AAC devices were available and five reported that AAC devices were not available for trial during the AAC assessment. The researcher then asked whether these devices were trialed during the AAC assessment. Thirty-seven participants provided this information. Ninety-seven percent of participants responding reported that the devices were trialed during the assessment. Less than three percent reported that these devices available were not trialed during the assessment. The

number of devices trialed during an AAC assessment was also solicited. Thirty-seven participants responded to this question. Table 23 presents the number of devices trialed in AAC assessments by the participants.

Table 23

Number of Devices Trialed During an AAC Assessment

Number of Devices Trialed	Number of Participants
0	1
1	1
2	16
3	18
4	0
5+	1

Thirty-eight participants reported the AAC options that were available for trial during AAC assessments in their schools. Table 24 presents the AAC options available for trial.

Table 24

AAC Options Available for Trial

AAC Options	Percentage of Participants	Number of Participants
Tobii-Dynavox devices	78.95%	30
Prentke Romich Company (PRC) devices	60.53%	23
Saltillo devices	50.00%	19
iPad with applications	92.11%	35
Go Talker	68.42%	26
Communication Board	78.95%	30
Picture Exchange Communication System (PECS)	76.32%	29
Other	18.42%	7

The researcher solicited from whom the participants received the AAC devices to trial during AAC assessment. Thirty-eight participants reported this information. Table 25 presents from whom the participants receive the AAC devices for trial.

Table 25

Where Participants Receive AAC Devices for Trials

From Where Trialed AAC Devices are Received	Number of Participants
The school/school district	15
Borrowed from the device manufacturer	3
Loaned from 'Middle men' companies	2
University Speech-Language clinic in your area	0
Other	18

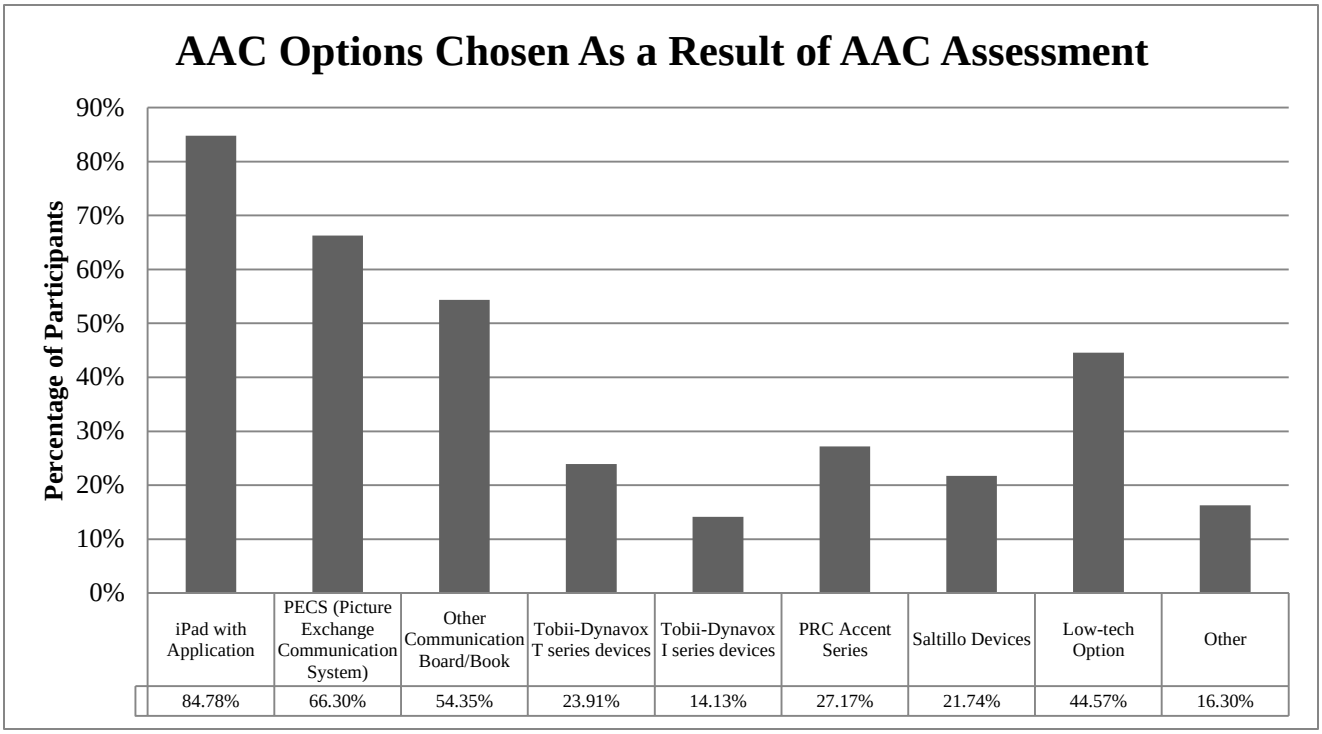
Other places that the participants received AAC devices for trial included Area Education Agency and Missouri Assistive Technology lending library. In addition, many of the participants who selected "other" reported that devices are received from a variety of sources.

Results of the AAC Assessments

The devices chosen as a result of an AAC assessment for students assessed by the participant or on the participant's caseload was solicited. Ninety-two participants responded to this question. Table 26 presents the devices chosen as a result of an AAC assessment for the students on the participants' caseload.

Table 26

AAC Options Chosen as a Result of an AAC Assessment



Participants who selected iPad with application were asked to provide the applications used by their students. Twenty-five different iPad applications were provided. Table 27 provides the most common iPad applications identified by the participants. Participants who selected low-tech option were asked to provide the low-tech options used by their students. Twenty-one low-tech options were listed. The most common low-tech options provided by participants include the Go Talk, switches, and the PODD Communication Book.

Table 27

Most Common iPad Applications Used by Students

Most Common iPad Applications Identified	Number of Participants
Proloquo2Go	49
Touch Chat	21
LAMP Words for Life	9
Go Talk Now	7
Dynavox Compass	6

All participants completing this survey were asked to provide information regarding the individuals who were involved in making the decision regarding what AAC system would be purchased for the student. Ninety-six participants responded to this question. The participants selected all choices that applied. Table 28 presents the individuals involved in the selection of AAC systems for the students on the participants' caseloads.

Table 28

Individuals Involved in Decision Regarding AAC System Selection

Individuals Involved in Decisions Regarding AAC System Selection	Percentage of Participants	Number of Participants
Speech-language pathologist	88.54%	85
Occupational therapist	44.79%	43
Physical therapist	25.00%	24
Administrators/coordinators	44.79%	43
Teacher	21.88%	21
Special Education Teacher	58.33%	56
Technology specialist	39.58%	38
Teaching assistance or paraprofessional	14.58%	14
The student	35.42%	34
The student's parent(s)/guardians	64.58%	62
Other	14.58%	14

Ninety-five participants reported the factors they believed influenced the decision of the AAC system chosen for students. Table 29 provides these factors.

Table 29

Factors Influencing the AAC System Selection Decision

Factors Influencing AAC System Selection Decision	Percentage of Participants	Number of Participants
Cost	64.21%	61
Best-suited AAC for the child	91.58%	87
Access and availability	67.37%	64
Influence by the family	51.58%	49
Most common AAC used in the school/school district	34.74%	33
Most well-known option by members of the team	31.58%	30
Other	4.21%	4
Total	100%	95

Participants were asked if they felt that the AAC systems chosen as a result of the AAC assessment were well suited for the student and his/her needs. Seventy participants reported that they believed the AAC systems chosen for their students were well suited. However, twelve participants reported that they did not believe the chosen systems were well suited to their students. Eleven participants reported “other.”

Chapter IV

Discussion

The purpose of this study was to gain understanding of the assessment process that occurs in the school setting for students who require augmentative and alternative communication to meet their daily communication needs. Data were collected via an online survey and analyzed to provide speech-language pathologists an understanding of the methods and procedures currently used for AAC assessments in the school setting to further guide their decisions regarding AAC assessments in their schools.

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

Historically, the training of speech-language pathologists in AAC at the graduate level has been considered to be lacking (Costigan & Light, 2010; Koul & Lloyd, 1994; Marvin, Montano, Fusco, & Gould, 2003; Ratcliffe, Koul, & Llyod, 2013). However, the results from this study suggest that only 4 of the 109 participants reported no training and almost 75% of participants reported that they received training via an AAC course taken prior to providing services and 44% reported training from a practicum experience. This shows a much larger percentage of individuals receiving training in AAC prior to working than reported in previous research. These results may differ from previous research due to the youth of the sample as well as ASHA's change in standards for knowledge obtained at the master's level. This change in standards became effective on January 1, 2005. With this change in standards, graduate speech language pathology students are required to obtain knowledge and skills in nine key areas of speech language pathology known as the "Big Nine". One of these areas that graduate students need to obtain knowledge and skills in is augmentative and alternative communication modalities. With this requirement change, graduate speech language pathology programs

beginning in 2005 needed to provide experiences in modalities for their students. Because of this, speech-language pathologists who have graduate since 2005 may have more experiences and knowledge in the area of AAC. In addition, the results from the present study may be influenced by interest in AAC by the participants. Those individuals who took this survey may have chosen to participate because of their interest and knowledge of AAC while others may have chosen not to participate due to a lack of knowledge or interest in AAC.

While many participants reported pre-service training, training from conventions, webinars, in-services/trainings provided by the schools, and manufacturer presentations were also reported by many participants. Overall, participants who reported that they have worked as a speech-language pathologist for less than one year, one to five years, six to ten years, eleven to fifteen years, and twenty-five to thirty years reported AAC course prior to providing services as the most common training experience. For participants working sixteen to twenty years, twenty-one to twenty-five, and more than thirty years the most common training experiences were conventions, manufacturer presentations, and in-services provided by the schools. This data does align with research that shows an increase in AAC experiences gained in graduate programs since 1994 (Koul & Lloyd, 1994; Ratcliffe, Koul, & Llyod, 2013). Ratcliff and colleagues (2013) found that most of the graduate speech-language pathology programs provided coursework to students in AAC, however, they found that the clinical experiences in AAC are still lacking. This reveals why participants in this present research reported more coursework experience than practicum experience in AAC.

It was concerning to note that while only one participant reported they did not receive training in AAC, this participant also reported that they conducted AAC assessments in the schools. It is possible that the participant may have misunderstood what the researcher

considered training and has received some training over their years of practice. In the school setting, speech-language pathologists may be conducting AAC assessments even when they do not have the appropriate training due to demands from the school, lack of school or district funding for an AAC specialist, lack AAC specialized speech-language pathologists providing services in the area, especially rural areas, or lack of knowledge of the speech-language pathologist. While this is not best practice, it is possible that this occurs often in the schools. However, speech-language pathologists should consider what knowledge and skills are needed to provide AAC services as well as their own knowledge and abilities. If a speech-language pathologist in the schools has the option to do, they should seek either another qualified speech-language pathologist or seek out training opportunities in AAC.

It is positive to see that almost all of participants agree or strongly agree that AAC is important for students who may need it or would benefit from it. This belief is very important for any speech-language pathologist to have if they are going to be able to provide ethical and quality services to individuals with complex communication needs, especially children in an educational setting. In addition, about 75% of speech-language pathologists reported that they strongly agree or agree that they are comfortable in knowing when AAC is a good match for a student and that they are clinically comfortable in knowing when to assess a student for AAC. Marvin, Montano, Fusco, and Gould (2003) found that 60% of participants reported that they are not comfortable or competent with AAC systems. The results from this present study may reveal an increase in comfort level with AAC service compared to the results found by Marvin and colleagues (2003) due to various factors. One possible factor is the increase in clinical training and academic coursework in the area of AAC due to changes in ASHA standards in 2005. In addition, this difference may also have occurred due to the participants' interest in AAC.

AAC Assessments in the School Setting

The majority of participants in this study, 57.14%, reported that they do not conduct AAC assessments in their school(s) of practice. About one-half of these participants, 48.33%, stated that Assistive Technology (AT) Teams conduct the assessments in their schools. Another 26.67% of these participants reported that another speech-language pathologist conducts these assessments while 25% selected "other". Many of the participants who selected "other" reported that their school uses a combination of AT teams, another speech-language pathologist in the district, and speech-language pathologists in a consultative role. This reveals the diversity of procedures of AAC assessments throughout schools, districts, and states.

Most speech-language pathologists working the schools are not assessing students for AAC systems even though the majority of the participants, 86.54%, have at least one student on their caseload who uses AAC for communication. Compared to the data collected in the *2016 Schools Survey Report: SLP Caseload Characteristics*, where it is reported that 55.1% of speech-language pathologists regularly provide intervention to individuals using AAC or who are nonverbal, data from this present survey reveals a higher number of speech-language pathologists who serve at least one student using AAC on their caseload. These results may have been found in this study due to the small sample of participants or due to of the method in which the survey was distributed and advertised. Because the survey was distributed describing that the purpose of this research was to learn about AAC assessments in the schools, speech-language pathologists who do not have much experience or engage with this population may have chosen to not participate.

When AAC assessments are conducted by professionals who are outside of the school and who are not the primary speech-language pathologist providing services to the student,

various issues can arise. This many include the outside professional not having a complete understanding of the student's strengths and weaknesses as well as the inability for the school based speech-language pathologist to implement the recommendations due to lack of knowledge of intervention with individuals using AAC. In addition, the outside speech-language pathologist will likely not have built the rapport and trust the primary speech-language pathologist has built which may affect the assessment process. While having a specialist conduct the AAC assessment is most appropriate and most beneficial when the primary speech-language pathologist does not have the knowledge and skill, these issues may have negative effects on the assessment and subsequent AAC services provided.

Most students using AAC on the participants' caseloads were in the special education classroom or the self-contained classroom for more than 50% of the day while only 19.39% of students were in the general education classroom. This data suggests that inclusive education in the general education classroom with individuals using AAC is not a common practice currently for the majority of schools represented in this survey. For these students who are not in the general education classroom, they may not be receiving the most appropriate, least restrictive education that IDEA requires. This can decrease the student with AAC's interactions with peers and decrease their interaction and experience with the general education curriculum. However, with the many programs promoting inclusive education for all students, it is important speech-language pathologists and other AAC assessment team members consider how AAC can assist the student in participating in the general education classroom. This data may suggest that students who have challenges communicating via speech are not considered to have complex or severe enough disabilities to warrant AAC. This poses a question of who should be considered for AAC in the school setting. ASHA states that AAC should be considered when an individual

is unable to use speech to meet all of their daily needs on a temporary or permanent basis (ASHA, n.d.). It is possible that students in the school setting who can meet some of their needs and do not have complex disabilities are not being assessed for AAC.

The participants who reported that they conducted the AAC assessments in their schools consisted of 42.86% of the participants in this study. The majority of these participants, 64.44%, reported that they are a part of a team for the AAC assessments in their schools, with 74.07% of these participants being the leader of this team. Many additional team members were selected by participants including physical therapists, occupational therapists, administrators, teachers, special educational teachers, the student's parents/guardians, and the students. This suggests that a team approach to AAC assessments is commonly used in the school setting which aligns with discussions in the literature regarding recommendations for AAC assessment teams (Beukelman & Mirenda, 2013; Proctor & Oswalt, 2008; Dodd, Schaefer, & Rothbart, 2015). Collaboration with other professionals in AAC assessment and intervention is cited as an important component due to the complexity of the assessment. AAC assessment requires all areas to be assessed which involves other professionals so that most appropriate and functional AAC system can be chosen.

The participants, who reported they were one a team, were asked to provide a short description of their role on the AAC assessment team. Assessment procedures described included gathering information, trialing devices, collecting data, analyzing data, and making recommendations. In addition, one participant reported their role to include working with other professionals to implement the AAC system as well as training others and programing the system. Collaborating was an additional role that was frequently mentioned. All of these roles are discussed throughout the literature as important for AAC assessments in the school setting (Proctor & Oswalt, 2008; Dodd, Schaefer, & Rothbart, 2015). The data collected in this study

indicates that the school based speech-language pathologists participating in this survey are following many of the AAC assessment procedures described in the literature. This could be because the individuals who chose to respond to the survey have interest in AAC and have some level of skill in the area.

Cross tabulation data regarding the participants' proficiency in AAC as well as if they conducted AAC assessment were considered. This data revealed that 75% of speech-language pathologists in this survey conducting AAC assessments in schools defined themselves to be experts or proficient in AAC with only six speech-language pathologist identifying themselves as intermediate and five speech-language pathologists as beginners. Seventy five percent of the speech-language pathologists who reported that they did not conduct the AAC assessments identified themselves to be beginners or intermediate. No participants who reported that they were an expert in AAC reported that they do not conduct AAC assessments. The results from this survey reveal that most speech-language pathologists in the schools conducting AAC assessments are experts or proficient in AAC which is promising for these services. This suggests that speech-language pathologists are either advocating to work in these positions because of their experience or are learning more about AAC to fulfill and meet the roles this position requires. Speech-language pathologists who do not have the knowledge and skills but are providing AAC assessment services, may be providing these services because of demands of the school, lack of knowledge, or lack of access to a speech-language pathologist with more knowledge of AAC. Speech-language pathologists who do not have the skills and knowledge in AAC may not provide AAC services that are evidence based,. Because of this, if these speech-language pathologists are providing services, the services may negatively impact a student or may not provide the support a student needs. For this reason, those speech-language pathologists

who do not have the skills and knowledge should either refer to another speech-language pathologist or they should find ways to obtain this knowledge and these skills.

Many systematic evaluation procedures and/or evaluation tools were provided on the survey. The participants selected the tools used at their school(s). More than half of the participants reported that they used systematic evaluation procedures or evaluation tools during their AAC assessments. The most commonly used is the Communication Matrix, the SETT Framework, and the Test of Aided Communication Symbol Performance. An additional tool provided by multiple participants included the AAC Planning Tool.

The Communication Matrix is a well-known, free tool used by a variety of professionals and parents to evaluate an individual's expressive communication behaviors as well as the function of these behaviors. This tool has been recognized by professionals to be a tool of high value that is highly recommended for assessing communication skills (Rowland, 2012). It is likely that these features of the Communication Matrix make it highly used in the school setting by speech-language pathologists and other professionals during the AAC assessment. The SETT framework is also considered to be widely used tool. This tool may be used by AAC assessment teams because it was designed to assist in determining a child's plan for education with the AAC system in mind. With this tool all members of the team can collaborate and consider how the AAC system will be incorporated into the student's environment and tasks (Zabala, 2005). The Test of Aided-Communication Symbol Performance (TASP) is an assessment tool available to assist in assessing symbolic skills. From assessing these skills, a starting point for selecting an appropriate AAC system can be provided (Bruno, 2010). These tools provide valuable information regarding communication, language, and symbols which assists in the assessment process.

While the data from this survey indicates that many speech-language pathologists conducting AAC assessments are using frameworks and tools to guide the assessment, about 30% of the participants are not. This may be due to the complex nature of the assessment and the individuality of each AAC assessment. In addition, the participants may not have understood what this questions was asking, leading them to answer that they do not use these tools.

Providing trials with AAC devices during the educational AAC assessment process is discussed throughout the literature (Binger et al., 2012; Dietz, Quach, Lund, & McKelvey, 2012; Dodd, Schaefer, & Rothbart, 2015; Lund, Quach, Weissling, McKelvey, & Dietz, 2017; Mercurio-Standridge, 2014; Proctor & Oswalt, 2008). Results from this survey reveal that the majority of AAC assessments involve the trialing of various AAC systems and devices. It was noted that while devices are available for trialing in some schools, a minimal number do not trial devices despite their availability. Trials in schools may not be occurring due to lack of funding or knowledge of the school district. Lack of funding may affect trials because the school district may have specific options already available such as a premade communication board that can easily be produced and provided for low costs. Trialing other more expensive devices may lead to costs the school cannot afford. The majority of speech-language pathologists in this study who trialed devices, reported that they trialed two or three devices with the student during the assessment process. It is common for many speech-language pathologists to trial about three AAC systems due to insurance purposes. This however, is also helpful so that the comparison of various devices can be observed which reveals which may be the AAC system best suited for the student.

The participants also provided information regarding the length of time of an AAC assessment. Results varied from one to eighteens days or more than twenty four days. More than

half of the participants reported the assessment taking more than twenty four days to complete. The length of this assessment was reported to be increased by a few participants due to the trials of devices. The results from this study regarding length of assessment may be skewed due to the way in which the participants defined AAC assessment and trialing of devices. Some participants may have included all aspects of trialing devices within the length of the AAC assessment while others many only have considered the testing of language and other skills without the trials to be the AAC assessment. This difference in definition possibly affected the results in the present study. Dietz and colleagues (2012) found that speech-language pathologists specialized in AAC reported trialing various symbol systems in various scenarios. They also reported trialing devices over up to eight sessions, over an extended period of time which may be up to a few months (Dietz et al., 2012). In comparison to the results from the present study and the study by Dietz and colleagues, a common theme of extended periods of time to complete the assessment, especially the trailing of devices were noted. This agreement in practice between the specialist speech-language pathologist in the Dietz and colleagues study (2010) and the present study suggests that best practice is being used by speech-language pathologists in the schools in various areas of the AAC assessment process.

The most common AAC option trialed was the iPad with an application. Following this are the Tobii-Dynavox devices and communication boards. iPads may be the most commonly trialed AAC device because of the relative low expense as well as the accessibility of the iPad to many school districts. Similarly, communication boards and books may commonly be trialed due to the low expense as well as the availability of this option. In addition, these low tech options may be trialed often due to many professionals' beliefs that a student must present their ability to communicate using a low tech option prior to use of a high tech device. While this theory is not

substantiated by research, it still may be a common practice in the school setting (Kangas & Lloyd, 1988; Drager, Light, & McNaughton, 2010). The Tobii-Dynavox device may be commonly chosen due to easy access through regional representatives to this device as well as the easy understanding of the symbols and system. This system, in comparison to other systems, presents language in a way that many see as easier to understand. For this reason, many speech-language pathologists may trial this option to consider a high tech SGD.

Results of the AAC Assessment in the School Setting

The results from the survey show that across various areas, the iPad is the most common device selected as a result of assessments. These areas include level of proficiency, size of school district, number of years of experience working as a speech-language pathologist, whether they received training, and whether the participant conducted AAC assessments in the schools Following the iPad are PECS, other communication boards, and other low tech options. Even though Tobii-Dynavox devices were commonly trialed in AAC assessments, these devices and other high tech, dedicated speech-generating devices were reported as not commonly chosen as a result of an AAC assessment compared to iPads with applications, PECS, or communication boards/books. Selection of iPads and other low-tech options may be occurring due to the existing belief that individuals should begin with a low tech option to show their abilities before moving onto a higher tech options. This may also be occurring because iPads and low-tech options are more affordable for the schools and funding high-tech devices becomes costly for a school district. Another reason iPads or other tablets may be selected is because they are commonly used which may make the assessment team feel more comfortable and confident with this option. Because iPads are commonly used in today's society, the social acceptance of this type of AAC

system may be more accepted than other forms causing an increase in use of iPads as AAC in schools (McNaughton & Light, 2013).

A majority of the participants reported that the devices chosen for their students with AAC were best suited for the student. When participants were asked to explain their response, a few themes and notable answers were provided. One theme observed is a mismatch in perspective of best suited device between the school-based speech-language pathologist and speech-language pathologists in outside settings like clinics or hospitals. The differences in medical services and school services may influence this mismatch. In the medical setting, speech-language pathologists are considering how communication is affecting an individual overall while in the school setting, the educational team is considering how the student's deficits in communication are affecting education. This can cause a difference in view point or perspective on the most appropriate AAC system. In addition, funding differs in the medical and the school setting. In the medical setting, a dedicated AAC device can be funded either completely by the family/client, partially by insurance, or fully by insurance. Insurance companies do not cover the cost of iPads or other tablets with an application. Because of this families will need to cover an iPad or tablet with an application independently. Within the school setting, an AAC device is often funded either by funds of the school or is sometimes funded by Medicaid. These differences in funding can greatly affect the type of AAC device that is chosen for a student.

Another theme observed was that the process of selecting an AAC system was individualized and that it was a team decision that led to the selection of the appropriate device. While this was noted, other participants reported the opposite saying that due to various factors, the decision was not as individualized and the results were determined by common AAC systems

used in the school district as well as funding. Another concern noted was the inability for the student to take the AAC system home due to district policies. The speech-language pathologist, who noted this, stated that changing this policy has so far been an unsuccessful. It was also noted that many students are receiving low tech AAC options which could be due to lack of knowledge or experience even though they may benefit more from a high tech AAC option. Other participants believed that many AAC options are too advanced for the students causing them not to be used. Starting a student with a low tech system like Picture Exchange Communication System (PECS) was also discussed by a few participants. These discussion points, suggest that there are very differing beliefs and views about AAC for students. This variety in beliefs and views about AAC may results in decisions regarding AAC system selection that are not the most beneficial or the best suited option for a student. If this occurs it may inhibit the student's ability to engage in the curriculum and social interactions at school and outside in the community. To avoid this, speech-language pathologists who are making these decisions should make sure that they are up to date on the research surrounding AAC system selection so that they can make the best decisions for their students.

The most common factor influencing the AAC system selection decision for a student were reported to be the best fit for the child as 91.58% of participants selected this answer. Additional factors selected included access and availability of AAC options, influence of the family, cost of devices, as well as the most commonly used AAC options in the school or school district. While the participants in this study reported that best fit was the most common factor considered in device selection, it is possible that best fit is influenced by additional factors. These factors may include regulations and commonly known practices in the schools related to cost of device as well as access and availability of AAC options. In addition, the influence of

families on the process may affect the schools approach to this selection thus affecting what is believed to be best fit.

Clinical Implications

This study was designed to explore the AAC assessment process in the schools and to help speech-language pathologists in the school setting better understand the methods and procedures being used. Speech-language pathologists working in the schools should have knowledge of AAC, especially knowledge regarding AAC assessments. Speech-language pathologists are encourage to assess their own knowledge and skills to determine if they have the appropriate knowledge and skills needed for providing AAC services. This present study reveals that many speech-language pathologists in the school setting have some training in AAC. However, speech-language pathologists must consider if their training is sufficient and if the training is up to data. Additional training in AAC can be acquired in a variety of ways including webinars, speech-language pathology conventions, device manufacturer trainings, and school in-services. In addition, speech-language pathologists can access various online resource including the ASHA Augmentative and Alternative Communication Practice Portal (ASHA, n.d.) and ASHA's Augmentative and Alternative Communication Evidence Map to learn more information about AAC and to stay up to date on research in this area. Staying current with the research and literature about AAC assessments will be important in guiding the process rather than relying on common ideas and practices that may not be accurate but may be present in the school setting. It would also be helpful if school speech-language pathologists reflected on their role in AAC assessment as described by Binger and colleagues (2012). AAC finders and general practice speech-language pathologists may want to increase their skills thus improving services

for students who need or have AAC systems. They may also want to forge relationships/partnerships with AAC clinical specialists in their community.

In addition to having knowledge about and experience with AAC, it is important for speech-language pathologists to feel comfortable and confident in knowing when to assess a student for AAC and whether an AAC system is best suited for the student. Lack of comfort and confidence in AAC can be caused by the lack of knowledge or lack of current evidence regarding AAC. For example, many believe that before a child should use a high tech device, they need to develop further or have higher cognitive skills. However research indicates that this is not true, rather, when giving a child a high tech device, there are higher expectations which can help to increase the child's cognitive skills (Kangas & Lloyd, 1988; Drager, Light, & McNaughton, 2010). Speech-language pathologists must be aware of this evidence and apply this to the decisions they are making in practice.

Speech-language pathologists in the school setting work with many professionals. It is key for speech-language pathologists to collaborate with other professionals, administrators, and families during the AAC assessment process and when making the decision regarding the appropriate AAC system for a student as various areas outside of communication and language need to be assessed. In addition, speech-language pathologists must keep in mind the individuality of the AAC assessment that differs from other speech and language assessments. These assessments should focus on the individual and what will work best for them when determining appropriate AAC system.

The results from this research also point to the importance of reviewing the school's and the district's procedures, polices, and practice regarding AAC. Some of the results from this study do not align with the best practices regarding AAC provided by ASHA and found in the

literature. In addition, this survey reveals the importance of training in AAC for speech-language pathologist providing not only AAC assessment services but also AAC intervention services. Speech-language pathologists can advocate for in-service training at their schools so that they can become more competent in providing AAC services and to remain current in the field of AAC.

From this study, various recommendations to speech-language pathologists are noted. First, speech-language pathologists in the schools should advocate for themselves to their school administrators to let them know the tools that are needed to provide AAC services to students. In addition, speech-language pathologists in the schools should do their best to gain knowledge and skills and remain current in the research regarding AAC and use tools recommended by ASHA and other experts in AAC to assess students for AAC.

Limitations

Limitations of the study include lack of participants who conduct AAC assessments, the participants' understanding of the questions asked, lack of specific questions, and inability to generalize to all school-based speech-language pathologists. While there was a high completion rate of the survey, a limited number of participants reported that they conduct AAC assessments in the schools and of these participants not all answered questions regarding the AAC assessments. Because of this, the information provided about AAC assessments in the schools cannot be generalized due to the small sample of participants who fit this role. In addition, information about the AAC assessments in the schools provided by the individuals who do not conduct these assessments many not be fully accurate as these participants may not be aware of the AAC assessment teams or methods in their schools.

The speech-language pathologists' responses to various questions suggest that they may not have understood some of the specific terminology used in the questions or were not informed about the areas solicited because of lack of experience with AAC assessments in the schools. The participants' lack of knowledge or understanding may have affected their ability to provide correct information about AAC assessments in their schools.

After the survey was distributed, the researcher determined that a few areas were not solicited in the survey. For example, a question regarding the speech-language pathologists' state of practice was not included in the survey. Because of this, the researcher needed to use latitude and longitude information provided by Qualtrics. However, each response did not have this information. Lack of this information may affect the demographic information of the participants in this research. In addition, it was not asked who initiated the AAC assessments. If families did, they might have sought out AAC clinical specialists in community settings.

The sample of participants may affect the ability to generalize this information to all school-based AAC assessments. The small sample of speech-language pathologists participating in this research may cause a skewed view of the image of AAC assessments in the schools. In addition, because the survey was distributed describing AAC as the main focus, many participants who are not familiar with or interested in AAC services, especially AAC assessment may have chosen not to take this survey. This may have affected data regarding speech-language pathologist who work with students using AAC in the school setting as well as the data regarding training of speech-language pathologists in the area of AAC. Without these speech-language pathologists participating in this survey, the information collected from this research may not appropriately represent school-based speech-language pathologists.

Future Research

Future research in the area of AAC assessments in the school setting should a larger sample of school-based speech-language pathologists. In addition, this research can be expanded to include solicitation of the specific techniques, strategies, and activities that the speech-language pathologists are using in their educational AAC assessments. Future research many also focus on the specific behaviors from the students that the speech-language pathologists are looking for during the assessments and how this affects and influences the AAC system selection process. It will likely to be helpful to continue to assess the speech-language pathologists' knowledge and proficiency in AAC.

This research can also be expanded to include how various educational factors may affect the AAC assessment process. For example, considering how the assessment relates to the general education curriculum may be a beneficial area to solicit. In addition, consideration of the effect of laws and regulations at the federal, state, district, and school level on the AAC assessment can provide valuable information for speech-language pathologist in assessing students with complex communication needs. Considering how the academic standards for a student affect the AAC assessment in the schools could be part of further research. Finally, if possible, interviews with the participants after the survey would be helpful to obtain more details about their responses and make sure that the participants fully understand the researcher's questions.

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Appendix

AAC Assessment Procedures in the Schools: A National Survey

KU THE UNIVERSITY OF KANSAS

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 anytime without penalty.

We are conducting this study to better understand assessments for Augmentative and Alternative Communication in the schools. This will entail your completion of a survey. Your participation is expected to take approximately 15 minutes to complete the survey. The content of the survey should cause no more discomfort than you would experience in your everyday life.

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 processes involved in AAC assessments in the schools and how this affects the outcome for the student. Your participation is solicited, although strictly voluntary. Your name will not be associated in anyway 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.

If you would like additional information concerning this study before or after it is completed, please feel free to contact us by email at rbroom126@ku.edu.

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,

Rachel Broom
Principal Investigator
Department of Speech-Language-Hearing
Haworth Hall
University of Kansas
Lawrence, KS 66045
rbroom126@ku.edu

Jane Wegner, Ph.D.
Faculty Supervisor
Department of Speech-Language-Hearing
Haworth Hall
University of Kansas
Lawrence, KS 66045
jwegner@ku.edu

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

0% 100%

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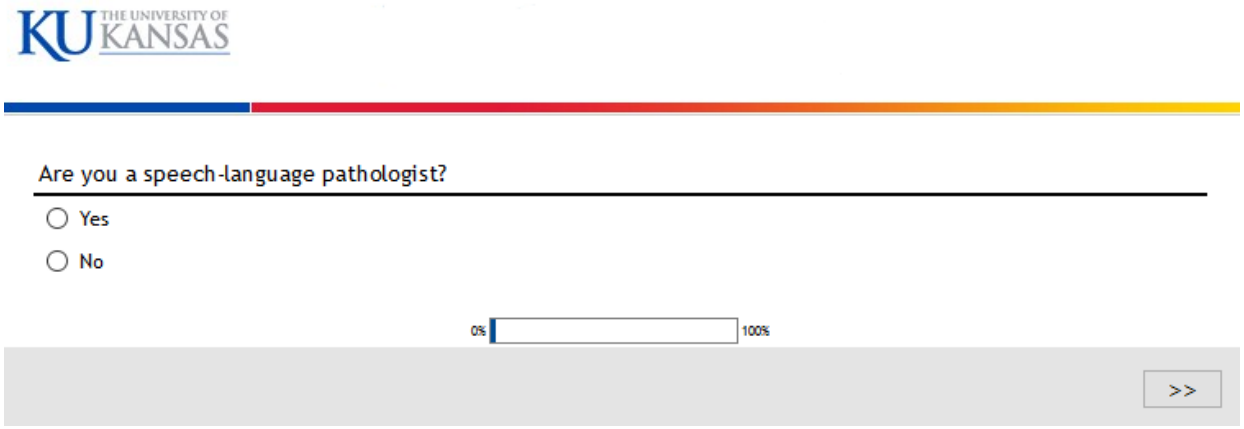
KU THE UNIVERSITY OF KANSAS
Are you a speech-language pathologist?
Yes
No
0%
100%
>>

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

- ○ Yes
- ○ No

What is the highest level of education you have received?

- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctor of Philosophy (PhD)
- ☐ Clinical Doctorate in Speech-Language-Pathology
- ☐ Other

0% 100%

>>

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Are you a male or a female?

- ○ Male
- ○ Female
- ○ Choose not to respond

How many years have you worked as an SLP?

- ○ 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 what settings do you practice as a speech-language pathologist? Select all that apply.

- ☐ School
- ☐ Private clinic
- ☐ Hospital
- ☐ Skilled nursing facility
- ☐ Other

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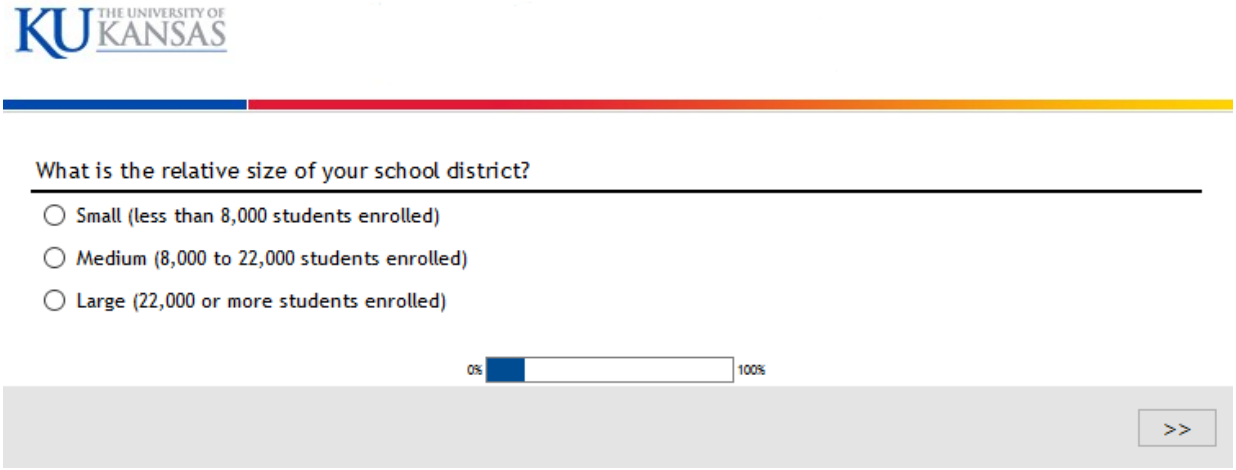
KU THE UNIVERSITY OF KANSAS
What is the relative size of your school district?
Small (less than 8,000 students enrolled)
Medium (8,000 to 22,000 students enrolled)
Large (22,000 or more students enrolled)
0%
100%
>>

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

- ☐ Urban
- ☐ Suburban
- ☐ Rural
- ☐ Other

How many years have you worked as a SLP in the school setting?

- ○ less than 1 year
- ○ 1-5 years
- ○ 6-10 years
- ○ 11-15 years
- ○ 16-20 years
- ○ more than 21 years

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

- ☐ Early childhood
- ☐ Elementary
- ☐ Secondary
- ☐ High School

How many students are on your caseload?

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

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

- ○ 0
- ○ 1-3
- ○ 4-6
- ○ 7-9
- ○ 10-12
- ○ 13-15
- ○ 16+

Overall, where do your students using AAC spend more than 50% of their school day? Select all that apply.

- ☐ inclusive general education classroom
- ☐ special education classroom
- ☐ resource room
- ☐ self-contained classroom
- ☐ other

Have you received training (e.g. graduate coursework, graduate practicum, CEU, conference, in-service at workplace) in augmentative and alternative communication during your schooling or when providing services in augmentative and alternative communication?

- ○ Yes
- ○ No

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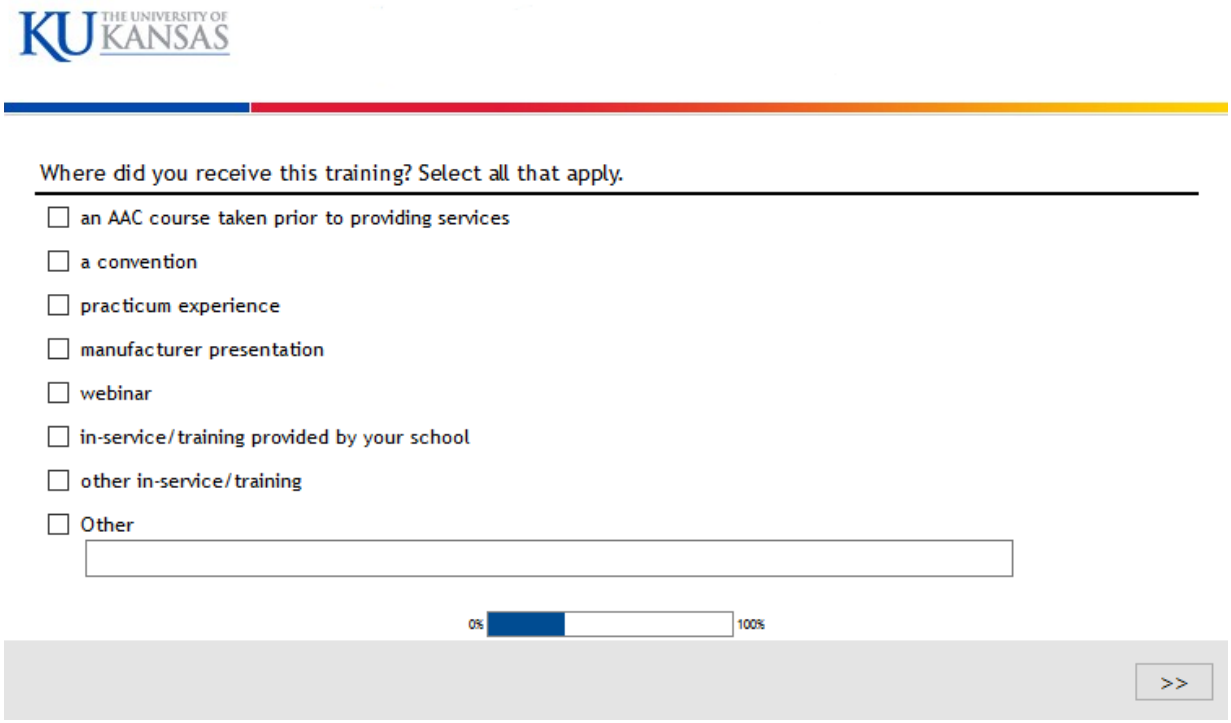
KU THE UNIVERSITY OF KANSAS
Where did you receive this training? Select all that apply.
an AAC course taken prior to providing services
a convention
practicum experience
manufacturer presentation
webinar
in-service/training provided by your school
other in-service/training
Other
0%
100%
>>

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I consider myself to be _____ in AAC.

- ○ an expert
- ○ proficient
- ○ an intermediate
- ○ a beginner
- ○ other

Do you conduct assessments for augmentative and alternative communication in your school(s)?

- ○ Yes
- ○ No

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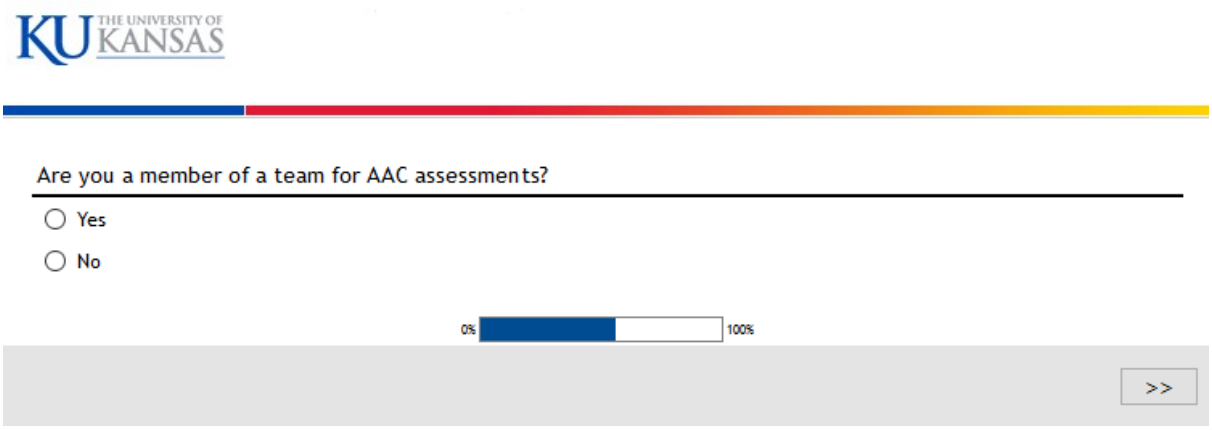
KU THE UNIVERSITY OF KANSAS
Are you a member of a team for AAC assessments?
Yes
No
0%
100%
>>

Yes

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Are systematic evaluation procedures or evaluation tools (e.g. SETT, WATI, The SCERTS Model, The Communication Matrix, TASP) used for AAC assessments at your school(s)?

- ○ Yes
- ○ No
- ○ Other

0% 100%

>>

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What systematic evaluation procedures and/or evaluation tools are used at your school? Select all that apply.

- [ ] SETT (Student, Environments, Tasks, and Tools) Framework
- [ ] Wisconsin Assistive Technology Initiative (WATI)
- [ ] The Participation Model
- [ ] The SCERTS Model (Social Communication/Emotional Regulation/Transactional Support)
- [ ] The Communication Matrix
- [ ] The Source for Augmentative and Alternative Communication
- [ ] Augmentative Communication Evaluation Simplified—AAC TECH Connect (ACES)
- [ ] University of Kentucky Assistive Technology Toolkit (UKAT)
- [ ] Functional Evaluation for Assistive Technology (FEAT)
- [ ] Test of Early Communication and Emerging Language (TECEL)
- [ ] School-Based AAC Evaluation: Choosing Effective Assistive Technology Strategies for Students with Complex Communication Needs
- [ ] Social Networks: A Communication Inventory for Individuals with Complex Communication Needs and Their Communication Partners
- [ ] Test of Aided Communication Symbol Performance (TASP)
- [ ] Triple C-Checklist of Communications Competencies
- [ ] Assessing Students' Needs for Assistive Technology (ASNAT)
- [ ] A Communication Independence Model: For People with Severe Communication Disabilities
- [ ] Augmentative and Alternative Communication Profile: A Continuum of Learning Communication Matrix
- [ ] AAC Evaluation Genie
- [ ] Inventory of Symbolic Functions
- [ ] Other

0% 100%

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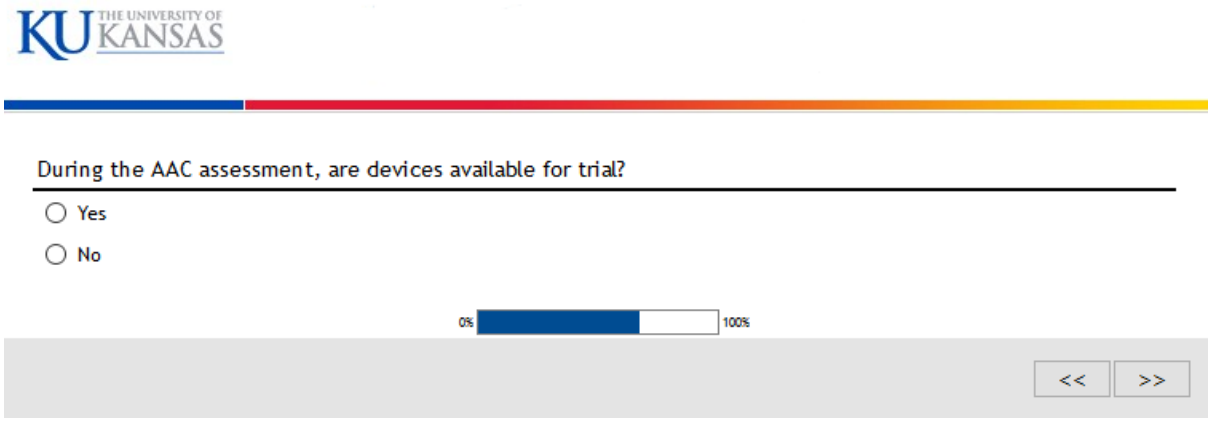
KU THE UNIVERSITY OF KANSAS
During the AAC assessment, are devices available for trial?
Yes
No
0%
100%
<<
>>

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Are these devices trialed during the assessment?

- ○ Yes
- ○ No

From where do you receive these devices?

- ○ The school/school district
- ○ Borrowed from the device manufacturer
- ○ Loaned from 'Middle men' companies
- ○ University Speech-Language clinic in your area
- ○ Other

What devices or AAC options are available for trial? Select all that apply.

- ☐ Tobii-Dynavox devices
- ☐ Prentke Romich Company (PRC) devices
- ☐ Saltillo devices
- ☐ iPad with applications; Names of applications
- ☐ Go Talker
- ☐ Communication Board
- ☐ Picture Exchange Communication System (PECS)
- ☐ other

Typically, how many devices are trialed during the assessment?

- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5+

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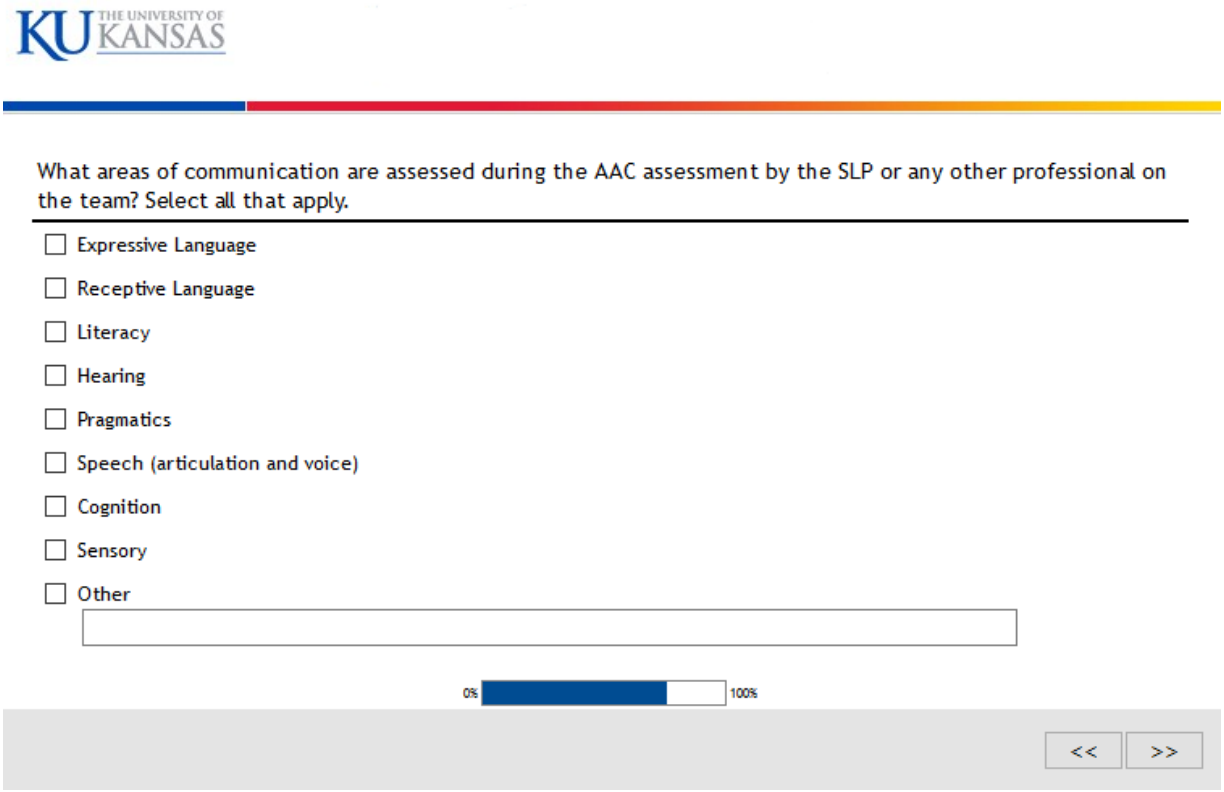
What areas of communication are assessed during the AAC assessment by the SLP or any other professional on the team? Select all that apply.
Expressive Language
Receptive Language
Literacy
Hearing
Pragmatics
Speech (articulation and voice)
Cognition
Sensory
Other
0%
100%
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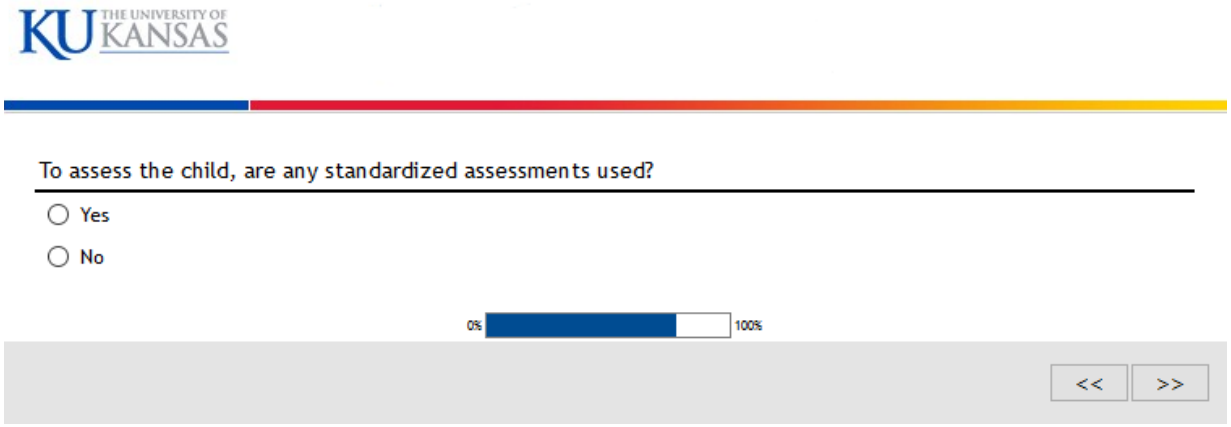
KU THE UNIVERSITY OF KANSAS
To assess the child, are any standardized assessments used?
Yes
No
0%
100%
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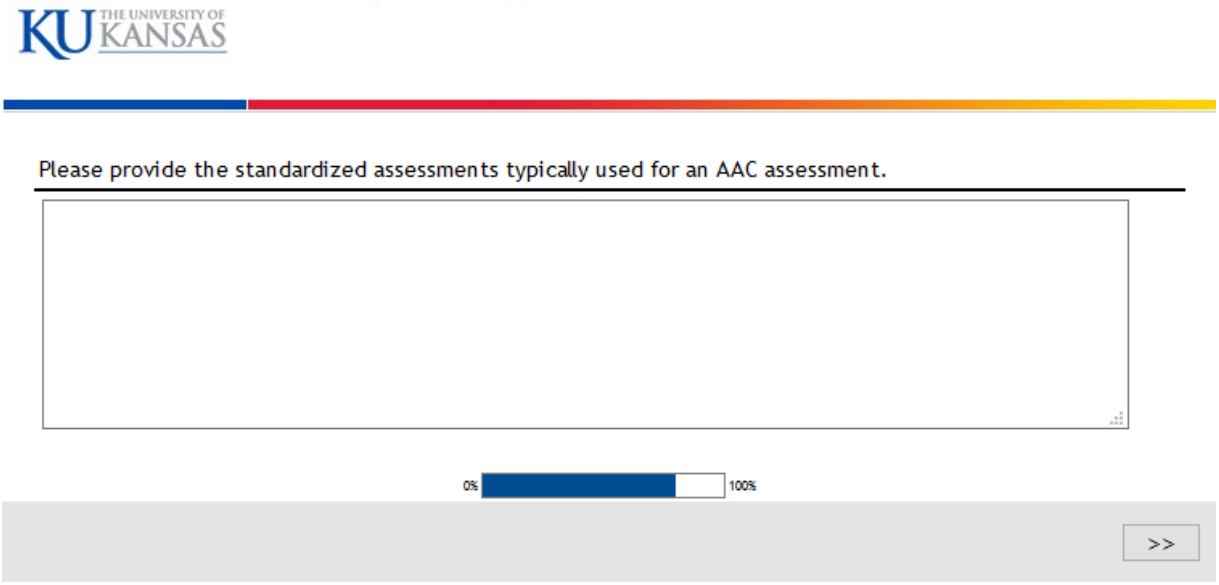
KU THE UNIVERSITY OF KANSAS
Please provide the standardized assessments typically used for an AAC assessment.
0%
100%
>>

KU THE UNIVERSITY OF KANSAS

How long does an AAC assessment usually take to complete?

- ○ 1-3 days
- ○ 4-7 days
- ○ 7-10 days
- ○ 11-14 days
- ○ 15-18 days
- ○ 19-23 days
- ○ 24 days or more

In what settings does the AAC assessment occur? Select all that apply.

- ☐ The Student's classroom
- ☐ The SLP's room
- ☐ The Special Education room
- ☐ The Student's home
- ☐ other

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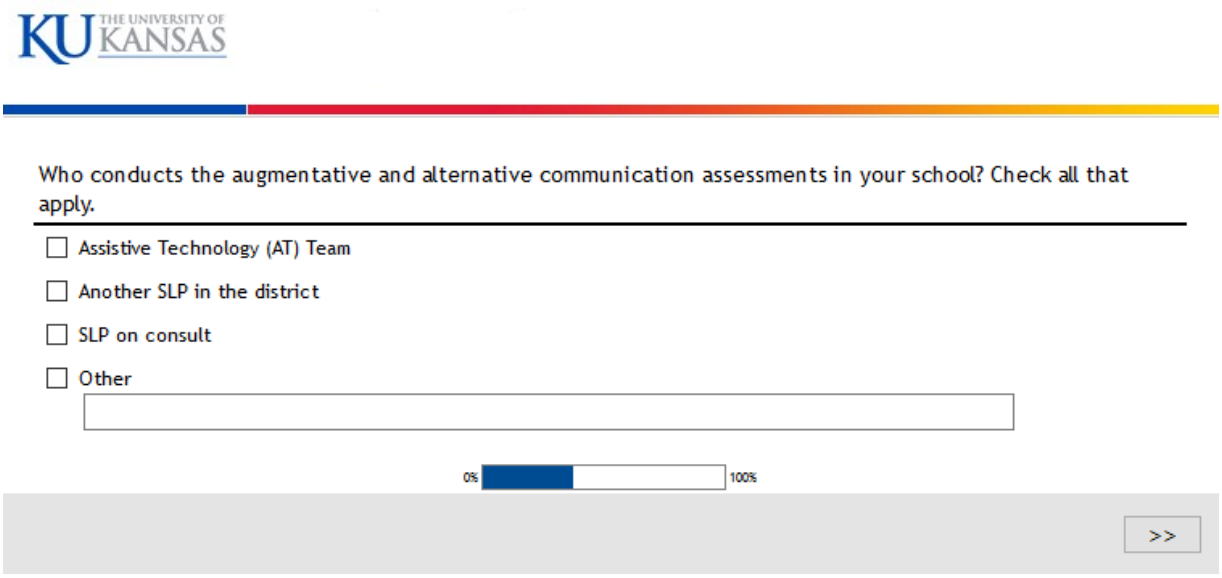
KU THE UNIVERSITY OF KANSAS
Who conducts the augmentative and alternative communication assessments in your school? Check all that apply.
Assistive Technology (AT) Team
Another SLP in the district
SLP on consult
Other
0%
100%
>>

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Who is involved in making the decision regarding what device will be purchased for the student? Select all that apply.

- [ ] Speech-language pathologist
- [ ] Occupational therapist
- [ ] Physical therapist
- [ ] Administrators/coordinators
- [ ] Teacher
- [ ] Special Education Teacher
- [ ] Technology specialist
- [ ] Teaching assistance or paraprofessional
- [ ] The student
- [ ] The student's parent(s)/guardians
- [ ] Other

What factors influence this decision? Select all that apply.

- [ ] Cost
- [ ] Best-suited AAC for the child
- [ ] Access and availability
- [ ] Influence by the family
- [ ] Most common AAC used in the school/school district
- [ ] Most well-known option by members of the team
- [ ] Other

What devices have been chosen as a result of an AAC assessment for the students on your caseload and/or students you have personally assessed? Select all that apply.

- [ ] iPad with application; Names of Applications
- [ ] PECS (Picture Exchange Communication System)
- [ ] Other communication board/book
- [ ] Tobii-Dynavox T series devices
- [ ] Tobii-Dynavox I series devices
- [ ] PRC Accent series
- [ ] Saltillo devices
- [ ] Low-tech option
- [ ] Other

Overall, do you feel that the devices chosen as a result of the assessments are well suited for the the child and his/her needs?

- ◯ Yes
- ◯ No
- ◯ Other

Please explain your answer.

0% 100%

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Rate your skills in the following areas.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am clinically comfortable in knowing when to assess a student for AAC.	○	○	○	○	○
I believe AAC is important for students who may need it or may benefit from it.	○	○	○	○	○
I am comfortable in knowing when AAC is a good match for a student.	○	○	○	○	○

Rate your skill in this area.

	No knowledge of AAC options	Limited knowledge of AAC options	Some knowledge of AAC options	Wide knowledge of AAC options	Extensive knowledge of AAC options
My knowledge of AAC options.	○	○	○	○	○

<< >>

If you have any additional comments about AAC assessment procedures and methods, please provide them below.

0% 100%

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We thank you for your time spent taking this survey.
Your response has been recorded.

0% 100%