EXPERIENCES OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION TEAM MEMBERS

by

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Abstract

This qualitative investigation is designed to describe team collaboration and communication among augmentative and alternative communication (AAC) team members who serve school-aged children with complex communication needs (CCN). The team members included speech-language pathologists, general educators, special educators, instructional assistants, and parents of children with CCN. Semi-structured, phone, and face-to-face interviews were conducted. Open coding was utilized to analyze the transcription for common themes and subthemes. Participants were asked about their AAC experiences with team communication and collaboration, AAC system training, AAC system vocabulary, AAC system satisfaction, team roles and expectations, recommendations for their team, recommendations for professionals, and recommendations for families. Results suggested that a lack of the following may hinder the use of the AAC system: vocabulary range; system use across natural environments; team member training on AAC; team communication; and team collaboration. The results of this study and other research to date suggest that team members should consider examining their approaches to communication and collaboration more closely to serve children with complex communication needs more effectively in the future.

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Chapter 1: Literature Review

Introduction

Augmentative and alternative communication (AAC) allows individuals a means to communicate when they cannot communicate through speech alone (Beukelman and Mirenda, 2013). For the purposes of this study, AAC will include low-technology (e.g., Picture Exchange Communication System, communication boards, visual schedules) and high-technology (e.g., DynaVox®[1], Vantage™[2]) systems that are utilized when individuals cannot communicate through speech alone. The population of AAC users is not limited to individuals of a particular demographic. Individuals use AAC as a result of short-term or long-term difficulties with nonverbal (gestural) and/or verbal (spoken and written) communication (Beukelman and Mirenda, 2013). Furthermore, individuals of all ages may take advantage of the use of AAC in order to effectively interact with their communicative partners. For many individuals, AAC is important for maintaining both an adequate quality of life and active participation in the community. In fact, AAC is often crucial to ensure that individuals have access to communication in a range of environments with a range of conversational partners. The process of AAC use itself may be complex for the individual with CCN. Light (1989) described communicative competence, which is essential for AAC users. Communicative competence refers to the knowledge and use of: the language of both the system itself and of the environment; the technical skills related to the use the AAC system; skills related to the social skills involved in communication; and, techniques to help compensate for barriers to efficient communication. It is important that individuals with CCN have a means to communicate

[1] DynaVox is a registered trademark of DynaVox Systems, LLC. Pittsburgh, PA.
[2] Vantage is a trademark of Prentke Romich Company (PRC). Wooster, OH.

for a variety of reasons. Light (1997) delineated four purposes for communication: needs and wants (e.g., "I need help"), social closeness (e.g., "I like your shirt!"), information sharing (e.g., "I saw a great movie last night"), and social etiquette (e.g., "Please"). AAC interventions typically address communicating needs and wants (Light, 1997). It is imperative that AAC systems have vocabulary that give individuals access to a wide range of conversational partners and different conversational contexts, and allow users to communicate needs and wants, social closeness, information sharing, and social etiquette (Light, 1997).

The Importance of a Team Approach

The efficacy of AAC interventions is contingent upon having team cooperation (Bailey, Parette, Stoner, Angell, and Caroll 2006; Soto, Muller, Hunt, and Goetz, 2001). Working independently is not as efficient as working on a team (e.g., Beukelman and Mirenda, 2013). AAC teams must include family members and a variety of professionals in order to address the complex assessment and intervention needs of AAC users (Beukelman and Mirenda, 2013). Teams may include: the individuals who use AAC; family members; speech-language pathologists; occupational therapists; physical therapists; educators (general educators and special educators); and, instructional assistants. The expertise and cooperation of individual team members will promote the success of AAC users (e.g., Beukelman and Mirenda, 2013).

System Abandonment

AAC systems provide individuals with CCN access to communication (Beukelman and Mirenda, 2013); however, AAC systems are often abandoned by their users (e.g., Johnson, Inglebret, Jones, and Ray, 2006). AAC system abandonment has

multiple definitions (e.g., Johnson et al., 2006). One refers to the inappropriate cessation of an AAC system that the child with CCN still needs access to (e.g., Johnson et al., 2006). This excludes individuals who rejected AAC prior to the selection of an appropriate system. It also excludes individuals with CCN who stopped using an AAC system secondary to progress that resulted in the elimination of the need for AAC. AAC systems may be abandoned for a variety of reasons (e.g., Johnson et al., 2006).

Factors That Influence the Likelihood of System Abandonment

Four factors that influence the likelihood of system abandonment include the following: team communication and collaboration, AAC system training, AAC system satisfaction, and AAC system vocabulary (e.g., Angelo, Jones, and Kokoska 1995; Bailey et al., 2006; Johnson et al., 2006; Kent-Walsh and Light, 2003, Parette, Brotherson, Huer, 2000; Parette, Huer, Brotherson, 2001; Soto et al., 2001).

Team Communication and Collaboration. The first factor addresses team communication and collaboration. Communication is a necessary part of team collaboration (Cook and Friend, 2013). Effective team communication results from team members communicating in unison, rather than solely relying on communication between select individuals at one time. Cook and Friend (2013) defined collaboration as a form of interaction between a minimum of two equal individuals with a mutual goal. Frequent communication and collaboration amongst team members is imperative for the success of AAC interventions (e.g., Bailey et al., 2006; Soto et al., 2001). The perspectives of families, general educators, and speech-language pathologists regarding team communication and collaboration have been documented (e.g., Angelo et al., 1995; Bailey et al., 2006; Parette et al., 2000; Parette et al., 2001; Kent-Walsh and Light, 2003).

Both team collaboration and communication are vital to adequately serve children with CCN (e.g., Bailey et al., 2006). Bailey et al. (2006) conducted a study in which six parents or guardians of children with CCN shared their AAC team experiences. Parents reported the importance of regular communication amongst team members to promote the children's success using the AAC systems. Results suggested that effective team collaboration involved team involvement in which all members' perspectives were taken into account throughout the process of AAC. Additionally, Parette et al. (2000) conducted a study that utilized focus groups and structured interviews to give parents the opportunity to voice their unique perspectives on AAC issues, such as decision-making, roles on teams, and team expectations. To facilitate positive team relationships, the authors suggested that teams should meet regularly and recognize each member's unique input. System abandonment may result if parents are frustrated with the teams' decisions and team communication is insufficient.

From the perspective of general educators, a lack of team communication hindered the effective inclusion of students with CCN in the classroom (Kent-Walsh and Light, 2003). The teachers expressed their lack of participation in creating goals for their students' Individualized Education Programs (i.e., IEPs). The educators frequently felt uninformed regarding their students with CCN, which was problematic. Two recommendations made by the teachers included in the study were to increase team collaboration and to make sure the general educators were continuously supported by their fellow AAC team members.

Parette et al. (2001) conducted both focus groups and interviews of professionals (i.e., AAC system vendors, physical therapists, occupational therapists, speech-language

pathologists, and other related professionals). Nineteen of the 37 professionals in the study were speech-language pathologists. Based on the results, these authors recommended: a regular meeting schedule to share updates regarding the AAC user's progress; a manner of communication that allows the parents to participate and share their unique input; and, a team dynamic with a focus on collaboration.

Overall, research with various AAC team members has identified the value of regular AAC team meetings, input from all team members, open communication, and shared knowledge of goals and progress. These elements may decrease the likelihood of the abandonment of AAC systems (e.g., Angelo et al., 1995; Bailey et al., 2006; Parette et al., 2000; Parette et al., 2001; Kent-Walsh and Light, 2003).

AAC System Training. The second factor addresses AAC system training for the AAC user, the family, and professionals. Training may address: access techniques (e.g., switches); vocabulary programming and maintenance; and implementation of the AAC system in natural contexts, such as the classroom (Beukelman and Mirenda, 2013).

Lack of AAC system training may hinder an AAC user's success with a system (Bailey et al., 2006). Family members voiced concerns about insufficient time for training and collaboration with professionals, particularly when the AAC systems were complex. A study by Angelo et al. (1995) also examined family perceptions regarding AAC through a survey including 91 parents of children with CCN. The parents' priorities included knowing about the variety of systems available, in addition to learning to program, use, and maintain the AAC systems.

Educators may not be able to adequately serve individuals with CCN without sufficient training in AAC system use (Kent-Walsh and Light, 2003). Kent-Walsh and

Light reported that general educators experienced a lack of knowledge of both special education and AAC. They felt that their teaching schedules did not allow for adequate training in AAC and appropriate classroom modifications. The general educators recommended that each AAC team member should receive training in the use of the AAC system. Furthermore, the educators themselves wanted to develop proficiency in the use of the AAC system and to secure sufficient time to plan for students with CCN.

In keeping with the families and general educators on AAC teams, speech-language pathologists and related professionals stressed the importance of providing AAC training to families (Parette et al., 2001). Speech-language pathologists and related professionals should train families on how to implement the AAC system in natural contexts at home as well as other communicative environments. Johnson et al. (2006) surveyed speech-language pathologists with an expertise in AAC. Training with communication partners in natural contexts, time to keep the systems functioning well, and adequate support from both team members and AAC experts facilitated favorable outcomes for the AAC users.

Soto et al. (2001) interviewed focus groups to examine the perspective of the following team members of children with CCN who utilize AAC systems in the school system: parents; general educators; instructional assistants; and, speech-language pathologists. Participants noted that both training on AAC systems and team collaboration led to favorable outcomes (Soto et al., 2001).

Irrespective of the role played on the AAC team, members stressed the importance of sufficient AAC system training for the entire team (Angelo et al., 1995; Bailey et al., 2006; Kent-Walsh and Light, 2003; Parette et al., 2001; Soto et al., 2001).

AAC System Satisfaction. The third factor related to AAC system abandonment involves team members' satisfaction with various aspects of the system (e.g., Bailey et al., 2006; Johnson et al., 2006; Parette et al., 2000).

Bailey et al. (2006) suggested that family members' satisfaction in the following four areas resulted in AAC system success: augmented communicative competence and independence; ease of implementation and maintenance of the system; increased opportunities for communicative interactions; and, increased communication in a variety of contexts.

The general educators' satisfaction with the AAC system was dependent upon restrictions in technology, in addition to the reliability and availability of the system (Kent-Walsh and Light, 2003). The general educators suggested that the selection of AAC systems customized with appropriate features to suit the children's needs may facilitate classroom participation. The selection of AAC systems and the implementation of systems in functional environments may be spearheaded by speech-language pathologists. In fact, the speech-language pathologists in Johnson et al. (2006) identified the importance of selecting a system that minimizes complexity and meets the child's unique needs.

In summary, the team members concur; AAC system satisfaction may result in success for the AAC user (Bailey et al., 2006; Johnson et al., 2006; Kent-Walsh and Light, 2003).

AAC System Vocabulary. The final factor influencing system abandonment is the vocabulary available to the AAC user (e.g., Bailey et al., 2006). Vocabulary enabling individuals to communicate in a multitude of settings with a variety of partners is

essential (e.g., Beukelman and Mirenda, 2013). A core vocabulary (e.g., "I", "want"), words and phrases commonly used by individuals in multiple settings, and fringe vocabulary (e.g., "Tyrannosaurus Rex") exclusive to the users' interests should be included. It may be important to obtain input on vocabulary from a variety of family members and professionals who work with the child with CCN in order to obtain an adequate set of vocabulary (Beukelman and Mirenda, 2013).

In a study by Bailey et al. (2006), family members reported that AAC users often could not communicate functionally secondary to inadequate vocabulary programmed on the AAC system. The inadequate vocabulary was perceived to be one of the main barriers to the success of the AAC user.

From the perspective of general educators, speech-language pathologists are essential in order to select appropriate vocabulary and to modify the classroom curriculum to promote the participation of individuals with CCN (e.g., Kent-Walsh and Light, 2003). Johnson et al. (2006) and Soto et al. (2001) concurred with respect to the relationship between vocabulary selection or updates and the success of the AAC user.

Overall, literature suggests that the appropriate selection of vocabulary for the individual with CCN is important for the success of an AAC user (Angelo et al., 1995; Beukelman and Mirenda., 2013; Johnson et al., 2006; Kent-Walsh and Light, 2003).

Research thus far has described the unique perspectives of those who serve different roles on the AAC team, including families, speech-language pathologists, general educators, and instructional assistants; however, the team dynamic and interaction within individual AAC teams has not been well documented in the literature (Bailey et al., 2006; Johnson et al., 2006; Kent-Walsh and Light, 2003; Parette et al.,

2000; Parette et al., 2001; Soto, Muller, Hunt, and Goetz, 2001). Previous researchers have conducted qualitative research to attempt to identify what factors are influencing the successful use of a system or abandonment. As previously stated, authors have found that the AAC user's success with a system may be contingent upon the dynamic of the team; however, each of the authors grouped individuals serving the same roles on teams (e.g., Bailey et al., 2006; Johnson et al., 2006; Kent-Walsh and Light, 2003). Research to date documenting teams serving one child with sufficient detail of each team's dynamic is scarce.

Research Objectives

This qualitative study was designed to document the AAC perspectives and team dynamic of four AAC teams of individuals serving school-aged children with CCN. In semi-structured interviews, families, speech-language pathologists, special educators, general educators, and instructional assistants were asked to describe their experiences working on teams with the shared goal of helping children with CCN achieve functional communication. Specifically, this study was designed to investigate the team members' experiences with: (a) team communication and collaboration; (b) AAC system training; (c) AAC system vocabulary; (d) AAC system satisfaction; (e) team roles and expectations; (f) recommendations for their team, professionals, and families.

Chapter 2: Method

Research Design

Surveys and group designs were considered when designing the study; however, given the scarcity of research, a qualitative design was deemed best. This method was chosen to investigate AAC team members' unique perspectives regarding team collaboration and communication, AAC system training, AAC system satisfaction, AAC system vocabulary, and recommendations (for their respective AAC team members, for future parents/families, and for future professionals). Qualitative analysis was deemed appropriate for this study because the goal of the study was to describe and assign meaning to experiences; the goal was not to test a hypothesis (Corbin and Strauss, 2008).

The research design conformed to a single descriptive case study with embedded units. A multiple-case study was not appropriate due to the small sample size, unequal team membership, and the need for replication between findings in a multiple case study (e.g., Baxter and Jack, 2008; Yin, 2003; Yin, 2011). This study was a single case qualitative design that occurred in a single context. The case was defined as 15 members representing four AAC teams. The context was the public school system in Southwest Virginia. Results were primarily analyzed at the level of the case (Baxter and Jack, 2008; Yin, 2003) and were additionally informed by analyses at the level of the embedded unit. Embedded units represented two lines of analyses. The data were analyzed within and between embedded units, when each unit was defined as one cohesive AAC team. The data were analyzed within and between embedded units when the unit was defined as the role the individual served on the team: parent, speech-language pathologist, general educator, special educator, and instructional assistant.

Participants

The recruitment of parents, general educator, special educators, speech-language pathologists, and instructional assistants was conducted through: (a) direct phone calls to parents of children who used AAC, had children who had attended Radford University Speech-Language-Hearing Clinic (RUSLHC), and expressed interest in participating in research and (b) e-mails sent to speech-language pathologists affiliated with Radford University (i.e., clinical supervisors from 2011-2013). Once consent of one member on the team was provided, he/she contacted each of the subsequent members to share information about the study. If individuals indicated an interest in the study, written consent forms were completed prior to the commencement of phone interviews or face-to-face interviews. Five AAC team members were invited to participate from each team; however, there was some variation in the make-up of each team. One general educator stated that he did not feel that he could contribute enough information regarding his student to participate in the study because of his lack of AAC knowledge and experience. All teams included a parent, speech-language pathologist, and at least one educator (i.e., special educator and/or general educator). Three instructional assistants were also participants.

The AAC team members varied in their years of experience with AAC. The parent on Team A had 10 years of experience with AAC; his experience was limited to only that of his child. The instructional assistant's experience was also limited to Team A's child. The special educator and speech-language pathologist on Team A both had between 20 and 22 years of experience with AAC. The parent, speech-language pathologist, and instructional assistant on Team B had experience with AAC, but it was

limited to Team B's child. The special educator on Team B had 10 years of experience with AAC. The parent and speech-language pathologist on Team C both had between 10 and 12 years of experience with AAC. The special educator on Team C described her experience as only with the current child. The general educator and instructional assistant on Team D both reported one year of experience with AAC. The parent on Team D had experience limited to only her child. Lastly, the speech-language pathologist on Team D reported 12 years of experience with AAC. See Table 1 for a list of the members of each team and their number of years of experience with AAC.

Table 1: Team Members and Years of Experience with AAC

Team	Child-Team Member	Experience with AAC
A	Parent	10 years Only with current child
	Instructional assistant	Only with current child
	Special educator	22 Years
	Speech-language pathologist	20 Years
B	Parent	Only with current child
	Instructional assistant	Only with current child
	Special educator	12 Years
	Speech-language pathologist	Only with current child
C	Parent	12 Years
	Special educator	Only with current child
	Speech-language pathologist	10 Years

D	Parent	Only with current child
	General educator	1 Year
	Instructional assistant	1 Year
	Speech-language pathologist	12 Years

All participants in the study met the following criteria: (a) they provided written consent to participate in the study; (b) the child utilized AAC; (c) the child was school-aged; and (d) at least two of the following professionals on each team participated: the child's general educator, special educator, speech-language pathologist, and instructional assistant.

The child on Team A was a 16-year-old female in tenth grade with a diagnosis of agenesis of the corpus callosum. At the time of the study the child used two iPads®[3] (i.e., home and school) and the Vantage; the specific Vantage system was not specified. The team members on Team A included the parent, speech-language pathologist, special educator, and instructional assistant. The child on Team B was a 10-year-old boy in third grade with a diagnosis of Down syndrome. His AAC system at the time of the study was an iPad. The team members on Team B included the parent, speech-language pathologist, special educator, and instructional assistant. The child on Team C was a 10-year-old female in the third grade with a diagnosis of autism. Her AAC systems included the Kindle™[4] and Picture Exchange Communication System. The team members on Team C included the parent, speech-language pathologist, general educator, and instructional assistant. The child on Team D was an eight-year-old boy in the first grade with a diagnosis of agenesis of the corpus callosum. At the time of the study, the child utilized

[3] iPad is a registered trademark of Apple, Inc. Cupertino, CA.
[4] Amazon, Kindle, Kindle Fire, the Amazon Kindle logo, and the Kindle Fire logo are trademarks of Amazon.com, Inc. or its affiliates. Seattle, WA.

both an iPad® and the DynaVox; the specific DynaVox system was unspecified. The AAC team members on Team D included the parent, speech-language pathologist, general educator, and instructional assistant. Table 2 presents the demographic characteristics of children who use AAC in the present study.

Table 2: Demographic Characteristics of Children Who Use AAC

Demographic Information				
	Team A	**Team B**	**Team C**	**Team D**
Age	16	10	10	8
Grade	10th	3rd	3rd	1st
Gender	Female	Male	Female	Male
Diagnosis	Agenesis of the Corpus Callosum	Down Syndrome	Autism	Agenesis of the Corpus Callosum
System(s)	Vantage iPad® (School) IPad® (Home)	iPad®	Kindle PECS	iPad® DynaVox
Team Members	Parent Speech-Language Pathologist Special Educator Instructional Assistant	Parent Speech-Language Pathologist Special Educator Instructional Assistant	Parent Speech-Language Pathologist Special Educator	Parent Speech-Language Pathologist General Educator Instructional Assistant

Materials and Procedures

The Olympus WS-400 S digital hand held audio-recorder was utilized in phone and face-to-face interviews to transcribe the participants' responses verbatim. The interview questions were compiled and adapted from questions used by Bailey et al. (2006), Parette et al. (2000), and Parette et al. (2001). See Appendices B, C, and D for a comprehensive list of interview questions.

Data Analysis

Five graduate students were trained in coding and assisted with the transcriptions, which were completed verbatim. The general inductive approach to coding was used to analyze the collected data (Thomas, 2006). Specifically, open coding was utilized to further analyze the samples for common themes and subthemes. First, utterances in each sample were separated into the smallest units that may carry meaning (e.g., "Due to schedule conflicts it is difficult to find time for AAC system training"). The researchers coded the samples for themes (Thomas, 2006). After themes were identified, subthemes were assigned to specifically describe the true nature of each unit. This method of open coding allows researchers to make comparisons between events and similar events are then grouped to form categories (Corbin and Strauss, 1990).

Reliability

Five graduate students trained in coding assisted with the transcriptions. A minimum of two individuals transcribed 25% of each sample to ensure reliability of the transcriptions was maintained. Interjections were not counted during reliability (e.g., "um" and "uh"). The minimum standard of reliability for the present study was equal to 90%. The average reliability was 98%, with a range of 93% to 99%. Two researchers coded the samples for themes. Another researcher who was trained in the coding procedures coded 20% of each sample. Disagreements in codes were discussed among the researchers and were coded for a second time. The average reliability for the codes was 98%, with a range of 97% to 99%.

Chapter 3: Results

The results of assigning themes and subthemes to the individual units of the transcribed samples are presented below. See Table 3. Six major themes emerged from the semi-structured interviews. The table presents the following five major themes: Team Communication, Team Collaboration, Team Members Responsibilities, AAC System Features, and AAC System Selection. Subthemes were identified based on similarities and differences between AAC team members' responses. Table 3 highlights these subthemes and major findings within each.

Table 3: Themes, Subthemes, and Major Findings Across AAC Team Members

Themes	**Subthemes**	**Major Findings Across AAC Team Members**
Team Communication	Modality Preferred by Team Members	Discrepancies within teams
	Types of Meetings	<u>Two types</u> Formal (i.e., IEP meetings) Informal (e.g., exchanges in classroom and hallways)
	Attendance at Team Meetings	Key AAC team members missing
	Frequency of Meetings	Range of frequencies Weekly to annually Satisfaction improved with frequent meetings
	Satisfaction with Team Communication	Lack of satisfaction
Team Collaboration	Team Roles and Expectations	<u>Roles</u> Keeping the team informed and using the system <u>Expectations of team members</u> Implementation of the system in a variety of settings Effective communication among team members

		Support for independent, functional communication System training Team expectations not met
	Knowledge of Speech-Language Pathologists' Goals	Inability to state more than a general skill area (e.g., communication, language, social)
	Satisfaction with Team Collaboration	Lack of satisfaction
Team Member Responsibilities	AAC System Selection	Lack of team consensus on device selection resulting in multiple systems
	AAC System Programming	Responsibility assumed by range of members
	AAC System Training	Lack of AAC training Independent learning of AAC system
AAC System Features	Vocabulary Categories	Basic nouns, verbs, and adjectives Unknown vocabulary categories
	Frequency of Vocabulary Updates	Frequency unknown or infrequent
	Frequency of Device Use	Use infrequent
	AAC System Advantages and Disadvantages	Ease of programming and use Communication Language Child's preferences Portability Speech
AAC System Implementation	AAC System Impact	Positive effect or no effect on communication Minimal or no impact on participation in school
	AAC System Restrictions	Vocabulary insufficient

Team Communication

There were five subthemes identified within Team Communication: Modality Preferred by Team Members, Types of Meetings, Attendance at Team Meetings, Frequency of Meetings, and Satisfaction with Team Communication.

Modality Preferred by Team Members. Team members were asked to describe their preferred modalities of communication with their team members. Discrepancies within the teams were noted. Nine of the 15 AAC team members stated that face-to-face meetings were the most ideal for their teams. Nine of the 15 AAC team members mentioned e-mail correspondence as the preferred mode for team communication. Five of the 15 AAC team members noted meetings as a preferred means of communication within their teams. Some members mentioned more than one preferred mode of communication (e.g., five mentioned both face-to-face and e-mail as preferred means of communication). The instructional assistant on Team D stated that face-to-face interactions among team members was the best modality for her team to communicate because it minimized breakdowns.

> "I'd say face-to-face because you know if somebody's there then you're hands on, you know, what's going on. If you email me a message I'm like oh my [gosh] now what did she mean. I mean, this is me personally. You know others they could probably do it, this is me personally."

Comparison of the four teams' preferences revealed that three of the four teams disagreed on the best modality for communication (i.e., Teams A, C, and D). The parent on Team A preferred notebook and meetings for communication; the speech-language pathologist preferred face-to-face and e-mail. The parent in Team C indicated e-mail was

the best modality for communication and the speech-language pathologist preferred face-to-face communication. Lastly, the parent on Team D stated that face-to-face was the best mode of communication and the speech-language pathologist identified e-mail as the best mode. Of note, Team B demonstrated the best consensus; three of the four AAC team members (i.e., parent, speech-language pathologist, and special educator) mentioned both face-to-face and e-mail as their best modes of communication.

Types of Meetings. Teams were asked to describe the format of their meetings, and two types were identified: formal (i.e., IEP meetings) and informal (e.g., exchanges in classrooms and hallways). Two complete teams (i.e., eight AAC team members) reported meeting annually for IEP meetings. Seven of the 15 team members reported informal meetings. The speech-language pathologist in Team D described her use of informal face-to-face meetings.

> "I mean overall, I think we do a great job. We are a small school system, which I think helps. If we were a big district, I could see where you would get lost in it or kids could fall, but we're small, we are able to see each other pass in the hallway and have power meetings. I am pleased with how we get stuff done."

The instructional assistant on Team B shared her experiences with communicating with her team members informally. She stated, "I usually can talk personally with them or if I've got a question...I would say most the time, I just stop them in the hall and say, 'Hey I've got a question about this.'"

Attendance at Team Meetings. In their discussions of team meetings, some participants reported that key AAC team members were absent. Three of the five teams were missing key AAC team members. Team A members mentioned missing the

instructional assistants at team meetings. The instructional assistant, speech-language pathologist, and occupational therapist were reported missing at meetings for Team C. The special educator on Team C discussed her experience in meetings in which key AAC team members were absent.

> "Typically as of right now, Mom is there, I am there, her special education [teacher]…her general educator sometimes the IAs if they are available. That's so far who has been attending them at the start. Speech and OT haven't come yet."

Team D members reported missing both the instructional assistant and speech-language pathologist at team meetings. The instructional assistant in Team A said that she missed meetings due to scheduling conflicts.

> "Sometimes I get a chance. It depends on the time, like, if it's during the class, I'm with [the child] and she gets to go to the meeting then I'm able to go. If it's during another class time when I'm not with her, I kind of miss out on that opportunity. I haven't been to two or three meetings since the beginning of the school year so since then I haven't. I might have missed one or two, I can't remember. I think there's been four, maybe five, since the beginning of the school year, but I might be wrong. I've been to about two or three."

The speech-language pathologist on Team B also described scheduling challenges that affected the AAC team members' attendance at meetings.

> "And unfortunately we don't have a whole lot of team meetings. When we met this past week it was kind of one of the only ones that we've met where everybody has been there. And we should meet more than we do, but just the schedules and everybody's all over the place, that's hard."

Frequency of Meetings. The frequency of meetings, as reported by the AAC team members, was inconsistent; responses ranged from weekly to annual meetings. Eight of the 15 AAC team members stated that their teams met annually. A parent on Team B stated that her team met annually and the only additional meetings tended to be negative and focused on addressing problem behaviors in the classroom.

> "[The team met] for the IEPs once at the beginning or maybe once a year. Whenever the IEPs are, that's when everybody gets together. Usually that depends on [my child's] behavior. If it's a behavioral problem then the meetings are called. You're not called just for the heck of it. You know you don't have meetings unless there's a problem usually."

Four of the 15 AAC team members reported meeting weekly or every other week, and three of the 15 reported a meeting frequency ranged from once a month to every other month.

Many participants described their satisfaction with the regularity of their meetings. Eight of the 15 AAC team members indicated that they were unsatisfied with the frequency of team meetings and stated that additional meetings would be beneficial. Suggestions ranged from weekly to monthly meetings. For example, the instructional assistant on Team A stressed the need for more opportunities to interact with the team's speech-language pathologist.

> "I rarely see [the speech-language pathologist] myself so I'm kind of completely at awe, lost 'cause of communication right now, pretty much. Unless it's through another aide that's with her that can relay the information back to me. But, as for me and the speech therapist we don't communicate right now because I don't get

a chance to see her cause I'm not with [the child] during the time that she has speech. I rarely have a chance to touch base with her…I think that would be nice to talk, to touch base."

Seven of the 15 AAC team members stated they were satisfied with the frequency of meetings. Of these, five met weekly or every other month. For example, the speech-language pathologist on Team C stated her satisfaction with the regular meeting schedule for her team.

"I think that [meeting weekly] was good because I think it allowed us an opportunity to stay on top of things…when you have changed things or had to deal with things, you know things that came up, there wasn't this long amount of time for it to grow or get bigger. It was just easier to tweak things as you go along, and I think just stay on top of it. I mean it's easy for people to forget things and when you aren't meeting…on a regular basis, sometimes things just get left undone. So I think it was good"

Satisfaction with Team Communication. The AAC team members were asked to describe their level of satisfaction with their teams' communication. A lack of satisfaction with team communication was identified for many. Ten of the 15 AAC team members were unsatisfied with communication within their respective teams; five were satisfied. Of these individuals who noted communication as insufficient, half (i.e., five) specified a lack of satisfaction with communication with the speech-language pathologist in particular.

The parent on Team A described wanting to help address her child's goals at home.

"No, I mean things are going really well. Probably just touching base more with the speech-language pathologist and maybe figuring out from her what I need to do on my end to help [my child]…meet her communication goals and [use the device]."

The special educator on Team A reported that she was interested in finding ways to implement the AAC system at the student's vocational site during the school day; however, she shared that she lacked guidance from the speech-language pathologist regarding the system.

" I guess maybe that the speech therapist would maybe communicate more… if there is a barrier or if there is something we could do to speed up the process with making sure that communication is enhanced…[at the student's] placement of employment. Again like I said, I don't know what's going on there, but I feel like sometimes there's a link missing with the speech therapist."

Of the five team members who stated communication was sufficient among the team, three highlighted good communication with the instructional assistants in particular. The speech-language pathologist on Team A stated that open communication was maintained with the instructional assistants.

"… I felt very comfortable…speaking with [the instructional assistants]. If there was something we needed to do different or something we needed to tweak um a certain way. We were doing a particular phase in PECS and going through it with the instructional assistant…to make sure we were doing it as [errorless] as possible. So I feel like we've always had [open] communication."

Team Collaboration. There were three subthemes identified within Team Collaboration: Team Roles and Expectations, Knowledge of Speech-Language Pathologists' Goals, and Satisfaction with Team Collaboration.

Team Roles and Expectations. Each team member was asked to describe their roles on their team, what they expected of their fellow team members, and if those expectations were met. The two main roles described by the AAC team members addressed keeping the team informed and using the system. Eight of the 15 AAC team members described their role as keeping AAC team members informed. The special educator on Team A described her role as ensuring the AAC team members were all working collaboratively towards the same goal. She said, "making sure that everyone is on the same page at school and at home [because] I communicate with mom and the therapist to make sure we are all working together."

The special educator on Team C said she also viewed her role as keeping her team informed about working collaboratively on the child's goals.

> "I just need to make sure that she is receiving the services she should be receiving according to her IEP. If we say we're going to do something then I feel I'm the person to do the follow up…facilitate and make sure those things are being followed through, and that we're doing what we said were gonna do."

The second role described by many participants (i.e., seven of the 15 members) was to support the use of the system. For example, the instructional assistant described her role as ensuring the child had access to communication.

> "My role, I feel is to bring out as much as I can [and] to make [the AAC system] as accessible to [the child]. To help [the child] find where the icons are that we

are looking for, whether it's work, play, or activities we are doing…that's what I feel my role is."

In addition to asking about roles, the team members were asked to describe their expectations of other team members. Four main expectations were identified and frequently reported as not met. The first main expectation was to facilitate the use of the AAC system in a variety of settings. Ten of the 15 AAC team members wanted others to use the system with the child in order to support the use of the system for communication. For example, the speech-language pathologist on Team B described the need for the team to utilize the system despite potential negative attitudes towards the system itself.

> "Right now, I just want [the AAC team] to use the device… I understand that they don't feel comfortable because even sometimes I get it and I don't feel comfortable, but I just want them to try to use it. Try to learn it and if they have questions then they can come to us and we can figure that out as a team. But, I think right now they aren't using it, whether that be they're not sure how or they're scared to touch it, or they just don't feel like uh 'I don't have time to do it today, I'm not gonna do it'. But, I want them to, you know, have a role in that step, because obviously you just don't communicate in speech. You communicate throughout your life, so I want them to, you know, use that device as much as possible with [the child] so that he will use it more spontaneously and independently hopefully down the road."

The second expectation for teams was to develop effective communication among team members. Eight of the 15 AAC team members mentioned the need for

communication. For example, the instructional assistant on Team A stated that she felt regular communication regarding the child's daily needs would be beneficial.

> "If we do something together we'll talk about it kind of communicate, among ourselves. If there's something different about [the child's] day… that way, we could allow everybody else to know about that, so [the team] would be more aware. I guess for us to communicate well."

The instructional assistant on Team D also emphasized the need for team communication to ensure AAC team members are informed about current services.

> "So my expectations are that they [AAC team] will inform me and keep me informed on what we are working on and what procedure they want me to work on in the classroom and any changes in the device that we are using…But pretty much, it's just keeping me abreast of whatever we're working on… and how to use [the device] with [the child] throughout the day."

The third expectation for AAC teams was to support the child's independent, functional communication. Seven of the 15 AAC team members shared this concern. The special educator on Team A emphasized the importance of identifying communicative opportunities throughout the day.

> "I would say just to, you know, be on alert and make sure that we are seizing every moment with [the child] as far as [the child] being able to communicate independently. That we're just looking at everything throughout her day and making sure that we are capitalizing on everything whether it be the lunch room or the gymnasium."

Lastly, five of the 15 AAC team members expected to receive training on the use of the system. The parent on Team C described the need for AAC system training. She stated, "I guess expectations would be, you know, once a device is selected, to make sure that the [AAC team] knows how to use it [and] knows how to program it."

Overall, 11 of the 15 AAC team members stated that their expectations of their fellow team members were not met. The instructional assistant for Team A described how her expectations for good communication are unmet.

> "We all have our ups and downs of course. Every day seems to be kind of adaptable to change. Sometimes there might be some needs, some things that aren't communicated with us, but there might be some miscommunication between some of us…we do what we can"

Knowledge of Speech-Language Pathologists' Goals. None of the AAC team members were able to describe the specific communication goals targeted in speech-language therapy. Twelve AAC team members, including the four SLPs, listed only general skill areas (e.g., communication, language, and social interactions). The special educator on Team B described her lack of knowledge regarding the speech-language goals. She stated, "It all just blends together, I'm sorry. I do not [know how the goals were chosen]." The special educator on Team A shared, "I definitely think possibly peer communication and communicating with adults." She was unable to provide any additional information. The general educator on Team D stated, "Really speech, I don't really know of anything…as far as anything speech I don't know, [the speech-language pathologist] would know more about that." The speech-language pathologist on Team C stated, "I could probably find, let me find her IEP. Hold on can I put you on hold for one

second...you know that social communication…I haven't looked at [the IEP] since the spring so I guess that's why I just want to make sure…but you know social communication for her is the big one."

Satisfaction with Team Collaboration. The AAC team members were asked to describe their overall satisfaction with team collaboration. Eleven of the 15 AAC team members mentioned lack of team collaboration. The speech-language pathologist on Team A expressed her lack of satisfaction with her team's collaboration, particularly related to the lack of AAC system training and use.

> "I just think everyone on the team, especially at the highschool level, even middle school, they just want to go say it's all the speech service it's all the speech service. It's not all speech service. It's a complete team, especially for [the child] because communication is just a part, and everyone needs people willing [to] work collaboratively and get the training and not pawn it off on other people"

Team Member Responsibilities

Three subthemes were identified within Team Member Responsibilities: AAC System Selection, AAC System Programming, and AAC System Training.

AAC System Selection. A variety of team members assumed responsibility for prescribing AAC systems. In fact, three of the four teams had multiple systems for the child, often specific to one environment and selected by different AAC members who served on a single team (e.g., systems for home vs. school). The parent on Team A described the discrepancy in the implementation of multiple systems by different team members. The speech-language pathologist and the parent prescribed two separate systems, and the school provided an iPad® that remained at school.

> "Well, you know, the thing is, that [the school team has] their own. She's got her own iPad® at school, so, I don't…even see that iPad®. So, I'm not even sure. I don't know exactly what goes on that iPad® to be honest with you."

The parent on Team B selected the device and the speech-language pathologist said that she wasn't afforded any input into the decision; she shared that she would have preferred a different device. The parent on Team B stated that the lack of support when identifying an AAC system resulted in her making a decision independent of her team members.

> "I don't know that I got a lot of assistance in trying to get a device for [my child]. I mean the previous special ed teacher helped, but I really just had to finally take the proactive approach and say, 'Forget these devices from [the AAC system vendor], we're going with the iPad®.'"

The speech-language pathologist on Team B also described the lack of input regarding system selection. She stated, "Well, over the summer Mom decided to get the iPad®…and that's what we have kind of been forced to use with him." The speech-language pathologist on Team A described a similar lack of involvement in system selection for multiple students on her team. She stated, "I don't know, I've not been the one who's been, like, recommending the device. A lot of the time the devices have been falling into my lap and somebody else made the recommendations."

AAC System Programming. The participants were asked to describe which team members were involved in the programming of the vocabulary for the AAC systems. Consistent with the discussions about AAC system selection, a variety of team members assumed responsibility for programming. Seven of the 15 AAC team members mentioned

parents as responsible for programming vocabulary on the AAC systems. When the parent on Team B was asked about who programmed the child's device she stated, "Let's see, I primarily purchased the program and downloaded it myself. Yeah, so it was mainly just [me]."

Six of the 15 AAC team members mentioned that the speech-language pathologists were responsible for programming vocabulary. The speech-language pathologist on Team A stated, "Currently…I work with the speaking system. We're the ones to make sure things are in there."

Five of the 15 AAC team members mentioned special educators were responsible for programming vocabulary. The speech-language pathologist on Team B stated, "Our special ed teacher put a page on there for school which could help him locate some icons based on his school day."

Four of the 15 AAC team members stated that instructional assistants shared responsibility for programming vocabulary. The speech-language pathologist on Team C described the instructional assistant's involvement in system programming.

> "The main people would be… the instructional assistant. She was able to do it, myself…and of course mom. So I think, well I don't think the teacher ever did it herself although she was aware of it… and was present for the team meetings and things. We were the ones that pretty much did any additional programming."

Finally, no AAC team members specified general educators as responsible for programming vocabulary on AAC devices. The general educator on Team D stated her lack of involvement in programming the AAC system secondary to absence of training.

She stated, “You know they are trained as a special ed teacher, I’m not. So I think it should fall more on them as far as programming and putting anything new in.”

AAC System Training. The team members were asked to describe the level of training they received on the AAC systems. Ten of the 15 AAC team members noted a lack of training after receiving the AAC system. Six of the ten described learning the AAC system on their own. A parent on Team A described learning the system independently. He stated, “Yeah I don’t remember getting support anywhere for that other than just, um, you know, installing it and playing with it.”

Six of the AAC team members mentioned the desire for additional AAC system training. Three of the six (i.e., two instructional assistants and one parent) suggested frequent refresher courses. The general educator on Team D mentioned that additional training may be beneficial to keep the devices vocabulary updated. She stated, “More training I think. You know, I have not been [asked] to download or change anything on it, but should that ever arise, I have not a clue. I think more training to understand the device more would be good.”

Of the four speech-language pathologists participating in the study, three stated that they had received training; however, none of the parents in the study received training from the speech-language pathologist on his or her team.

AAC System Features

Four subthemes were identified within AAC System Features: Vocabulary Categories, Frequency of Vocabulary Updates, Frequency of Device Use, and AAC System Advantages and Disadvantages.

Vocabulary Categories. Each of the AAC team members was asked to describe the types of vocabulary programmed on their child's AAC system. In terms of the programmed vocabulary, 13 of the 15 AAC team members stated that basic nouns, verbs, and adjectives comprised the child's AAC system. Four of the 15 AAC team members stated that they did not know what was programmed on AAC systems; in part, this was due to the fact that some teams had AAC systems specific to school or home (i.e., two of the four AAC teams). According to the parent of a child who utilizes multiple AAC systems, "Well you know the thing is that [the school has] their own. [The child's] got her own iPad® at school so I don't even see that iPad®." Figure 1 presents the categories of vocabulary programmed on the children's AAC Systems.

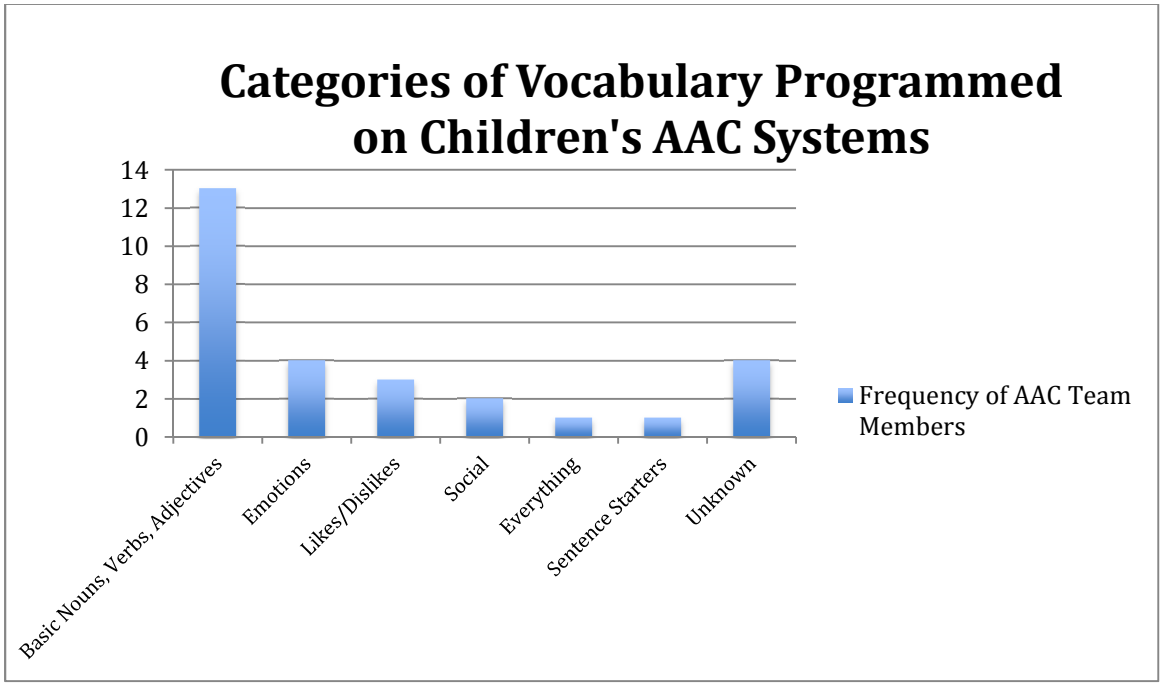

Figure 1: Categories of Vocabulary Programmed on Children's AAC Systems

The speech-language pathologist on Team A discussed the limited vocabulary programmed on the system and its impact on functional communication.

> "And even today when people ask [the child] questions you have to know what's on the device so [the child] could answer the right questions. If it is asked in a different way [the child] couldn't answer because of the way it was being asked if [the AAC system] did not have the right words."

Frequency of Vocabulary Updates. The AAC team members were asked to describe how often vocabulary was updated on the children's AAC systems. Ten of the 15 AAC team members stated the frequency of vocabulary updates on the AAC systems were either infrequent or unknown. A parent on Team D mentioned the infrequency of vocabulary updates for her child's AAC device.

> "Um, we add stuff, um, every so often, but basically it's the same stuff that's there. So we don't really have to change anything. You might add something new or [a] picture or [a] photo of someone but everything's basically the same that's in there."

Two AAC teams updated vocabulary more than one time a week, two stated vocabulary was updated every one to three weeks, and one AAC team member stated vocabulary was updated once a month or as needed. The speech-language pathologist on Team D described frequent vocabulary updates. She stated, "[We update the vocabulary] at least several times a week... at least 2-3 times a week we add new vocabulary to it."

Frequency of Device Use. The AAC team members were asked to describe the extent to which the system was used in natural environments. Limited use of the AAC system emerged as an important subtheme across team members. Eleven of the 15 AAC team members mentioned infrequent use of the AAC system. The overwhelming majority reported that the system itself was not being used across contexts, which is problematic

for the children with CCN. The speech-language pathologist on Team A described her experiences regarding the child's lack of access to functional communication across settings.

> "But I don't think right now [the other AAC team members] are using it, whether that be they're not sure how or their scared to touch it, or they just don't feel like. I don't have time to do it today I'm not gonna do it. But, I want them to you know have a role in that step because obviously you just don't communicate in speech you communicate throughout your life. That's the hardest part getting any sort of AAC device used consistently within the school system this year. She's not the only one I have at the high school level… I think the iPad® has worked well because people aren't afraid of the iPad® like other devices."

At least one member on every team commented that they did not know how the device was used outside of interactions in their setting. For example, the parent on Team B did not know how frequently the device was used at school; the special educator on Team C did not know how frequently the device was used at both school and at home. The speech-language pathologist on Team B shared her experiences with the use of the AAC system by her student.

> "The aide I think just tries to do all the academics, and she's new to [the child] this year and so she's having to learn how to deal with the behaviors, how to stop the behaviors and just try to get him throughout the day basically. Just get [the child] moving and doing his work and so she said that she's more focused on the academics then rather him communicating."

This speech-language pathologist also stated the importance of making the AAC system accessible to the child to increase the use of the system across educational environments.

> "So she's just pushing those worksheets or whatever it is as opposed to getting out the communication device and trying to work with [the child] on that. The special ed teacher didn't really say anything she just kind of said I just forget to use it. If it's not out, same thing with him, like if it's not out they don't think about it. And so if it's not [out of] his bookbag, the special ed teacher just says, ah I just forget. So basically a lot of it was happening was the communication was happening with me in speech and then the one aide that has him in the morning. But, we've talked about you know of course using it as many times as possible throughout the day and always have it out on the desk in case he wants to use it, and at lunch and things like that."

Furthermore, the speech-language pathologist expressed her concerns when other AAC team members do not value the use of the system at school.

> "But right now I don't think so, and one of the things that really bothered me in the meeting was that the instructional aide said if she has it out she doesn't have the volume on because she's afraid it's interrupting the classroom and the teacher. So kind of [a] panic moment when that was said so we told her that's his voice, you can't turn that off. And the teachers will understand and once that happens a couple times the children will understand. Their so accepting at that age anyways so I don't know that it's really…impacting his classroom because I don't think it's being used in the classroom."

The speech-language pathologist on Team D also shared her experiences with use of the AAC system in the school setting.

> "And I am somewhat cranky and mean about it sometimes. I am not gonna lie. I mean if I walk in his classroom and it's in [the child's] bookbag, I blow a gasket. 'Cause I mean that is, and I have made statements to people, that is like taking his right to literacy, that is like taping another child's mouth shut in that classroom."

AAC System Advantages and Disadvantages. The AAC team members were asked to describe advantages and disadvantages of their child's current AAC system. The six features that were most often identified as influencing whether or not a system was advantageous were: ease of programming and use, communication, language, child preferences, portability, and speech.

Thirteen participants described ease of programming and use as essential to the functional use of the AAC system by the child. The parent on Team B stated, "He became familiar with it. And [the system] was user friendly."

Eight AAC team members mentioned that an advantage of the AAC system was its effect on communication. The general educator on Team B shared, "I would have to say it would just be [an] advantage, you know, for him because he is able to communicate."

Five AAC team members stated an advantage of the AAC system was improving language. The speech-language pathologist on Team B described an increase in language secondary to AAC system use. She said, "More independently, we have seen an increase in his vocabulary because he is being exposed to those words on the device."

Five AAC team members reported considering the preferences of the children when selecting a system as advantageous. The parent on Team A stated that his child's preference for the AAC system had a positive influence on her use of the system.

> "You know I definitely think… [both of the systems]… she finds fun, I mean she likes to explore both of them… On the way over here today she was playing around with it some… it certainly gives her the ability to explore…[and] helps her communicate. I'm not sure if the exploration is the biggest advantage of it. She just likes to explore different words and different paths through it and stuff like that."

Four AAC team members stated an advantage of the AAC system was ease of portability. The parent on Team 3 stated, "It's easier to kind of carry [the device] around because the cards aren't falling out and getting lost."

Four AAC team members stated that an increase in the children's speech following the AAC system implementation was advantageous. The speech-language pathologist on Team 2 stated, "I think advantages [are] that although he's still vocalizing the majority of his speech, he is starting to try and produce more words." The parent on Team B also expressed that the AAC system helped facilitate her child's speech. She stated, "We were using the iPad® to help build up speech and then I think the iPad® helped him also speak more."

AAC System Implementation

Two subthemes emerged in the discussion about the implementation of the AAC system in natural environments: the impact of the AAC system on the children's communication and participation, and restrictions imposed by the AAC system.

AAC System Impact. The AAC team members were asked about the impact the system had on their child's communication and classroom participation. The team members were inconsistent in describing the effect of the system on communication; they reported a positive effect, minimal or no effect on communication and school participation.

Seven of the 15 AAC team members described the impact of the AAC system on communication as significant. The special educator on Team A stated, "It gives her [an] edge as far as not having the frustration of trying to relay something to us and we don't understand what she's saying. It helps her communicate with us." Eight of the 15 AAC team members describe the impact of the AAC system on communication as minimal or unknown. The instructional assistant on Team B stated, "I don't think it really has an impact. I don't think it impacts him in the sense that I wish it did. I think part of it is because it is not accessible enough for him."

Twelve of the 15 AAC team members described the impact of the AAC system on the children's classroom participation as minimal or absent. The speech-language pathologist on Team B described her experiences.

> "Hopefully it will impact it more…but I think up until now it's impacted it very minimally. Because, like I said it's only being used in speech and then a little bit in the morning. So hopefully the more that he uses it throughout the day, the more, you know, access he will have to his communication."

AAC System Restrictions. The AAC team members were asked to describe how the AAC systems may have imposed restrictions on the children. Ten of the 15 AAC team members reported that the child's communication was restricted secondary to

insufficient vocabulary on the AAC system. The speech-language pathologist on Team A stated,

> "Well I think a lot of [it's] just not having the right vocabulary on there [to express] what she needs to say… even today when people ask her questions you have to know what's on the device…so she could answer the right questions."

The special educator on Team C stressed the following about AAC system restrictions on her child with CCN, "The only way it restricts her [is if] what she wants to say isn't there…maybe she can't find the right picture or word for what she wants to communicate. That's the only way it really restricts her." The parent on Team D also reported insufficient vocabulary on her child's AAC system.

> "Um, the pictures could be more kids friendly and maybe the program he's using a lot of time when you look at the picture you automatically know what it is and these are a little different so he's trying to learn the picture and process it in his brain what it is. It's a little different then just a push thing you know."

Recommendations

All AAC team members were asked to provide recommendations for their fellow team members, other professionals serving on AAC teams, and families of children with CCN. Table 4 presents the six major recommendations discussed. A detailed description of each follows.

Table 4: Recommendations for Within AAC Teams, Other Professionals, and Other Families

Recommendations Within Team	Recommendations for Professionals	Recommendations for Families
To increase system use To facilitate team collaboration To increase AAC system	To select an appropriate system for child To increase team communication	To increase team communication and collaboration To select an appropriate

training To improve attitudes towards AAC systems To increase communication with speech-language pathologist To increase the number of meetings	To facilitate team collaboration To be knowledgeable of AAC system options	system for child To increase system use To trial systems before selection To increase AAC system training To be knowledgeable of AAC system options

Recommendations within Team. Eight of the 15 AAC team members recommended their team members increase the use of the system in natural environments (i.e., incorporating the device into more communicative opportunities). For example, the parent on Team A addressed wanting the AAC system used more frequently within the school setting.

> "I would like [the school professionals] to use the Vantage more, but I don't know [if] that's really practical. We've talked frankly in terms of when we have…meetings about this. And um again it's not that they say they don't wanna do it but their not jumping for it or volunteering to do it necessarily either. They'll kinda quietly say our preference is the iPad® and um we don't push it."

Six of the 15 AAC team members recommended greater team collaboration. The parent on Team C discussed the lack of collaboration on her team.

> "Right now you know this is not really a team. You know we haven't found our team yet. Everybody is kind of new to each other, or new to the school so we're still working on getting that kind of 100% collaboration you know where everybody is just comfortable with each other and that's just gonna take time."

Six of the 15 AAC team members suggested training in the use of the AAC system. Each of the four AAC teams recommended training for their respective team members. For example, the instructional assistant on Team D stated, "I would love to have more hands on learning or you know a refresher course for myself." The general educator on Team D described a similar recommendation.

> "More training I think. You know, I have not been [asked] to download or change anything on [the AAC system], but should that ever arise I have not a clue. I think more training to understand the device more would be good. Let them take it home, give them a week to play with it or whatever. Kind of like [on] a trial run basis…like I said…I have not dealt with special needs students before either."

Three of the 15 AAC team members felt that if their fellow team members modified their attitudes, there would be more positive outcomes for the children. For example, the speech-language pathologist on Team D stated she would recommend team members adopt a more positive attitude towards the AAC system.

> "Just everyone's overall opinion of [the AAC system]… everyone has the right to literacy and communication and that it's not a burden. It's a human right to communicate and you need to help facilitate it. And that it can be successful, it takes work but if you can put a little bit of time in it will be successful."

Two of the 11 AAC team members recommended increased communication with their speech-language pathologist. The special educator on Team A described wanting more communication with the SLP to increase the functional use of the system.

> "Uh I guess maybe that the speech therapist would maybe communicate more as to if there is a barrier. If there is something we could do to speed up the process

with making sure that communication is enhanced on her job…again, like I said I don't know what's going on there but I feel like sometimes there's a link missing with the speech therapist, um so that's one dynamic I would change."

Lastly, three of the 15 AAC team members recommended regular team meetings or more involvement in team meetings. When asked to describe what changes would be made to the team dynamic, the instructional assistant on Team D expressed the need for increased team collaboration in meetings. She stated, "In general, we need to be a little more on the same page. I would like to have a little bit more of all of us involved in meetings. But we all have to also use the device." The speech-language pathologist on Team D stated,

"I mean I think in the fantasy world when you could have time for everyone to meet and you could work through things, time is of the essence. In a perfect world if you had time to meet for me to go in to work with teachers to use the device to get it started that would be great but that's just not real world."

Recommendations for Professionals. The team members were asked if they had any recommendations for professionals. There were four key recommendations described which include the importance of: finding a system to match child's needs, increasing team communication, developing stronger team collaboration, and researching AAC system options.

Eight of the 15 AAC team members recommended finding a system that best met the child's needs. For example, the speech-language pathologist on Team C stated, "But I think you know you have to consider the child and what's appropriate for the child… you really have to take the child's needs into consideration when choosing a device."

Seven of the 15 AAC team members described the importance of team communication. The special educator on Team A stated,

> "Just really listen to the families' needs and wants because who better knows the student than the family. I mean just because data shows certain things it may not be the desire of the student or the family, so I would just say professionals just lend an ear to the family."

Six of the 15 AAC team members recommend professionals focus on developing stronger team collaboration. The instructional assistant on Team D shared her opinion.

> "We had the DynaVox last year…I don't know if everybody just gave up I really don't know what happened. I don't know if we pushed as hard as we could have pushed, you know, what I'm saying. I don't mean that in a bad way against nobody or anything bad. I just think when you look at it this is this person's life. I think to myself, if this is my grandchild, how much harder would I work with his device to be able to communicate with my grandchild."

Five of the 15 AAC team members recommended professionals thoroughly research AAC system options before selecting a system. The parent on Team A stated,

> "I don't know what all the options are. That's probably one thing that would be um difficult in choosing …to understand which software to choose in that situation…the biggest thing [that] I would say is um understand all of your options for support and take advantage of every single one of them."

Recommendations for Families. The AAC team members were asked to provide recommendations for family members of children with CCN. There were six major

recommendations suggested. Eight of the 15 AAC team members recommended team communication and collaboration. The speech-language pathologist on B team noted,

> "So I think just kind of be willing to work with your team members at the school or your outside sources as opposed to just trying to take it all on yourself because that's a lot to deal with."

Six of the 15 AAC team members recommended that families select an appropriate system that fits the child's needs. The parent on Team C recommended,

> "I think that um you should work through a process with your team of, you know, well why do we want to get a device, [and] what do we want the device to do? And then kind of let that get to an end point where then you've figured out these are the five things we really need and then look at a device that meets those needs… you know people are like well I'm gonna get an iPad® or I'm gonna get this and sometimes that might not be the best fit for the student."

Five of the 15 AAC team members recommended increasing the use of the AAC system in natural contexts. The instructional assistant on Team D stated,

> "[Use the device] every day. If you go with a device then you have to follow through with it. You have to get involved with it every day [and] you have to be consistent with it in order for it to work."

Five of the 15 AAC team members recommended the use of trial systems before making a final selection. The speech-language pathologist on Team B stated the following:

> "And be open to the idea that maybe if you decide on a communication device trial it first because it's probably not going to work the first time…there [are] so

many different devices out there that you know the first one is probably not going to be the one that you're going to pick automatically."

Four of the 15 AAC team members recommended additional system training for the families. The speech-language pathologist on Team C stated, "As far as the device goes, well I guess to be informed about it [and] to be trained in it."

Lastly, all of the four AAC teams recommended that the family should be provided with additional education so that they are aware of AAC system options. The speech-language pathologist on Team C highlighted the importance of being informed about system options.

"I think being a part of that team and giving your input is important. Being educated on different devices and just figuring out how to carry it over so it's useful for [the children] outside of school… yes, there might be different things you need from time to time, but I think just being able to carry things over."

Chapter 4: Discussion

Team Communication

Team communication was one of the major themes that emerged in the study. In keeping with Bailey et al. (2006), regular communication between team members is crucial for the successful use of the AAC system by the child.

There were discrepancies in the participants' responses when discussing which mode of communication they preferred. The majority of team members' preferred modality differed from their fellow team members. The most popular modes of communication were face-to-face or e-mail. Some team members expressed that they thought both face-to-face and e-mail were beneficial for communication with their fellow team members. Interestingly, three of the four teams had clear differences in their preferences of modes of communication. In particular, on the three teams, the speech-language pathologists and parents did not share the same preferred mode of communication. For example, the parent in Team A preferred using a notebook and meetings; however, the speech-language pathologist preferred face-to-face and e-mail. Unfortunately, when team members have different preferences for manners of communication, breakdowns in communication are likely and may negatively influence their ability to collaborate effectively.

The majority of the AAC team members expressed dissatisfaction with their team's communication. Of the ten team members specifying dissatisfaction with their team communication, half of these participants reported insufficient communication with the SLP in particular. As noted in Soto et al. (2001), team member communication and

collaboration is important for the successful use of the AAC system by the child with CCN.

Team meetings were described as being formal (i.e., IEP meetings) and informal (e.g., exchanges in classrooms and hallways). Team members were almost equally divided in their reports about types of meetings. Two full teams reported meeting solely for IEP meetings. Some team members expressed face-to-face meetings as a means to keep the team consistently informed. Results suggest that informal meetings may facilitate a successful AAC intervention because the teams that met more frequently expressed satisfaction with their team. Four of the participants reported meeting very frequently (i.e., weekly or every other week); however, one of these individuals reported that any additional meeting tended to be negative, focusing more on problem behaviors.

Participants were asked about their satisfaction with the frequency of their team meetings; seven stated they were satisfied. Of note, five of these seven members met weekly or every other month. The eight team members who reported dissatisfaction with the team meeting frequency stated that additional meetings ranging from weekly to monthly would be beneficial. This suggests that teams that hold more frequent meetings may experience improvements in satisfaction with team communication and collaboration; furthermore, this may facilitate better intervention outcomes for AAC users. In keeping with Bailey et al. (2006), frequent communication amongst team members is important for the success of the AAC user across different environments.

When participants described their experiences at team meetings, some members expressed concerns regarding poor attendance. In fact, three of the four teams voiced frustration with the absence of key AAC team members at meetings. For example, the

members on Team D reported the instructional assistant and speech-language pathologist were often missing from team meetings. Additionally, Team C reported missing the speech-language pathologist, and the instructional assistant. Lastly, Team A reported missing the instructional assistant at meetings. This lack of attendance may hinder the success of the system for the child with CCN. Participants noted that the absence of key AAC team members were primarily due to difficulties with scheduling, which may be an additional factor that may negatively impact the communication and collaboration of teams. Moreover, the absence of key AAC team members may directly hinder the quality of services provided to the child with CCN. Literature emphasizes the importance of team members working collaboratively and sharing unique skills to adequately serve the child with CCN (e.g., Beukelman and Mirenda, 2013).

Team Collaboration

Team collaboration was a second major theme that emerged in the study. In keeping with Parette et al. (2000), team collaboration and AAC system use may be negatively influenced if team members fail to work together or value each team member's unique perspectives.

When team members were asked to describe their role on the team, approximately half of the participants stated they felt it was their responsibility to keep other members informed. Additionally, approximately half of the participants shared that they felt their role was to assist with providing the child with functional access to communication. Although half of the participants felt that their role was to facilitate the child's functional use of the AAC system, as many as 11 of the 15 team members stated that the AAC system was infrequently used. In part, the infrequent use of the system may also be

attributed to two key concerns voiced by the team members. The first was limited vocabulary programmed on the AAC systems or a lack of knowledge by the AAC team member as to what was programmed on the AAC system. The second was a lack of training, which was noted by the majority of participants (10 of 15 of AAC team members).

The four main expectations for team members described by the participants were implementing the system in a variety of settings by multiple team members, facilitating effective communication among the team members, supporting functional communication for the children with CCN, and providing training on the system for team members. Unfortunately, the majority (11 of the 15 AAC team members) shared that they felt that the expectations of their fellow team members remained unfulfilled. If these important team expectations are not met, the child with CCN may not be a successful AAC user. Literature suggests that consistent team communication, training, and collaboration lead to the AAC users' success with the system (e.g., Bailey et al., 2006).

Literature suggests that AAC team members have distinct perceptions of roles team members are expected to meet (Bailey et al., 2006). It was suggested that the speech-language pathologists held the primary responsibility for leading the team in the area of the children's communication (Kent-Walsh and Light, 2003). The team members in the study were specifically asked about their knowledge regarding the communication goals set by the speech-language pathologists. Surprisingly, none of the AAC team members, including the SLPs, were able to describe specific areas of intervention addressing improved communication for the CCN. Twelve of the 15 simply listed general areas such as: communication, language, and social skills. It seems that if the team

members were unaware of the children's specific communication goals progress in the use of the device in functional situations is futile. Clearly, team communication and collaboration would also be significantly compromised. Literature suggests the importance of team collaboration and communication to adequately serve the child with CCN (e.g., Bailey et al., 2006).

Given the findings described above, it was not surprising that the majority of AAC team members (i.e., 11 of 15) described a lack of team collaboration. It seemed that AAC team members did not share the responsibility for addressing communication during their individual time with the child. On a positive note, the majority of the participants made specific recommendations for their fellow team members, for other professionals, and other families related to the value of strategies to improve communication and collaboration. In keeping with Bailey et al. (2006), effective team collaboration involves equal team involvement in which all members' perspectives are taken into account to facilitate positive team relationships.

Team Member Responsibilities

The third major theme that emerged from the study included team member responsibilities. In keeping with Beukelman and Mirenda (2013), it is essential that AAC team members work together to promote the success of AAC users.

The majority of AAC team members expressed a lack of consensus on device selection, resulting in the use of multiple AAC systems. In fact, two of the four teams had multiple systems. For example, the child on Team A was asked to use three systems: an iPad® at home, an iPad® at school, and a Vantage at a private clinic. Interestingly, half of the SLPs reported a lack of involvement when choosing the child's current AAC

system. The individuals with the most experience in communication and AAC systems were being left out of the selection process; this may be problematic. Furthermore, the vocabulary on all three devices was different and team members were unaware of the vocabulary programmed on the devices outside of their environment. Literature suggests that sufficient vocabulary and frequent vocabulary updates are important for AAC users (e.g., Johnson et al., 2006). Many team members mentioned a lack of support in decision-making, resulting in key AAC team members feeling unaware of or uninvolved in the AAC selection process. In keeping with Parette et al. (2000), families and fellow AAC team members need to maintain frequent communication to promote successful AAC system use by the individual with CCN.

It appears that when multiple AAC team members fail to collaborate together regarding system prescription, the success of the child is unlikely. The consistency in using a single system is critical for the child's progress in acquiring functional communication. The majority of the participants in the study mentioned the AAC systems were infrequently used. This may be in part attributed to the use of multiple AAC systems.

Almost half of the participants felt that speech-language pathologists should hold the responsibility for programming the system. In keeping with Kent-Walsh and Light (2003), speech-language pathologists play an important role in making AAC decisions and supporting families throughout the process of AAC use. Additionally, about half of the participants identified parents as responsible for programming vocabulary. Instructional assistants and general educators were identified as responsible for programming vocabulary less often, and the general educators were not identified by

participants as responsible for programming vocabulary. Interestingly, three of the general educators did not choose to participate in the study; one of the three general educators stated that he lacked information and had limited experience and knowledge of AAC. With regards to AAC system training, three of the four speech-language pathologists had received training and shared that they had 10 to 20 years of experience with AAC. None of the parents, on the other hand, were trained in the use of AAC systems and often noted having to learn the system independently. It appears that children would use the system more frequently and more effectively if the speech-language pathologists with more experience and training could lead the parents in learning how to use and program the AAC system. In keeping with Bailey et al. (2006) and Johnson et al. (2006), AAC system training may influence the likelihood of inappropriate system abandonment. Although all of the teams in the study still have systems, if AAC training across team members is not addressed, the effectiveness of the AAC system may be hindered and may result in system abandonment.

AAC System Features

A fourth major theme that emerged in the study was AAC System Features. In keeping with Bailey et al. (2006), functional communication may be hindered by insufficient vocabulary.

The main type of vocabulary programmed on the AAC systems included basic nouns, verbs, and adjectives. Very few AAC team members reported additional categories such as emotions, likes/dislikes, social, and sentence starters. Some of the AAC team members reported being unaware of vocabulary categories on the AAC system, perhaps due to the prescription of multiple AAC systems that are not used across

natural environments. Light (1989) emphasized the need for a range of vocabulary in order to promote functional communication for individuals who use AAC. The infrequent use of the AAC system may be attributed to this lack of functional vocabulary.

In addition to insufficient vocabulary, it was noted that the vocabulary was rarely updated on the children's AAC systems. According to Johnson et al. (2006), vocabulary updates are essential to the successful use of the AAC system by the child with CCN. Unfortunately, if vocabulary updates are not maintained, inappropriate system abandonment may result.

AAC team members offered helpful input regarding some of the advantages of AAC systems. These included the ease of programming and use, communication, language, child preferences, portability, and speech. Although the systems were infrequently used, the participants recognized many of the advantages of implementing AAC with the children with CCN. Additionally, aside from the recommendations for making a system advantageous or not, the systems themselves are influencing the children's communication and school participation very minimally. Literature suggests that although AAC systems provide individuals with CCN access to communication (Beukelman and Mirenda, 2013), they are often abandoned by their users (Johnson et al., 2006).

AAC System Implementation

A fifth major theme that emerged in the study was AAC System Implementation. When participants were asked to describe their perspectives on the impact that AAC systems have had, the results were mixed. About half of participants felt there was little to no influence on communication. With regard to the children's classroom participation,

12 of the 15 AAC team members described minimal or no change as a result of implementing the AAC system. Furthermore, the majority of the AAC members reported that the child's communication was restricted. In part this may be due to insufficient vocabulary as mentioned previously. Professionals and families interested in improving the communication of children with CCN may consider dedicating time to programming systems with a wide variety of vocabulary.

Recommendations

The last theme that emerged from the study was recommendations. The participants provided a wide range of recommendations for making improvements within their team, as well as suggestions for other professionals and families.

In an effort to make suggestions for improving their own teams, recommendations were made to: increase system use; facilitate team collaboration; increase AAC system options; improve attitudes; increase communication; increase number of meetings. Additionally, the AAC team members recommended professionals to: select an appropriate system for child; increase team communication; facilitate team collaboration; and be knowledgeable of AAC system options. Lastly, the members recommended that families: increase team communication and collaboration, select an appropriate system for the child; increase the use of the system, use systems before selection, increase AAC system training, and be knowledgeable of AAC system options.

Several recommendations for AAC teams, professionals, and other families were similar. For example, there was an emphasis on increasing the effectiveness of communication and collaboration. There was also an emphasis on the need to select an

appropriate system for children with CCN. Finally, participants emphasized the need for parents, in particular, to receive additional training.

Clinical Implications

It is imperative that AAC team members agree on preferred modalities of team communication to ensure teams are more satisfied with team communication and collaboration. It appears that if AAC teams meet more frequently, their satisfaction, communication, and collaboration may increase. With regards to the frequency of meetings, team members suggested regular meeting schedules ranging from weekly to monthly. Since additional team meetings have been associated with a more negative connotation to address problem behaviors, future AAC teams should focus on meeting regularly to keep the team informed and to work together to properly serve the child with CCN. Secondary to scheduling conflicts, one compensatory strategy for teams may be to assign team members specific roles and responsibilities. This may help facilitate efficient collaboration to best serve the child with CCN.

Since the majority of team members mentioned the goals for their fellow team members remained unmet, it may be beneficial for teams to set goals and voice them to their respective team (i.e., "I will provide AAC system training within 3 months"). To address dissatisfaction with communication with the SLP, it will be important for the SLP to play a major role in AAC intervention and maintain open communication in each team. Because none of the AAC team members could recall specific communication goals set by the SLP, it will be crucial for future AAC teams to share the goals to facilitate functional communication for the child with CCN across settings. SLPs tended to be the most trained of all the AAC team members; it is important that they set time aside to train

their respective team members to facilitate a successful AAC system for the child with CCN.

Additionally, general educators should play a bigger role in AAC, given the amount of time spent with the child and their important role in inclusion in the classroom environment. With regards to the children's AAC systems specifically, the majority of the systems' vocabulary were basic nouns, verbs, and adjectives; however, in order to facilitate functional communication, a greater variety of unique vocabulary will be needed to ensure the child can communicate in a variety of contexts with a variety of conversational partners.

Limitations and Directions for Future Research

There were several limitations identified in the study. First, the small sample size and unequal team membership may have limited the generalization of the findings to a broader population of teams serving children with CCN. Future research should include a larger number of AAC team members. Secondly, the participants in the study volunteered their time to take part in the interviews; therefore, these participants may not be representative of the larger population of AAC team members. Future research may include surveys to target less opinionated or motivated individuals. The study included children with CCN who utilized a limited variety of systems (e.g., iPad®, Kindle, PECS) that do not represent the wide market of systems available to families. Future research may include children who use a wider range of AAC systems. Additionally, it may be important to examine the AAC perspectives of other individuals who serve or interact with the child with CCN, such as an increased number of general educators, regular educators, vendors, and other school administrators. Lastly, the population of AAC team

members was limited to the geographical region of Southwest Virginia. Future research may include participants representing a broader area. The results of this study and other research to date suggest that team members should consider examining their approaches to communication and collaboration more closely to serve children with complex communication needs more effectively.

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Appendix A: Augmentative and Alternative Communication (AAC) Child Case History

1. Child's name:

2. Child's birthdate:

3. Diagnosis:

4. What school district is your child in for school? Which county?

5. What grade is your child in?

6. Which of the following does your child use to communicate?

_____eye gaze
_____gestures
_____pointing
_____facial expressions
_____pantomime
_____drawing
_____writing
_____sign language
_____vocalizations/word approximations
_____speech
_____other, please describe:

7. How easily is your child's speech understood?

- with you?_____
- with familiar adults?_____
- with other children?_____
- with unfamiliar people?_____

8. Does your child combine words to communicate? _____yes _____no
If yes, how long (on average) are the utterances (number of words per utterance)?

9. Which of the following types of communication turns does your child use?

_____requesting objects or actions
_____refusing or protesting
_____commenting
_____requesting information
_____answering questions
_____storytelling/narratives

(Adapted from The Waldron College of Health and Human Services AAC Child Case History Form)

Appendix B: Interview Questions for Families

1. Describe your experiences with AAC.
2. Describe a typical day for your child.
3. Tell me about how your child communicates. (If needed ask question #3)
4. With whom does your child communicate? Where does your child communicate?
5. Where does your child struggle with communication at home and/or at school?
6. Which AAC device(s) has your child used in the past?
7. How effective was each device?
8. What factors were considered when choosing the child's current device?
9. How many systems were considered?
10. Who was involved in the selection of and programming of the AAC device?
11. What were your goals or expectations for your child's most recent AAC device before it was received?
12. Describe how the goals or expectations changed after using the AAC device?
13. When the device was prescribed, did you receive any training and practice with how to use the device?
14. Describe the type of vocabulary that is programmed on the child's device.
15. How often is the vocabulary changed on the child's device?
16. In what situations can the chosen vocabulary be utilized?
17. Describe any advantages and disadvantages the device has had on your child's communication.
18. What are the current speech-language pathologist goals for the child's communication? How were the goals chosen?
19. Describe the impact of the AAC device on the child's school day?
20. What impact does the AAC device have on your child's communication?
21. How has the device affected the child's classroom involvement?
22. How does the device restrict your child when communicating?
23. Are you satisfied with all aspects of your child's AAC device? If not, what aspects would you like to see changed?
24. What do you believe is your role on the AAC team?
25. What expectations do you have for the other AAC team members? Describe if these expectations have been met or not.
26. Describe the level of communication among team members.
27. Tell me about your satisfaction with the team collaboration throughout the process of AAC use.
28. About how often does your team meet per year? Tell me about your satisfaction with regards to the number of meetings.
29. If you could change the AAC team dynamic, what would you change?
30. If you could tell professionals how to better work with families when trying to identify AAC devices for children, what would you say?
31. What are some recommendations you would give to other parents/families?
32. Is there anything else you would like to discuss regarding this topic?

Adapted from (Bailey, et al., 2006; Parette, et al., 2000; Parette et al., 2001)

Appendix C: Interview Questions for Speech-Language Pathologists

1. Describe your experiences with AAC.
2. Describe a typical day for your student.
3. Tell me about how your student communicates (If needed ask question #3)
4. With whom does your student communicate? Where does your student communicate?
5. Where does your student struggle with communication at school and/or at home?
6. Which AAC device (s) has your student used in the past?
7. How effective was each device?
8. What factors were considered when choosing the student's current device?
9. How many systems were considered?
10. Who was involved in the selection of and programming of the AAC device?
11. What were your goals or expectations for your student's AAC device before it was received?
12. Describe how the goals or expectations changed after using the AAC device?
13. When the device was prescribed, did you receive any training and practice with how to use the device?
14. Describe the type of vocabulary that is programmed on the student's device.
15. How often is the vocabulary changed on the student's device?
16. In what situations can the chosen vocabulary be utilized?
17. Describe any advantages and disadvantages the device has had on your student's communication.
18. What are the current speech-language pathologist goals for the student's communication? How were the goals chosen?
19. Describe the impact of the AAC device on the student's school day.
20. What impact does the AAC device have on your student's communication?
21. How has the device affected the student's classroom involvement?
22. How does the device restrict your student when communicating?
23. Are you satisfied with all aspects of your student's AAC device? If not, what aspects would you like to see changed?
24. What do you believe is your role on the AAC team?
25. What expectations do you have for the other AAC team members? Describe if these expectations have been met or not.
26. Describe the level of communication among team members.
27. Tell me about your satisfaction with the team collaboration throughout the process of AAC use.
28. About how often does your team meet per year? Tell me about your satisfaction with regards to the number of meetings.
29. If you could change the AAC team dynamic, what would you change?
30. If you could tell professionals how to better work with families when trying to identify AAC devices for students, what would you say?
31. What are some recommendations you would give to other parents/families?
32. Is there anything else you would like to discuss regarding this topic?

Adapted from (Bailey, et al., 2006; Parette, et al., 2000; Parette et al., 2001)

Appendix D: Interview Questions for General Educators, Special Educators, and Instructional Assistants

1. Describe your experiences with AAC.
2. Describe a typical day for your student.
3. Tell me about how your student communicates?
4. With whom does your student communicate? Where does your student communicate?
5. Where does your student struggle with communication at school and/or at home?
6. Which AAC device (s) has your student used in the past?
7. How effective was each device?
8. What factors were considered when choosing the student's current device?
9. How many systems were considered?
10. Who was involved in the selection of and programming of the AAC device?
11. What were your goals or expectations for your student's AAC device before it was received?
12. Describe how the goals or expectations changed after using the AAC device?
13. When the device was prescribed, did you receive any training and practice with how to use the device?
14. Describe the type of vocabulary that is programmed on the student's device.
15. How often is the vocabulary changed on the student's device?
16. In what situations can the chosen vocabulary be utilized?
17. Describe any advantages and disadvantages the device has had on your student's communication.
18. What are the current speech-language pathologist goals for the student's communication? How were the goals chosen?
19. Describe the impact of the AAC device on the student's school day.
20. What impact does the AAC device have on your student's communication?
21. How has the device affected the student's classroom involvement?
22. How does the device restrict your student when communicating?
23. Are you satisfied with all aspects of your student's AAC device? If not, what aspects would you like to see changed?
24. What do you believe is your role on the AAC team?
25. What expectations do you have for the other AAC team members? Describe if these expectations have been met or not.
26. Describe the level of communication among team members.
27. Tell me about your satisfaction with the team collaboration throughout the process of AAC use.
28. About how often does your team meet per year? Tell me about your satisfaction with regards to the number of meetings.
29. If you could change the AAC team dynamic, what would you change?
30. If you could tell professionals how to better work with families when trying to identify AAC devices for students, what would you say?
31. What are some recommendations you would give to other parents/families?
32. Is there anything else you would like to discuss regarding this topic?

Adapted from (Bailey, et al., 2006; Parette, et al., 2000; Parette et al., 2001)

Appendix E: Interview Questions and Corresponding Themes and Subthemes

Interview Question	Theme	Subtheme	Subtheme
1. Describe your experiences with AAC.	1. Training	1. Absent 2. Present	1. Class/Workshop (Type) 2. Insufficient 3. Speech-language pathologist guided 4. External professional 5. Type not specified 6. Independently
	1. Experiences	1. 0 Years 2. 12 Years 3. 1 Year 4. 22 Years 5. 20 Years 6. 10 Years 7. Only current client	
2. Describe a typical day for your student.	1.Schedule	1. School 2. Home 3. Other	1. Breakfast/lunch 2. Pull out 3. Classroom 4. Other (music, reading, entertainment etc.) 5.Unknown 6. Therapies 7. Activities of daily living (ADL)
3. Tell me about how your student communicates.	1. Communication Modes	1. PECS 2. Speech 3. Sign Language 4. Kindle 5. Gestures 6. Vocalizations 7. iPad® 8. Pictures 9. DynaVox	

		10. Vantage	
4. With whom does your student communicate? Where does your student communicate?	1. Communication Context	1. School Professionals 2. Other Adults 3. School 4. Breakfast/Lunch 5. Parents/Family 6. Students/ Children 7. Home 8. Public 9. All Environments	
5. Where does your student struggle with communication at school and/or at home?	1. Challenges	1. Communication 2. Social 3. Speech 4. Attention 5. Consistency	
6. Which AAC device(s) has your student used in the past?	1. Device History	1. Unknown 2. PECS 3. Kindle 4. iPad® 5. None 6. DynaVox 7. Vantage 8. Low-Technology (Not Specified) 9. High-Technology (Not specified)	
1.Device-Current	1. iPad® 2. Kindle 3. Vantage 4. PECS 5. DynaVox		
1.Device-Use	1. Frequent 2. Infrequent 3. Absent 4. Unknown		

7. How effective was each device?	1. Device-Type 2. Device-Kindle 3. Device-PECS 4. Device-Unknown 5. Device-iPad® 6. Device-DynaVox 7. Device-Vantage	1. Effective 2. Ineffective	1. Motivation 2. Familiarity 3. Programming and Use 4. Communication 5. Social 6. Speech 7. Not Specified 8. Portability 9. System Features 10. Language
8. What factors were considered when choosing the student's current device?	1. Prescription-Factors	1. Unknown 2. Known	1. Communication 2. Reliability 3. Familiarity 4. Social 5. Portability 6. Expense 7. Child-directed 8. Programming and Use 9. Recommended
9. How many systems were considered?	1. Prescription-Options	1. Unknown 2. None 3. Two 4. Multiple	
10. Who was involved in the selection of and programming of the AAC device?	1. Prescription-Personnel 2. Programming-Personnel	1. Parent 2. Unknown 3. Parent and Team 4. BCBA Therapist 5. speech-language pathologist 6. Special educator 7. Principle 8. Nurse 9. Special Ed	

		Director 10. Regular Ed 11. TTAC 12. Instructional assistant	
11. What were your goals or expectations for your student's AAC device before it was received? 12. Describe how the goals or expectations changed after using the AAC device?	1. Goal	1. Communication 2. Speech 3. Social 4. Programming and Use 5. Language 6. Independence	
13. When the device was prescribed, did you receive any training and practice with how to use the device?	1. Training After Device	1. Present 2. Absent	1. Speech-language pathologist 2. Class/workshop 3. Not specified 4. Independently 5. Special educator 6. Instructional assistant 7. Parent
	1. Training after device	1. Wants additional 2. None necessary	1. Condition-frequent refresher courses 2. Hands on
14. Describe the type of vocabulary that is programmed on the student's device.	1. Vocabulary-Categories	1. Sentence starters 2. Emotions 3. Likes/dislikes 4. Basic nouns/verbs/	

		adjectives 5. Unknown (specific if included) 6. Academic/ therapy 7. Everything 8. Social	
15. How often is the vocabulary changed on the student's device?	1. Vocabulary-Updates	1. Frequency	1. Unknown 2. Infrequent 3. Monthly/as needed 4. 1-3 weeks 5. More than one time a week
16. In what situation can the chosen vocabulary be utilized?	1. Vocabulary-Use	1. Unknown 2. Needs/Wants 3. Variety 4. Academic/ Therapy	
17. Describe and advantages or disadvantages the device has had on your student's communication.	1. PECS-Advantage 2. Kindle Advantage 3. PECS-Disadvantage 4. Kindle-Disadvantages 5. iPad®-Advantage 6. iPad®-Disadvantage 7. Vantage-Advantage 8. Vantage-Disadvantage	1. Communication 2. Programming and Use 3. Language 4. Motivation 5. Social 6. Portability 7. Modern 8. Child-Prefers 9. Speech 10. Auditory Feedback 11. Expensive	
18. What are the current speech-language pathologist goals for the student's communication? How were those goals chosen?	1. Goal	1. Known 2. Unknown	1. Communication 2. Language 3. Social 4. Speech 5. Device
	1. Goal-Personnel	1. Known 2. Unknown	1. Special educator 2. speech-language

			pathologist 3. Parent 4. General educator 5. TTAC 6. ABA Therapist 7. Full Team 8. Teacher (Not Specified)
19. Describe the impact of the AAC device on the student's school day.	1. Device-Impact	1. School	1. Minimal 2. Variable 3. Significant 4. Absent 5. Unknown
20. What impact does the AAC device have on your student's communication?	1. Device-Impact	1. Communication	1. Minimal 2. Variable 3. Significant 4. Absent 5. Unknown
21. How has the device affected the student's classroom involvement?	1. Device-Impact	1. Participation	1. Minimal 2. Variable 3. Significant 4. Unknown 5. Absent
22. How does the device restrict your student when communication?	1. Device-Restrictions	1. Communication 2. Time 3. Motivation 4. Infrequent Use 5.Programming and Use 6. Portability 7. Speech	
23. Are you satisfied with all aspects of your student's AAC	1. Device-Satisfaction	1. Satisfied 2. Unsatisfied 3. Variable	1. Vocabulary 2. Communication 3. Comprehension 4. Not specified

device? If not, what aspects would you like to see changed?			5. Lack of Independence 6. Programming and Use 7. Visual 8. Affordable 9. Portability
24. What do you believe is your role on the AAC team?	1. Team	1. Your Role	1. Support-General 2. Support-Use Device 3. Social 4. Academic 5. Device Selection 6. Device Training 7. Communication (Team) 8. None
25. What expectations do you have for the other AAC team members? Describe if these expectations have been met or not.	1. Team	1. Expectations	1. Support-general 2.Support-use device 3.Social 4.Academic 5.Device selection 6. Device training communication (team)