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# AAC Camp as an Alternative School-Based Service Delivery Model: A Retrospective Survey


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## **Comments**

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AAC Camp as an Alternative School Based Service Delivery Model: A Retrospective Survey

## Abstract

School based speech-language pathologists are obligated to apply evidence based practice and document progress of their students' response to intervention in compliance with federal law. The purpose of this preliminary study was to explore the effects of an AAC based intervention provided in a camp format and begin the exploration of examining strategies to monitor and document progress. Through the use of a survey, data were also collected regarding the demographics of camp attendees and their response to the camp based intervention model. Results indicated children with autism and intellectual disability comprised a significant portion of the children referred for this type of intervention and positive gains were documented both in the areas of communicative behaviors and pragmatic use.

*Keywords: AAC intervention, progress monitoring, complex communication needs, alternative service delivery model*

## AAC CAMP SERVICE DELIVERY MODEL

The American Speech-Language-Hearing Association (ASHA) has taken the firm stance that communication is a basic human right which all people should have access to regardless of the severity of their disability (2005). Many children and adults who are unable to use expressive language as an effective and efficient means to communicate are often introduced to augmentative and alternative communication (AAC). Aids such as manual signs, communication boards, and low- and high-tech speech generating devices (SGDs) are often provided to either supplement or replace an ineffective expressive language system. School based speech-language pathologists (SLPs) are not only charged with the task of identifying the appropriate AAC system based on the needs of the individual but implementing evidence based interventions in compliance with federal law (IDEA, 2004; NCLB, 2001).

The Individuals with Disabilities Education Act (IDEA, 1990) is the federal law that guarantees children with disabilities receive a free and appropriate education. In 2004, IDEA was reauthorized to align with the federal legislation, No Child Left Behind (NCLB, 2001). Due to pressures for increased accountability, a significant emphasis was placed on the need for data collection as a part of the individualized educational program's (IEP) reporting process known as progress monitoring.

Progress monitoring as it relates to students with disabilities is the scientific practice of assessing a student's progress towards his/her IEP goals (IDEA, 2004). Additionally, progress monitoring provides a means to evaluate the effectiveness of the intervention itself. Measuring a student's response to an intervention is not only necessary in documenting progress towards IEP goals and important in developing and implementing instructional strategies, but a legal mandate under federal law (IDEA). Therefore, practitioners are challenged with the obligation of applying

evidence based practice (EBP) as well as documenting adequate progress of a student's response to the intervention.

Application of EBP requires accessing current research evidence to substantiate clinical expertise and stakeholder perspectives (Schlosser & Raghavendra, 2004). This process can be challenging as it applies to the field of AAC for several reasons. First, the evidence is published across a multitude of disciplines primarily because of the cross disciplinary attraction of AAC (Schlosser, Wendt, Angermeier, & Shetty, 2005). Unintentionally, practitioners may conclude a particular intervention approach as less effective when important references are mistakenly overlooked (Schlosser et al.). Additional complications in the investigative process involve the broad application of the term “complex communication needs” (Alant, Bornman, & Llyod, 2006). In the AAC literature, the term complex communication needs (CCN) has been applied in reference to individuals, both children and adults, with a wide range of disabilities such as cerebral palsy (Hemsley, Blandin, & Togher, 2008; Larsson & Sandberg, 2008), acquired disabilities (Beukelman, Ball, & Fager, 2008), and developmental disabilities (Beck, Stoner, & Dennis, 2009).

Finally, there is a confusing reference/use of terms to describe the communication skills of children who benefit from AAC infused interventions. Terms such as “pre-linguistic” are used synonymously with terms such as “non-verbal” or “pre-verbal” (Alant et al., 2006). There is an immense difference between a pre-linguistic child who does not communicate (e.g., a child with a more severe form of autism) and a non-verbal child who experiences extreme difficulty formulating intelligible speech (e.g., a child with cerebral palsy). Clearly, searching for applicable evidence for a target population can be a challenge even for the most seasoned investigator.

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Due to the diverse nature of children who benefit from AAC based interventions, single case studies have transcended as the norm rather than the exception (Ganz et al., 2012). To strengthen the findings of these studies, an effort to cluster the results of these single subject studies has been made but not without challenges such as non-comparable variables. Many of these researchers evaluate participants' responses differently. A variety of targeted communication behaviors are reported including percentage of correct picture requests, changes in frequency of challenging behaviors, and changes in verbal production (Ganz et al.). As a result, a clinician's/researcher's ability to draw decisive conclusions is obscured.

In addition, many studies present with significant methodological issues. Schlosser and Sigafoos (2006) reviewed many promising studies but methodological concerns invalidated many of the findings or warranted caution in drawing any conclusions. With problematic research methodologies, diffuse outcome measures, and divergent participant demographics, the task of drawing reasonable conclusions about the effectiveness of any particular treatment approach can be formidable. As a result, SLPs may have difficulty determining an evidence based form of intervention for a particular student or client.

Researchers in the field of AAC have examined a multitude of topics related to AAC and the competencies of communication proposed by Light (1989). Along with the skills and knowledge which influence successful operation and strategic use of an AAC aid, AAC researchers have examined the influence of AAC on non-targeted skills (e.g., speech) and its effect on AAC related linguistic skills. AAC selection techniques, along with the impact of symbol organization on efficiency and language development are among some of the topics explored in the research. AAC users' system preferences, manual signs versus SGDs (van der Meer et al., 2012) and communication boards versus SGDs (Dyches, Davis, Lucido, & Young,

2002; Sigafos, O'Reilly, Ganz, Lancioni, & Schlosser, 2005; Van Acker & Grant, 1995) have also been explored in the research along with the impact of various AAC instructional strategies on spelling and symbol learning (Schlosser & Sigafos, 2006).

One area of research which has received considerable attention is the effect of AAC on the acquisition of speech (Schlosser & Wendt, 2008). It has been documented that AAC intervention does not impede speech production in children with autism or other cognitively impairing disorders (Binger, Berens, Kent-Walsh, & Taylor, 2008; Millar, Light, & Schlosser, 2006; Schlosser & Wendt). In fact, there is merging evidence to suggest that non-speech generating AAC systems (e.g., PECS) may actually contribute to increased speech production in some children (Binger et al.; Millar et al.), however, the distinguishing characteristics of these children is not completely understood. Although there is mounting evidence suggesting a positive relationship between the use of non-speech generating AAC systems and speech acquisition in children with autism, there is a void in the research related to the impact of SGDs on speech in not only children with autism but children with other disabilities as well (Binger et al.).

Another area of research which has received attention is the use of AAC aids to model language on various linguistic aspects of AAC use. Aided language modeling (ALM) and similar intervention techniques which incorporate AAC (e.g., aided language stimulation, augmented input) refers to the intervention practices of pairing oral language models with picture symbols such as those on a child's communication device to promote language acquisition and use while supporting auditory comprehension (Binger & Light, 2007; Goosens', 1992; Ronski & Sevcik, 2003). Increased use and responsiveness (Beck et al., 2009) along with improved grammar (Lund & Light, 2003) have been identified as some of the positive effects such techniques can have on adults with developmental delays. AAC modeling has shown promise as an intervention



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technique in teaching grammatical morphemes (Binger, Maguire-Marshall, & Kent-Walsh, 2011) and improving syntactic performance (Bruno & Trembath, 2006) in young AAC users. Increasing comprehension of vocabulary (Dada & Alant, 2009) and improving symbol comprehension and production (Harris & Reichle, 2004) are among some of the other benefits of applying such techniques to an intervention. Participants have expanded their use of action-object messages (Nigam, Schlosser, & Lloyd, 2006) and ability to formulate multi-symbol messages (Binger & Light, 2007) in response to an intervention which included aided modeling. Although AAC modeling is demonstrating promise in teaching young AAC users a variety of linguistic skills the research is very much in the infancy stage as many of these studies were single case studies involving a very low number of participants.

Although these components of linguistic competence have been examined, there remains paucity in the research regarding outcomes of AAC based intervention. As previously discussed, federal law (IDEA, 2004) mandates that clinicians monitor the effect of intervention. Many children who benefit from AAC based interventions such as children with severe forms of autism and other communicatively and socially impairing disorders often demonstrate small incremental changes in behavior over time which are often difficult to document. Therefore, operative progress monitoring for this population is reliant on two processes: (a) a measure that is sensitive enough to document change and (b) an intervention which is effective in inducing change.

Another aspect of the intervention paradigm warranting investigation is the concept of intervention intensity. While the topic of intervention intensity is being brought to the forefront there continues to be a void in the research on the topic in the field in general (Ukrainetz et al., 2008) and much more so as it relates to AAC based interventions. Intervention intensity can be

described based on a number of variables including form (e.g., drill, play), dose (e.g., number of trials), duration (i.e., length of session), frequency (e.g., number of sessions per week), total intervention time (e.g., number of times), and cumulative intervention intensity (i.e., total number of practice opportunities over time) (Warren, Fey, & Yoder, 2007). In this preliminary investigation, participants reported on their campers' response to an immersive intervention. Campers received 24 hours (i.e., total intervention time) of an AAC based intervention delivered over the span of 2 weeks (i.e., duration, frequency) provided within a naturalistic context (i.e., form).

Chapman University's *All About Communication (AAC)* camp is a two week alternative school-based service delivery model for student users of AAC devices. Striving to emulate a camp experience, AAC Camp is provided in partial fulfillment of each student's extended school year (ESY). ESY refers to special education and related services (e.g., speech-language intervention, occupational therapy) that are provided to a student beyond their normal school year in order to prevent the excessive loss of skills or deterioration of behavior that is likely to occur in the presence of an extended break such as a summer vacation (IDEA, 2004). In participating schools, selected students or campers leave their special education classes to attend "camp" for two weeks where they participate in various camp themed activities including daily camp fire time, nature hikes, scavenger hunts, and arts and crafts. Graduate student clinicians who assume the role of "camp communication guides" provide scaffolding opportunities for camper participation across activities. Utilizing a child-centered approach (Paul & Norbury, 2012), camp communication guides employ various language enhancing strategies such as modeling, expansionism, and self-talk through the application of aided language stimulation and augmented input. Campers learn how to use core vocabulary across activities for an expanding

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range of communicative functions (Dodd & Gorey, 2013a; Dodd & Goreyb, 2013; Dodd, Jekerle, & Marsden, 2011) Graduate student clinicians monitor their campers' response to the intervention periodically throughout the two week period by collecting data on their campers' use of their communication aid.

This preliminary survey-based investigation is a first step in filling the void in the research in support of practitioners' need to employ EBP while monitoring change in their most communicatively challenging students. The results of this study will describe the demographic information for and communication abilities of AAC users who participated in an annual alternative school-based service delivery model. Data regarding reported change over time, a brief discussion section, and future recommendations will be provided.

## **METHOD**

### **Participants**

The participants of this survey based study were 29 graduate student clinicians who had completed their first year of graduate school. An email including a link to the online survey was sent to the 29 graduate students who participated in the 2012 AAC Camp describing the purpose of the survey. An informed consent was embedded at the beginning of the survey. Responses were submitted in an anonymous manner and participation was voluntary. The student respondents completed the survey in approximately 10-15 minutes. Prior to the onset of camp, the participants completed a graduate level augmentative and alternative communication course taught by the principal investigator. During this course, participants received instruction in the areas of intervention and progress monitoring as it related to AAC camp. As a component of their training, participants reviewed associated articles, completed related assignments, participated in

role play activities, and watched relevant videos. Supervising clinicians received similar training and had supervised student clinicians in prior camps under the direction of the principal investigator. Students participated in AAC Camp in fulfillment of their practicum course which occurred immediately following the completion of the AAC course. Participants were assigned to one of four camp locations based on geographical location and then randomly assigned to campers at their assigned camp site. The participants had no prior experience or familiarity with their campers before conducting initial chart review and collecting baseline measures. In preparation for camp, graduate student clinicians developed goals in the areas of symbol knowledge and use consistent with the questions posed on the online survey. Goals were reviewed and approved by supervising clinicians. Graduate student clinicians collected data on a regular basis evaluating their camper's progress toward their goals. Data forms were constantly reviewed by supervising clinicians throughout the duration of the practicum experience

### **Survey Questionnaire**

An online survey comprised of 17 questions was developed for the purpose of this study. Survey questions were developed to provide a descriptive analysis of the population of camp attendees and evaluate their response to the intervention. The principal investigator's experience with AAC camp over the past four years along with her experience developing functional outcome measures for children who benefitted from the implementation of AAC based interventions influenced the development of the questions. The questions were distributed among the following areas of investigation: camper demographic information, profile of communication abilities, and response to intervention. The demographic questions solicited information regarding the campers sex, age, cultural identification, past experience with camp, primary and secondary special education qualifying disability, and medical diagnosis.

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The next section requested the participants to identify their camper's communication abilities prior to the onset of camp. The final section asked participants questions regarding their camper's response to the AAC camp intervention itself. Questions were asked to specially examine if there was an increase (or decrease) in number of symbols used at the conclusion of camp, if there was a change in the number of symbols sequenced to convey messages, and if their campers expanded the purposes for what they communicated.

## RESULTS

All 29 graduate student clinicians responded to the survey reporting on the progress of 30 of the 31 campers, 18 (60%) male and 12 (40%) female. The ages of the campers ranged from 5 to 22 years of age and included students enrolled in grades preschool through adult transition programs. Table 1 provides an overview of campers' demographic information (e.g., age, grade, cultural background) including their primary and secondary special education eligibilities. The majority of the campers qualified for special education services under the eligibilities of autism (33%) and intellectual disability (37%) with a scattering of campers qualifying for services under the eligibilities of medical disability (7%), multiple disabilities (3%), other health impairment (10%), orthopedic impairment (7%) and speech or language impairment (3%).

Table 1

*Demographic Characteristics—AAC Camp Participants (n = 30)*

<b>Variable</b>	<b>n</b>	<b>Percentage</b>
<b>Sex</b>		
Male	18	60%
Female	12	40%

<i>Variable</i>	<i>n</i>	<i>Percentage</i>
<b>Age</b>		
Mean	11.4	
Range	5 – 19	
5	5	17%
6	2	7%
7	2	7%
8	1	3%
9	4	13%
10	1	3%
12	1	3%
13	3	10%
14	2	7%
16	1	3%
17	2	7%
18	5	17%
19	1	3%
<b>Grade in School</b>		
Preschool	3	10%
1st	2	7%
2nd	3	10%
3rd	4	13%
4th	2	7%
5th	1	3%

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<b>Variable</b>	<b><i>n</i></b>	<b><i>Percentage</i></b>
7th	2	7%
8th	2	7%
10th	2	7%
11th	1	3%
12th	1	3%
Adult Transition	7	23%
<b>Cultural Background, per IEP documentation</b>		
Filipino	1	3%
Hispanic	12	40%
Japanese	1	3%
Other Asian	2	7%
Other Pacific Islander	1	3%
Vietnamese	2	7%
White, Non-Hispanic	11	37%
<b>Primary Special Education Eligibility, per IEP</b>		
Autism	10	33%
Established medical disability	2	7%
Intellectual disability	11	37%
Multiple disabilities	1	3%
Other health impairment	3	10%
Orthopedic impairment	2	7%

<b>Variable</b>	<b><i>n</i></b>	<b><i>Percentage</i></b>
Speech or language impairment	1	3%
<b>Secondary Special Education Eligibility, per IEP</b>		
Autism	1	3%
Hard of Hearing	2	7%
Specific Learning Disability	2	7%
Intellectual disability	8	27%
Other Health Impairment	1	3%
Orthopedic Impairment	2	7%
Speech or Language Impairment	3	10%
Visual Impairment	1	3%
No secondary eligibility	6	20%
No response	4	13%
<b>Medical Diagnosis, per IEP</b>		
Autism	10	33%
Down Syndrome	5	17%
Cerebral Palsy	10	33%
Fragile X	1	3%
Seizure disorder	1	3%
None	2	7%
Other	1	3%

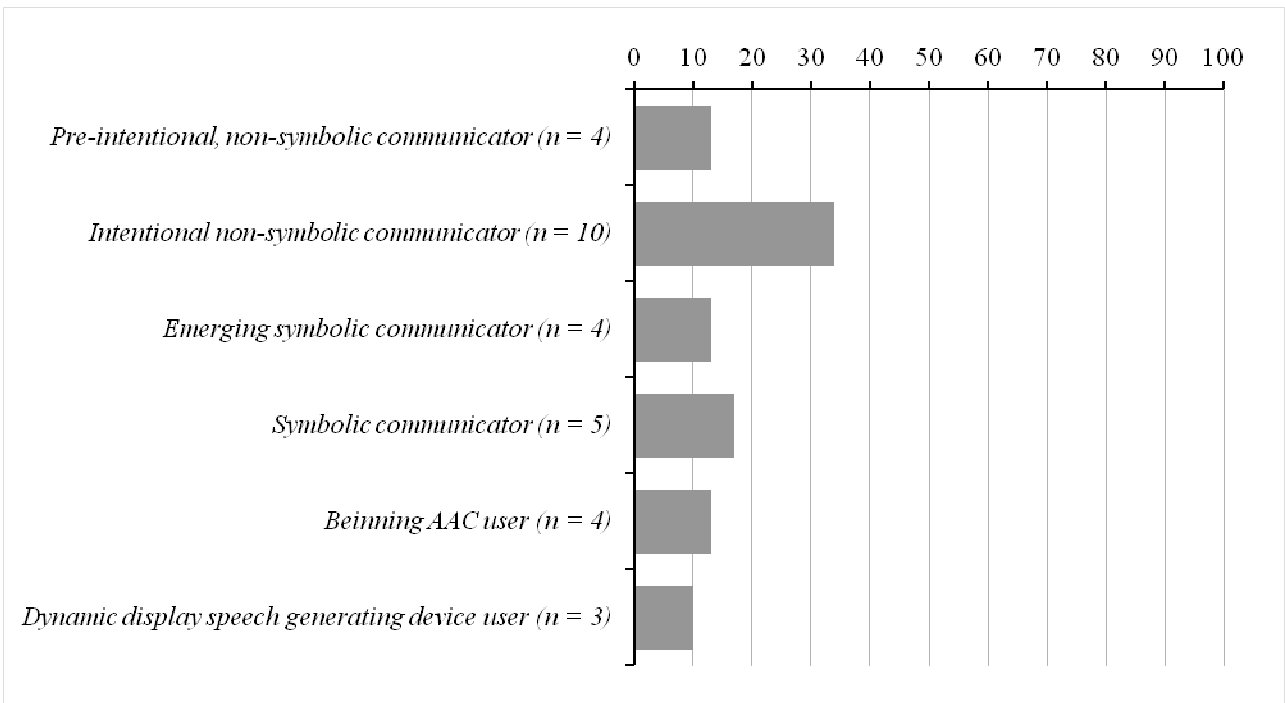


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Prior to the onset of camp, along with conducting a thorough review of their campers' confidential files (e.g., multidisciplinary team reports, annual individualized educational programs), graduate student clinicians observed their campers in their regular school environment across a minimum of three different activities and administered a battery of assessments to establish a baseline. In addition, graduate student clinicians identified the total number of different symbols (TNDS) and the mean number of symbols per message (MNSM) used by their camper, and created an inventory of the communicative purposes of their camper's messages. Graduate student clinicians utilized this information to identify their camper's communication skills prior to the onset of camp (Figure 1) and established intervention goals based on the individual needs of their camper. Goals approved by their supervising clinician were written in the area of symbol knowledge (i.e., increase number of different symbols) and use (i.e., expanding number of symbols sequencing to create message, expanding range of communicative purposes). At the conclusion of camp, graduate student clinicians evaluated their campers' progress toward their intervention goals using identical evaluative procedures.

Figure 1

*AAC Campers' Communication Skills Prior to the Onset of Camp*



Thirty-four percent of the campers were described as intentional pre-symbolic communicators prior to the onset of camp meaning they demonstrated communicative intent using non-symbolic forms of communication (e.g., gestures such as pointing, pulling one’s hand, and/or vocalizations) to communicate basic wants and needs. The second most represented group of communicators was those described as symbolic communicators (17%). These campers used a communication system (e.g., non-electronic communicator displays, communication book, or static display SGDs) consisting of five or more symbols primarily for the communicative purpose of requesting preferred items and activities. Only 10% of campers were described as dynamic SGD users. The remaining campers were equally distributed among pre-intentional non-symbolic communicators, emerging symbolic communicators and beginning AAC users.

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Pre-intentional non-symbolic communicators used primarily non-symbolic behaviors (e.g., hitting, dropping to the floor, grabbing) which were attributed meaning by those familiar to the child to communicate. Emerging symbolic communicators used a restricted set (less than five) of symbolic forms of communication (e.g., manual signs, picture symbols) to communicate basic wants and needs. Individuals who used a communication system (e.g., non-electronic communicator displays, communication book, or static display speech generating device) consisting of 25 or more symbols using their system for an expanding range of communication functions combining two to three symbols to formulate a message were classified as beginning AAC users.

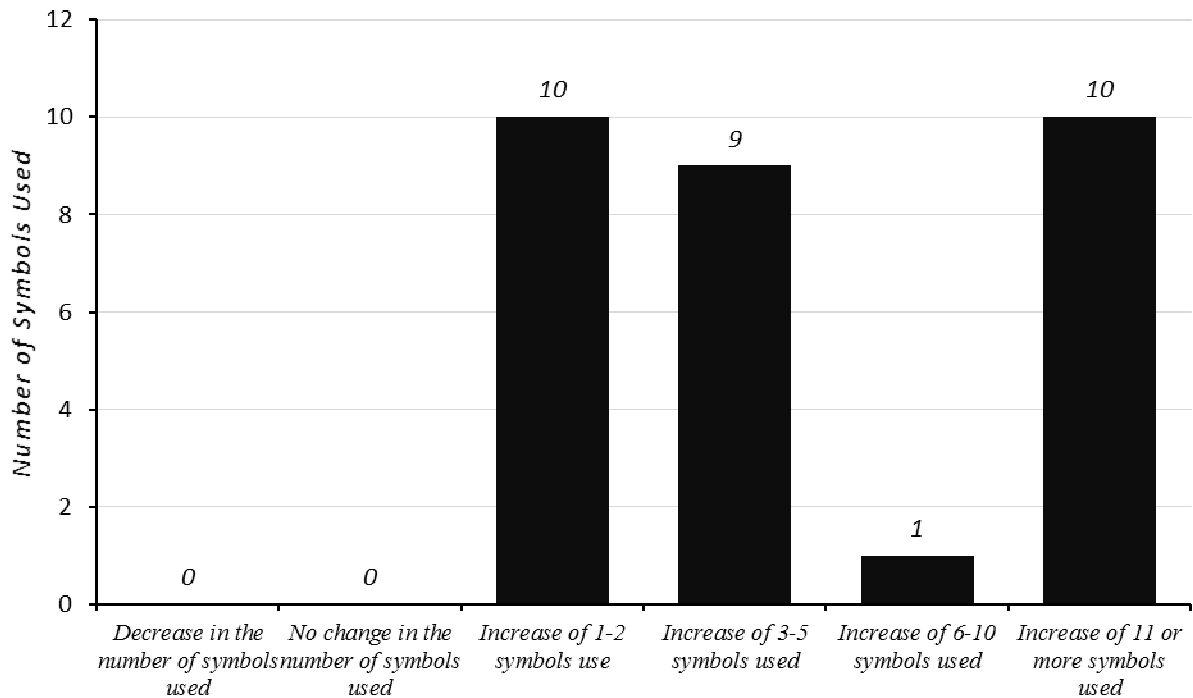
### *Campers' Response to the Intervention*

In order to monitor their camper's response to the two-week intensive intervention program graduate student clinicians evaluated their camper's progress towards intervention goals developed based on baseline measures. Camper's progress was evaluated in terms of change in total number of different symbols (TNDS) used (Figure 2), change in mean number of symbols per message (MNSM) (Figure 3), and change in range of communicative functions of AAC messages (Figure 4). As Figure 2 illustrates, upon completion of camp there was not a decrease in TNDS used nor was there an instance in which a camper failed to increase the TNDS used. 100% of campers increased their TNDS used following the AAC camp intervention. This is significant because 47% of campers were identified as non-symbolic communicators prior to onset of camp with 29% of these non-symbolic communicators being classified as pre-intentional. Upon conclusion of camp, pre-intentional, non-symbolic communicators were emerging in their intentional use of symbolic forms of communication. At a minimum by

increasing their TNDS by one to two symbols these previously non-intentional, non-symbolic communicators emerged as intentional communicators.

Figure 2

*Change in Total Number of Different Symbols (TNDS)*

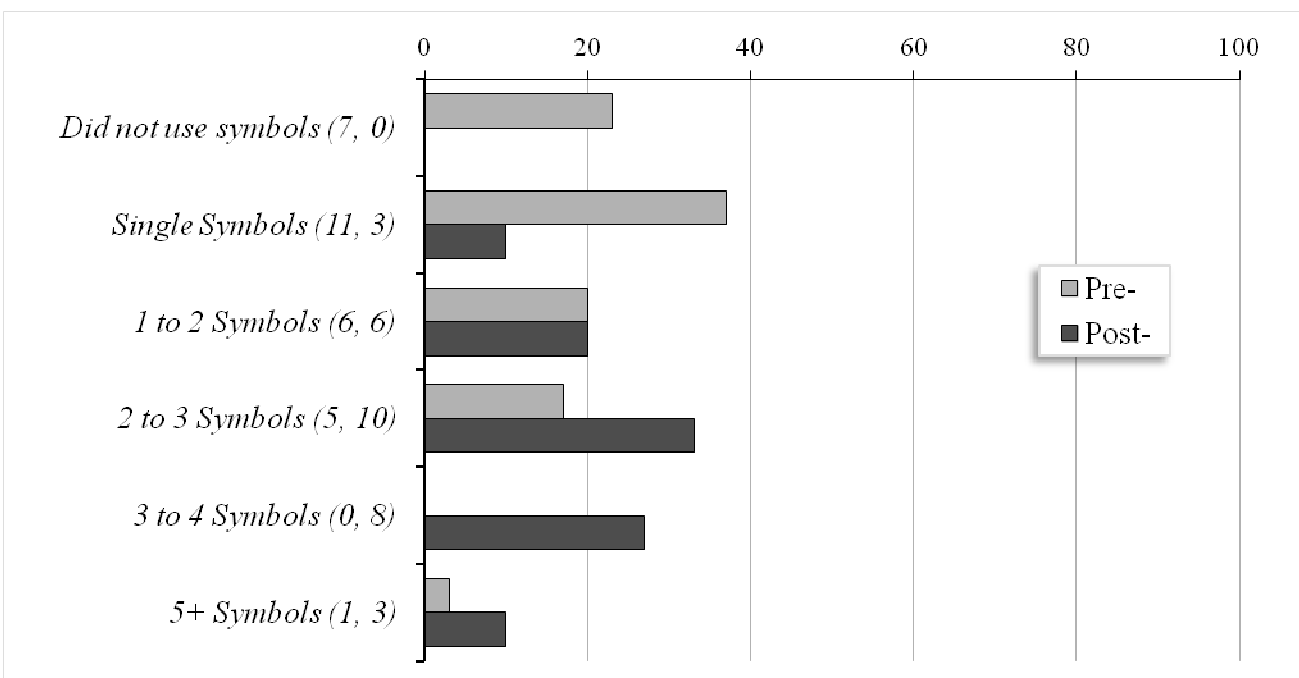


At the onset of camp, 60% of campers were either not using symbols to communicate (23%) or using predominately single symbols (37%) to communicate. Upon completion of camp, 90% of campers were sequencing symbols to create messages. Mean number of symbols per message (MNSM) ranged from two to five or more symbols per message. Figure 1 illustrates the change in MNSM from the onset to the conclusion of camp.

Figure 3

Mean Number of Symbols per Message (MNSM), Pre- and Post-Camp

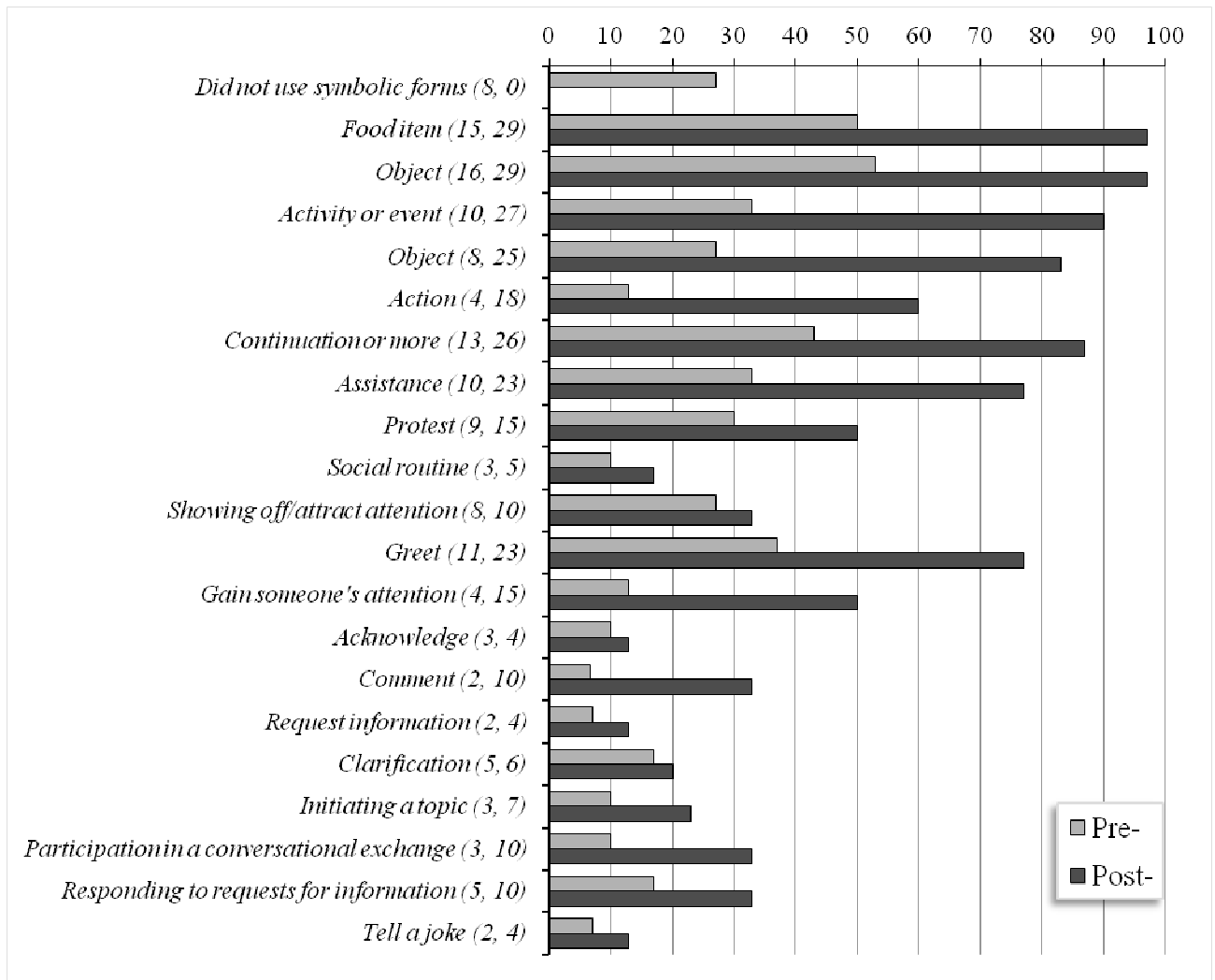
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Expanding the purposes for which one communicates is a critical aspect of becoming a competent communicator and often a target of intervention. Prior to the onset of camp, campers were predominantly using their communicative acts for purposes of regulating the behavior of others (e.g., request preferred food items, activities and objects). Upon conclusion there was a noted increase in the number of campers using their communicative acts for purposes within the categories of social interaction and joint attention.

Figure 4

*Communicative Functions of AAC Messages, Pre- and Post-Camp*



According to Beukelman and Mirenda’s Participation Model (2013), there are two types of barriers that impede an individual’s ultimate progression in learning to use their AAC system in meaningful ways—those related to access and those related to opportunity. As the participants of this study clearly identified, barriers related to access continue to be a valid concern related to their camper’s ongoing progress in using their AAC device. Having access to a personal communication system (37%) and accessibility to their device throughout their day (43%) were reported to a high-degree and very high-degree as barriers in campers’ ongoing progress in using their AAC system. Forty percent of participants reported teacher/staff’s understanding of the

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intervention techniques and ability to create communication opportunities would to a moderate degree impact their camper's ongoing progress in using their AAC system.

Table 2

*Reported Barriers (n = 30)*

<b>Barrier</b>	<b>Not at All</b>	<b>Small Degree</b>	<b>Moderate Degree</b>	<b>High Degree</b>	<b>Very High Degree</b>	<b>Rating Average</b>	<b>Rating Count</b>
<i>Access to a personal, individualized communication system</i>	16.7% (5)	20.0% (6)	26.7% (8)	10.0% (3)	26.7% (8)	3.10	30
<i>Teacher/staff programming ability</i>	10.0% (3)	30.0% (9)	26.7% (8)	20.0% (6)	13.3% (4)	2.97	30
<i>Teacher/staff's understanding of the intervention techniques</i>	10.0% (3)	10.0% (3)	40.0% (12)	23.3% (7)	16.7% (5)	3.27	30
<i>AAC camper's motivation to use device</i>	13.3% (4)	23.3% (7)	36.7% (11)	3.3% (1)	23.3% (7)	3.00	30
<i>Parent/family support</i>	24.1% (7)	17.2% (5)	31.0% (9)	10.3% (3)	17.2% (5)	2.79	29
<i>AAC camper's access to their communication system throughout the day</i>	13.3% (4)	10.0% (3)	23.3% (7)	13.3% (4)	40.0% (12)	3.57	30
<i>Teacher/staff ability to model AAC use throughout the day</i>	0.0% (0)	16.7% (5)	23.3% (7)	33.3% (10)	26.7% (8)	3.70	30
<i>Teacher/staff's ability to create communication opportunities</i>	3.3% (1)	23.3% (7)	40.0% (12)	10.0% (3)	23.3% (7)	3.27	30

## DISCUSSION

The purpose of this preliminary study was to explore the effects of an AAC based intervention provided in a camp format in addressing the communication deficits of children with CCN. Through the use of a survey, information was gathered regarding demographic information including a description of preliminary communication skills of children who participated in an annual alternative school-based service delivery model. Data was also collected regarding camper attendees' response to the camp based intervention model. Results indicated children with autism and intellectual disability comprised a significant portion of the

children referred for this type of intervention and positive gains were noted both in the areas of communicative behaviors and pragmatic use. Camp attendees increased the TNDS used along with the MNSM. Additionally, campers expanded the purposes for which they used their AAC systems to communicate.

The influx of advance technologies paired with the lack of strong evidence perpetuates the need for ongoing research in this area. Research is needed examining the use of AAC not only as an alternative form of communication but more importantly as a means to teach communication. One of the primary purposes of this preliminary investigation was to begin filling the void in the research in support of practitioners' need to employ EBP while monitoring change in their most challenging students. The findings of this preliminary study identify the possible benefits of an intensive, immersive AAC based intervention model which addresses the communication needs of non-verbal children with ASD, intellectual disabilities and other communication impairing disorders. This study also began the exploratory process of examining alternative progress monitoring strategies when using AAC based interventions. This study can be used to guide future studies in the experimental process.

Many of the intervention approaches (e.g., Picture Exchange Communication System, Functional Communication Training) used with children similar to the ones reported in this study focus on teaching communication for the purpose of requesting to fulfill immediate wants and needs. Intervention such as these, while proven effective in teaching requesting (Schlosser & Wendt, 2008) and reducing challenging behaviors (Mancil, 2006), present with significant limitations to teaching communication on a much broader scale. We must challenge ourselves as practitioners to embrace the availability of advanced technologies while still employing EBP.



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Another aspect of the intervention process requiring attention relates to how progress is monitored. Effective progress monitoring for the population of AAC users who are described in this study must employ discrete strategies to monitor changes in communicative behavior (e.g., NDS, MNSM) and pragmatic use of language (e.g., communicative functions). The children who are of particular interest to this study represent a group of children with CCN who fall into a category of AAC users for whom documenting progress can be a challenge. It is difficult to deem an intervention as less effective when the challenge may not be in the intervention itself but related to how we monitor change. Many interventionists evaluate progress from the stance of the child's ability to communicate for three primary purposes: behavioral regulation, social interaction, and joint attention (Bruner, 1981; Shumway & Wetherby, 2009; Wetherby & Prizant, 1989). However, each one of these broad categories can be delineated by subcategories to more specifically denote each communicative act for its communicative purpose (Wetherby, Cain, Yonclas, & Walker, 1988). In practice, we are suggesting that in order to denote the subtleties in changes in pragmatic functions, communicative acts may need to be categorized by more discrete subcategories within each broad category.

Another critical feature of the intervention paradigm requiring attention relates to the impact of access and opportunity barriers on an AAC user's ability to acquire communication. As the participants of this study noted having a personal communication system and the child's accessibility to that system throughout their day was a concern related to their camper's on going progress. Additionally, participants reported teacher and staff's understanding of the intervention techniques employed during camp and their ability to scaffold communication opportunities throughout the child's days was an area requiring further attention for successful implementation. The question still remains: how do we effectively address these concerns in a public school

setting while being sensitive to the constraints (e.g., funding, time) characteristic of such a setting. With the influx of children being introduced to AAC based interventions, future research studies need to examine how to effectively address and remediate these barriers for children who use AAC.

Although this study suggests the potential benefits of an intensive, immersive AAC based intervention there are limitations that must be acknowledged. As a survey based study, data obtained were directly influenced by the respondents' knowledge, experience, and invested interest in their camper's progress. The participants of this study were graduate student clinicians reporting on the progress on their camper following a two intensive intervention. Additionally, data was reported in a manner that did not lend itself for comparing degree of change and individual AAC user characteristics. Due to the range of changes in communicative behaviors it would have been helpful to know the extent of change by descriptive demographics. Finally, the graduate student clinicians were unable to observe their campers performance in their regular classroom to note possible generalization of new communication skills. In lieu of the limitations of this study, there are clinical implications with regards to service delivery and progress monitoring of individuals who may benefit from AAC based interventions along with its influence on future investigations.

The primary goal of AAC based interventions for children with severe disabilities is to improve functional communication skills enabling them to participate in a wide range of environments and activities with an expanding range of communication partners (Calculator, 1999). As Light (1997) suggests, functional communication includes the ability to express wants and needs, establish social closeness, exchange information, and participate in routines of social etiquette. Translation of intervention goals to practice "means teaching communication forms

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and functions—with the functions discoverable only in the interactive, socialized contexts in which these functions occur and are responded to by other people” (National Joint Committee for the Communication Needs of Persons With Severe Disabilities, 1992). Therefore intervention for children with the most complicated communication needs must involve direct therapy within a naturalistic, social context.

Despite the limitations of this study, there is preliminary evidence to support the further exploration of an intensive, immersive AAC intervention in addressing the communication needs of children with severe forms of autism and those with intellectual disabilities. We propose examining the very means with how we teach communication to this often difficult to teach population and expanding the manner in which we evaluate their progress.

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