

The Benefits of an Immersive Augmentative and Alternative Communication (AAC) Camp
Experience for Rehabilitation Medicine Students

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Benefits of an AAC Camp Experience for Students

ABSTRACT

Augmentative and alternative communication (AAC) camps provide opportunities for children who use AAC, and their families, to build communication skills in a short-term intensive format. Students in graduate rehabilitation medicine programs are often utilized as counsellors at these camps, but research is lacking on benefits for student counsellors. The present study examined the benefits of participating in a hands-on clinical experience at *AAC Camp Alberta* for speech-language pathology, occupational therapy, and physiotherapy students enrolled in the Faculty of Rehabilitation Medicine at the University of Alberta. Nineteen student counsellors completed surveys indexing knowledge, skills, and attitudes in the area of AAC four weeks before and one week after camp. Post-camp, students reported having increased their knowledge of AAC devices and communication repair strategies, and skills for troubleshooting devices and communicating messages to individuals who use AAC. Students also reported feeling more confident after camp, in their ability to encourage communication by individuals who use AAC and provide them with the same quality of service as other clients. Implications of the potential for hands-on clinical experiences to reduce knowledge, skill, and attitude barriers for students who may later work in the area of AAC are discussed in light of speech-language pathology graduation, licensing, and certification requirements.

INTRODUCTION

The American Speech-Language-Hearing Association (2005) defines augmentative and alternative communication (AAC) as:

... an area of research, clinical, and educational practice. AAC involves attempts to study and when necessary, compensate for temporary or permanent impairments, activity limitations, and participation restrictions of individuals with severe disorders of speech-language production and/or comprehension, including spoken and written modes of communication. (p. 1)

This definition highlights the fact that, for individuals with severely impaired speech production and/or comprehension, AAC represents not only a means by which to access communication, but a key to unlocking their ability to interact with others, be part of their communities, and experience a full life. People of all ages with a diverse range of communication disorders may use manual signs, low-tech communication boards, and/or high-tech speech-generating devices (SGDs) for varying levels of support (Dodd & Hagge, 2014). The purpose of AAC intervention is not to replace an individual's speech and other natural communicative behaviours with technology, but rather to enhance natural communication and allow individuals to participate in everyday life by expressing wants and needs, conveying information, and building and maintaining relationships (Beukelman & Mirenda, 2013).

A Life Participation Approach to AAC Interventions

However diverse or complex an individual's communication needs may be, the ultimate goal of AAC intervention is to allow individuals with communication disorders to participate more fully in social contexts. Light and McNaughton (2014) argue that the level of social

participation achieved by individuals who use AAC depends largely on their level of communicative competence in four main areas: 1) linguistic competence: understanding of the key principles of language structure and function; 2) operational competence: technical, physical, and cognitive skills required to operate the AAC system; 3) social competence: ability to assume a variety of social roles and use communication for a variety of purposes; and 4) strategic competence: skills related to planning effective communication and repairing communication breakdowns.

Communicative competencies are acquired over time as individuals who use AAC are provided with opportunities to communicate within a variety of social contexts. In other words, individuals who use AAC cannot become fully competent communicators by practicing the use of their AAC system in a single context with a single communication partner. Environmental factors, such as institutional policies and practice, societal attitudes, and the knowledge and skill of communication partners greatly influence the level of communicative competence that individuals who use AAC can achieve (Light & McNaughton, 2014). Because environmental factors so greatly influence the communicative competence, and therefore the participation of individuals who use AAC, it is crucial that AAC interventions target communication skills in the context of real social interactions with parents, peers, teachers, healthcare professionals, and other important people in the lives of individuals who use AAC.

AAC Camps

AAC Camps are an emerging service delivery model that has the potential to increase social participation and communicative competence for children who use AAC. These short-term, immersive experiences provide intensive communication training for children who use

AAC and their families, along with the opportunity to interact with other individuals who use AAC, all in the context of fun camp activities (Look Howery, 2015). A variety of AAC camp formats have been offered, including day camps, overnight camps, and school-based summer programs with camp durations ranging from one to two weeks (Bruno, 1998; Dodd & Hagge, 2014; Kent-Walsh, Binger, & Malani, 2010). Research on these camps has generally focused on improving the communication skills of children who use AAC devices, their parents, and preservice speech-language pathologists (SLPs). Bruno (1997) sums up well the mission of Camp Chatterbox, located in New Jersey:

The mission of Camp Chatterbox is threefold: to help children become more interactive (meaning communicating with each other and the staff) using their AAC systems and to have fun in the process; to help parents gain the necessary skills to facilitate functional use of the device at home; and to provide opportunities for professionals working in the field to gain hands-on experience working with children using AAC devices. (p. 11)

Dodd and Hagge (2014) examined the impact of a two-week school-based summer program on the symbolic communication of children ages 5 to 19 using a wide range of AAC devices, including non-electronic communicator displays, communication books, and static SGDs. The program provided children with the opportunity to participate in a variety of camp-themed activities while graduate student clinicians used language stimulation strategies including modelling, expansions, self-talk, and parallel talk, to scaffold the children's communication development. They evaluated the campers' communication before and after the camp and found that campers increased the total number of different symbols (TNDS), the

mean number of symbols per message (MNSM), and the number of communicative functions for which they used their AAC devices.

AAC camps have also documented improvements in parents' abilities to support their children's communication through parent training programs. A study by Bruno and Dribbon (1998) examined the outcomes of a parent training program at Camp Chatterbox in which parents were educated on the importance of access to and use of AAC devices. The training resulted in the children having greater access to, and customization of, their AAC devices with significant gains made in pragmatic functions. Another study by Kent-Walsh, Binger, & Hasham (2010) examined the effectiveness of the ImPAACT Program (Improving Partner Applications of Augmentative Communication Techniques), a communication partner training program provided at an AAC day camp. Parents who participated in the program, successfully learned to use an instructional strategy designed to improve language outcomes for their children. Children who participated in the camp made significant gains in their production of multi-symbol AAC messages.

Speech-Language Pathology (SLP) Training in AAC

Although it has been mentioned that participating in AAC camps helps graduate student SLPs to develop professional competencies in the area of AAC (Bruno, 1997; Kuhlmeier & Johnson, 2012), no evidence has been published to demonstrate these benefits. Various camps utilize graduate student SLPs as camp counsellors who work one-on-one with campers using AAC (Dodd & Gorey, 2014; Dodd & Hagge, 2014; Bruno, 1997; Kuhlmeier & Johnson, 2012). Anecdotally, participating in AAC camps provides student SLPs with hands-on clinical experience with children who use AAC, which contributes to their skill set and readiness for

serving clients who use AAC in their future practice (Bruno, 1997). Such experience may be extremely valuable in light of findings that many practicing SLPs do not feel confident in their ability to work with clients who use AAC. In a survey of American SLPs who worked in various settings and had varying levels of experience, about half of the SLPs surveyed rated their competence and comfort level with AAC systems as limited/poor (Marvin, Montano, Fusco, & Gould, 2003). In the same survey, 83% of respondents rated the education provided by their professional program as limited/poor. About half of the SLPs surveyed reported that their education in AAC was provided by on the job training rather than their university program or clinical practicums.

The Canadian Context. The position statement from Speech-Language and Audiology Canada (SAC, 2015) on the role of SLPs with respect to AAC makes it clear that all SLPs practicing in Canada, regardless of their area of specialty, should be prepared to apply knowledge of AAC tools and strategies to support expression and comprehension in their assessments and interventions. It follows then, that training for student SLPs in Canada should include both informational instruction in AAC and opportunities to apply that knowledge in clinical contexts. AAC is listed as one of the twelve main content areas in the widely-used guideline *Assessing and Certifying Clinical Competency: Foundations of Practice for Audiologists and Speech-Language Pathologists* (Speech-Language and Audiology Canada, 2004). In Canada, every accredited speech-language pathology program is required to provide some instruction in the area of AAC, but the format and scope of this instruction varies by program (Council for Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology, 2005).

Blockberger & Haaf (1995) found that the number of compulsory instructional hours in AAC at Canadian SLP programs ranged from 7 to 53 hours. Additionally, while SAC and provincial regulatory bodies require a minimum number of clinical hours to be completed in many other content areas, such as voice disorders, fluency disorders, and dysphagia, no minimum number of clinical hours in the area of AAC is required by any of the seven regulated provinces or by SAC, (Council for the Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology, n.d.). Published data available on practicum experience in Canada, collected over 20 years ago, shows that only about 14% of Canadian student SLPs at the time were receiving focused practicum hours in AAC (Blockberger & Haaf, 1995). For new Canadian graduates, the variability in the extent of classroom instruction in AAC, as well as a lack of clinical experience in AAC, may result in poor preparation for serving clients who use AAC.

Other Professionals. According to the SAC position paper (2015), AAC interventions are most successful when delivered by an interprofessional team, especially for clients who present with physical, sensory, and/or cognitive impairments in addition to speech and language difficulties. In view of the potential shortcomings of SLP training in the area of AAC however, it is likely that other professions on multidisciplinary teams face some of the same challenges. A review of training for SLPs, special education teachers (SETs), and occupational therapists (OTs) found that individuals in these professions tend to receive minimal preservice training in AAC, provided by faculty who have minimal expertise in AAC (Costigan & Light, 2010). In the studies reviewed, 0 to 42% of graduating students were rated by faculty members as competent to provide AAC services. The authors suggest that increased fieldwork opportunities in AAC, along

with professional mandates that require AAC fieldwork in pre-service training, may help entry-level SLPs, SETs, and OTs to develop AAC competencies.

According to the Participation Model for AAC (Beukelman & Mirenda, 2013), opportunity barriers represent barriers to participation that are imposed by people other than the individual who uses AAC. Policy and practice barriers refer to systemic barriers to an individual's participation, while knowledge, skill and attitude barriers refer to barriers on the part of an individual facilitator of communication. Thus, a lack of knowledge of intervention options, technology, and instructional strategies among professionals, as well as a lack of hands on experience putting this knowledge into practice, can prevent individuals who use AAC from participating to their full potential. Additionally, professionals may have low expectations of the individual's communicative capabilities which compound the effects of a lack of knowledge and skills related to AAC. Effective pre-service training for professionals can play a role in minimizing these barriers to participation that individuals who use AAC may face. A short term intensive clinical experience at an AAC camp could supplement existing training in the area of AAC by providing student SLPs and other rehabilitation medicine students, such as occupational therapy (OT) and physical therapy (PT) students, with hands-on experience working with clients who use AAC. This experience could help increase students' knowledge and skills in the area of AAC, and also encourage positive attitudes about AAC and the individuals who use it.

The Present Study

AAC Camp Alberta, offered by the Department of Communication Sciences and Disorders at the University of Alberta in partnership with March of Dimes Canada, was held at Easter Seals Camp Horizon in Bragg Creek, Alberta from August 25 to 28, 2016. The weekend

camp was modeled after the *Advancing Adventures in Communicating (AAC) Camp* in Idaho and the *Alberta Aphasia Camp* (also offered by the University of Alberta and March of Dimes Canada). Eighteen campers and their families came from across Alberta, to participate in the first annual *AAC Camp Alberta*. Campers ranged in age from 7 to 20, had a wide variety of medical diagnoses (e.g., cerebral palsy, autism, Down syndrome, etc.), and used a wide variety of SGDs (i.e., iPads with Proloquo/TouchChat, NovaChats, Accents, Tobii-Dynavox I-series). Student counsellors were assigned an individual camper to support one-on-one over the weekend. Camper-counsellor pairs were then assigned to one of five teams, each led by two volunteer professionals including five SLPs, an OT, an assistive technology consultant, and a biomedical engineer.

The camp was structured such that teams cycled through adventure-based activities led by camp staff, and communication-based activities led by student SLPs who were not counsellors. There were three adventure-based activities, each 90 minutes in length, including swinging in a giant swing, archery, and swimming. There were six communication-based activities total, each 30 minutes in length, including creating a team flag, dressing up a team mascot, playing Olympic trivia, making postcards, and participating in a scavenger hunt and a relay race. All activities were Olympic-themed, following the 2016 Summer Olympics in Rio de Janeiro, and designed to facilitate communication. Counsellors modeled and encouraged use of their campers' device at each of these stations to communicate with other campers. Siblings had the option of participating in activities with their camper while parents attended training sessions or supervised other children. Following dinner, campers, parents, and counsellors all

participated in evening activities such as campfire and songs that permitted further opportunities for communication.

Purpose. The purpose of the present study was to examine the benefits of participating in a hands-on learning experience at *AAC Camp Alberta* for SLP, OT, and PT students enrolled in master's programs in the Faculty of Rehabilitation Medicine at the University of Alberta. More specifically, this study examines the effect of participation in a short-term intensive clinical learning experience on the knowledge, skills, and attitudes of SLP, OT, and PT students in the area of AAC. It is hypothesized that SLP, OT, and PT students participating as counsellors in *AAC Camp Alberta* will report increased knowledge and skills in the area of AAC, as well as a positive shift in attitudes towards AAC after camp relative to before.

METHODS

Participants

Participants were recruited from the 19 graduate students from the three Faculty of Rehabilitation Medicine programs at the University of Alberta who volunteered to be counsellors at *AAC Camp Alberta*. Counsellors included 11 SLP, 6 OT, and 2 PT students, roughly the SLP:OT: PT program ratio sought by designers for the communication-focused camp. All counsellors were in the first year of their graduate program, except for two PT students and one SLP student who were in their second year.

Prior to their participation in *AAC Camp Alberta*, SLP, OT, and PT students completed coursework in AAC as per their program requirements. SLP students completed a 1.5-credit course titled *Augmentative/Alternative Communication Systems (CSD 523)*, covering various AAC systems and assessment and intervention for individuals with complex communication

needs. OT students completed a 3-credit course titled *Enable Occupation Through the Use of Assistive Technology* (OCCTH 522), covering theory and practice skills for ensuring the correct interface between client's needs, assistive technology, occupation, and context, including two lectures and two labs on AAC. There was also an optional 1-credit module for OT students titled *Understanding Assistive Technology Devices from an Occupational Therapy Perspective* (OCCTH 543), covering how individuals with disabilities can use assistive technology, both low- and high-tech, to participate more fully in their lives. Information on whether any of the OT students serving as camp counsellors completed this module was not collected. As part of a 3-credit course titled *Gross Motor Development and Pediatric Physical Therapy* (PTHER 563), PT students received one lecture and one lab on assistive technology, including mostly low-tech AAC.

Measures

Participants completed online surveys to generally index their knowledge, skills, and attitudes in working with individuals who use AAC. The pre- and post-camp surveys consisted of 12 likert scale questions. Of the 12 questions, four indexed knowledge, four indexed skills, and four indexed positive attitudes. A sample likert scale question is: "I am familiar with a variety of types of AAC devices." Responses to these 12 questions were made on a 5-point scale (i.e., 1 = strongly disagree to 5 = strongly agree). One open-ended question was included on the post-camp survey: "What did you learn from being a part of the AAC Camp Alberta Experience? Please explain." See Appendix A, Table 1 for other survey questions. Questions were adapted from the *Augmentative and Alternative Communication Profile* (Kovach, 2009) which assesses functional skills for developing communicative competence using AAC and surveys for the Idaho

AAC and *Alberta Aphasia Camps*. Other likert-scale and open-ended questions (not listed in Appendix A) were included in the surveys that are not the focus of the current paper.

Procedure

The administrative assistant for the Department of Communication Sciences and Disorders distributed the Google Forms links for the pre- and post-camp surveys to all 19 students who volunteered to be camp counsellors on July 25, 2016 and August 31, 2016 respectively. She also randomly assigned participant numbers to surveys to ensure the investigators were blind to the identity of those who completed the surveys and to enable matching of pre- and post-camp surveys.

Completion of these surveys by students was voluntary and in no way impacted their program completion or participation in *AAC Camp Alberta*. Students did not receive any monetary reward or other benefit for their involvement in this study (i.e., the completion of surveys). OT and PT students had the option of receiving credit for their participation in the camp as a whole however, while SLP students accrued clinical hours in the “other” category.

Four weeks after receiving the pre-camp survey link, students participated in *AAC Camp Alberta* as counsellors. As part of their participation, counsellors spent two half-days prior to their camper’s arrival, familiarizing themselves with their camper’s file and device, and partaking in training. Training was structured around Light & McNaughton’s (2014) four communicative competencies and focused on: being a good communication partner, aided language stimulation, and modeling AAC device use. Hands-on practice was provided for counsellors with a device similar to their camper’s. For example, counsellors practiced using

their device to instruct a partner on how to build a particular playdough sculpture. This required them to describe the shape, color, and structure of the sculpture using AAC.

Three days after camp, counsellors received the post-camp survey link. Survey responses for two participants were excluded. One SLP student was excluded because she had more extensive knowledge of AAC through her thesis and previous AAC camp experience in another province. One OT student was also excluded because her assigned camper was unable to attend due to illness. After these exclusions, the overall response rate to both surveys was 13/17 (76%) with 9/10 (90%) of SLP, 3/5 (60%) of OT, and 1/2 (50%) of PT students responding.

ANALYSIS AND RESULTS

Paired samples t-tests were used to compare responses to individual likert scale questions pre- and post-camp. A Bonferroni correction was applied to account for multiple comparisons. Consistent with the hypothesis that students would report increased knowledge, skills, and confidence in working with individuals who use AAC after camp, results revealed a significant increase in post-camp over pre-camp responses for 6/12 Likert scale questions. Differences between responses to Questions 1, 5, 6, 8, 9, and 11 were statistically significant while the other six Likert scale questions all trended in the same direction (see Figure 1 below), but did not reach statistical significance

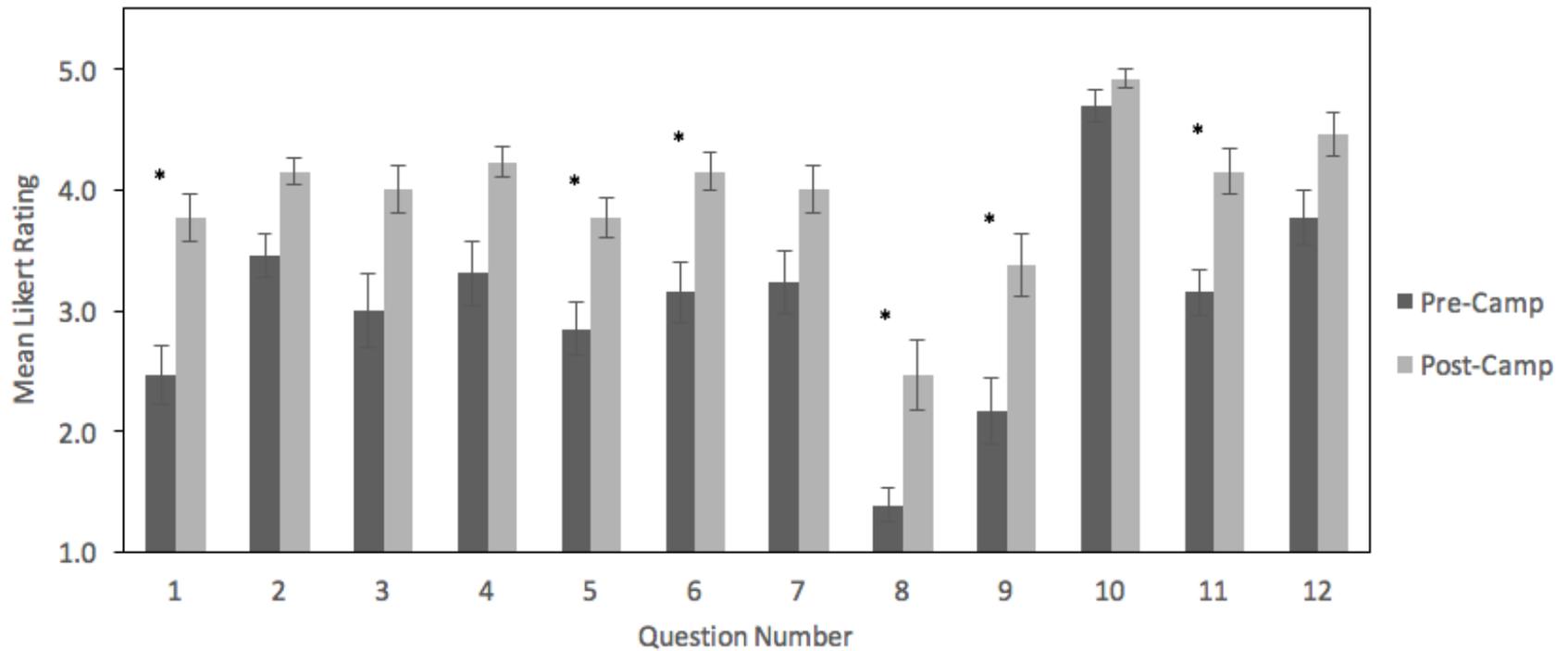


Figure 1. Mean camp counsellor responses to each of twelve survey questions pre- and post-camp on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Error bars indicate standard error of the mean. * $p < .008$.

Students rated themselves as significantly more familiar with a variety of types of AAC devices after camp ($M = 3.77$, $SD = 0.73$) than before camp ($M = 2.46$, $SD = 0.88$), $t(12) = 4.25$, $p = .001$ (Question 1). Post-camp, students rated themselves as having significantly more strategies to repair communication breakdowns with individuals who use AAC ($M = 3.38$, $SD = 0.87$) than pre-camp ($M = 2.17$, $SD = 0.94$), $t(11) = 4.49$, $p = .001$ (Question 9). Students also reported being able to communicate messages to individuals with more ease after camp ($M = 3.77$, $SD = 0.60$) than before camp ($M = 2.85$, $SD = 0.90$), $t(12) = 3.86$, $p = .002$ (Question 5). Additionally, students reported being better able to troubleshoot challenges arising with AAC devices post-camp ($M = 2.46$, $SD = 1.05$) than pre-camp ($M = 1.38$, $SD = 0.51$), $t(12) = 3.48$, $p = .005$ (Question 8). As far as confidence, students felt significantly more confident they could encourage communication and self-expression from individuals who use AAC after camp ($M = 4.15$, $SD = 0.55$), than before camp ($M = 3.15$, $SD = 0.90$), $t(12) = 3.60$, $p = .004$ (Question 6). Students also felt significantly more confident they could provide individuals who use AAC with the same quality of service as any other clients post-camp ($M = 4.15$, $SD = 0.69$) compared to pre-camp ($M = 3.15$, $SD = 0.68$), $t(12) = 3.95$, $p = .002$ (Question 11).

Responses to the post-camp open-ended survey question (i.e., “What did you learn from being part of the *AAC Camp Alberta* experience?”) were analyzed for major themes by two researchers. All responses were coded for the following mutually identified themes: (1) knowledge of devices/device features, (2) strategies for facilitating communication, (3) comfort interacting with individuals who use AAC, (4) positive attitudes about communication access and advocacy, and (5) appreciation for functional intervention in naturalistic environments. Inter-rater reliability for this coding was 97%. Analysis revealed the following results:

- 31% (4/13) of students reported increased knowledge of devices/device features (e.g., “I learned more about specific AAC devices, particularly Nova chat with word power.”)
- 85% (11/13) reported having more strategies to facilitate communication by individuals who use AAC (e.g., “[I learned] numerous strategies to engage with and model language for those who use AAC.”)
- 38% (5/13) reported feeling more comfortable interacting with individuals who use AAC (e.g., “In general, I feel much more comfortable in my ability to interact with people who use AAC!”)
- 23% (3/13) reported having an increased awareness of the importance of access to AAC (e.g., “Communication is a vital part of our lives and getting to help these children build that ability with AAC devices really taught me to appreciate and advocate for what the devices can be and do for a child.”)
- 23% (3/13) reported having an increased appreciation for functional AAC intervention in naturalistic environments. (e.g., “[I learned about] using AAC devices for functional communication.”)

DISCUSSION

This study sought to examine the benefits of participating in a hands-on learning experience (i.e., *AAC Camp Alberta*) for rehabilitation medicine students from the University of Alberta. It was hypothesized that students would report increased knowledge and skills in the area of AAC, as well as a positive shift in attitudes towards working with individuals who use

AAC following their camp experience. This hypothesis was based on the fact that *AAC Camp Alberta* provides students with a unique hands-on experience to gain knowledge, skills, and positive attitudes that cannot be gained in the classroom alone. Partial support was provided for this hypothesis and is discussed below.

Responses to two of the four questions assessing knowledge showed a significant increase from before to after camp. Students did not report having significantly increased their number of AAC listening strategies or having significantly furthered their understanding of interdisciplinary team roles after camp. Students did however, report being significantly more familiar with a variety of AAC devices and having significantly more strategies to repair communication breakdowns with individuals who use AAC post-camp. These findings are supported by the qualitative survey question results which revealed that 31% of students reported having increased their knowledge of AAC devices and device features, and 85% reported having increased their number of strategies to facilitate communication by individuals who use AAC. Consistent with the hypothesis, these findings suggest that *AAC Camp Alberta* provided students with an opportunity to increase their knowledge of AAC devices and strategies for communicating with individuals who use AAC.

Similar to the questions that assessed knowledge, half of the questions that assessed skill increased significantly from before camp to after camp. Students reported having significantly increased their ability to troubleshoot challenges with AAC devices and their ability to communicate messages to individuals who use AAC with ease. Consistent with the hypothesis, these findings indicate that *AAC Camp Alberta* provided students with an opportunity to gain skills in the area of AAC, specifically in communicating messages and with

troubleshooting devices. Students did not however, report having significantly increased their ability to recognize when individuals who use AAC want to communicate or their ability to acknowledge and interpret non-verbal forms of communication after camp.

Following the same pattern as for knowledge and skill, half the questions that assessed attitudes significantly increased (i.e., became more positive) from before to after camp. Post-camp, students reported feeling significantly more confident they could encourage communication and self-expression by individuals who use AAC and provide the same quality of services to individuals who use AAC as other clients in their clinical practice. These findings suggest that *AAC Camp Alberta* provided students with an opportunity to increase their confidence in facilitating communication and providing service to individuals who use AAC and are supported by the qualitative results which revealed that 38% of students reported feeling more comfortable interacting with individuals who use AAC following camp. Interestingly however, responses for the Likert scale question assessing comfort interacting with individuals who use AAC did not significantly increase after camp relative to before (although they trended towards significance).

Furthermore, students did not report feeling significantly more strongly that individuals who have difficulty speaking should have access to AAC after camp than before, but 23% reported having increased their awareness of the importance of access to AAC devices for the open-ended survey question. This discrepancy may be explained by the fact that a ceiling effect was observed for this question, with students reporting feeling access to AAC was very important before camp as well as after. These results, taken together with the fact that 23% of students reported having increased their appreciation of naturalistic intervention for individuals

who use AAC, indicate that students experienced a positive shift in attitudes towards AAC intervention following camp.

Implications

On the whole, the findings for this study indicate that participation in *AAC Camp Alberta* was related to an increase in knowledge and skills in the area of AAC and a positive shift in attitudes towards AAC for SLP, OT, and PT students. A lack of knowledge of AAC tools and strategies and application of that knowledge on the SLP's part, combined with low expectations can prevent individuals with complex communication needs from reaching their communication potential. *AAC Camp Alberta* therefore provided student clinicians with an experience that may, in their future practice, reduce knowledge, skill and attitude barriers to participation for individuals who use AAC. Specifically, *AAC Camp Alberta* provided students with opportunities to apply knowledge from classroom and camp instruction and gain confidence in their ability to support individuals who use AAC and their families. Following camp, students reported increased knowledge and skills in AAC and a positive shift in attitudes towards AAC which should translate to better service and advocacy for individuals with complex communication needs in the future. Greater clinician advocacy for clients who use AAC will help to diminish not only attitude barriers surrounding AAC, but also policy and practice barriers that may limit participation in society.

Given that a hands-on experience for student clinicians has the potential to reduce knowledge, skill, and attitude barriers to participation for individuals who use AAC, clinical graduate programs should consider offering such experiences as part of their programs. All participants in this study received classroom-based instruction in the area of AAC prior to

participating. This suggests that the increases in knowledge, skills and positive attitudes shown post-camp, represent a kind of learning that is specific to participation in a hands-on clinical learning experience. AAC camps are a unique and efficient method of providing this experience because of their short-term intensive format. Because AAC camps can be conducted in one week or less, the opportunity to participate in an AAC camp can be added to existing training in the area of AAC, rather than replacing it. Additionally, in light of SAC's position that all SLPs should be prepared to apply their knowledge of AAC tools and strategies (SAC, 2015), accreditation, certification, and regulatory bodies may wish to consider the merits of requiring a minimum number of clinical hours in AAC, whether those hours be accrued through an AAC camp or other practicum experiences.

Strengths and Limitations

The major strength of this study is that it examined the benefits of participation in a hands-on clinical learning experience in the area of AAC for SLP, OT, and PT students in a real-life setting. Research to date on AAC camp outcomes has focused on camper and parent outcomes with little published on outcomes for students who participate as counsellors. This study adds to the literature, documented benefits of participation as camp counsellors for SLP, OT, and PT students, benefits which may translate to reduced barriers for individuals who use AAC in the future.

Quantitative results showing an increase in certain knowledge, skills and positive attitudes in the area of AAC were supported, at least in part, by the qualitative results, suggesting some degree of validity for the self-report measures used in this study. It is worth noting however that, while the quantitative survey questions for this study were divided into

groups assessing knowledge, skills, and attitudes, overlap existed between groups and some questions may have indexed more than one of knowledge, skills, and attitudes. Thus, the results of this study were interpreted with caution and found to show only a general, not specific, increase in knowledge, skills, and positive attitudes for students who participated in the AAC camp.

Another significant limitation of this study is the short duration of the AAC camp which made capturing significant change in student knowledge, skills and attitudes challenging, particularly with no control group. Had the camp been longer, more significant changes in these areas may have been recorded. Furthermore, the unequal SLP:OT:PT student ratio prevented comparisons between programs which may have revealed program- specific differences in outcomes. Student counsellors were fairly homogenous however, in that they all had received some instruction in AAC prior to the camp, but had little or no experience working clinically with clients who use AAC.

Future Directions

Future research on pre-service training for professionals in the area of AAC should investigate the most effective way to measure the development of clinical competencies. This study was designed with the assumption that reducing knowledge, skill, and attitude barriers would lead to increased competence of clinicians to deliver effective services to clients who use AAC. Robust measures of clinical competence in the area of AAC for SLPs, OTs, and PTs are not available at this time and therefore, most studies rely on self-report and confidence ratings to demonstrate clinical competence (Costigan & Light, 2010). Future research should explore the

relationship between such measures of clinical competency and client and family outcomes in order to demonstrate the validity of the measures.

As mentioned by Costigan & Light (2010), little research has investigated the relationship between the type of preservice training in AAC and competent service delivery and outcomes. The results of this study suggest that hands-on clinical experience has a unique role to play in fostering clinical competence that is different from that of classroom instruction. The role of AAC camps and other types of pre-service training, such as traditional coursework, distance learning, and on-the-job training should be further examined in future research to determine what types of training will best prepare professionals to enable the full social participation of clients who use AAC.

REFERENCES

- American Speech-Language-Hearing Association. (2005). *Roles and responsibilities of speech-language pathologists with respect to augmentative and alternative communication: Position statement*. Retrieved from www.asha.org/policy/
- Beukelman, D., & Mirenda, P. (2013). *Augmentative and alternative communication: Supporting children and adults with complex communication needs* (4th ed.). Baltimore, MD: Paul H. Brookes Pub.
- Blockberger, S., & Haaf, R. (1995). Professional preparation in augmentative and alternative communication in Canadian speech-language pathology training programs. *Journal of Speech-Language Pathology and Audiology, 19*(4), 241-249.
- Bruno, J. (1997). Mom went to speech instead of the beach: Camp Chatter Box-Children's Specialized Hospital. *Perspectives on Augmentative and Alternative Communication, 6*, 11-13.
- Bruno, J. & Dribbon, M. (1988). Outcomes in AAC: Evaluating the effectiveness of a parent training program. *Augmentative and Alternative Communication, 14*(2), 59-70.
- Costigan, F. A., & Light, J. (2010). A review of preservice training in augmentative and alternative communication for speech-language pathologists, special education teachers, and occupational therapists. *Assistive Technology, 22*(4), 200-212.
- Council for Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology (2005). *Governance, procedures and policies manual*. Retrieved from <http://www.cacup-aslp.ca/English/accreditationStandards.html>.

- Council for the Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology (no date). Compliance with Registration Standards of Seven Regulated Provinces and CASLPA Certification Requirements. Unpublished document.
- Dodd, J. L. & Hagge, D. K. (2014). AAC camp as an alternative school-based service delivery model a retrospective survey. *Communication Disorders Quarterly, 35*(3), 123-132.
- Kent-Walsh, J., Binger, C., & Hasham, Z. (2010). Effects of parent instruction on the symbolic communication of children using augmentative and alternative communication during storybook reading. *American Journal of Speech-Language Pathology, 19*(2), 97-107.
- Kent-Walsh, J., Binger, C., & Malani, M. (2010). Teaching partners to support the communication skills of young children who use AAC: Lessons from the ImPAACT Program. *Early Childhood Services, 4*(3), 155-170.
- Kovach, T.M. (2009). *AAC Profile: A Continuum of Learning*. East Moline, IL: LinguiSystems.
- Kuhlmeier, A. & Johnson, J. M. (2012, November). *Benefits of AAC camp for campers, families, and professionals*. Poster presented at the annual convention of the American Speech-Language-Hearing Association, Atlanta, GA.
- Light, J. (1989). Toward a definition of communicative competence for individuals using augmentative and alternative communication systems. *Augmentative and Alternative Communication, 5*(2), 137-144.
- Light, J., & McNaughton, D. (2014). Communicative competence for individuals who require augmentative and alternative communication: A new definition for a new era of communication?. *Augmentative and Alternative Communication, 30*(1), 1-18.

Look Howery, K. L. (2015). *Literature review: Conditions for success in augmentative and alternative communication practice*. Retrieved from

<http://www.calgaryandarearcsd.ca/resources/complex-communication-needs/>

Marvin, L. A., Montano, J. J., Fusco, L. M., & Gould, E. P. (2003). Speech-language pathologists' perceptions of their training and experience in using alternative and augmentative communication. *Contemporary Issues in Communication Science & Disorders*, 30, 76-83.

Speech-Language and Audiology Canada (2004). *Assessing and certifying clinical competency:*

Foundations of practice for audiologists and speech-language pathologists. Retrieved

from [http://www.sac-oac.ca/professional-resources/resource-library/assessing-and-](http://www.sac-oac.ca/professional-resources/resource-library/assessing-and-certifying-clinical-competency-foundations)

[certifying-clinical-competency-foundations](http://www.sac-oac.ca/professional-resources/resource-library/assessing-and-certifying-clinical-competency-foundations)

Speech-Language and Audiology Canada (2015). *SAC position paper on the role of speech-*

language pathologists with respect to augmentative and alternative communication

(AAC). Retrieved from [http://www.sac-oac.ca/professional-resources/resource-](http://www.sac-oac.ca/professional-resources/resource-library/sac-position-paper-role-speech-language-pathologists-respect)

[library/sac-position-paper-role-speech-language-pathologists-respect](http://www.sac-oac.ca/professional-resources/resource-library/sac-position-paper-role-speech-language-pathologists-respect)

APPENDIX A

Table 1

Likert scale questions as grouped by indexing knowledge, skills, and positive attitudes

Knowledge

- (1) I am familiar with a variety of types of AAC devices.
 - (4) I have listening strategies that I can use with an individual who uses AAC.
 - (9) I have strategies to repair communication breakdowns when communicating with an individual who uses AAC.
 - (12) I understand my profession's role on an interdisciplinary team working with an individual who uses AAC.
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Skills

- (3) I can recognize when an individual who uses AAC wants to communicate.
 - (5) I can communicate messages to an individual who uses AAC with ease.
 - (7) I can acknowledge and accurately interpret non-verbal forms of communication from an individual who uses AAC (e.g., eye gaze, facial expressions, gestures).
 - (8) I can troubleshoot challenges that arise with AAC devices.
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Positive Attitudes

- (2) I feel comfortable interacting with an individual who uses AAC.
 - (6) I feel confident that I can encourage communication and self-expression when working with an individual who uses AAC.
 - (10) It is essential that people who have difficulty speaking have access to AAC.
 - (11) If I encountered an individual who uses AAC in my clinical practice, I would feel confident that I could provide the same quality of service to him/her as I could any other client.
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Notes. Numbers correspond to question number on surveys.