A Phase One Exploratory Study of Distance Coaching of Augmentative and Alternative Communication Implementation Strategies for Speech-Language Pathologists

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ABSTRACT

Background: The introduction and implementation of Augmentative and Alternative Communication (AAC) in Early Intervention (EI) can be a crucial component in the facilitation of speech and language development in children with AAC needs. There is a need to increase speech-language pathologists' (SLP) competence, comfort, and efficacy with the use of AAC implementation strategies to increase the likelihood of communication partner training, improve patient outcomes, and decrease AAC device abandonment.

Purpose: The purpose of this phase one exploratory study was to investigate (a) if distance coaching increased the frequency of SLPs use of evidence-based AAC implementation strategies for children in EI with AAC needs after one coaching session and (b) if distance coaching focused on AAC implementation strategies improved self-efficacy of the SLPs.

Methods: This initial investigation was addressed with a within subject pretest-posttest comparison design with three dyads, each containing one SLP and one child in EI with AAC needs. The investigators developed the AAC Implementation Strategies Checklist (AAC-ISC) to track the SLPs' use of AAC strategies (e.g., selecting relevant vocabulary, aided augmented input).

Results: After one session of distance coaching, there was an increase in frequency of two of the SLPs' use of at least one of the targeted AAC strategies. Positive change scores were noted for SLPs' self-efficacy related to implementation of AAC strategies. SLP participants reported that coaching was beneficial to their treatment.

Conclusion: Distance coaching may be an effective method to help SLPs support children in EI with AAC needs. However, these questions need to be investigated in detail with a larger sample size and more data points per group.

Keywords: Distance coaching, Early intervention, Self-efficacy, Speech-language pathology

ABBREVIATIONS

AAC: Augmentative and Alternative Communication
EI: Early intervention
SLP: Speech-language Pathologists
ASHA: American Speech-Language-Hearing Association
SSE: Specific self-efficacy
GSE: General self-efficacy

INTRODUCTION

The introduction of Augmentative and Alternative Communication (AAC) in Early Intervention (EI) is a crucial component in the facilitation of speech and language development in children [1-3]. Speech-language pathologists (SLPs) play a vital role in promoting communication partner competence in early intervention (EI) [4-8]. Significantly positive results have already been reported when intervention includes training for communication partners [5-8,9]. It is problematic that a significant portion of SLPs working with children with AAC needs report limited competence in their knowledge of AAC and report feeling overwhelmed and not equipped to support AAC users after entering the workplace with inadequate preparation [10]. A consequence of reported limitations in competence in this area of practice is AAC device abandonment. One explanation includes lack of AAC knowledge on the part of the professional (e.g., SLP) to provide appropriate training to both the user and the communication partners such as caregivers [8]. While there are more preservice education and training opportunities for SLP graduate students [11], a recent study surveying 530 SLPs nationwide who predominantly identified as general practice SLPs showed that more than half identified "knowledge" as their most significant AAC system barrier to AAC service delivery [12]. In a 2019 survey, only 31% of speech-language pathologists felt adequately prepared in AAC from their undergraduate or graduate program [13]. There is a need to increase speech-language pathologists' (SLP) competence, comfort, and efficacy with the use of AAC implementation strategies to increase the likelihood of communication partner training, improve patient outcomes, and decrease AAC device abandonment. Additionally, there is a need for more clinical education training for both preservice clinicians and SLPs [14,15].

Training and embedded coaching helps facilitate adult learning and master of AAC instructional skills for team members [16]. Stoner et al. [17] outlined studies that support the concept that communication partners can be effective when coached to provide interventions within their home environments, routines, and activities. In a study where individualized coaching was used to aid educational assistants in the implementation of AAC for their students, Binger et al. [18] cited significant increases in students' production of multi-symbol messages, increased turn-taking in communication, and increased use of semantic concepts, all areas that support communicative competence. Positive results have been reported when evaluating coaching as a method in the EI setting for clinicians to promote naturalistic teachings and support facilitation of language in the home and other environments for children with AAC needs [19-26].

According to Rush and Shelden [27], "The role of the coach (early interventionist) is to identify the parent's priorities for their child's development, determine what they already know and are doing in relation to their child's development, share new information and ideas, and then work together to support the child's participation and expression of interest within everyday activity settings to provide opportunities for learning" (p. 9-10). The five evidence-based characteristics of coaching include joint planning, observation, actions, reflection, and feedback [27]. Joint planning includes collaboratively determining specific activities and strategies that will be focused on between visits. Observation allows the coach to observe the learner interacting with the child or the learner to observe the coach model an action, strategy, or behavior. Action includes the opportunity for the learner to use or model information discussed during or between visits. It is the role of the coach to support the learner in practicing and analyzing skills while using strategies learned. An effective strategy includes asking reflective questions to determine what the learner knows and analyze strategy effectiveness. Lastly, Rush and Shelden [27] suggest feedback is an essential component that should occur after the learner has time to reflect.

The delivery format for coaching should also be considered. Videoconferencing during a speech-language therapy session has been reportedly useful for novice clinicians, clinicians with limited AAC experience, and caregivers [28-30]. Geographical location does not affect the use of this service; therefore, it is beneficial in remote rural communities and for those with transportation challenges. With this type of service, feedback can be immediately provided to successfully support service delivery for the AAC user. Telehealth continues to gain global acceptance as existing interactive videoconferencing technology makes access more available and affordable [31,32].

Consultative services for team members in EI working with autistic children *via* videoconferencing is a promising service delivery model [33], however it did not include AAC strategies. Hall et al. [30] conducted a study using videoconferencing as an active consultation coaching method for preprofessional graduate student clinicians. Results suggested improvements in graduate student skill level; however, it did not apply to practicing SLPs. Light and McNaughton [34] highlighted the importance of future research to explore the most effective techniques to disseminate information and enhance collaboration with team members to effectively implement evidence-based AAC strategies for children with AAC needs.

Meadan et al. [23] conducted a pilot study to investigate the feasibility and effectiveness of an internet-based coaching program related to the use of naturalistic and visual teaching strategies for children with Down syndrome aged two to five years old. Their findings demonstrated a significant connection between learners' use of the proposed teaching strategies and the children's communication behaviors. Increased rate of coached strategy use was linked to high frequencies of communicative initiation by the children. This correlation further supports the use of coaching for AAC implementation. Currently, there is limited research on the use of AAC coaching for SLPs in EI to improve AAC implementation; therefore, this area should be explored further as a way to possibly improve the standard of care. There is limited evidence related to the effects of coaching via a telehealth delivery model.

Self-efficacy has been considered a robust predictor of learning, training and performance across different environments and circumstances [35]. Bandura [36] discussed the concept of self-efficacy, and the motivational variable related to achievement. An individual's behavioral confidence as to whether they can perform a specific activity relates to their ultimate achievement of that task. Specifically, achievement improves self-efficacy and self-efficacy influences achievement. A meta-analysis of 38 studies measuring self-efficacy and performance indicated that learners with a high self-efficacy engaged in more strategy use and persisted longer at a task compared with those with low self-efficacy [37]. SLPs need to feel confident in their ability to facilitate AAC use. For this reason, it is necessary to also look at the perceived outcomes of coaching methods from the perspectives of SLPs.

The Current Study

The purpose of this phase one exploratory study was to determine the feasibility and safety of a distance coaching program to increase use of AAC implementation strategies and to determine if the instructional coaching impacted the self-efficacy of SLPs in their implementation of evidence-based AAC strategies. Specifically, the following research questions were examined: (1) Does distance coaching increase the frequency of SLPs use of evidence-based AAC implementation strategies for children in EI with AAC needs after one coaching session? (2) Does distance coaching focused on AAC implementation strategies improve the self-efficacy of SLPs working with children in EI with AAC needs?

METHODS

Research Design

A within-subject pretest-posttest comparison design was used for this phase one exploratory study to assess if one session of distance coaching could improve the frequency of SLPs providing evidence-based AAC implementation strategies. It included working SLPs and their clients, designed to minimize disruption to the clinical process. This study included measurement of baseline data followed by data from the intervention phase. A pre-coaching and post-coaching self-efficacy questionnaire was used to explore if distance coaching of SLPs improved their self-efficacy. A final survey, with a qualitative portion comprised of

open-ended questions, was also provided to participants in an attempt to understand more about the challenges, limitations, and benefits of this type of coaching model.

The distance coaching intervention was the independent variable for this study. All participants received the same intervention structure, following specific coaching guidelines. There were two dependent variables for this study: (1) the frequency of SLPs use of evidence-based AAC implementation strategies, and (2) the self-efficacy of SLPs regarding their ability to implement AAC intervention strategies before and after the coaching intervention.

Participants

This study was approved by Nova Southeastern University's (NSU) Institutional Review Board (IRB). There were three dyad participant groups; each dyad consisted of an SLP and a child in need of services. In total there were 3 SLPs and 3 children. The three SLPs were recruited through the local county's EI program using convenience sampling. The assistant commissioner for children with special needs at the county's Department of Health was interested in the possible addition of distance AAC coaching to the EI program and was therefore contacted to aid in recruitment.

The inclusion criteria for the SLP included: (1) have a valid New York speech-language pathology license (2) certified by the American Speech-Language-Hearing Association (ASHA), (3) have a child on their caseload with AAC needs who received EI speech-language therapy services, and (4) provided therapy to the child in English. The inclusion criteria for the children included: (1) under three years old, (2) receiving speech-language therapy at least one time per week through EI, and (3) exposed to some type of AAC in their therapy sessions. Caregivers had to sign a consent form for their child to participate. The exclusion criteria for SLPs included: (1) if they were a clinical fellow and (2) had less than one year of experience. The exclusion criteria for the children included: (1) if they were turning three years old within an 8-week period from when the study began and (2) if they required bilingual speech-language therapy services **[38]**.

The participants were given a moniker to ensure anonymity (i.e., SLP A, Child A, SLP B, Child B, SLP C, Child C). SLP Participant experience levels can be found in **Table 1**.

Participant	Number of Years Working in EI	AAC Training Background
SLP A	6-10 years	One academic course in AAC while in graduate school, with no additional training or clinical instruction in AAC since then
SLP B	1-5 years	One academic course in AAC while in graduate school and had Picture Exchange Communication System (PECS) Level One training
SLP C	1-5 years	No formal training in AAC.

Table 1: SLP Participant Experience Level

MATERIALS

Creation of Materials

The Coaching Practices Rating Scale **[27]** was used as a guideline to implement evidence-based coaching practices with the treating SLP to promote self-assessment, self-reflection, and new knowledge and skills.

Creation of Materials

The SLP Self-Efficacy Pre-coaching/Post-coaching Questionnaire was created specifically for this study to obtain the SLPs' self-efficacy before and after the distance coaching experience. Training that results in high self-efficacy beliefs is more likely to lead to desired outcomes **[39]**. Specific self-efficacy (SSE) has been reported to provide more knowledge about how a training program works as compared to general self-efficacy (GSE) **[35].** For that reason, questions related specifically to the predetermined AAC implementation strategies for coaching were used for the this close-ended self-efficacy questionnaire. SLPs were required to indicate their level of agreement with statements related to self-efficacy written in the affirmative followed by a 5-point Likert scale (*1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree*). The same questionnaire was used before and after the coaching session. To establish validity of this tool, three SLPs (not the study participants) were asked to complete the questionnaire and determine whether the directions, questions, and answer choices were understandable and valid for participants.

We created a checklist for the AAC implementation strategies to ensure that the SLP used all strategies during their sessions [called the AAC Implementation Strategies Checklist (AAC-ISC) hereafter]. Three content area experts (CAEs) in the area of AAC were asked to rate this checklist to ensure the validity of the strategies. For each strategy, the CAE was asked to rate if they agreed or disagreed that the strategy was "understandable" and "important" to AAC implementation. Three out of three CAEs either agreed or strongly agreed that each of the strategies were both understandable and important. All strategies were rated equally relevant and applicable to the wide range of AAC interventions available. The following strategies were used:

1. Use of relevant and core vocabulary **[40-42]**. Core vocabulary makes up approximately 80% of the most-used words in the English language. These words include linguistic forms such as pronouns, verbs, demonstratives, prepositions, and adverbs and include words such as more, again, stop, go, finished, me, this, and that. Focusing on core vocabulary provides the child with high utility vocabulary that can be modeled and used to communicate a variety of messages across settings. The remainder of words in an individual's vocabulary are known as fringe vocabulary, which consists mainly of nouns. Robust vocabulary selection can facilitate the development of a range of communicative functions (e.g., requests, protests, comments, directives, questions, greetings).

2. Use of aided augmented input **[42,43]**. Aided augmented input refers to systematic modeling with input from two or more modalities, one of which includes the individual's AAC system. This input fosters improvement in receptive and expressive vocabulary, pragmatics, and expressive syntax. and allows for demonstration of contextually appropriate use of specific symbols and language across environments.

3. Use of the PoWR strategy **[44]**. The acronym PoWR, created by stands for Provide opportunities, Wait, and Respond. It was created to provide communication partners with a structured approach to facilitating language with AAC. Providing opportunities for communication may initially involve environmental arrangement (i.e., set up the environment to increase the likelihood the child will communicate), establishing joint attention, and choosing motivating tasks and activities. Once these tasks are arranged, specific to each child and environment, the opportunities provided may include asking questions, commenting, or providing choices to the child. Other methods may include engineering the environment, providing small amounts of preferred items or opportunities, briefly delaying access to something, or using fill-in-the-blank activities **[41]**. Next, the communication partner should wait for child's communication, which includes using an expectant pause, waiting at least five seconds after providing an opportunity to give the child time to respond. Respond to the child's communication includes encouraging communication partners to respond to the child's communicative attempt, even if the communication was unclear, asking for clarification if necessary.

4. Train Communication Partners **[41,40,45]**. SLPs must take the time to train others interacting with the child, especially those with whom they interact most. This may include caregivers, family members, other therapists, teachers, paraprofessionals, and friends. A skilled communication partner is one who recognizes communicative attempts, offers scaffolding, models language, and shapes behaviors into more appropriate forms of communication. SLPs can offer strategies to caregivers for AAC implementation and provide concrete examples relating to language facilitation outside of therapy either during or after therapy.

A post-coaching intervention survey was also created for the SLPs which included close-ended questions about the coaching experience as well as an open-ended comment section to evaluate the intervention for educational and technical aspects.

Procedures

Recruitment

To recruit participants (SLPs and children), the Assistant Commissioner for Children with Special Needs at the Westchester County Department of Health shared a recruitment email with both SLPs and caregivers of children who met inclusion/exclusion criteria. The recruitment process was complete when three cohorts (i.e., both SLP and child/caregiver) signed consents to participate. The first two original cohorts completed the study without any dropout. The third original cohort dropped out of the study after two baseline sessions secondary to scheduling difficulties between the SLP and the child's caregiver. Another third cohort was recruited through the aforementioned process and subsequently completed the study.

After recruitment, the study length was planned to last approximately 6 weeks and included observation of three initial baseline speech-language therapy sessions (one onsite and two via videoconferencing), followed by one distance coaching session, and two subsequent speech-language therapy sessions *(via* videoconferencing). It should be noted that due to the global health crisis of Covid-19, face-to-face interactions in EI services in New York state, as previously planned, were no longer permitted; therefore, the first interaction between AAC coach and participants was changed from onsite to videoconferencing. In addition, all interactions between SLP and child participants were also changed to videoconferencing to provide an equivalent experience. For videoconferencing and recording, the Zoom[2] software was used. The remainder of this section will discuss the procedure during each week of the study.

Before Week 1: The "AAC coach" and "Observer" reviewed the Coaching Practices Scale and completed a trial using the AAC-ISC to ensure results were reliable. The AAC coach was the individual who provided the distance coaching to the SLPs and the Observer would review videos of sessions to track data. Using Simucase[1] software, both the AAC coach and Observer rated the frequency of AAC strategies implemented during the same two AAC virtual therapy sessions using the AAC-ISC.

The distance coaching software was reviewed with the treating SLP and caregiver via phone in preparation for the first videoconferencing interaction. The SLPs completed the Self-Efficacy Pre-Coaching Questionnaire.

Week 1 & 2: During weeks 1 and 2, the AAC coach, SLP, child and caregiver met via videoconferencing for 3 speech-language therapy sessions. During this observation phase of coaching, the treating SLP provided speech-language therapy services, approximately 30 minutes, and the sessions were recorded for baseline data. The AAC coach did not provide any instruction during the sessions. Directly after the first session, the AAC coach met with the SLP and caregiver for approximately 30 minutes to inquire about the background knowledge of service delivery, goals and challenges. After the sessions, the AAC coach and Observer reviewed video recordings of the three baseline sessions and completed the AAC-ISC. They compared data and discussed discrepancies until they were in agreement.

Week 3: The AAC Coach provided the SLP a 1-hour distance coaching session reviewing the specific AAC-ICS strategies for implementation. The coaching activities included (1) the AAC coach provided descriptions and demonstrations of each strategy and examples of how it could incorporated into therapy sessions during play (2) review of activities for strategy implementation based on interest and motivation (3) the opportunity for the SLP to role play specific strategies with the AAC coach to practice and demonstrate comprehension (4) an opportunity for the SLP to obtain feedback from the AAC coach, self-reflect on their use of the strategy, and ask questions, as needed. Fidelity checks for the principles of coaching were conducted before the start of the procedures.

Week 4: The AAC coach observed the treating SLPs' implementation of AAC intervention strategies with the child in the session. After the session, the AAC coach asked SLPs to reflect on their therapeutic interaction and encouraged them to analyze the implementation of strategies, including what went well and if any issues arose. The AAC coach then provided supportive and corrective feedback if required.

The AAC coach and Observer reviewed the video of the fourth session and once again completed the AAC-ISC, subsequently comparing data and discussing discrepancies until they were in agreement. The SLPs completed the SLPs Self-Efficacy Post-Coaching Questionnaire.

Week 5: Week 5 was allowed as a break.

Week 6: The AAC coach conducted an additional observation of the SLPs during a speech-language therapy session with the child. The AAC coach and Observer reviewed the video of the fifth session and once again completed the AAC-ISC. The three SLPs also completed the SLP Post-Coaching Intervention Survey after week 6.

Data Analysis

When data were collected *via* the AAC-ISC, 100% of the AAC coach's observations were also checked by the Observer for reliability of the data. If there were any discrepancies among the observations, the items were discussed until an agreement was reached.

This study followed a within subject design across multiple participants. The comparison responses were between the participants' own pretest and posttest responses. The SLP Self-Efficacy Questionnaire pretest data was compared with the posttest, as well as data from the AAC-ISC regarding the frequency of AAC intervention strategy use before and after the coaching intervention. Visual analysis was used to monitor the results of the intervention [46]. Data analysis for this study relied heavily on visual inspection, in which the participant's data was plotted individually and examined to make judgments about whether or not- and to what extent- the distance coaching had an effect on the SLPs' self-efficacy and/or frequency of AAC strategy use [47].

The qualitative data from the open-ended question portion of the SLP Post-Intervention Survey was analyzed by grouping statements and ideas according to emerging themes. The data were analyzed to determine if SLPs' perceptions of the coaching intervention related to the quantitative data.

RESULTS

AAC Strategy Use

For data analysis purposes, the speech-language therapy session length was kept the same for each individual cohort for consistency. Therefore, the shortest session duration became the standard amount of time for data tracking for that cohort. Session duration for SLP A was 27 minutes, SLP B was 23 minutes, and SLP C was 28 minutes.

It should be noted that due to the global health crisis, all speech-language therapy sessions were completed via telehealth, rather than the typical in-person format. Due to this modification, caregivers were required to take a more primary role in facilitating therapy activities and provide support to the child, likely impacting SLPs' participation. For example, if the SLP was providing therapy services in-person, they may provide a communication opportunity and then wait for the child's response. In many cases during this study in the videoconferencing sessions, the caregiver often intervened after the SLP provided such opportunities, decreasing the SLPs frequency of strategy use. This was often noted during use of the PoWR strategy, during which the SLP provided an opportunity for communication and attempted to wait for the child, but then the caregiver intervened. Additionally, due to this alternation in format, the criteria for observing the SLP train a communication partner was altered. **Figures 1, 2, and 3** demonstrate AAC strategy use across sessions from baseline to follow-up. From baseline sessions to either post-coaching or follow-up sessions, two of the three SLPs increased frequency of at least one AAC strategy.

SLP A: As seen in **Figure 1**, SLP A demonstrated variability in frequency of AAC strategy use. From baseline to post-coaching, increases were observed in SLP A's inclusion of relevant vocabulary. A noteworthy clinical observation during the post-coaching session included that Child A put two words together for the first time using a combination of a hand gesture plus word approximation (i.e., MORE + *ball*). SLP A and caregiver reported that this was the first time Child A used a 2-word utterance.

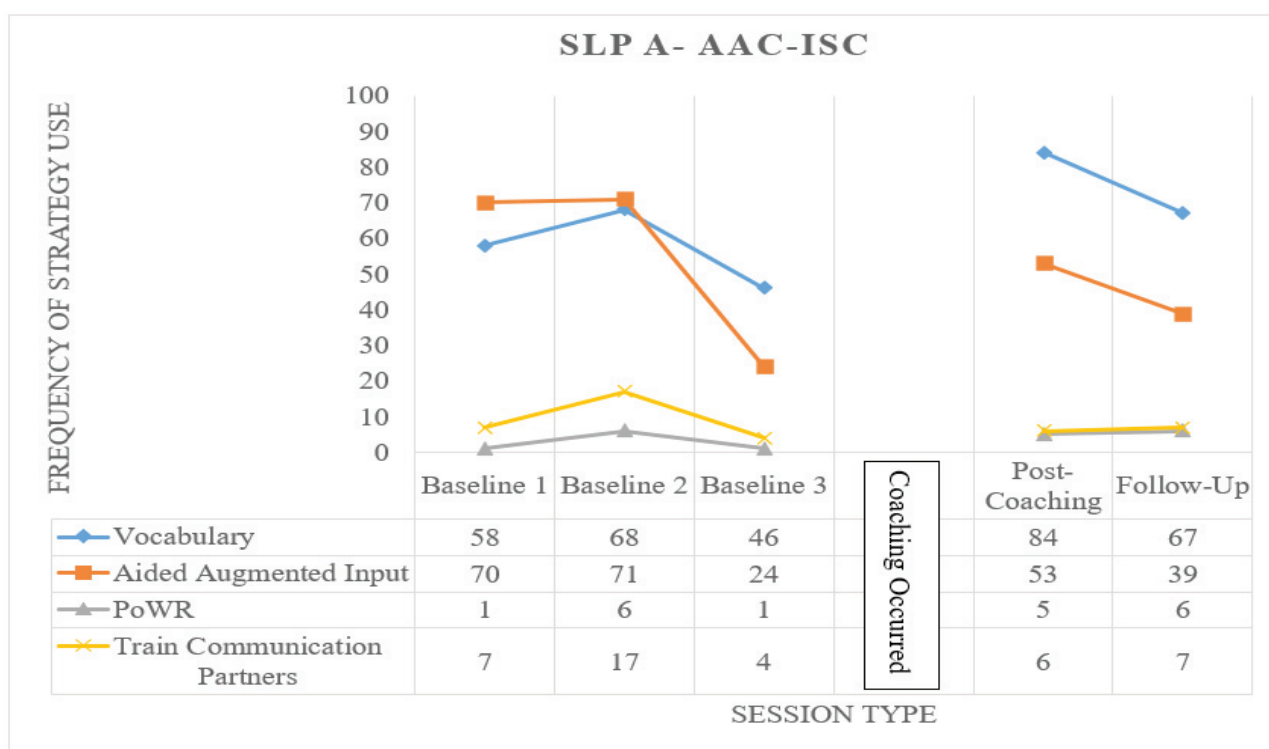| SLP A- AAC-ISC	Baseline 1	Baseline 2	Baseline 3	Coaching Occurred	Post-Coaching	Follow-Up
Vocabulary	58	68	46		84	67
Aided Augmented Input	70	71	24		53	39
PoWR	1	6	1		5	6
Train Communication Partners	7	17	4		6	7

Figure 1: Strategy Use of SLP A Across Sessions

SLP B: During the post-coaching session, SLP B introduced a six-cell grid with target vocabulary/picture symbols of *MORE, FINISHED, BLOW, WANT, BUBBLE, ME*. During the follow-up session, SLP B introduced another six-cell communication grid with target vocabulary *MORE, FINISHED, WANT, ROLL, PLAYDOH, ME*. As seen in **Figure 2**, during the follow-up session, SLP B included more vocabulary in the session as compared with baseline sessions. SLP B provided increased use of aided augmented input during both the post-coaching and follow-up sessions as compared with the baseline sessions. During the post-coaching session, SLP B increased the frequency of training opportunities for Child B's communication partner.

SLP C: As seen in **Figure 3**, there were no notable quantitative differences between baseline and post-coaching and follow-up sessions for SLP C. From baseline sessions to post-coaching, all of SLP C's use of AAC strategies decreased. SLP C introduced and implemented a novel low technology communication board discussed during coaching (i.e. two-cell grid with "*more*" and "*finished*" symbol-based icons). Notable clinical observations during the session included that the child was attentive to the communication board. While the caregiver provided aided augmented input using the communication board, the child visually attended to the modeling. Additionally, he was observed to point to pictures on the communication board two times to request MORE of a preferred item. As per parent report, this was a novel communication occurrence for Child C.

SLP B- AAC-ISC

	Baseline 1	Baseline 2	Baseline 3	Coaching Occurred	Post-Coaching	Follow-Up
Vocabulary	30	23	43		34	54
Aided Augmented Input	16	14	31		40	37
PoWR	2	1	0		1	0
Train Communication Partners	1	6	1		9	2
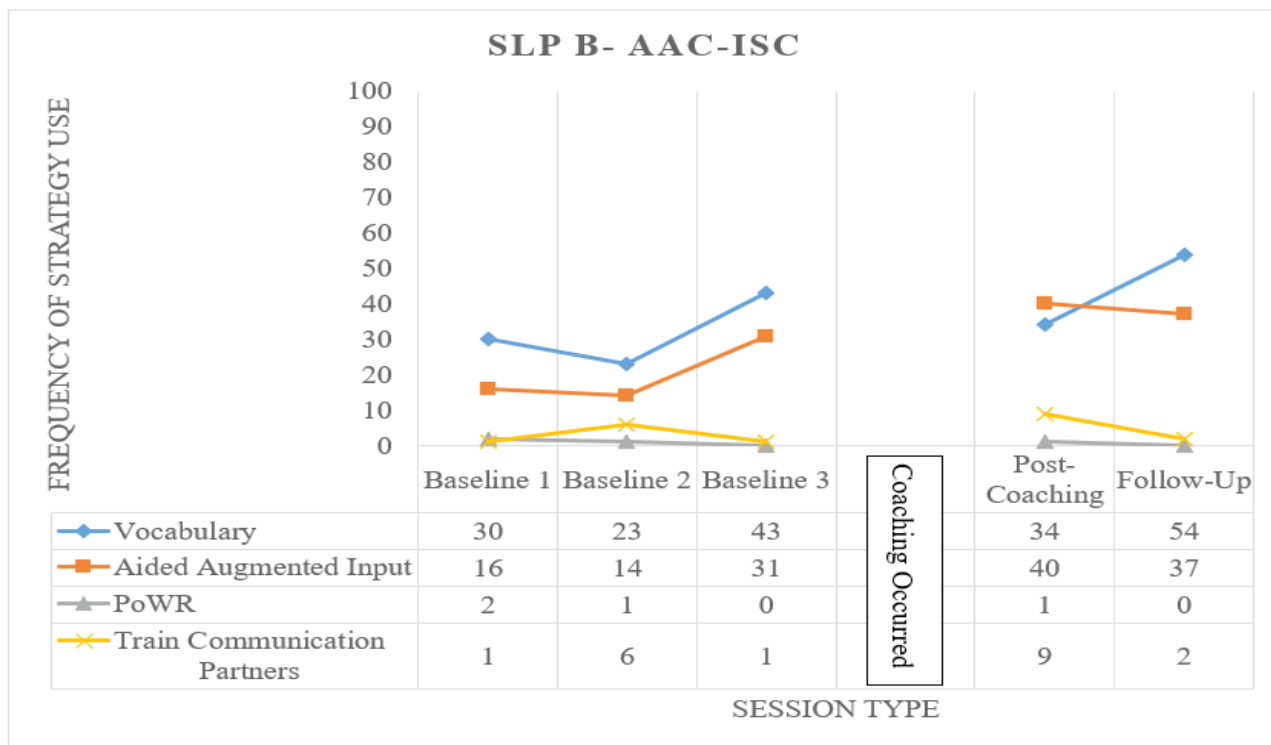
Figure 2: Strategy Use of SLP B Across Sessions

SLP C- AAC-ISC

	Baseline 1	Baseline 2	Baseline 3	Coaching Occurred	Post-Coaching	Follow-Up
Vocabulary	38	57	53		22	44
Aided Augmented Input	51	44	52		14	32
PoWR	0	1	3		0	1
Train Communication Partners	25	27	39		9	34
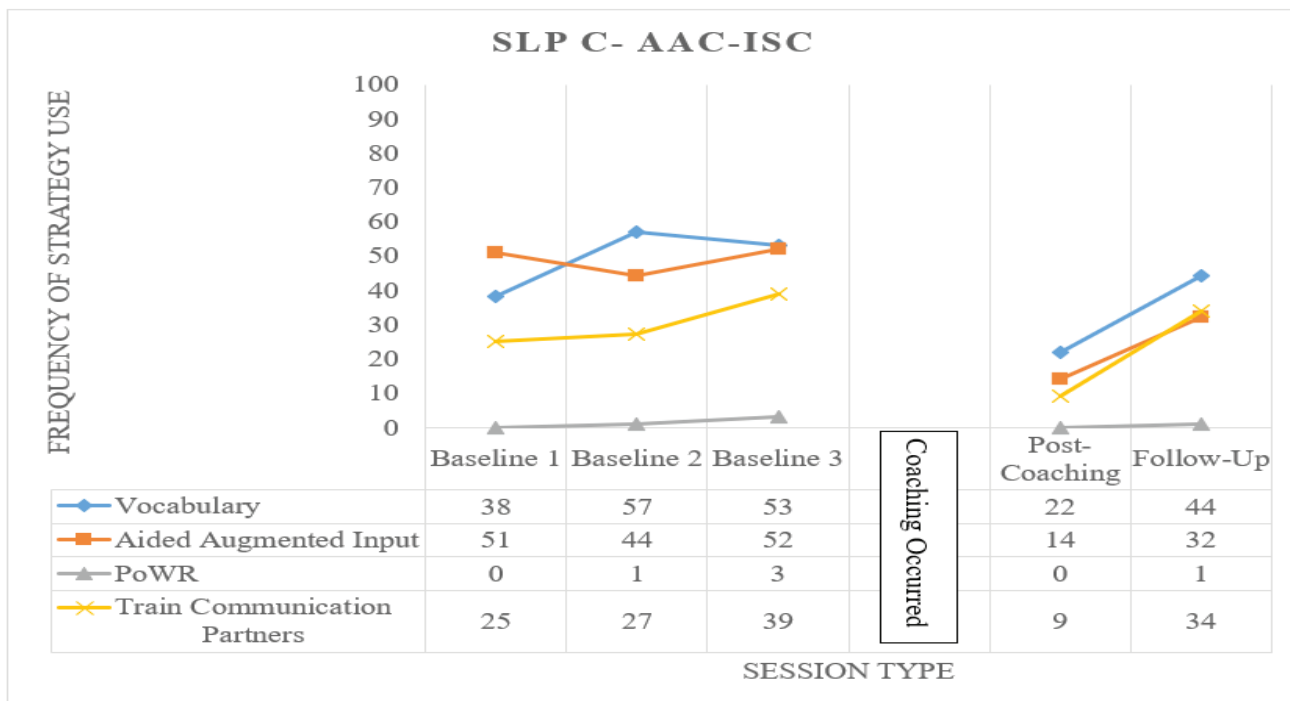
Figure 3: Strategy Use of SLP C Across Sessions

SLP Self-Efficacy

SLPs' Self-Efficacy Questionnaire scores from pre-coaching to post-coaching calculated and analyzed. For example, if an SLP responded "neither agree or disagree" to a question at pretest, and "agree" at posttest, the change score would be +1. The change scores for each SLP participant are presented in **Table 2**.

Question	SLP A	SLP B	SLP C
1. I feel competent working with children in EI with AAC needs.	0	0	+1
2. I am confident in my ability to choose relevant vocabulary for AAC implementation.	+1	+2	0
3. I am confident in my ability to provide children with opportunities for communication via AAC.	+1	+1	+1
4. I am confident in my ability to provide appropriate wait time for a child to respond to communicative opportunities.	+1	+1	0
5. I am confident in my ability to respond to a child's communication.	+1	+1	+1
6. I am confident in my ability to provide aided augmented input.	+3	+1	+1
7. I am confident in my ability to train communication partners.	0	0	+1
Total Change Score	**+7**	**+6**	**+5**

Table 2: Change Scores for Pre/Post-Coaching Self-Efficacy Questionnaires

All three SLP participants' total change score improved by at least five points from pre-coaching to post-coaching. It should also be noted that all participants had either neutral or positive changes scores; no negative change scores were observed. There was at least one positive change score for each question across participants. All SLPs had positive change scores in the areas of providing children with opportunities for communication via AAC, responding to a child's communication, and providing aided augmented input. The most positive change score across all three SLP participants included increased confidence in their ability to provide aided augmented input (i.e., total +5 change score for that item).

Intervention Survey Results

On the SLP Post-Coaching Intervention Survey, three of three SLP participants agreed that the coaching experience improved their knowledge and skills in AAC implementation. All SLP participants strongly agreed that their clients in EI would benefit from having communication partners trained to implement AAC goals. Three of three SLP participants either agreed or strongly agreed that distance coaching could be a potential strategy to train communication partners about how to implement AAC strategies. All three SLP participants agreed or strongly agreed that the videoconferencing equipment was easy to use.

All three participants cited positive experiences with the distance coaching. SLP A reported, "I enjoyed the coaching. I got some new perspectives about Aided Augmented Input and the power of waiting." SLP B reported, "The coaching session was informative and helpful. I think that it would be helpful for the AAC coach to assist in the implementation of the coaching model. If possible a 0.5 hour of coaching the SLP and then introduce the AAC with the SLP during a telehealth session." SLP C reported, "The coaching was very helpful. I feel like I learned a lot that I can use with other clients as well."

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DISCUSSION

The purpose of this study was to examine (a) if distance coaching increased the frequency of SLPs' use of evidence-based AAC implementation strategies after one coaching session and (b) if distance coaching focused on AAC implementation strategies improved the self-efficacy of SLPs. This study met the goal of a phase one exploratory study to determine the feasibility and safety of the distance coaching intervention.

AAC Strategy Use

Results indicated that after one session of distance coaching, limited and varied increases were noted in SLP use of targeted AAC strategies. A variety of factors may be related to this result. First, only one session of distance coaching of pre-determined AAC implementation strategies was provided. The distance coaching did not account for the individualized variability of strategy type required for each individual child.

Frequency of strategy use may have also been impacted by the speech-language therapy session format. The study procedure originally planned for all speech-language therapy sessions to occur in-person/onsite with only the distance coaching session to be held via videoconferencing. As previously mentioned, this was not possible due to the global health crisis. Through the telehealth delivery method, caregivers were required to take a more primary role in facilitating therapy activities and provide support to the child, likely impacting SLPs' frequency of strategy use.

Across participants, there was much variation in the caregivers' abilities to implement the strategies shared by the SLP. Some children demonstrated interfering behaviors (e.g., crying, screaming, unsafe movements) that made it more difficult for the caregiver to implement new strategies during a session. Some caregivers also required more repetition and teaching from the SLP. For this study, frequency of strategy use was calculated without examining the quality or context of implementation. This did not allow for inclusion of external factors related to the child or caregiver's participation, mood, fatigue level, preparation of resource, and performance. With the ability to now do speech-language therapy sessions in-person again, it would be interesting to note if SLP use of AAC strategies would improve given the ability to play a more hands-on role in the session.

SLP Self-Efficacy

All SLP participants had positive change scores in the pre-coaching and post-coaching self-efficacy surveys, potentially indicating improved self-efficacy after one distance coaching session. In addition, all SLPs reported that the coaching experience was beneficial to their treatment. This indicated a level of acceptance and willingness of SLPs to actively support and participate in this type of coaching in the future. This correlates well with previous research that indicated positive results when evaluating coaching as a method to support clinician facilitation of language for children with AAC needs in EI [19-22, 26]. Light and McNaughton [34] highlighted the importance of finding ways to disseminate information and enhance effective team implementation of evidence-based AAC strategies for children with AAC needs. Based upon the encouraging results of this study, distance coaching for SLPs has the potential to be one such strategy. With an increase in SLP confidence in AAC implementation, performance levels could continue to increase with more coaching and training opportunities.

The SLP participants reported that the coaching was not only helpful for the child participant in the study, but that they applied what they had learned in coaching to other children on their caseloads. In New York state and other areas of the country, there are often waiting lists for AAC evaluations and treatment with one of the reasons cited being that there are not enough SLPs trained in AAC. An effective distance coaching model has the potential to improve both the SLPs' knowledge and skills in AAC as well as the clients' communicative competence; thereby reaching more clients in need of these services.

Limitations

There are several limitations to this study. Convenience sampling was used rather than random assignment of participants which limits the study's generalizability. Given the small sample size of three dyads, the data should be interpreted with caution and cannot be generalized to other populations without further replication. These observations were based on visual inspection of the data; therefore, more data are required to generalize any result.

The total sessions (baseline, coaching intervention, post-coaching) offered a limited snapshot of SLPs' baseline and post-coaching performances. The literature did not specify the number of coaching sessions required to increase an adult's knowledge in AAC implementation; therefore, additional research in this area is warranted.

Future Directions

Phase Two of this study would look to to examine the effectiveness of the distance coaching program. Future studies should include a more robust research design with an increase in the number of baseline, coaching, and post-coaching sessions to allow

for a more reliable reflection of SLP performance. The coaching should focus on one strategy at a time (e.g., aided language input, vocabulary, PoWR) to ensure opportunities to model, practice, and provide feedback. It would be interesting to examine if a greater number of sessions of distance coaching, with increased opportunities for role-play and feedback from the AAC coach, would affect SLP strategy use. Other possible areas to examine include the caregiver's use of strategies and the child's communication outcomes. Frequency of AAC strategy use can be compared to outcome measures on a child's communication including their linguistic, operational, strategic, social, and psychosocial competence of AAC.

CONCLUSION

The results of this phase one exploratory study will aid in planning future research regarding application of distance coaching models for EI providers, an area where limited research information is available. Increases in self-efficacy and AAC strategy use may lead to effective implementation and use of aided and unaided AAC, reduced device abandonment, and improved communication outcomes for children with AAC needs. The spread of this information to areas with limited AAC specialists can allow more SLPs to gain knowledge in the area of AAC and improve functional outcomes of the children and families with whom they are working. An effective model for distance coaching, can allow for specialists to cast a wider net for sharing valuable content with other professionals in the field in not only the specialty area of AAC, but also other such as feeding and swallowing therapy where specialists are difficult to find.

Endnotes

[1]Simucase is an internet-based tool that provides those in the speech-language pathology field with a video library of virtual patients to observe, assess, diagnose, and provide intervention to in order to help master specific clinical skills and practice interprofessional collaboration. www.simucase.com

[2]Zoom is a cloud-based video conferencing service by Zoom Video Communications that allows individuals to virtually interact. www.zoom.us

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