

An AAC Training Program for Special Education Teachers: A Case Study of Palestinian Arab Teachers in Israel

RUPAL PATEL^{a*} and REEM KHAMIS-DAKWAR^b

^aNortheastern University, Boston, USA; ^bTeachers College Columbia University, USA

We present an augmentative and alternative communication (AAC) training program provided to 20 special education teachers in a Palestinian Arab community in Israel. The training program consisted of didactic workshops interleaved with on-site supervision. Instructional goals included creating awareness, imparting knowledge, and assisting teachers to develop and use AAC within their classrooms. Prior to training, we administered a questionnaire to assess teachers' knowledge, practices, and attitudes in relation to AAC. The questionnaire was re-administered and individual interviews were conducted post-training to determine the program's impact on knowledge, practices, and attitude barriers. Teachers' responses revealed that training helped them to address barriers to AAC intervention. The responses also provided insights into the linguistic and cultural challenges of AAC implementation within the Palestinian Arab community.

Keywords: AAC training models; special education; barrier model; knowledge; practice; attitudes; Palestinian; Arabic

INTRODUCTION

At present, there is only limited information on the use of augmentative and alternative communication (AAC) in Israel. There is, however, good reason to believe that many individuals in need of AAC are not receiving appropriate services. Merrill, Yilon-Haimvitz, Weiss, Lebel, and Seligman-Wine (2000) conducted a demographic study of AAC services in Israel that focused on service delivery in Jewish community schools for students with cerebral palsy and/or moderate-severe developmental delays. Their results indicated that 36% of the students with multiple impairments had severe speech impairments. Moreover, AAC implementation in these educational settings was often found to be partial and insufficient: for example, 36% of the students with severe speech impairments did not receive AAC intervention, 41% did not use AAC despite receiving AAC intervention, and 35% of the students with severe speech impairments did not receive AAC interventions and therefore did not use AAC. The

situation for the Arab community in Israel, which is economically disadvantaged in comparison to the general population, is thought to be characterized by even poorer service delivery and implementation (Hezroni, 2002).

In an attempt to assess obstacles in AAC implementation, Merrill et al. (2000) addressed the training of professionals in Israel who worked in AAC, including speech language pathologists (SLPs), occupational therapists (OTs), and special educators. They reported that most of the training programs were located in the capital city of Jerusalem, which isolated SLPs and other professionals in rural areas from AAC resources and educational opportunities. Arab professionals and families, as well as other minority professionals in rural areas, were further cut off from services because training and resource materials were typically available only in Hebrew (Fromm, 1996; Patrick, 1990; Taylor, 1995).

Balandin and Iacono (1998) have argued that having limited access to culturally and linguistically appropriate AAC resources is most detri-

*Corresponding author. Dept. of Speech Language Pathology and Audiology, Northeastern University, 360 Huntington Ave., 102 Forsyth Building, Boston, MA, 02115, USA. Tel: 617.373.5842. Fax: 617.373.2239. E-mail: r.patel@neu.edu

mental to new or relatively inexperienced professionals. Many SLPs trained in Israel have limited knowledge of and experience with AAC because most academic departments of communicative disorders subscribe to what Ratcliff and Beukelman (1995) referred to as an "infused training" (p. 67) pedagogy of AAC instruction, in which students receive only brief and often insufficient exposure to AAC principles and practice. In addition, many clinicians may not be adequately prepared to assess and implement AAC strategies within ethnically diverse communities. These dynamics often translate into serious consequences for the quality of interventions offered to culturally and linguistically diverse individuals with severe developmental delays.

In this report, we focus on an in-service training program provided to Palestinian Arab special education teachers living in rural areas of Israel. Within the current sociopolitical climate, it is essential to support the training of Arab professionals in rural settings for several reasons. First, there are a limited number of certified Arabic SLPs in Israel. A non-governmental human rights association reported that, in 2000, only 21 of the 1,185 speech therapists in Israel were Palestinian Arabs (Human Rights Watch, 2001). This figure is all the more striking given that the Arab population is comprised of approximately 1 million children (Human Rights Watch, 2001). Several researchers have suggested that the lack of professionals specially trained in AAC results in a lack of AAC services to this segment of the population (ASHA, 1981; Merrill et al., 2000; Silverman & Brady, 1978). Second, the limited resources available to Arab teachers, particularly in the area of AAC, may lead to limited teacher competency in providing AAC services. Balandin and Iacono (1998), for example, found in their survey of Australian SLPs that the most common reason reported for not recommending AAC use was the family or teacher's lack of AAC knowledge or skills. These issues may be even more potent in cultures with different social structures, different sets of beliefs about health and disability, and different expectations of professionals. Barzon (1999)¹ documented that families of children with special needs in Israel are "anxious about letting others make decisions about their child" (p. 24). Once a clinician becomes involved with the child, however, his or her parents often set high expectations for the professional, including that the treatment will cure the child. Third, in light of The Special Education Law in Israel (1988), which mandates that every child be included in all aspects of society, it is critical to empower professionals and families of children with special needs with the knowledge and skills

they need to facilitate communication development.

Our training program was aimed at Palestinian Arab teachers living in rural areas in Israel who were working within the Arab special education system. The teachers and the children who could benefit from AAC services were part of the Palestinian minority living within Israel, and which constitutes approximately 20% of the Israeli population (Human Rights Watch, 2001). These Palestinians share the Arabic language as their mother tongue, as well as Arabic cultural values and beliefs and historical memory. The Palestinian minority in Israel is comprised of individuals from three religious groups: Muslims (76%), Christians (15%), and Druz (9%) (Adalah, 1998). A majority of this population live in rural areas in northern Israel, and as a whole, most families have low socioeconomic status (Human Rights Watch, 2001).

Previous AAC Training Models

Several training models for AAC implementation have been presented in the literature. Shane and Yoder (1981) presented three models of AAC delivery: the first was the Local Educational Agency model, which focused on the professional development of educational specialists so that they would be able to assist in AAC implementation within educational settings. The second was the Itinerant Team model, which focused on developing a multidisciplinary Itinerant Specialty Team (IST) that would be responsible for monitoring and revising AAC interventions within a prescribed geographic area. The third model was the Specialty Clinic model, in which comprehensive assessment, prescription, and device fitting were provided to individuals who used AAC, along with professional training and family consultations.

Collier and Blackstein-Adler (1998) presented three training models that addressed three graduated levels of competence development in AAC. The first, Building AAC Awareness, involved a mobile educational lab about AAC that was designed as a self-study environment and contained AAC resources, such as videotapes and books, as well as study stations of documented case presentations and instructional material. The lab was placed at station-sites for approximately 20 days at a time. The second, Building Basic AAC Competencies model, targeted SLPs and OTs. The goal was to increase awareness of AAC resources and to develop networking among AAC professionals. The third model was the Building Specialty AAC Competencies model, the goal of which was to develop a specialized, transdisci-

plinary AAC team with the cooperation of at least two service agencies.

The program described in the current study was based on the participation model (Beukelman & Mirenda, 1998). The goal of the in-service training program was to decrease the adverse effect of three relevant barriers—knowledge, practice, and attitude—that influence the implementation and the effectiveness of AAC intervention. Briefly, *knowledge barriers* are established when members of the intervention team (e.g., teachers, caregivers) have limited understanding of AAC techniques and strategies; *practice barriers* exist when commonly held practices within schools limit participation opportunities for children with AAC needs; and *attitude barriers* consist of negative or restricted attitudes towards the use and effectiveness of AAC and reduced expectations for children with complex communication needs.

The participation model was employed so that issues of training, programming, and evaluation could be addressed within a common framework, which has not been evident in previously published training programs such as the three training models described by Collier and Blackstein-Adler (1998). Additionally, we incorporated Frey's Communication Disorder Model (1984) to assess the effectiveness of AAC intervention along the World Health Organization's (WHO) taxonomy of impairment, disability, and handicap.

Although previous reports have noted the need for in-service training (e.g., Collier & Blackstein-Adler, 1998), few studies have demonstrated the benefits of staff training and its effectiveness in building competencies. We attempted to document the impact of our training by administering a pre- and post-training questionnaire and by interviewing teachers post-training to learn about changes that had occurred in their knowledge, attitudes, and use of AAC in the classroom.

METHOD

Participants

Special Education Teachers

Twenty teachers from the Northern Arabic District of the Ministry of Education in Israel participated in this study. All of the teachers worked in special education schools for students with mild to moderate intellectual disabilities. Teachers ranged in age from 25 years to 56 years (mean = 29 years). Three of the teachers were males and 17 were females. All were Palestinian citizens of Israel. They all spoke Arabic as their mother tongue, and Hebrew and English as their

second and third languages, respectively. All teachers had at least a Bachelor of Education degree and their years of teaching experience ranged from 1 to 36 (Mean = 11 years). Six of the teachers reported having received supervision in AAC during their final year of college, in the form of practical training or through work in special education institutions in Jerusalem. Teachers were recruited through word-of-mouth and from the Mar Elias College, which provides in-service training to teachers in Israel.

Students. Thirty-four students were also involved in this training, by virtue of being in the classrooms of those teachers who took part in the study. Each teacher was asked to identify at least one child within his or her classroom whom they felt could benefit from AAC intervention. Nine teachers decided to apply AAC intervention with only one child, 10 teachers applied it with two children, and one teacher applied it for all five of the children in her class. The students varied in the severity and nature of their communication needs. Three students exhibited symptoms consistent with Pervasive Development Disorder (PDD), four had dyspraxia, seven had cerebral palsy, and 10 students were diagnosed as having developmental delay. As a group, all the students were from Arabic-speaking homes, and ranged in age from 3 to 17 years (mean = 10 years). Students attended schools in the northern district of Israel and were diagnosed with mild-moderate intellectual disabilities as the primary disability. None of the students had a prior history of receiving AAC services, but two of the children had received speech and language interventions.

Data Collection

Questionnaire

Development. The two trainers who conducted the workshop designed the questionnaire. The first trainer (second author) was a certified SLP with more than 5 years of experience working with children with autism and developmental delays in the field of AAC. The second trainer was a special education teacher with over 15 years of experience. The questionnaire was designed to elicit teacher responses that would reflect changes in (a) the depth and accuracy of knowledge about AAC, (b) common practice and use of AAC in schools, and (c) teacher attitudes toward the use and effectiveness of AAC with children who have severe intellectual disabilities, following training. All of the questions were open-ended in order to elicit as much information as possible without constraining teacher responses.

To assess the content validity of the questionnaire, two additional Arabic-speaking SLPs and a special educator examined the first draft. The scope of each question, as well as that of the questionnaire as a whole, was examined. Items that were deemed non-informative or poorly worded for assessing knowledge, practice, and attitudes barriers were removed. An expert in questionnaire development revised the questionnaire with regard to its clarity, flow, and redundancy. Face validity of the questionnaire was assessed by two additional SLPs who were not associated with the Mar Elias College. They confirmed that the content of the questionnaire fulfilled the investigators' stated intentions. The appendix provides an English translation of the questionnaire.

Administration. The questionnaire was administered pre- and post-training to all participating teachers. They were asked to answer the questions without referring to any assisting materials. The questionnaire took approximately 20–30 min to complete (although there were no time constraints) and was conducted in a quiet, comfortable room. All participants were seated in the same room and each teacher received a copy of the questionnaire to be completed individually. The questionnaire was completed anonymously and teachers were asked to be as honest as possible. A brief description of the objectives of the questionnaire was provided in its introduction (see Appendix).

Coding. The questionnaire responses were reviewed and coded by the two trainers. For each questionnaire, the trainers assigned a numerical value (1 or 3 or 5), depending on the accuracy and completeness of each response. The trainers made judgments about accuracy and completeness based on the training curriculum and their professional knowledge. Although some of these judgments were qualitative in nature and, as such, subject to rater bias, it is important to note that the same criteria were uniformly applied to all teacher responses. Every attempt was made to evaluate each response with as open and broad a perspective as possible. The coding scheme with examples of typical responses at each level is presented in Table 1.

Interviews. Post-training, the two trainers conducted interviews with each of the teachers. The aim of the interviews was to further explore whether there had been changes in practices, knowledge, or attitudes with respect to AAC as a result of the training. Qualitative methods, such as semi-structured interviews, provide opportunities to explore issues about service delivery in greater depth. These methods enabled us to consider the interactions between the various

factors to be explored and thereby to provide more comprehensive pictures of the training experience from the perspective of each teacher (Foddy, 1999; Sherman & Reid, 1996).

The interviews consisted of four main open-ended questions, each of which was asked of all participants: (a) What impact did the training have on your instructional practice? (b) What impact did the training have on your attitudes towards AAC and your students? (c) What impact did the training have on your personal development? and (d) Do you have any suggestions for future training programs? To foster a comfortable, familiar, culturally sensitive interview environment, the two trainers conducted all interviews in a quiet room at the school where the interviewees were employed. All of the participants were informed that their responses would remain confidential. The trainers leveraged their rapport of mutual trust and respect that had been established in the training phase to elicit natural and honest responses from the teachers. Each teacher was explicitly informed that there were no correct answers and that the trainers were not looking for any particular responses.

All of the interviews were video-recorded and later transcribed and categorized for analysis by the two trainers. The analysis focused on changes to attitude and practice barriers, as well as documenting thoughts and issues that were raised by the teachers relevant to the training program, the modes of AAC intervention that were taught, future training design, and specific cultural and linguistic issues. The data categories were: (a) AAC knowledge, (b) perceptions about and attitudes towards AAC, (c) AAC practices, (d) student performance, (e) personal and professional development, and (f) suggestions about cultural and linguistic challenges for AAC implementation.

Training

A unique characteristic of the training program was the attempt to integrate the dissemination of knowledge with individually tailored, hands-on supervision to help teachers implement AAC strategies during each phase of the training. The training program comprised two segments. The first segment included lectures that were administered at the Mar Elias Teachers Center, located in Ibillin village within the northern district of Israel. All teachers attended weekly sessions (25 in total). Each session was 4 hours in length with two, 15 min breaks. The sessions included lectures given by the second author for all the participating teachers, and breakout discussion

TABLE 1 Questionnaire coding scheme and teacher responses, pre- and post-training

Question	Response category	Response code	Examples of typical responses	Number of responses	
				Pre-training	Post-training
Knowledge questions					
What types of AAC do you know about?	Inaccurate	1	Computer games, stickers	11	0
	Partially accurate	3	Mix of incorrect (e.g. computer games) and correct (e.g. VOCA) examples, or described some but not all AAC components	9	6
	Fully accurate	5	All AAC components: signs, gestures, pictures, letter boards, writing, VOCAs, and computers	0	14
Who needs AAC?	Inaccurate	1	Healthy non-impaired students, learning disabled students	2	0
	Partially accurate	3	Children with speech impairments	12	2
	Fully accurate	5	Children with expressive and communication impairments	6	18
What functions does AAC serve?	Inaccurate	1	To control a wheelchair	0	0
	Partially accurate	3	Mentioned only one or two of the following functions: communication, speech intelligibility, & social-behavioral	20	4
	Fully accurate	5	Mentioned all functions: speech intelligibility, communication, and social adaptation	0	16
Do you know whether a VOCA can be rented in your community?	No	1	“No.” or “I don’t know.”	2	0
	Yes	5	“Yes” or “Yes, but I don’t know where they can be rented.”	18	20
Have any of your recent readings or professional courses focused on AAC?	No	1	“No.” or “Only when I was a student a long time ago.”	20	0
	Yes	5	“Yes”, or the name/author of the article	0	20
Practice questions					
Which individuals do you consider essential to the AAC professional team?	Inaccurate	1	No response or only one professional was mentioned	6	5
	Partially accurate	3	Teacher and SLP	12	5
	Fully accurate	5	Everyone working with the child	2	10
Which materials do you use for AAC implementation?	Inaccurate	1	No response or toys/games	16	0
	Partially accurate	3	Boardmaker™	4	8
	Fully accurate	5	Boardmaker™, pictures, objects, and letters board	0	12
Attitude questions					
Do you believe that the use of AAC will negatively impact speech production?	Yes	1	“I do”	12	0
	Maybe	3	“Sometimes it does and sometimes it does not” or, “It depends”	4	0
	No	5	“No I do not believe so” or “Not at all.”	4	20

Note: Cumulative number of responses per question = 20

groups comprising four or five teachers. The second segment consisted of supervised sessions, including individual supervision within each teacher’s classroom. Each teacher was required to obtain permission from the parents of the identified children in their classes, in order to work with the children on AAC intervention

goals and to be able to share their records with the training staff. The trainers visited each school every second week, providing approximately 1 hour of supervision to each teacher within a 2 week period. Figure 1 depicts a schematic of the training program. The three phases of the training are described in upcoming sections.

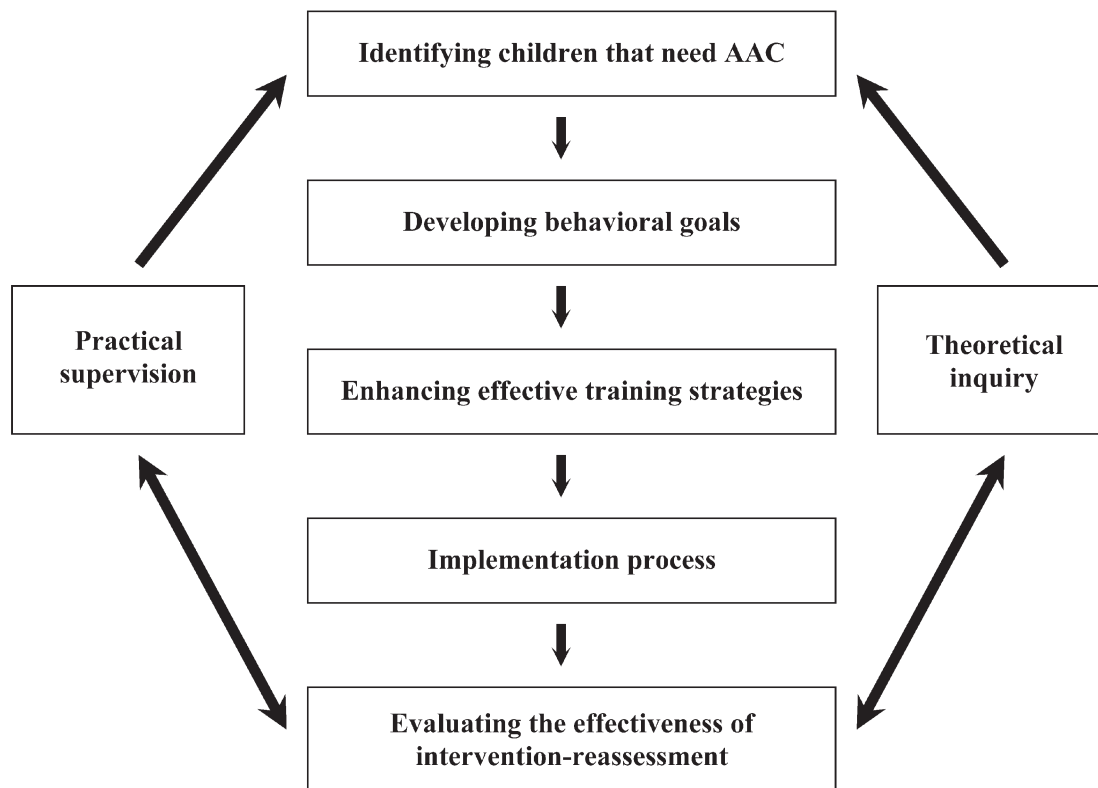


FIGURE 1 A schematic representation of the service delivery model.

Phase 1: Identifying Children with the Potential to Benefit from AAC Intervention

Lectures during this phase of the training focused on providing teachers with information about the cognitive, communicative, physical, and social characteristics of individuals who might benefit from AAC and outlining common goals in AAC intervention. Some potential populations discussed included people with intellectual disabilities, cerebral palsy, traumatic brain injuries, multiple sclerosis, spinal cord injuries, cleft palate, developmental language disorders, autism and pervasive developmental disorders (PDD), apraxia/dyspraxia of speech, dysarthria, hearing impairments, deafness and blindness, and multiple handicaps (Blackstone, 1993).

Additionally, teachers were introduced to various AAC intervention goals. These goals included reducing the gap between comprehension and production, promoting greater participation in the school setting, enhancing vocational opportunities, promoting social interaction, reducing frustration associated with communication breakdowns, enhancing language comprehension, facilitating speech development, facilitating linguistic and conceptual organization, and enhancing speech intelligibility (Blackstone, 1993).

In one of the interactive discussions, teachers were asked to form small groups of four or five teachers. Each teacher in each of the groups then took a turn at role-playing case examples of children who required AAC. After hearing and observing the role plays, group members were asked to write down what they thought the role-player intended to say/communicate. Following the breakout session, the group reconvened to discuss the cases, and identified strengths and weaknesses and effectiveness of AAC use in each case.

Supervision during this phase consisted of helping each teacher to identify students in their class who could benefit from AAC by applying the knowledge from the workshops. Teachers were also assisted in developing appropriate objectives for each identified child.

Phase 2: Developing Behavioral Goals

Lectures during this phase focused on providing teachers with knowledge about three areas. The first area focused on types of AAC systems in terms of aided techniques (e.g., picture communication boards, voice output communication aids) versus unaided techniques (e.g., gestures, signs, and facial expressions) (Blackstone, 1993). The second area pertained to identifying of the

strengths and weaknesses of different AAC components. The third area consisted of a discussion about incorporating multiple AAC strategies (such as sign language, picture communication boards, remnants) within an individual's overall communication system. Supervision at this phase focused on transferring AAC objectives to behavioral goals by choosing the most effective system(s) for each student, setting up a program for training, and then implementing the intervention program.

Phase 3: Enhancing the Effectiveness of Training Strategies

Lectures and workshops during this phase provided information about the various training strategies used in AAC (e.g., types of communication displays, the Picture Exchange Communication system [PECS], incidental teaching). In the workshop sessions, teachers viewed assessment and intervention sessions in AAC, and subsequently discussed strengths and weaknesses of the intervention. They also learned to formulate intervention programs with both short- and long-term goals. In the lecture segment of training, participants were trained to use the Boardmaker™ software program² (Johnson, 1981, 1985) and to develop picture communication displays for the identified children in their classroom. In the supervision segment, the trainers met with each of the teachers to discuss appropriate intervention goals, AAC systems, and preparation materials for the children identified in their classes. As well, the trainers observed classroom sessions and then met with the teachers to discuss the impact of their intervention. The trainers worked jointly with the teachers to address obstacles and to problem-solve. The trainers often demonstrated various AAC techniques and then worked jointly with the teachers to implement the strategies within the classroom setting. Problem solving scenarios included assisting with material preparation, such as choosing an appropriate picture for a referent; making adaptations, such as enlarging pictures for students with vision problems; and positioning a Voice Output Communication Aid (VOCA) in order to maximize its use. The trainers worked with each teacher to tailor their student's individual programs, based on the students' changing needs and preferences.

Phase 4: Implementation Process

Lectures during this phase focused on variables that affect the intervention process: implementation context, physical considerations, and cogni-

tive and linguistic abilities. Although these factors were discussed in Phase 3, the lectures during Phase 4 included how to identify breakdowns/failures as well as strategies for successfully addressing these breakdowns. Trainers discussed the need to set appropriate expectations in the classroom and at home and how these changing needs required iterative intervention planning. In addition, Phase 4 included information on identifying resources for implementation and development of AAC intervention. Some of the resources discussed included ISAAC (International Society of Augmentative and Alternative Communication) Israel's services, a local center for multidisciplinary professional assessment of AAC and for renting VOCAs.

Supervision at this phase included reviewing and discussing interventions for each student with their teachers, encouraging teachers to continue with the process, and attempting to find solutions for difficulties in AAC implementation.

Phase 5: Evaluating the Effectiveness of Intervention

During this last lecture phase, the following topics were addressed: (a) application of the communication disorder model (Frey, 1984), to assess the effectiveness of teacher training;³ and (b) the reliability and validity of various outcome measurements used in the AAC literature (e.g., direct observation of conversational interaction in natural environments vs. in structured environments).

During supervision, the trainers assisted teachers in evaluating the effectiveness of their AAC programs in terms of their impact in the areas of impairment, disability, and handicap. Discussions focused on how to use valid and reliable measures to test the effectiveness of AAC interventions within their classrooms.

RESULTS

Teacher responses to the questionnaire were analyzed within and across pre-training and post-training administrations. In addition, the post-training interviews were analyzed qualitatively to assess the teachers' perceived impact of intervention. The data from the questionnaire are presented first, followed by the data from the interviews.

Teacher responses for each question in the questionnaire were measured using the discrete numerical scale (each response was assigned a value of 1, 3 or 5) to allow for comparison between textual responses across teachers and

questionnaire administrations (pre- and post-training). The proposed analysis to test for significant differences or changes between administrations was a matched-paired *t*-test. The small number of teachers who applied for the workshop, however, increased the likelihood that the assumptions for parametric statistics would not be satisfied. Hence, the non-parametric equivalent, the Wilcoxon-signed two-tailed test, was used to analyze the data. This test assigned values for change scores and then tested whether there were significantly more positive or negative sign values between administrations. Thus, improvements in teacher responses between pre- and post-training were given a positive sign value. Differences scores that indicated no change or decreases in the post-test score in relation to the pretest score, were indicated by a negative sign value. Responses by question type,⁴ coding scale, and administration (pre-training or post training), are presented in Table 1.

Impact of Training on Knowledge Level

Responses to the six knowledge questions (#1, 2, 3, 6, 7, 9) indicated that there was an increase in teacher knowledge about AAC as a result of the training ($p < 0.01$). Prior to training, many teachers were unable to identify different types of AAC methods. Following the training, all teachers were able to provide at least one type of AAC intervention/strategy. Teachers also became increasingly aware of a wider range of communicative disorders and delays for which AAC intervention could be beneficial. Prior to training, teachers acknowledged the importance of AAC for expressing needs (20%) and/or communicating (80%). They did not identify the usefulness of AAC as a way to reduce frustration, increase self-confidence, and foster social adaptation. Post training, however, 80% of teachers placed greater emphasis on the social and communicative role of AAC. Prior to training, although 90% of the teachers reported knowing they could rent VOCAs, they did not know where these systems were available. Following training, all teachers knew where they could rent a VOCAs. Prior to training, none of the teachers reported reading AAC literature; in contrast, after training, all teachers reported doing so.

Impact of Training on Practice

Responses to the three practice questions (#5, 8, and 10) demonstrated that teachers increased their use of AAC in the classroom subsequent to training ($p < 0.01$). Prior to the in-service, only 35% of the teachers had received supervisory

training in AAC and most teachers (60%) considered only SLPs and teachers to be members of the AAC team. Although the number of teachers who regarded all professionals who worked with the child as part of the AAC team increased after training, the change from pre-training was not statistically significant ($p = 0.302$). After training, teachers used photographs, artifacts, and concrete objects to help children comprehend abstract concepts, in contrast to prior to training, when they did not use these materials for communication. Following training, teachers used tools such as BoardmakerTM software, other symbol sets, objects, and object parts for communication.

Impact of Training on Attitudes

Teacher attitudes were inferred from discussions during post-training interviews and from one question (#4) on the questionnaire, which asked teachers whether the use of AAC has a negative impact on a child's speech production abilities. Prior to the training, 60% of the teachers had believed that AAC use would have a negative impact on speech production, and an additional 20% thought that it *may* have a negative impact on speech production. Following the training, none of the teachers reported such beliefs ($p < 0.01$).

Teacher's attitudes inferred from responses during the post-training interviews were analyzed qualitatively. Analyses revealed the following strengths and challenges:

Attitude Changes

Following in-service training, teachers reported more positive attitudes about the potential of children with expressive impairments and about using AAC as a successful intervention strategy. As an example, a teacher who worked with a 9-year-old girl with cerebral palsy acknowledged the following:

We viewed M as an object, moving her from here to there without asking her permission and without telling her what we were doing. Now, we have started to view her as a human being, taking into account her needs and her choices.

All of the teachers also indicated a change in their perceptions of what a child with expressive impairments could achieve if given the appropriate intervention. One teacher indicated that the "doors were opened for continuous work" with a 5-year-old student with PDD as a result of using PECS.

Recognition of the Need for More AAC Training

Teachers noted that families and other staff members also needed to have training in AAC. Teachers supported and encouraged the need to conduct in-service training for the entire staff, including administrators, professionals, and parents, to effectively transfer the knowledge and practice of AAC to all aspects of a child's environment. One administrator appointed a teacher who was receiving our training as the school's AAC mediator. This mediator worked with teachers, families, and other staff members to implement AAC through workshops, hands-on training, and material development.

Teachers Acknowledged the Benefits of Meeting With and Sharing AAC Experiences

Teachers felt that meetings with staff members and parents helped them to encourage one another to implement AAC services and to overcome obstacles as they arose. In other words, teachers commented on the need for a team effort in addressing the challenging goal of facilitating communication. One teacher who worked with a 9-year-old boy with selective mutism reported that listening to another teacher's experiences, frustrations, and successes helped her to overcome her own frustration and motivated her to continue to work with the student.

Teachers Felt More Empowered

Training empowered some teachers and improved their self-esteem and leadership abilities. Three teachers in our program, for example, went on to initiate projects both at their own school and with other schools.

Teachers Recognized the Importance of Practice

Teachers reflected on the need for opportunities to practice effective implementation before attitudes could be altered. One teacher indicated that, "at the beginning of the training I was not convinced with the importance of AAC use." Despite this initial attitude, she continued to work with the child and eventually noticed improvements in verbal expression and imitation ability, stating that, "Only then, did I start to believe."

Teachers Stressed the Importance of Training That Recognizes Cultural and Linguistic Differences

One teacher noted that many Arab families have specific beliefs about children with special needs (e.g., children are viewed as either normal or not

normal). She pointed out that these beliefs must be considered during training. Another teacher claimed that the families she worked with tended to transfer the burden of improving their children's functioning to professionals. Many teachers expressed the need to understand and discuss these and other cultural issues during training.

DISCUSSION

Results from the pre- and post-questionnaire, as well as teacher interviews, indicated that the training program enhanced knowledge, practice, and attitudes with respect to AAC. Specifically, we were able to create awareness among special education teachers about AAC and impart knowledge necessary for successful implementation. This training program also led to the initiation of a pioneer team of Arab teachers who specialized in AAC and who were able to disseminate their knowledge and experience to other teachers, administrators, SLPs, and caregivers. Finally, through our experiences with the teachers, students, and their families, we were able to identify several linguistic and culturally specific issues that were critical for appropriate service delivery to the Palestinian Arab community in Israel.

Training Design and Implementation

Teachers indicated that, following training, they had an improved level of awareness about AAC. They were better able to identify children who would benefit from AAC strategies and were better equipped to address their communication needs. Supervised sessions revealed that, in addition to the children who had been identified during Phase 1, teachers were implementing AAC interventions with a number of other children in their classrooms. They also demonstrated increased facility in providing intervention to children with various types and degrees of disabilities.

Interestingly, post-training, teachers were using AAC to address social as well as communication needs. Moreover, students were communicating with one another using AAC following exposure to a curriculum that incorporated the use of AAC.

Increasing knowledge alone, however, is not sufficient to effect change in AAC implementation. Cohen (cited in Blackstone, 1993) provided a list of factors that may contribute to communication breakdown, including lack of knowledge, mechanical breakdown, practice barriers, and

negative attitudes. In light of these factors, several researchers (Collier & Blackstein-Adler, 1998; Korinek, Schmid, & McAdams, 1985; Sparks, 1983) have advocated for a holistic approach to AAC training, which includes seminar instruction, combined with joint client service. Similar to McCall and Moodi (1998), we found that this holistic approach was welcomed by the staff and led to maintenance and carryover of skills according to teacher self-reports as well as the trainers' observations.

It was evident from the results of this study that training alone did not necessarily lead to collaborative teaming. It appears that the importance of collaborative teaming in implementing AAC services needs to be emphasized during training by conducting joint or parallel training with other professionals, administrative staff, and families. Such collaborative training seems especially important given that AAC implementation within inclusive classrooms may incorporate a complex array of technologies for learning, mobility, and classroom participation; as well as overlapping functions of educational team members (Hunt, Soto, Maier, Muller, & Goetz, 2002).

In the current study, the use of didactic workshops in addition to on-site supervision consisting of modeling effective strategies and engaging in group discussions was found to be highly effective. The use of the barrier model provided a theoretical foundation upon which to develop a holistic training program. Moreover, using a non-threatening and familiar environment⁵ in which to conduct training contributed to teacher comfort and cooperation. From the beginning of the workshop, the importance of having teachers, training staff, and administrators all assume an equal burden in shaping their community by improving their understanding and implementation of AAC, was stressed. The results suggest that successful practice of AAC intervention is highly reinforcing and necessary for substantial attitude change. A deeper understanding of the relationship between attitude and practice barriers, however, requires further attention.

Linguistic and Cultural Issues

Our findings indicated that AAC resources must be adapted in order to assist Arabic users to address characteristics of the written system, the lack of culturally appropriate vocabulary, and the presence of diglossia. In contrast to English, Arabic is written from right to left. Thus, symbols sets that have been developed for English speaking people who use AAC, cannot simply be

adapted for those who are Arabic-speaking. Some PCS symbols for utterances embed syntactical information within one symbol. For example, the PCS symbol for I WANT includes a graphical depiction of the subject (I) and the verb (want) from left to right, within the symbol. This ordering is inappropriate for Arab individuals who use AAC.

Currently used AAC symbol sets, such as PCS (Johnson, 1981, 1985), the Oakland Picture Dictionary (Kirstein & Bernstein, 1981), as well as the Israeli Sign Language (Savir, 1992), do not provide symbols for lexical items such as familiar foods, holidays, cultural dress and special events that are specific to Arab individuals who use AAC. Teachers in our study reported that they altered many symbols because they felt the original symbol did not represent the object or event clearly. Huer (2000) examined the influence of culture on perceptions and interpretations of AAC symbols across four cultures. She found that, even when referents were translated, perceptions of graphic symbols differed among cultural groups. Thus, it may be necessary to initiate efforts to develop culturally appropriate symbol sets for Arab individuals who use AAC.

Another unique characteristic of the Arabic language is *diglossia*, which refers to the existence of two separate language varieties for formal versus colloquial use. Modern Standard Arabic is used for most written and formal spoken purposes and functions as the official standard language in all Arab countries (Al-toma, 1969; Ferguson, 1959). In contrast, Colloquial Arabic is used for daily conversation and varies widely along geographical, religious, and socio-economic lines within and between Arab countries. These differences between Modern Standard Arabic and Colloquial Arabic must be addressed when developing communication interfaces. During group discussions with teachers in the current study, the general consensus was that decisions about whether to use Modern Standard Arabic or Colloquial Arabic should be made based on a child's reading level and the context within which the AAC system will be used.

Cultural and sociopolitical factors also need to be considered when providing AAC training to teachers serving Arab communities. Specifically, family beliefs and orientations, teacher empowerment, and the political environment must be considered in order to implement training effectively. An understanding and appreciation of family competence and style is a substantial part of effective intervention (Corbet, 1999; Shalock & Kelly, 1999). Anecdotal evidence from interviews revealed that many teachers held the opinion that Arab families typically assume a passive role

when it comes to services for their children. They felt that families perceived their children's disabilities as something that was dealt to them by a supreme power, which often translated into low expectations for the children. Moreover, families transferred responsibility for their children's performances to the professionals who worked with them, thereby increasing the expectations and responsibilities of the professionals. Awareness of these family beliefs enables a clinician to plan interventions appropriately. In addition, many Arab families live in extended families in which each member may assert his or her own opinions or beliefs about what constitutes appropriate service delivery for the child. Engaging these family members in the assessment and intervention processes may lead to improved AAC outcomes.

Finally, teachers suggested that they valued discussions concerning language and cultural values with the trainer because it allowed them to talk about often controversial topics in AAC implementation for Arab individuals who use AAC. Although some teachers had previous AAC training, they felt that differences between themselves and the trainers in terms of priorities, language, and culture were obstacles to previous attempts at competency building. Given that many Arab citizens in Israel feel as though they are second-class citizens, it was important to empower teachers with the tools that would assist them to change their perceptions and practices with regard to AAC systems within the classroom and society overall.

CONCLUSION

An AAC training program was provided to a group of 20 Palestinian Arab special education teachers in Israel. The barrier model was used to ensure a holistic approach to training, in which didactic workshops were interleaved with on-site training and group discussions. To assess the effectiveness of the training, a questionnaire was administered prior to and after training. In addition, post-training interviews were conducted to address changes in attitudes and practices. The findings revealed an increase in teacher knowledge about AAC post-training. In addition, teacher attitudes and implementation of AAC improved considerably following training, especially in situations in which teachers witnessed or experienced positive outcomes as a result of using AAC with children in their classrooms. On the other hand, the findings addressed the need to expand AAC training programs to include other professional staff who worked in school/clinic

settings, administrators, and family members. Discussions with teachers revealed several linguistic and cultural factors that must be considered when providing AAC training to teachers from diverse ethnic communities. These factors included the need to adapt AAC resources to meet characteristics of the Arabic written system, and to address the presence of diglossia and lack of culturally appropriate vocabulary. Also identified were several key cultural and family values/orientations that should be considered in order to increase the effectiveness of AAC interventions with individuals who use AAC from Arab communities.

Acknowledgements

We would like to thank Rita Khoury for her invaluable contribution to the implementation of the training program. In addition, we thank the students who participated in this study, their teachers, and family members for their cooperation, for being open and patient with our new training program, and for sharing their classrooms/homes and ideas with us. This work was supported in part by the Dean's Diversity Fellowship at Teachers College Columbia University.

Notes

- 1 This study included Jewish families but it did not include Palestinian families from Israel.
- 2 The rationale for using Boardmaker™ was that the picture communication symbol (PCS) set is one of the most frequently used picture sets in AAC intervention (Blackstone, 1993). It includes colored and black-white pictographs, is easy to enlarge and minimize, can be translated into Hebrew making it easy for teachers to retrieve words, and it is available on a computer software platform. All of these factors made it attractive for teachers to learn the Boardmaker software. However, there were no expectations of teachers to use PCS with all children who required AAC.
- 3 Frey (1984) employs the World Health Organization model to distinguish between three main aspects of communication disorder: impairment, disability, and handicap.
- 4 The division of the questions into practice and knowledge area is based on the trainers' and authors' judgment.
- 5 The Mar Elias Teachers Centre is located in the Arabic village of Ibillin and is the only Arabic Teachers' Center certified by the Ministry of Education in Israel. The Center holds workshops and lectures in Arabic that are focused on the continuing educational needs of Palestinian Arab teachers.

References

- Adalah: The Legal Center for Arab Minority Rights in Israel (1998). *Legal Violations of Arab Minority Rights in Israel*. Adalah: Israel.

- Al-toma, S. J. (1969). *The problem of diglossia in Arabic: A comparative study of classical and Iraqi Arabic*. Cambridge, MA: Harvard University Press.
- American Speech-language and Hearing Association Ad Hoc Committee on Communication Processes and Non Speaking Communication (1981). *American Speech and Hearing Association*, 23, 577–581.
- Balandin, S., & Iacono, T. (1998). AAC and Australian speech pathologist report on a natural survey. *Augmentative and Alternative Communication*, 14, 239–249.
- Barzon, M. (1999). The mutual influences in encounters between families of handicapped children and professionals. *Augmentative and Alternative Communication*, 15, 23–24.
- Beukelman, D. R., & Mirenda, P. (1998). *Augmentative and alternative communication: Management of severe communication disorders in children and adults*. Baltimore, MD: Paul H. Brookes.
- Blackstone, H. (1993). *Augmentative communication: An introduction and the curriculum guide for an introductory course in augmentative communication*. Rockville, MD: American Speech-Language Hearing Association.
- Collier, B., & Blackstein-Adler, S. (1998). Building competencies in augmentative and alternative communication among professionals. *Augmentative and Alternative Communication*, 14, 250–260.
- Corbett, J. (1999). Disability arts: Developing survival strategies. In P. Retish & S. Reiter (Eds.), *Adults with Disabilities* (pp. 171–183). New Jersey: Lawrence Erlbaum Associates.
- Ferguson, C. A. (1959). Diglossia. *Word*, 15, 325–340.
- Foddy, W. (1999). *Constructing questions for interviews and questionnaires: Theory and practice in social research*. London: Cambridge University Press.
- Frey, W. (1984). Functional assessment in the 80's. A conceptual enigma, a technical challenge. In A. Halpren & M. Fuhrer (Eds.), *Functional assessment in rehabilitation* (pp. 11–44). Baltimore: Paul H. Brooks.
- Fromm, J. (1996). A consultative approach to service delivery in school. *Australian Communication Quarterly*, 9, 14–15.
- Hezroni, O. (2002). Augmentative and alternative communication in Israel: Results from a family survey. *Augmentative and Alternative Communication*, 18, 255–266.
- Huer, M. B. (2000). Examining perceptions of graphic symbols across cultures: Preliminary study of the impact of culture/ethnicity. *Augmentative and Alternative Communication*, 16, 180–185.
- Human Rights Watch (2001). *Second class: Discrimination against Palestinian Arab children in Israel's schools*. NY: Human Rights Watch.
- Hunt, P., Soto, G., Maier, J., Muller, E., & Goetz, L. (2002). Collaborative teaming to support students with augmentative and alternative communication needs in general education classrooms. *Augmentative and Alternative Communication*, 18, 20–35.
- Johnson, R. (1981). *The Picture Communication Symbols*. Salana Beach, CA: Mayer-Johnson.
- Johnson, R. (1985). *The Picture Communication Symbols*. Salana Beach, CA: Mayer-Johnson.
- Kirstein, I., & Bernstein, C. (1981). *Oakland Schools Picture Dictionary*. Pontiac, MI: Oakland Schools Communication Enhancement Center.
- Korinek, I., Schmid, R., & Mcadams, M. (1985). In service types and best practices. *Journal of Research and Development in Education*, 18, 33–38.
- McCall, F., & Moodi, E. (1998). Training staff to support AAC users in Scotland: Current status and needs. *Augmentative and Alternative Communication*, 14, 228–238.
- Merrill, N., Yilon-Haimvitz, S., Weiss, T., Lebel, T., & Seligman-Wine, J. (2000). Students with severe communication impairment in special educational settings in Israel: A demographic survey. *Augmentative and Alternative Communication: ISAAC-Israel*, 16, 38–44.
- Patrick, K. (1990). Outback speech pathology. *Australian Communication Quarterly*, 3, 6–7.
- Ratcliff, A., & Beukelman, D. (1995). Professional preparation in AAC: State of the art report. *Augmentative and Alternative Communication*, 11, 61–73.
- Savir, H. (1992). *The Israeli Sign Language*. Tel-Aviv, Israel: The association of the deaf in Israel.
- Shalock, R., & Kelly, C. (1999). Sociocultural factors influencing social and vocational inclusion of persons with mental retardation: A cross-cultural study. In P. Retish & S. Reiter (Eds.), *Adults with Disabilities* (pp. 309–325). New Jersey: Lawrence Erlbaum Associates.
- Shane, H., & Yoder, D. (1981). Facilitating the communicative interaction of non speaking persons in large residential settings. *Topics in Language Disorders*, 2, 73–84.
- Sherman, E., & Reid, W. J. (1996). Introduction: Coming of Age in Social Work: The Emergence of Qualitative Research. In E. Sherman & W. J. Reid (Eds.), *Qualitative Research in Social Work* (pp. 1–10). New York: Columbia University Press.
- Silverman, F. H., & Brady, J. (1978). Need for including course work on non-vocal communication systems: A survey. *American Speech and Hearing Association*, 20, 1023.
- Sparks, G. M. (1983). Synthesis of research on staff development for effective teaching. *Educational Leadership*, 41, 65–72.
- Special Education Law (1998). Sec. A (1) (a). Retrieved September, 2002, from <http://main@Lawdata.co.il>.
- Taylor, P. (1995). Change without pain: Organizational change in a rural health project. *Australian Communication Quarterly*, 8, 26–29.

APPENDIX

An English translation of pre-post-training questionnaire

Dear prospective participant,

This is the first time we have conducted this workshop at the Mar Elias College. It is thus important for us to evaluate this unique project. We are interested in your responses to the following questionnaire, and we hope that the findings will assist us in addressing your specific needs, as well as in evaluating the design of the workshop.

In this questionnaire we present various questions regarding AAC. You are asked to answer the questions, and please be as open and honest as possible in your responses.

Thank you for your cooperation.

- (1) Who needs augmentative and alternative communication (AAC)?
- (2) What types or examples of AAC do you know?

- (3) Why is it important to implement AAC services?
- (4) Does AAC use negatively influence speech production?
- (5) Which professionals are needed for implementing AAC services?
- (6) Is it possible to rent a voice output communication aid (VOCA) in your community?
- (7) If yes to #6, where can you rent a VOCA?
- (8) What are some materials required for making a communication board?
- (9) Have you recently read any material related to AAC? Please specify.
- (10) Have you ever received supervision in AAC?