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Family-Centered Intervention and Satisfaction With AAC Device Training

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The purpose of this article is to describe a family-centered collaborative approach for developing and implementing augmentative and alternative communication (AAC) device training for one family. Family-centered training emphasized collaboration with the primary investigator and focused on needs assessment, the identification of priority communicative contexts, AAC device implementation, and communication partner training. Responses to a questionnaire to assess satisfaction at posttraining revealed high degrees of satisfaction for most dimensions (e.g., expertise and sensitivity of the trainer, relevance and appropriateness of the training). Other dimensions (e.g., family's comfort when using the AAC device), by comparison, were associated with less satisfaction, which provides important information to guide further intervention efforts. Clinical implications, directions for future research, and the importance of a family-centered approach to practice are discussed.

Previous research has suggested that successful outcomes in augmentative and alternative communication (AAC) device use are often attributed, in part, to the support and commitment of family members, particularly parents (Parette & Angelo, 1996). Conversely, family stress created by the demands of the AAC device use, frustration with speech-language pathologists (SLPs), and lack of training and personal involvement have been associated with AAC device abandonment (Angelo, 2000). Parents of children who use AAC report a need for family-sensitive AAC device training (Parette & Angelo), including increased knowledge of assistive devices,

assistance with planning for future communication needs, information on how to integrate the AAC device into the home, and training on how to program the device (Angelo). Unfortunately, many researchers and practitioners agree that parental perspectives are not often fully accessible to professionals in many intervention settings (Goldbart & Marshall, 200; Hammer, 1998; Ronski & Sevcik, 2005).

FAMILY-CENTERED INTERVENTION AND AAC

This article describes a family-centered and collaborative intervention approach to developing and implementing AAC device training. The literature review describes the nature of family-centered intervention, the application of family-centered intervention specifically for children using AAC devices, and factors related to the quality of AAC device training. One approach to implementing family-centered intervention will be described to explicate some processes that professionals should consider when attempting to promote the communicative functioning of the child who uses an AAC device.

Comprehensive Family-Centered Intervention

Because relatively few studies have examined family-centered intervention and children who use AAC devices, discussion of these studies will be prefaced by a more general overview of the nature of comprehensive family-centered intervention. Crais (1994) described the theoretical background and practical applications of family-centered services and suggested

that family-centered services can improve global family satisfaction and relationships with professionals. She also stated that to apply a family-centered intervention approach, the SLP must shift from client-centered to family-centered intervention, from “professional to family-driven decisionmaking and from focusing on problems to developing client and family strengths” (Crais, p. 14). Underscoring the involvement of caregivers is important because the family represents a constant in the child’s life. Moreover, applying family-centered practices can address the limited transfer of skills from therapy to daily life (Crais).

Family-centered clinical practice provides parents with the opportunity to be involved in all planning related to communication goals for their child. Treatment should be designed to fit within the family’s daily routine (Paul, 2001), with the family making final decisions about the appropriate course of treatment. The key concepts include respect, support, choice, flexibility, collaboration, information, and identification of family strengths with these dimensions lying on a continuum of parental involvement (Rini, 2002). This model allows parents to be an agent of change by taking responsibility for designing intervention strategies and techniques (Rini) as well as implementing the strategies selected by the collaborators. This model is consistent with Huer and Lloyd’s (1990) hypothesis that family members are the most significant communication partners for young children. To effectively involve family members in intervention, research has also suggested that services be provided within the home, thus allowing children to focus on communication goals in the setting where they will have the opportunity to practice new skills (Rini).

Rainforth and York-Barr (1997) enumerated several core practices of family-centered intervention, which include dignity and respect for family members, sensitivity and responsiveness to family diversity, and involvement of family members in decisionmaking during intervention. To ensure parent participation, professionals must provide the information necessary to make informed choices (Rainforth & York-Barr). The focus of intervention should be on family-based priorities and needs, and clinicians should seek to promote and enhance family strengths (Rainforth & York-Barr). Collaboration and mutual trust also should be central to the parent–professional relationship. Considering the aforementioned qualities, which are considered best practice for implementing family-centered intervention, a next practical step is to survey the literature concerning the application of family-centered intervention to children using AAC devices.

Family-Centered Intervention for Children Using AAC Devices

Using an ethnographic method to examine the experiences, tensions and priorities of families of children who use an AAC device, Goldbart and Marshall (2004) surveyed several families and identified major themes that described the demands placed on parents and families. These themes reflected

a feeling of a lack of sufficient information. Parents reported shouldering the burden for finding needed information to partner with professionals, implementing the AAC device properly, and learning new ways to communicate with their child or enable others to do so. They also reported having to be “pushy” (p. 205) with professionals in an “ongoing struggle to keep professionals active on their child’s behalf” (p. 206). Although families are experts regarding a child, families and caregivers are not always expert in the effective use of an AAC device. Thus, caregivers require support and training to function as communication partners for people who use AAC. Language-mediated interactions with people who use AAC may require a communication partner to identify and create opportunities for communication (Sigafoos, 1999). Sack and McLean (1997) encouraged SLPs to work closely with family members to develop a communication-rich environment. Important environmental considerations include, but are not limited to, identifying opportunities for communication and ensuring the individual has access to an appropriate AAC device (Sigafoos).

Training family members to expect, recognize, and respond to the communication of their child using an AAC device is crucial (e.g., Ronski & Sevcik, 2005). Huer and Lloyd (1990) analyzed data regarding perspectives from 165 different people, ranging in age from 2 to 58 years, who used AAC devices. Emerging themes included frustration, negative attitudes toward professionals, and identification of family members as their most significant communication partners. The authors noted that parents are ascribed with helping their children achieve their communication potentials. Many people who used AAC in this study also believed family members offered the most significant social opportunities for them to communicate with others using their AAC device. In response to the input from those who use AAC, Huer and Lloyd declared family relationships “merit closer study in order to better understand their significance” (p. 247) as communication partners and suggested SLPs consider the presence of family members to a greater extent in intervention practices.

Parette, Brotherson, and Huer (2000) surveyed 23 parents of children who used AAC devices. The parents identified four roles for SLPs, including trainer/educator, expert, negotiator, and collaborator, and reported a preference for interacting with the SLPs as trainer/educators. In short, the families reported wanting in-home training for parents and siblings to become better communication partners who fully understand the use and programming of the AAC device. Parette and colleagues concluded that family participation may result in greater satisfaction with AAC devices and increased collaboration between parent and professional.

Angelo, Jones, and Kokaska (1995) investigated the needs, priorities and preferences of the caregivers of young AAC users by administering the *Assistive Device Technology Needs Scale* (Angelo & Jones, 1991) to 56 mothers and 35 fathers of children between the ages 3 and 12 years. The caregivers expressed a need for increased knowledge of the devices

and assistance in planning for future communication needs as their highest priorities. The authors suggested families do not always share “ownership” of the AAC interventions and cited such parental feedback as “We never use the device at home” and “I don’t know how to program the device” (p. 194) as evidence. This lack of involvement may be attributed to the SLP not identifying the families’ needs, preferences, and priorities. Contemporary approaches to AAC intervention include a focus on identifying parental needs and building on a family’s strengths. When this study was conducted, however, Angelo et al. (1995) noted client-focused intervention was far more common than family-centered. The authors emphasized the importance of parents as communication partners because parents provide important social experiences and opportunities for the child to practice using the AAC device. The experiences in which parents engage children make them integral facilitators of communication and social skills.

To engage in a family-centered intervention approach, it is essential to understand the needs of each family and to identify plans for intervention collaboratively. A needs-based approach has historically been implemented with children from birth to 3 years. These practices, however, should not be limited to this young age group, and this kind of intervention would be “beneficial for families of older children and adult populations as well” (Angelo et al., 1995, p. 200).

Angelo (2000) investigated the impact of AAC devices on families by administering a survey to 114 Pennsylvania families whose children used AAC devices. Using a 5-point Likert scale, families responded to 76 statements assessing family roles and responsibilities, implementation of AAC devices, family reaction and concerns, opportunities and outcomes for people who use AAC, and AAC device satisfaction. The purpose of the study was to identify the impact of AAC on families and determine implications for intervention. Angelo (2000) suggested a family needs assessment is instrumental in determining goals for family-centered intervention and that the likelihood of family satisfaction increases when clinicians recognize parent needs concerning the AAC device. For instance, approximately 45% of fathers in this study felt the need for more training on how to integrate AAC devices into family routines. Within a family-centered intervention approach, a clinician would identify this need and provide training or support.

Angelo, Kokoska and Jones (1996) emphasized the importance of involving the family in intervention strategies. They suggested that family-centered principles and practices should be implemented to meet all family needs and to maintain family involvement over time. This model focused on strengthening the family as competent communication partners and independent agents for communication change. Thus, from a family-centered approach, families are seen as central for promoting the communicative functioning of the child who uses an AAC device. Moreover, outcome measures that take advantage of the knowledge of the child and those who know the child best are welcomed from a family-centered perspec-

tive and have been characterized as “socially valid” (Wolf, 1978). Indeed, the perspectives of families alone represent important outcomes of treatment.

Quality of AAC Device Training

Bruno and Dribbon (1998) reported the outcomes of a parent training program that was combined with an intervention program for children. Sixteen parents participated in the training program and completed questionnaires describing their device operation and management skills, their AAC communication skills, and their child’s AAC device performance. The broad goals of training included “teaching device operation and management, improving parent interaction strategies, facilitating parent networking, and creating an awareness of the range of AAC device options” (p. 60). The frequency and duration of device training was varied on the basis of each parent’s needs. Parents consistently reported high levels of satisfaction with the training and positive changes were noted in the parents’ operational and interaction skills. Bruno and Dribbon argued that these results offered support for the notion that parent training focusing on device programming and communication partner skills positively influences parents’ perceptions of their own performance as well as their children’s actual AAC device performance.

Parents’ perspectives, concerns, and views surrounding their child who uses an AAC device have also been explored through focus groups and volunteer surveys. Parette and colleagues (2000) investigated the ways SLPs might help families during the initial AAC device planning and training sessions. Results from focus groups and structured interviews with a small number of families suggested professional sensitivity to family issues during AAC planning is integral to successful outcomes with the AAC device. The survey also revealed abandonment of the AAC device occurred even though families were “intensely committed to implementation of AAC” (p. 178) because the parents did not have the necessary training to encourage, teach, and enhance their child’s use of the AAC device. If professionals were not candid about the amount of time needed to learn how to use the device, the rate of device abandonment increased. Abandonment of an AAC device has varied implications for the family, including, but not limited to, exacerbation of the disability experienced by the child, escalation of personal and financial costs, and inefficient use of service system resources (Parette et al., 2000). If the family chooses not to use the AAC device at home, the child’s ability to generalize skills to new environments and communication partners may be limited and the overall effectiveness of the device jeopardized.

On average, one third of all assistive technology, including AAC devices, are abandoned (Philips & Zhao, 1993). Three variables related to AAC device abandonment are (1) a failure of the device to enhance independent functioning, (2) difficulty in device maintenance, and (3) high levels of assistance required by family members to implement the device success-

fully (Philips & Zhao). Thus, SLPs need to “capitalize on variables that ensure successful outcomes and minimize those that contribute to abandonment or underuse of AAC devices” (Angelo, 2000, p. 38). Parette and Angelo (1996) stressed that family routines, values, needs, and resources must also be considered in AAC intervention implementation to create effective intervention and avoid device abandonment. Parents often express the need for training within the home for both the parents and siblings (Parette et al., 2000). In a related vein, family-centered intervention may facilitate the SLP in meeting the needs of the family and maintaining family involvement over time by reducing parental stress (Jones et al., 1998) and involving parents in all planning related to the communication goals for their child (Paul, 2001). As such, family-centered intervention may provide the opportunity for family members to positively influence the course of AAC intervention.

DEVELOPING THE INTERVENTION

Participants

The family who participated in this intervention was recruited by contacting local school SLPs and AAC consultants and asking for potentially interested clients. The participating child (male) was 4 years, 6 months of age at the time of intervention, was diagnosed with cerebral palsy, and was first introduced to the Big Mack and Step-by-Step devices at 2 years of age. He had also previously, but not at the time of intervention, used Twin Talk. He attended a full inclusion, public, early essential education program designed for 3- to 5-year-olds and used AAC devices in the school setting for a little more than 1 year. He also used the AAC device in the home, although the family reported that the devices were not fully incorporated and that they were used in less than 20% of their communicative exchanges in the home setting. The family had received prior training in the home on programming and implementation of the devices from an SLP, which was characterized as brief and informal. The family also received limited instruction in sign language and the use of picture communication boards. The child was an adopted child living in a two-parent home with a younger brother and sister. Both siblings were younger than 2 years; one was biological and the other was adopted. The family identified themselves as having an annual combined household income between \$70,001 and \$80,000. Both parents were 38-year-old native English speakers who had obtained master's degrees.

Materials

Message and Context Selection Worksheets. During the first visit of the family-centered intervention, Message and Context Selection worksheets were reviewed with the family and completed in collaboration with the interventionist. Both worksheets were adapted from tools provided by the Barkley Memorial AAC Centers (available on the University of Nebraska Web site, www.aac.unl.edu). The Message Selection

worksheet was used to determine specific types of messages that were desired but lacking. Messages on this list were categorized according to their communicative function (e.g., “Hi,” “Hello,” “Good morning,” and “Good to see you” were categorized as Greetings; “Let’s try that again” and “Tell me what you think I said” were categorized as Communicative Repairs). The parents were then asked to rate a total of 17 community and home contexts (e.g., “To converse during meal times,” “To request social interaction,” “To ask social questions”) using the Context Selection Worksheet. The parents rated their priorities on a scale of 0 to 5, with 0 indicating use of the device in that context was not a priority at all and 5 indicating that use of the device in that context was a very high priority. The Context Selection worksheet was used as a guide for hands-on training during the second visit.

Assistive Device Technology Needs Scale (ADTNS). An adapted version of the ADTNS (Angelo et al., 1995) was administered to assess family needs during the first visit of the family-centered intervention. The ADTNS is a 31-item survey that assesses the needs, priorities, and preferences for caregivers in relation to nine categories: obtaining services, obtaining devices, knowledge, integration, programming, obtaining supportive equipment, finding and coordinating services, parent supports, and child supports. The ADTNS is a self-report instrument in which the respondents rate the extent of need for help and assistance specific to a given AAC device using a 5-point Likert scale (1 = *almost never*; 5 = *almost always*; NA = *no need*). Twelve items from this scale and eight additional items developed for this study comprise the adapted scale. To keep the response arrangement consistent across measures, this measure was also adapted such that each item was accompanied by a 10-cm continuum anchored by “minimal need” and “strong need.” Participants were asked to indicate the degree to which they felt the need for each statement by making a slash mark at the appropriate point along the continuum. The NA response category from the original scale was eliminated.

Training Satisfaction Questionnaire. This 14-item questionnaire was developed for this intervention and was administered as an index of satisfaction with the family-centered intervention. All items took the form of statements designed to represent various dimensions of satisfaction of training. Each item was accompanied by a 10-cm continuum anchored by “strongly disagree” and “strongly agree.” Participants were asked to indicate the degree to which they agreed or disagreed with each statement by making a slash mark at the appropriate point along the continuum. Additional open-ended items were included to allow family members to further describe feelings about the training program (see Appendix).

Procedure

Family-Centered Intervention. The family-centered intervention included three visits to the family’s home. The

first session was approximately 1 hour. The parents completed the ADTNS and the Message and Context Selection worksheets. The primary investigator (who was also the interventionist) answered any questions concerning message and context selection and inquired about the child's current related services (i.e., occupational therapy, physical therapy, and speech–language therapy). The interventionist also inquired about other modes of communication used by the child.

The primary investigator also conducted an informal observation of communicative function. Neither parent asked the child a question and no communication devices were available to the child during the observation. Three general areas were observed: the child's current modes of communication, the parents' responses to communication, and the child's use of communication devices in the home. The child's modes of communication were highlighted during several interactions involving play. For example, during one exchange, the father tickled the child and the child responded by laughing and then looking at his father to indicate that he wanted "more" at which time the father continued to tickle him. Parents noted that they frequently interacted with their child by attending and responding to his facial expressions, atypical vocalizations, and eye gaze. Vocalizations were commonly interpreted as calls for attention, and facial expressions were monitored as indications of mood.

Building on the information gathered during the first session, the second session lasted 1.5 hours and focused on message and context selection, discussion of family needs, and problem solving concerning AAC device implementation. Based on the results of the Message and Context Selection worksheets, the interventionist reviewed the top priorities of the parents and, with the parents, determined five mutually agreed-on priorities. Top contexts included to express physical states (e.g., "I'm tired"), to request assistance (e.g., "Bring that here" or "Help"), to request social interaction (e.g., "Tickle me?"), and to respond to social questions (e.g., "I'm OK"). During this second visit, the primary investigator and parents brainstormed how to use the device in each of the five contexts. For instance, the parents felt it was important for their son to be able to request social interactions. First, the parents brainstormed what social interactions he might want to request (e.g., tickling, picking up, puppet play), and identified situations in which the child would be likely to make such requests (e.g., when dad comes home from work, at bedtime). For instance, the phrase "Dad, come tickle me" was programmed into the device and the interventionist and family expected that this request would be most likely to be made when the father arrived home from work. Thus, the father was prepared for this interaction and made sure to respond to it when it occurred. Finally, the parents and primary investigator brainstormed age appropriate messages that should be used for requesting social interaction. For instance, the team wanted to make sure that the language programmed into the device would be typical of what a preschool-age child might say and would be acceptable and comfortable for the family.

Thus, a message like "Come here, papa" would be used instead of something like "Please come over here, dad." The importance of using age-appropriate vocabulary and sentence structure was discussed and various examples were practiced by the parents and interventionist. This process was used for each of the five context priorities.

Prior to the second session, the top needs of the parents were determined by tallying the needs-based assessment completed during the first session. There were three mutually agreed-on needs: integrating AAC device use at home, integrating AAC device use in the community, and planning for future communication needs. Of those three, the parents reported that one in particular stood out for them: planning for future communication needs. Through collaboration it was determined that to consider their child's future communication needs the family needed to know more about what was available in terms of more complex AAC devices and what AAC features would be most responsive to the child's communication and motor needs (e.g., scanning, dynamic display, picture based). Therefore, the primary investigator provided the family individualized information resources, including Web sites and descriptions of AAC device features that may be appropriate and useful for their child. Information about physical characteristics of selection sets (e.g., size, number of items), types of displays (i.e., dynamic vs. fixed), selection techniques (e.g., direct selection, scanning), and vocabulary length (e.g., whole sentence, sentence construction) were reviewed and discussed with the family. In addition, the primary investigator provided to the family phone numbers, Web sites, and catalogs of various AAC device companies (e.g., AbleNet, Attainment Company, Dynavox.). This information and the ensuing conversation gave the family information that they could use when thinking about long-term communication goals for their child.

The third session lasted 1.5 hours and focused on hands-on practice, communication partner training, and support around the parents' primary AAC device needs. The messages and contexts discussed with the family during the second session were used as the basis for training (i.e., the parents practiced communication partner skills when the child requested social interaction). For instance, when the child requested tickling, the father responded as he had before but also practiced new skills, such as maintaining eye contact, waiting for the child's to communicate his entire request, and creating communicative pressure to encourage child initiations. A portion of the communication partner training was adapted from Sack and McLean's (1997) *Developing Communicative Interactions* (DCI) program. DCI is a data-based training program designed to support the development of interaction skills. The program includes four modules that progress from strategies for engaging a person who uses an AAC device in the most basic, turntaking interactions through strategies for promoting overall improved communicative competence. Appropriate strategies for this family included education about how to structure the environment to promote interaction,

how to establish a common focus of attention, and how to engage in basic turntaking. In addition, the parents were educated about modeling the use of the device, monitoring understanding, and modifying the messages to enhance their child's comprehension. Lastly, ways to increase opportunities for communication were reviewed. All communication partner training was personalized according to the needs and priorities of the family, difficulties presented during practice, and observations of the child's device use. At the conclusion of intervention, the family was asked to complete the Training Satisfaction Questionnaire. The importance of honest responding and assurances of confidentiality were stressed. Although it was originally planned to administer the satisfaction questionnaire to all family members, only the mother's data were ultimately scrutinized. Data for other family members were not collected because other family members could not attend every intervention session. This was deemed appropriate, moreover, because social validity of the responses to the satisfaction questionnaire are logically related to knowledge of child functioning and device training and the mother reported being the most involved and knowledgeable regarding the child's communication.

DISCUSSION

Raw satisfaction data for individual items are included in the Appendix, with higher values indicating higher degrees of satisfaction. The possible range of scores by item was between 0 and 10. Satisfaction was operationalized by a measure designed to assess subjective feelings of satisfaction to yield socially valid indices that can be used as a basis for further training efforts. Inspection of the data by individual response item indicates some variability in responding. That is, some items (1, 6, 7, 8, 14) were rated with less satisfaction than were others. Specifically, items that were strongly worded (item 1: "This training answered *all* of my questions . . .") or that dealt with comfort when using the device (items 6, 7, 8, and 14) were not rated as highly as the other items that tapped the quality of the training experience. With regard to the latter, a persistent pattern emerged, with the highest rates of satisfaction being reported for items that solicited feedback on the knowledge and sensitivity of the interventionist and the relevance and appropriateness of training. Furthermore, the mother's satisfaction ratings were in line with her responses to the qualitative, open-ended questions regarding training satisfaction and efficacy. She reported that a particular strength of the intervention was that the primary investigator "listened to her needs, hopes, fears, and frustration." As such, it appears that for this family, one positive influence of this family-centered intervention approach was the emphasis on collaboration with, respect for, and sensitivity toward the family and the specific strengths they possess and challenges they face

Key ingredients of effective family-centered care include respect, support, flexibility, collaboration, information, and

identification of family strengths (Rini, 2002). This intervention was designed to include these aspects. During the first intervention session, parents' priorities and needs were requested, and subsequent intervention sessions were designed on the basis of this information. The parents did not passively receive information but instead acted as full partners in the intervention process. In addition, the primary investigator acted to support, empathize with, and respond to the parents as they expressed their concerns and frustrations regarding their child's communication disability. Although a basic protocol was designed, the primary investigator exercised flexibility to deliver an intervention that might best meet the family's needs. For instance, although device programming training was originally designed to be an element of the intervention, the family felt competent in programming their child's device and, consequently, this portion of the intervention was omitted and replaced with more appropriate instructional activities. Rainforth and York-Barr (1997) noted that it is important for professionals to provide information necessary for parents to make informed choices. By providing families with descriptions of various device features they may want in a device, the primary investigator provided the family with information so they would be more informed when making device decisions in the future. Therefore, it should be noted that it is not only the content of the intervention that is crucial, but also the quality and individualized nature of the intervention. These findings lend some support for the implementation of a family-centered approach as a method, rather than for any particular standard intervention per se.

Inherent to the family-centered framework is the belief that parents should be involved as active participants in their child's communicative goals and outcomes. Bruno and Dribbon (1998) described a parent training program that focused on teaching device operation, improving parent interaction strategies, facilitating networking, and creating an awareness of the range of AAC device options. As with the present intervention, the device training focused on the needs defined by each parent. Unlike the present intervention, Bruno and Dribbon employed no strategy to enable parents to engage in dialogue with the primary investigators to define and prioritize needs. Moreover, their interaction training was provided in a group setting rather than in the families' home. Despite these differences, the families in the Bruno and Dribbon study reported high satisfaction with the training following the intervention. These results are consistent with the current findings and, taken together, may be interpreted as evidence for a positive effect of personalized device and communication partner training on parent satisfaction.

SLPs have an obligation for data collection, and the types of data described here can be easily obtained to inform the intervention process and outcomes. The data collected for this intervention provide a means to monitor and provide continued family support beyond what was required for initially developing the intervention. The identified communication contexts and AAC device needs can provide direction for con-

tinued intervention, which may include teaching, modeling, observation, and troubleshooting. The ADTNS and Message and Context Selection worksheets can be administered periodically to assess whether and how family priorities shift during intervention so that professionals can address new or evolving priorities. The Training Satisfaction Questionnaire may be used for similar purposes. For example, satisfaction data indicated that the training did not necessarily help the parents feel completely comfortable communicating with their child using the AAC device. This information is valuable for developing an intervention approach in which the family becomes more at ease with the communication device. By engaging the parents in a dialogue about their discomfort, the interventionist could determine what additional supports are needed. Such supports might include instruction, modeling, role playing, a commitment to more consistent device use, and ongoing monitoring and support from the interventionist. For example, models of communicative exchanges may involve demonstrations of how to prepare the physical environment (e.g., having the communication device and attractive toys readily accessible) to create communicative pressure to promote a child's communicative initiations. Ongoing monitoring and support may also include technical assistance, evaluation of whether the current device is meeting the current needs, and evaluation of and suggestions for appropriate vocabulary and messages that may be future targets. Parents might also be encouraged to role-play particular communicative contexts with each other (or with the interventionist) and to try to use the device themselves. In these ways, parents may better understand the communicative process from the child's perspective and may be more able to identify and address communication breakdowns.

Several considerations for future research were gleaned from this intervention. First, future large-scale, controlled, and randomized studies are needed to address issues of causality and the magnitude of effects. To more fully understand the long-term effects of a family-centered intervention, future studies should also consider following families longitudinally.

Another concern for future studies involves assessment of efficacy with regard to socially valid indices as well as objective observations of child and family communicative functioning. Although parent informant assessment methods are welcomed from a family-centered perspective and have demonstrated that they can be reliable and valid indices, it is worthwhile to investigate whether a family-centered intervention is associated with objective estimates of communicative functioning across settings and conversational partners.

The tentative findings reported here gain importance when one considers the paucity of research in this area. Because the "population of AAC users is highly heterogeneous, in practice, AAC interventions for individual clients are seldom exactly alike" (Light, 1999, p. 16) and efficacy research should be aimed at establishing best practices and maximizing outcomes. Thus, exploring the application of family-centered intervention principles is an important step in further

understanding AAC training efficacy and may represent best practice. At present, this article offers support and recommendations to those who use and evaluate family-centered AAC intervention as a potentially powerful clinical procedure and an important and fruitful area of research. We need a better understanding of how individualizing and tailoring intervention for a person who uses an AAC device can meet the needs of the entire family.

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APPENDIX: TRAINING SATISFACTION QUESTIONNAIRE

The following items were designed to assess feelings about the training program. Respondents were instructed to read each question carefully and indicate their level of agreement by making a hash mark at the appropriate point along a 10 centimeter continuum. They were encouraged to read each statement carefully and to respond honestly. (* rating given by mother in the present intervention)

1. This training answered all my questions about [child's name] communication. (*1)
2. This training was sufficiently tailored to my family's needs. (*10)
3. I felt comfortable during this training. (*8.7)
4. The SLP who administered this training was knowledgeable about all aspects of AAC communication (*7.8)
5. This training respected my family's beliefs. (*10)
6. This training increased my knowledge of the AAC device that [child's name] uses. (*4.1)
7. This training helped me to feel comfortable programming [child's name] AAC device. (*4.3)
8. This training helped me to feel comfortable communicating with [child's name] with the AAC device. (* 2.1)
9. The SLP administered this training in a sensitive and respectful manner. (*10)
10. I am satisfied with the AAC training that our family received. (*8.5)
11. I would recommend this AAC training to other families with similar needs. (*10)
12. I feel like the SLP really understood our family's needs. (*8.9)
13. I feel like the SLP provided the most effective training possible. (*8.9)
14. This training should help our family to better communicate with each other. (*4.2)

The following open-ended questions were also included:

During what activities do you feel use of the AAC device enhances communication most?

What did you like most about this training program?

What remained unaddressed in this training program?

What would you like changed about this training program?

Any additional comments about your experience with this training program?