

Augmentative Communication and Early Intervention Myths and Realities

MaryAnn Romski, PhD, CCC-SLP; Rose A. Sevcik, PhD

The use of augmentative and alternative communication (AAC) services and supports with infants and young children has been limited, owing to a number of myths about the appropriateness of AAC use with this population. This article will provide an overview of some of the myths that have hampered the inclusion of AAC into early intervention service delivery and refutes them. It will then examine some of the realities that must be considered when delivering AAC services and supports to young children. **Key words:** *augmentative communication, severe disabilities, speech and language intervention*

FOR more than 3 decades now, the field known as augmentative and alternative communication (AAC) has addressed the communication needs of children and adults who cannot consistently rely on speech for functional communication (e.g., Beukelman & Mirenda, 2005). Numerous developments in the hardware and software options available to an individual using AAC, including speech output capabilities, have occurred from the 1980s to the present. The capacities of the devices and the intelligibility of the voices have improved substantially. (See the Communication Aids Manufacturers' Association Web site, <http://www.aacproducts.org>, for the range of technology available.) Simultaneously, there also have been important developments in the empirical knowledge base to support decision making for successful clinical assessment and intervention.

Despite these advances, the inclusion of AAC services and supports into early intervention service delivery for young children has been hampered primarily by myths about the specific types of roles AAC plays. The purpose of this article is to examine these myths, in light of the current literature on the early language development period, and to provide arguments and data to refute them. To meet this goal, we will provide an overview of how language and communication skills emerge in young typically developing children and the roles AAC may play in facilitating the development of young children with significant communication disabilities. Next, we will examine some of the myths and then discuss the issues that contribute to the successful delivery of AAC services and supports for young children.

TYPICAL PATTERNS OF EARLY LANGUAGE DEVELOPMENT

Young children use language for many purposes, including to meet their wants and needs, to gain knowledge about the world around them, to develop and maintain social relationships, and to exchange information with others. In order for young children to develop functional language and communication skills, they must be able to comprehend

From the Georgia State University, Atlanta, Georgia.

The preparation of this article was funded in part by grant DC03799 from the National Institutes of Health and a Research Program Enhancement Grant from Georgia State University. The authors contributed equally to the preparation of this article.

Corresponding author: MaryAnn Romski, PhD, CCC-SLP, Department of Communication, Georgia State University, PO Box 4000, Atlanta, GA 30302 (e-mail: mrromski@gsu.edu).

and produce language so that they can take on the reciprocal roles of both listener and speaker in conversational exchanges (Sevcik & Ronski, 2002). Sevcik and Ronski (2002) defined language comprehension as the ability to understand what is said to us so that we can function as a listener in communicative exchanges. Conversely, they characterized language production as the ability to express oneself so that one can function as a speaker in conversational exchanges.

Language comprehension

Spoken language comprehension skills assume an extremely important role in the early communication development of typically developing children (Adamson, 1996). From birth on, young, typically developing, children hear spoken language during rich social-communicative interactions that include reoccurring familiar situations or events (Bruner, 1983; Nelson, 1985). Well-established routines draw the young child's attention to word forms and their referents in the environment. Word input from the caregiver to the child also permits the caregiver to create new learning opportunities by capitalizing on well-established routines and the child's understanding of them (Oviatt, 1985). These social and environmental contexts converge with the available linguistic information to produce understandings (Huttenlocher, 1974). Contextual, or situational, speech comprehension begins to emerge as early as 9 months of age and by 12-15 months the child understands, on average, about 50 words without contextual supports (Benedict, 1979; Miller, Chapman, Branston, & Reichle, 1980; Snyder, Bates, & Bretherton, 1981). This type of comprehension means that children first learn to respond to words in highly contextualized routines that include situational supports (Platt & Coggins, 1990). For example, a child touches the blocks after her mother says "go get the blocks" and simultaneously points to them. The understanding of these words progress developmentally from person and

object names to actions and from present to absent person and object names. The most common compositions of the first 50 receptive words include people, games and routines, familiar objects, animals, body parts, and actions (Fenson et al., 1994). Recently reported methodologies suggest that from the outset the young child relies on comprehension to build a foundation for later productive word use (Hollich, Hirsh Pasek, & Golinkoff, 2000).

As children move through their second year of life, the character of their understanding of words changes. By 24 months, they rely more on social cues than on perceptual cues (Hollich et al., 2000). They also quickly expand their understanding from single words to relational commands, such as "Give daddy a kiss," and can carry out such instructions (Goldin-Meadow, Seligman, & Gelman, 1976; Hirsh-Pasek & Golinkoff, 1996; Roberts, 1983). Golinkoff, Hirsh-Pasek, Cauley, and Gordon (1987) reported that typically developing children as young as 17 months of age, who were characterized as productively one-word communicators and not producing word order, actually comprehended word order (e.g., "Big bird tickle Ernie." "Ernie tickle big bird.") when a video-based preferential looking paradigm was employed to assess their skills.

Interestingly, Fenson and his colleagues (1994) reported overlap between the words young children comprehended and produced, although comprehension was shown to have a developmental advantage in the majority of the children they studied. Young typically developing children quickly move on to word production, and the child's ability to comprehend words, and even sentences, is assumed by the adults in the child's environments. Since word production skills emerge so quickly in typical children, they may mask and overshadow the continuing role speech comprehension plays in the early language development process. Comprehension may play a particularly important role for the young child who is encountering great difficulty with this process.

Language Production

Young children typically begin to speak before 2 years of age. From birth to approximately 18–21 months of age, the young typically developing child advances through the stages of intentional communication development (perlocutionary or preintentional, illocutionary or intentional) learning that he or she can control the world through communication. (See Brady & McLean, 2000, for a review.) Somewhere between 12 and 15 months the young child begins to produce first word approximations and slowly starts to develop a vocabulary. At about the same time that the young typically developing child attains a 50-word productive vocabulary (18–21 months) and experiences a spurt in vocabulary size, he or she is also beginning to combine words. So, prior to the time a child has a 50-word vocabulary, the focus of communication development is on learning about the social functions and the meaning of language rather than on its grammatical dimensions. The child who is not yet talking may use comprehension skills as a way to break into language.

Overview

The beginning period of language development is rich with opportunities for the young child to develop a firm language foundation even though he or she is not yet talking. This foundation includes opportunities to develop comprehension skills and to communicate via vocalizations, gestures, and other means even before he or she uses a conventional output mode such as speech, manual signs, or symbols. The literature on typically developing children's language development strongly suggests then that these early types of experiences are important for later language development. It also illustrates the development of communication, language, and speech—3 distinct but related processes. Early language interventions must consider how these receptive and expressive experiences can be incorporated into intervention strategies during the beginning developmental period through the means of AAC.

YOUNG CHILDREN WITH DEVELOPMENTAL DISABILITIES

Every day, children who cannot speak face social and educational isolation as well as significant frustration because they are unable to communicate their necessities, desires, knowledge, and emotions to their parents, siblings, extended family members, peers, and teachers. These limitations may be due to some type of congenital disability that hinders their development of speech or having experienced an injury or illness very early in life that substantially limits the speech and language abilities they are developing. Autism, cerebral palsy, cognitive disabilities, dual sensory impairments, genetic syndromes, multiple disabilities (including hearing impairment), or even a stroke at or near birth are congenital disabilities that may impede the development of speech and language skills. A young child also may encounter difficulty communicating via speech through a traumatic brain injury as a result of an accident, stroke, or, in rare instances, even severe psychological trauma.

Most children with developmental disabilities do develop functional spoken communication skills during their childhood (Abbeduto, 2003); thus children who do not eventually speak form a relatively low incidence population. There are certainly individual differences in communication patterns. Not every child presenting with one of these disorders is, or will be, nonspeaking across his or her entire life span, but children within this broad range of disabilities may use AAC at some point during their early development to augment natural speech so that they can communicate and develop language skills.

WHAT IS AUGMENTATIVE AND ALTERNATIVE COMMUNICATION?

Communication is defined in the broadest sense as "any act by which one person gives to or receives from another person information about that person's needs, desires, perceptions, knowledge, or affective states" (National Joint Committee [NJC], 1992; <http://www.asha.org/njc>). Language is an arbitrary

code that we use to communicate with one another and speech is an output mode that uses the oral mechanism.

By definition, AAC is an intervention approach (Glennen, 2000) that uses manual signs, communication boards with symbols, and computerized devices that speak and incorporate the child's full communication abilities. These abilities may include any existing speech or vocalizations, gestures, manual signs, communication boards and speech-output communication devices. (See American Speech-Language-Hearing Association [ASHA], 2002, for a comprehensive definition of AAC.) In this sense, then, AAC is truly multimodal, permitting a child to use every mode possible to communicate messages and ideas. AAC abilities may change over time, although sometimes very slowly, and thus the AAC system selected for use at one age may need to be modified as a young child grows and develops (Beukelman & Mirenda, 2005).

A child can communicate using a range of representational mediums from symbolic (e.g., speech or spoken words, manual signs, arbitrary visual-graphic symbols, printed words) to iconic (e.g., actual objects, photographs, line drawings, pictographic visual-graphic symbols) to nonsymbolic (e.g., signals such as crying or physical movement). (See Mineo Mollica, 2003, and Sevcik, Romski, & Wilkinson, 1991, for discussions of visual-graphic representational systems.) In addition to the vocalizations and gestures that some young children use, they may benefit from other dimensions of AAC when communicating with familiar and unfamiliar partners across multiple environments. Some young children have no conventional way to communicate and may express their communicative wants and needs in socially unacceptable ways, such as through aggressive or destructive, self-stimulatory, and/or perseverative means. AAC systems can replace these unacceptable means with conventional forms of communication.

Typically, forms of AAC are divided into 2 broad groups, known as unaided and aided forms of communication. Unaided forms of communication consist of nonverbal means

of natural communication (including gestures and facial expressions) as well as manual signs and the American Sign Language (ASL), and can be employed by children who are able to use their hands and have adequate fine-motor coordination skills to make fine-grained production distinctions between hand-shapes. Of course, communication partners too must be able to understand the signs for communication to take place.

Aided forms of communication consist of those approaches that require some additional external support, such as a communication board with symbols (i.e., pictures, photographs, line drawings, symbols, printed words) or a computer that "speaks" for its user (also known as a "speech-generating" device) via either synthetically produced speech or recorded natural (digitized) speech. From laptop computers that talk and can perform a wide range of other operations (e.g., word processing, World Wide Web access) to computerized devices dedicated to communication, technological advances have produced a range of opportunities for communication. These boards and devices typically display visual-graphic symbols that stand for, or represent, what the child wants to express. Some children create messages using printed English words or letters of the alphabet. Access to aided forms of communication can be via direct selection or scanning. Direct selection techniques include pointing with, for example, finger, hand, head (through a head stick), eyes, or feet. Scanning is a technique in which the message elements are presented to the child in a sequence either by a person or the device. The child specifies his or her choice by responding yes or no to the person or the device after each element is presented. Scanning can be, for example, linear, circular, or row-column and encoding (e.g., Morse Code; see Beukelman & Mirenda, 2005, for a detailed description of these techniques).

AAC can play at least four different roles in early intervention. The role(s) an AAC system plays will vary depending on an individual child's needs. These roles are as follows: augmenting existing natural speech, providing a primary output mode for communication,

providing an input and an output mode for language and communication and serving as a language intervention strategy. The most common and well-known role is to provide an output mode for communication. For example, Janie is a 24-month-old girl with spastic cerebral palsy and quadraplegia whose attempts at speech are unintelligible to everyone other than her family members owing to severe dysarthria. She understands almost everything that is said to her. Janie could use an AAC system as a primary communication output mode in her interactions with adults and other children across a variety of settings. The other roles, however, can be equally important, especially for the very young child just beginning to develop communication skills. David is 36 months old, has some challenging behavior (i.e., head banging) and a very recent diagnosis of autism. He understands less than 20 words and has just a few undifferentiated vocalizations. He is learning to use AAC to indicate his wants and needs to his family and teachers. In this case, AAC serves a very different role than it did for Janie functioning as an input-output mode and a language intervention strategy. Using a developmental perspective, AAC interventions (i.e., gestures, devices, switches) can be viewed as a tool that aids or fosters the development of early language skills and sets the stage for later vocabulary development and combinatorial language skills regardless of whether the child eventually talks or not.

MYTHS ABOUT AAC

A myth is defined as "a widely held but false belief" (Oxford, 2002). Clinical myths

are derived from individual professional's beliefs or assumptions sometimes without any empirical support. Sometimes myths are perpetuated despite empirical evidence to the contrary. A limited research base along with the immediate demands of providing clinical services have fostered practice that relies more on a professional's clinical intuition than on current data (Cress, 2003; NJC, 2002). There are at least 6 myths, listed in Table 1, that have developed about the use of AAC. Each myth has grown out of information expressed in clinical literature but has not necessarily been backed up by empirical evidence to support or refute its use. Unfortunately, the myths remain and have become integrated into clinical practice. Their use in clinical practice may result in young children being inappropriately excluded from AAC supports and services ("AT/AAC Enables" Web site (<http://depts.washington.edu/enables/>); Cress & Marvin, 2003; NJC, 2002).

Myth 1: AAC is a "last resort" in speech-language intervention

When AAC was first emerging as an intervention strategy, it was considered a "last resort," to be employed only when every other option for the successful development of speech had been exhausted. In 1980, Miller and Chapman argued for a set of decision rules that indicated AAC was to be considered when speech had not developed by age 8 years (Miller & Chapman, 1980). Since that time, additional information has emerged to change the use of decision rules such as these. The use of AAC interventions should not be contingent on failure to develop speech skills

Table 1. Myths about AAC use

Myth 1	AAC is a "last resort" in speech-language intervention.
Myth 2	AAC hinders or stops further speech development.
Myth 3	Children must have a certain set of skills to be able to benefit from AAC.
Myth 4	Speech-generating AAC devices are only for children with intact cognition.
Myth 5	Children have to be a certain age to be able to benefit from AAC.
Myth 6	There is a representational hierarchy of symbols from objects to written words (traditional orthography).

or considered a last resort because AAC can play many roles in early communication development as described earlier (e.g., Cress & Marvin, 2003; Reichle, Buekelman, & Light, 2002). In fact, it is critical that AAC be introduced before communication failure occurs. This change means that AAC is not only for the older child who has failed at speech development but also for a young child during the period when he or she is just developing communication and language skills, to prevent failure in communication and language development.

Myth 2: AAC hinders or stops further speech development

The myth that AAC is a “last resort” goes hand in hand with another myth about AAC. It is the impression that AAC will become the child’s primary communication mode and take away the child’s motivation to speak. In fact, the fear many parents, and some practitioners, have is simply not supported by the available empirical data. The literature actually suggests just the opposite outcome. There are a modest number of empirical studies that report improvement in speech skills after AAC intervention experience (see Beukelman & Mirenda, 1998; Ronski & Sevcik, 1996, for reviews). Sedey, Rosin, and Miller (1991), for example, reported that manual signs had been taught to 80% of the 46 young children with Down Syndrome (mean chronological age 3 years, 11 months) that they surveyed. The families of these children also reported that they discontinued the use of the manual signs when the child began talking or when the child’s speech became easier to understand. Miller, Sedey, Miolo, Rosin, and Murray-Branch (1991) also reported that when sign vocabularies were included, the initial vocabularies of a group of children with Down Syndrome were not significantly different from those of mental-age-matched typically developing children. Adamson and Dunbar (1991) described the communication development of a 2-year-old girl with a long-term hospitalization and a tracheostomy (i.e., an incision into the trachea [windpipe] that forms

a temporary or permanent opening for the child to breathe) who used manual signs to communicate. When the tracheostomy tube was removed, she immediately attempted to speak and quickly used speech as her primary means of communication. Ronski, Sevcik, and Adamson (1997) evaluated the effects of AAC on the language and communication development of toddlers with established developmental disabilities who were not speaking at the onset of the study. Although the families of these very young children were much more receptive to using AAC than the investigators initially thought they would be, they were quick to focus exclusively on speech when their child produced his or her first word approximation. For very young children, the use of AAC does not appear to hinder speech development (Cress, 2003). In fact, it may enhance the development of spoken communication, which should be a simultaneous goal for intervention.

Myth 3: Children must have a certain set of skills to be able to benefit from AAC

In the past, young children with some degree of cognitive disability were frequently excluded from AAC intervention because their assessed levels of intelligence and their sensorimotor development were not commensurate with cognitive/sensorimotor skills that had been linked to early language development (Miller & Chapman, 1980; Mirenda & Locke, 1989; Ronski & Sevcik, 1988). While one may argue that some basic cognitive skills are essential for language to develop, the exact relationship between language and cognition have not been specified clearly (see Rice, 1983; Rice & Kemper, 1984, for reviews). Investigators have argued against excluding children from AAC interventions based upon intellectual performance and/or prerequisite sensorimotor skills (Kangas & Lloyd, 1988; Reichle & Karlan, 1988; Ronski & Sevcik, 1988). Given the overall impact language exerts on cognitive development, a lack of expressive language skills may put an individual at a distinct developmental disadvantage (Rice & Kemper, 1984). Some individuals

with severe sensori-motor disabilities cannot demonstrate their cognitive abilities without a means by which to communicate so we cannot insist on evidence of those abilities before providing AAC services and supports. There is also some evidence that severe physical disabilities and limited communication skills may interfere with the course of early cognitive development, in particular the development of object permanence and means-ends skills. Thus, developing language skills through AAC may be of critical importance if the individual is to make functional cognitive gains as well.

Myth 4: Speech-generating AAC devices are only for children with intact cognition

The cognitive skills a young child brings to the intervention task can vary from no evidence of cognitive disabilities to that of severe cognitive disabilities. Another myth related to Myth 3 relates to the use of speech-generating devices. In the past, computer-based AAC devices were often limited to children who had intact cognition by clinicians for 2 main reasons. First, the devices were expensive and thus it was argued that the money should only be spent on children who could "truly benefit" from the device (Turner, 1986). Second, early computer-based devices often required a fairly sophisticated set of cognitive skills in order to operate them and thus were provided only to those children who had such a level of skill. Neither of these 2 reasons are true today. The technological developments in AAC devices have made a broad range of options available to young children. There are now many choices of AAC devices that speak from simple inexpensive technology (like single switches) to complex systems that permit access to sophisticated language and literacy skills. This broad range of options include devices that are modestly priced (<\$100.00) to expensive (\$10,000.00 or more). These newer devices sometimes require little skill and can provide a place of introduction to AAC for the young child. The AAC device is simply a tool, a means to an end—language and communication skills—not the end in it-

self. Having a voice at a young age can facilitate self-identity as well as communication.

Myth 5: Children have to be a certain age to be able to benefit from AAC

There is no evidence suggesting that children must be a certain chronological age to optimally benefit from AAC interventions. Chronological age is often mentioned as an argument against the provision of AAC services to young children. Specifically, some parents and professionals believe that the introduction of an AAC mode at an early age will preclude the child from ever developing speech as his or her primary mode of communication. Current research clearly documents the efficacy of communication services and supports provided to infants, toddlers, and preschoolers with a variety of severe disabilities (Bondy & Frost, 1998; Cress, 2003; Pinder & Olswang, 1995; Ronski, Sevcik, & Forrest, 2001; Rowland & Schweigert, 2000). Studies also have demonstrated that the use of AAC does not interfere with speech development (Ronski, Sevcik, & Hyatt, 2003, for a review) and actually has been shown to support such development (see Millar, Light, & Schlosser, 2000, for a review of research demonstrating this effect; Ronski & Sevcik, 1996; Ronski, Sevcik, & Pate, 1988).

Myth 6: There is a representational hierarchy of symbols from objects to written words (traditional orthography)

This myth suggests that a child can only learn symbols in a representational hierarchy. The hierarchy begins with real objects to photographs, to line drawings, to more abstract representations, and then to written English words (traditional orthography). Namy, Campbell, and Tomasello (2004) suggested that 13- to 18-month-olds' early development of word learning is not specific to a predetermined mode of symbolic reference because their comprehension of referents in their environments is in the developmental stage. Iconicity did not impact the ability to learn symbol-referent relationships at the onset of language development but did make a

difference by the time the typically developing child was 26 months old. The child's expectation about the relationship between a symbol and its environmental referent may change throughout their development. By the time children are 4 years old, they may have developed a greater awareness of symbolic function, have a larger vocabulary, and may be more open to using various symbolic modes. This empirical evidence from the literature on typical language development suggests that this myth is not based on evidence about how young children learn. In fact, during early phases of development, it may not matter if the child uses abstract or iconic symbols because to the child they all function the same. The choice of symbol set may be complicated by what families perceive as appropriate for young children.

ISSUES IN DELIVERING AAC SERVICES AND SUPPORTS TO YOUNG CHILDREN

These 6 myths grew out of early thinking about how to use AAC services and supports. None of these myths are supported by the current literature on early intervention and AAC. However, they are often discussed when AAC is considered as part of the intervention plan for a young child. The delivery of AAC services and supports must be accomplished in the broader context of early intervention services. There is a growing recognition of the merits of implementing AAC interventions with young children (Cress & Marvin, 2003; Culp, 2003). First, the use of AAC is mandated as part of the implementation of Part C of the *Individuals With Disabilities Education Act*. And, second, AAC technologies are becoming increasingly available at a reasonable cost. Implementing AAC raises a number of issues that are only beginning to be explored. These issues include, though are not limited to, families as partners, assessment issues, transitions, and training for professionals.

Families as partners

There are a number of important issues related to the family and the child. When AAC

intervention is begun early in life, at least 2 additional issues need to be considered by professionals and families (Berry, 1987). First, families are still coming to terms with their young child's disability (Wright, Granger, & Sameroff, 1984) and often seek a broad variety of interventions (e.g., speech-language therapy, occupational therapy, physical therapy, educational therapy) to help their child overcome his or her limitations. These interventions may include highly publicized interventions (e.g., direct instruction, floor-time) or multiple types of speech-language therapy (e.g., therapy focused on feeding issues, therapy focused on speech-language development). Second, there appear to be fewer structured routines outside the home in which to place AAC intervention, than in the school child's day, including opportunities for communication with others during the young child's day. Thus, the toddlers' family may take a primary role in the intervention process in addition to their other parenting responsibilities (Crutcher, 1993). Fulfilling this primary interventionist role may require different external supports and organization than is the case when a child is school-aged. Kaiser and Hancock (2003) reported that parent-implemented language intervention is a complex phenomena that requires a multicomponent intervention approach. Ronski, Sevcik, and Adamson's (1997) preliminary findings regarding initial choice about AAC suggest that engaging in early augmented language intervention may be a more complex decision than professionals initially anticipate. Parent perception about communication and parental stress may play roles in augmented language intervention. In general, today's parents may not be afraid of the use of technology because of extensive parent education about the importance of getting communication started and the increased use of computers in daily life. Understanding how to arrange early augmented language intervention to be able to capitalize on the communicative roles family members may typically play has not been examined to date. In addition, sometimes, parental knowledge about AAC device choice

exceeds professional knowledge and experience with AAC devices because parents readily use the Internet to gain information. Such discrepancies in knowledge and experience can serve to create challenges for teams in determining and providing services.

One of the difficulties families face is that they want their young children to talk. Their expectations for production may lead to a competition between a focus on developing a way to communicate and a focus on having the child speak, even if the speech the child produces is imitative in nature. Thus, interventions that do not confuse the parents or children but instead permit them to focus their energies on a specific goal are needed.

Assessment Tools

For young children who present with significant communication disabilities, there are also limited tools available that can provide an adequate assessment of the young child's communication strengths and weaknesses. The more challenging the child's disabilities, the more difficult it can be to assess the child's language and communication skills. One particularly important, yet challenging, area of research need is that of language and communication measurement tools (Sevcik, Ronski, & Adamson, 1999). Attention must be focused on the development of assessment tools that provide a fine-grained analysis of the child's language and communication skills across modes and that measure a range of intervention outcomes over time. Sevcik and Ronski (2002) reviewed assessment options available for the examination of early comprehension skills during the child's communication assessment. Some outcomes of using AAC go beyond the development of specific comprehension and production vocabulary, and even grammatical skills, and have been somewhat elusive to quantitative measurement. Communication access can also prevent the emergence of secondary disabilities (e.g., challenging behaviors). Tools that permit measurement of these elusive outcomes are important to develop.

Transitions

The young child can make a number of transitions during this early period. Over a period of 3 years, the child must transition from early intervention services that are usually delivered in the family or home environment to a preschool classroom. This type of transition is complex and includes many different aspects. It is important to stress that parents are a source of expertise about how a child communicates when service providers change. Incorporating AAC during early communication development requires a focus on language and communication development within the context of the AAC mode. Sometimes school-based clinicians are not open to the use of AAC because it is not readily available or they are constrained by 1 or more of the 6 myths. It is particularly important that communication be a focus during the transition process.

Training for professionals and families

To ensure that AAC services and supports can be provided to children receiving early intervention services, training about AAC must be included for professionals and families. When serving young children, instruction for the early intervention team must include information about the philosophy of communication, technology, and assessment and intervention strategies, with particular emphasis on the role of the speech-language pathologist. Assessment must include information about test adaptations, standardized and informal or experimental measures, and parental report. Intervention strategies must discuss linking speech and language therapy with AAC, as the goal is language and communication development.

CONCLUSIONS

The reality is that it is never too early to incorporate AAC into language and communication intervention for the young child with a significant communication disability. The AAC devices and strategies are a tool, a means to an end—language and communication

skills—not the end. Incorporating AAC during early communication development requires a focus on language and communication development within the context of the AAC mode. AAC is sometimes thought of as a separate area of practice, and thus clinicians do not always incorporate the information they know about language and communication development as they consider AAC assessment and intervention. Often speech-language pathologists think that “someone else” will provide AAC services for the children on their caseloads. It is imperative that AAC be linked to early language and communication development. There is a strong history of empirical data to

draw on as clinicians make practice decisions about intervention strategies for early communication development. Clinical decisions must be guided by empirical data in the context of clinical judgment not just by “beliefs” (Romski, Sevcik, Hyatt, & Cheslock, 2002). AAC is not a last resort but rather a first line of intervention that can provide a firm foundation for the development of spoken language comprehension and production. It can set the stage for further language and communication development during the child’s preschool and early school years. It also can open the door for the child’s overall developmental progression.

REFERENCES

- Abbeduto, L. (2003). *International review of research in mental retardation: Language and communication*. New York: Academic Press.
- Adamson, L. B. (1996). *Communication development during infancy*. Boulder, CO: Westview.
- Adamson, L. B., & Dunbar, B. (1991). Communication development of young children with tracheostomies. *Augmentative and Alternative Communication, 7*, 275–283.
- American Speech-Language-Hearing Association. (2002). Augmentative and alternative communication: Knowledge and skills for service delivery. *ASHA Supplement, 22*, 97–106.
- Benedict, H. (1979). Early lexical development: Comprehension and production. *Journal of Child Language, 6*, 183–200.
- Berry, J. (1987). Strategies for involving parents in programs for young children using augmentative and alternative communication. *Augmentative and Alternative Communication, 90–93*.
- Beukelman, D., & Mirenda, P. (2005). *Augmentative and alternative communication: Management of severe communication impairments* (3rd ed.). Baltimore: Brookes.
- Bondy, A., & Frost, L. (1998). The Picture Exchange Communication System. *Topics in Language Disorders, 19*, 373–390.
- Brady, N., & McLean, L. (2000). Emergent symbolic relations in speakers and nonspeakers. *Research in Developmental Disabilities, 21*, 197–214.
- Bruner, J. (1983). *Child's talk*. New York: Norton.
- Cress, C. J. (2002). Expanding children’s early augmented behaviors to support symbolic development. In J. Reichle, D. Beukelman, & J. Light (Eds.), *Exemplary practices for beginning communicators: Implications for AAC* (pp. 219–272). Baltimore: Brookes.
- Cress, C. J. (2003). Responding to a common early AAC question: “Will my child talk?” *Perspectives on Augmentative and Alternative Communication, 12*, 10–11.v
- Cress, C. J., & Marvin, C. A. (2003). Common questions about AAC services in early intervention. *Augmentative and Alternative Communication, 19*, 254–272.
- Crutcher, D. (1993). Parent perspectives: Best practice and recommendations for research. In A. Kaiser & D. Gray (Eds.), *Enhancing children's communication: Research foundations for intervention* (pp. 365–374). Baltimore: Brookes.
- Culp, D. (2003). “If mama ain’t happy, ain’t nobody happy”: Collaborating with families in AAC interventions with infants and toddlers. *Perspectives on Augmentative and Alternative Communication, 12*, 3–9.
- Fenson, L., Dale, P. S., Reznick, J. S., Bates, E., Thal, D., & Pethick, S. J. (1994). Variability in early communicative development. *Monographs of the Society for Research in Child Development, 59*(Serial No. 242).
- Glennen, S. (2000, January). *AAC assessment myths and realities*. Paper presented at the ASHA SID 12 Leadership Conference on Augmentative and Alternative Communication, Sea Island, GA.
- Goldin-Meadow, S., Seligman, M. E. P., & Gelman, R. (1976). Language in the two year old. *Cognition, 4*, 189–202.
- Golinkoff, R. M., Hirsh-Pasek, K., Cauley, K. M., & Gordon, L. (1987). The eyes have it: Lexical and syntactic comprehension in a new paradigm. *Journal of Child Language, 14*, 23–46.
- Hirsh-Pasek, K., & Golinkoff, R. M. (1996). *The origins of grammar: Evidence from early language comprehension*. Cambridge, MA: The MIT Press.

- Hollich, G., Hirsh-Pasek, K., & Golinkoff, R. (2000). Breaking the language barrier: An emergentist coalition model of word learning. *Monographs of the Society for Research in Child Development*, 65(3, Serial No. 262).
- Huttenlocher, J. (1974). The origins of language comprehension. In R. L. Solso (Ed.), *Theories of cognitive psychology* (pp. 331-368). Hillsdale, NJ: Erlbaum.
- Kaiser, A. (1993). Parent-implemented language intervention: An environmental system perspective. In A. Kaiser & D. Gray (Eds.), *Enhancing children's communication: Research foundations for intervention* (pp. 63-84). Baltimore: Brookes.
- Kaiser, A. P., & Hancock, T. B. (2003). Teaching parents new skills to support their young children's development. *Infants and Young Children*, 16, 9-21.
- Kangas, K., & Lloyd, L. (1988). Early cognitive skills prerequisites to augmentative and alternative communication use: What are we waiting for? *Augmentative and Alternative Communication*, 4, 211-221.
- Millar, D., Light, J., & Schlosser, R. (2000). The impact of AAC on natural speech development: A meta-analysis. In *Proceedings of the 9th biennial conference of the International Society for Augmentative and Alternative Communication* (pp. 740-741). Washington, DC: ISAAC.
- Miller, J., & Chapman, R. (1980). Analyzing language and communication in the child. In R. Schiefelbusch (Ed.), *Nonspeech language, and communication: Acquisition and intervention* (pp. 159-196). Baltimore: University Park Press.
- Miller, J., Chapman, R., Branston, M. L., & Riechle, J. (1980). Language comprehension in sensorimotor stages V and VI. *Journal of Speech and Hearing Research*, 23, 284-311.
- Miller, J., Sedey, A., Miolo, G., Rosin, M., & Murray-Branch, D. (1991, November). *Spoken and sign vocabulary acquisition in children with Down Syndrome*. Poster session presented at the annual meeting of the American Speech-Language-Hearing Association, Atlanta, GA.
- Mineo Mollica, B. (2003). Representational competence. In J. Light, D. Beukelman, & J. Reichle (Eds.), *Communicative competence for individuals who use AAC* (pp. 107-145). Baltimore: Brookes.
- Mirenda, P., & Locke, M. (1989). A comparison of symbol transparency in nonspeaking persons with intellectual disabilities. *Journal of Speech and Hearing Disorders*, 54, 131-140.
- Namy, L. L., Campbell, A. L., & Tomasello, M. (2004). Developmental change in the role of iconicity in symbol learning. *Journal of Cognition and Development*, 5, 37-57.
- National Joint Committee (NJC) for the Communication Needs of Persons With Severe Disabilities (1992, March). Guidelines for meeting the communication needs of persons with severe disabilities. *ASHA*, 34(Suppl. 7), 1-8.
- National Joint Committee (NJC) for the Communication Needs of Persons With Severe Disabilities (2002). Access to communication services and supports: Concerns regarding the application of restrictive eligibility criteria. *Communication Disorders Quarterly*, 23, 145-153.
- Nelson, K. (1985). *Making sense: The acquisition of shared meaning*. New York: Academic Press.
- Oviatt, S. L. (1985). Tracing developmental change in language comprehension ability before twelve months of age. *Papers and Reports on Child Language Development*, 24, 87-94.
- Peterson, S., Bondy, A., Vincent, Y., & Finnegan, C. (1995). Effects of altering communicative input for students with autism and no speech: Two case studies. *Augmentative and Alternative Communication*, 11, 93-100.
- Pinder, G. L., & Olswang, L. B. (1995). Development of communicative intent in young children with cerebral palsy: A treatment efficacy study. *Infant Toddler Intervention*, 5, 51-69.
- Platt, H., & Coggins, T. (1990). Comprehension of social-action games in prelinguistic children: Levels of participation and effect of adult structure. *Journal of Speech and Hearing Disorders*, 55, 315-326.
- Reichle, J., Beukelman, D., & Light, J. (Eds.). (2002). *Implementing an augmentative communication system: Exemplary strategies for beginning communicators*. Baltimore, MD: Paul H. Brookes.
- Reichle, J., & Karlan, G. A. (1988). Selecting augmentative communication interventions: A critique of candidacy criteria and a proposed alternative. In R. L. Schiefelbusch & L. L. Lloyd (Eds.), *Language perspectives: Acquisition, retardation and intervention strategies*. Baltimore: Brookes.
- Rice, M. (1983). Contemporary accounts of the cognition/language relationship: Implication for speech-language clinicians. *Journal of Speech and Hearing Disorders*, 48, 347-359.
- Rice, M., & Kemper, S. (1984). *Child language and cognition*. Baltimore: University Park Press.
- Roberts, S. (1983). Comprehension and production of word order in stage I. *Child Development*, 54, 443-449.
- Romski, M. A., & Sevcik, R. A. (1988). Augmentative and alternative communication systems: Considerations for individuals with severe intellectual disabilities. *Augmentative and Alternative Communication*, 4, 83-93.
- Romski, M. A., & Sevcik, R. A. (1996). *Breaking the speech barrier: Language development through augmented means*. Baltimore: Brookes.
- Romski, M. A., Sevcik, R. A., & Adamson, L. B. (1997, March). Toddlers with developmental disabilities who are not speaking: Family stress, home environment, and language intervention. In N. Brady (Chair), *Communication Disorders and Families*. Symposium conducted at the 30th annual Gatlinburg Conference

- on Research and Theory in Mental Retardation and Developmental Disabilities. Riverside, CA.
- Romski, M. A., Sevcik, R. A., & Forrest, S. (2001). Assistive technology and augmentative communication in early childhood inclusion. In M. J. Guralnick (Ed.), *Early childhood inclusion: Focus on change* (pp. 465-479). Baltimore: Brookes.
- Romski, M. A., Sevcik, R. A., & Hyatt, A. (2003). Augmentative and alternative communication for persons with mental retardation. In L. Abbeduto (Ed.), *International Review of Research in Mental Retardation*. New York: Academic Press.
- Romski, M. A., Sevcik, R. A., Hyatt, A., & Cheslock, M. B. (2002). Enhancing communication competence in beginning communicators: Identifying a continuum of AAC language intervention strategies. In J. Reichle, D. Beukelman, & J. Light (Eds.), *Implementing an augmentative communication system: Exemplary strategies for beginning communicators*. (pp. 1-23). Baltimore, MD: Brookes.
- Romski, M. A., Sevcik, R. A., & Pate, J. L. (1988). The establishment of symbolic communication in persons with mental retardation. *Journal of Speech and Hearing Disorders*, 53, 94-107.
- Rowland, C., & Schweigert, P. (2000). Tangible symbols, tangible outcomes. *Augmentative and Alternative Communication*, 16, 61-78.
- Sedey, A., Rosin, M., & Miller, J. (1991, November). *The use of signs among children with Down Syndrome*. Poster session presented at the annual meeting of the American Speech-Language-Hearing Association, Atlanta, GA.
- Sevcik, R. A., & Romski, M. A. (2002). The role of language comprehension in establishing early augmented conversations. In J. Reichle, D. Beukelman, & J. Light (Eds.), *Implementing an augmentative communication system: Exemplary strategies for beginning communicators* (pp. 453-474). Baltimore, MD: Brookes.
- Sevcik, R. A., Romski, M. A., & Adamson, L. B. (1999). Measuring AAC interventions for individuals with severe developmental disabilities. *Augmentative and Alternative Communication*, 15, 38-44.
- Sevcik, R. A., Romski, M. A., & Wilkinson, K. (1991). Roles of graphic symbols in the language acquisition process for persons with severe cognitive disabilities. *Augmentative and Alternative Communication*, 7, 161-170.
- Simpson, J. (Ed.). (2002). *Oxford English Dictionary*. Oxford, England: Oxford University Press.
- Snyder, L., Bates, E., & Bretherton, I. (1981). Content and context in early lexical development. *Journal of Child Language*, 8, 565-582.
- Turner, G. (1986). Funding VOCAs for the lower cognitive functioning. *Closing the Gap*, 5, 26.
- Wright, J., Granger, R., & Sameroff, A. (1984). Parental acceptance and developmental handicap. In J. Blancher (Ed.), *Severely handicapped young children and their families: Research in review* (pp. 51-90). New York: Academic Press.

Copyright of *Infants & Young Children: An Interdisciplinary Journal of Special Care Practices* is the property of Lippincott Williams & Wilkins -- Nursing and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.