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PERSPECTIVES on
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From the Coordinator

Amy Goldman

Welcome to the first issue of *Perspectives in* 2009 and to our new Managing Editor, Cynthia Millikin. This issue, focusing on AAC with early intervention and pre-school populations, is a valuable and highly useful resource. Thanks to Nancy Robinson for serving as our Guest Editor for this issue and coordinating this collection of articles that address early intervention and AAC. Kathleen C Sadao, Jennifer Brown, and Debbie Grant describe an assistive technology toolkit for young children with disabilities, while Patti Solomon-Rice and Gloria Soto discuss language modeling as an early language intervention approach. Sandra M. Grether presents the applications for AAC within the Response to Intervention model in preschool settings, and Nancy B. Robinson gives us a comprehensive collection of Internet resources for AAC in Early Intervention and Early Childhood Services. Finally, I am covering funding issues in assistive technology for infants and toddlers with disabilities.

Our 10th Annual DAAC Conference, Pragmatically Speaking, was recently held at the Gaithersburg Marriott Washingtonian Center on February 20-22. A big “thanks” goes to Jan Bedrosian, our Program Chair, who assembled an outstanding set of presentations. The keynote speakers, Dr Bonnie Brinton of Brigham Young University and Dr Herbert Clark of Stanford University, along with our other invited speakers, Sarah Blackstone, Jeff Higginbotham, Marilyn Buzolich, Ann Beck, Linda Hoag, Jan Bedrosian, and Kathy McCoy, created an atmosphere crackling with discussion relevant to all professionals who work in the field. Other highlights of the conference were topics presented by ASHA National Office staff who discussed activities related to AAC and the tour of the new ASHA National Office hosted by Executive Director Arlene Pietranton.

Thanks also go to Conference Chair Jacquelyn R. Moore, Poster Chair Ann Ratcliff, DAAC Continuing Education Administrator Sarah Scarborough, along with ASHA Associate Directors for the Special Interest Divisions Kerry Chmielenski, and Leigh Deussing and Special Division Coordinator Andrea Ducker, for making the conference a success.

The conference would not have been as successful as it was without the generosity of our sponsors. Our thanks go to Lingraphica, for sponsoring Friday's breakfast and breaks, to Blink Twice, for sponsoring all 3 days of breakfast and breaks, and to DynaVox/Mayer Johnson and the Prentke Romich Company for their full sponsorship of the entire conference. For the first time, we were able to offer exhibit space to our full sponsors, so that both DynaVox and PRC had tables with equipment and literature that were staffed by company representatives who were available during breakfast and break hours for all 3 days of the conference, including the reception/poster session.

Altogether, the combination of presentations, posters, and exhibits resulted in a vibrant gathering of professionals. All who attended would agree that the program was a huge success and stimulated discussion that will continue for months to come.

In our continuing effort to further the education of clinicians in the field of AAC, two sets of webcasts have been created by the DAAC in partnership with ASHA's Professional Development Unit. The first set features Kathryn Garrett and Joanne Lasker who present "Functional AAC Approaches for Severe Aphasia: An Introduction"; this set is now available on the ASHA Web site at Shop@ASHA. The second set, "AAC for School-Age Children With Intellectual Disabilities," was created by Krista Wilkinson and Ellen Kravitz and will be available in early 2009. For information on these and other Web workshops on AAC, go to

http://www.asha.org/eWeb/OLSDynamicPage.aspx?Site=ashacms&Webcode=olsresults&tpc=aac

Finally, I would like to thank my predecessor, Iris Fishman, for her service to the Division. After guiding the Division to a successful conference, Iris announced her decision to resign her post as Coordinator due to the increasing demands of her private practice. Thanks for all your hard work, Iris!

Response to Intervention: Applications for AAC in Preschool Settings

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Abstract

Educators were previously encouraged to use IQ-achievement discrepancy to identify children with learning disabilities. The Individuals with Disabilities Education Improvement Act (IDEA, 2004) promotes an alternative method, "Response to Intervention" or RTI, to identify and provide early intervention to all children at risk for school failure. Recognition and Response (R & R) is the RTI model for preschool-aged children. Children with complex communication needs, who use augmentative and alternative communication (AAC), are at risk for failing in the preschool classroom and can benefit from the educational supports provided through R & R. This article discusses the levels of support provided by RTI and strategies and supports for achieving academic success for preschool children who use AAC.

Reading, writing, listening, and speaking are infused into almost every aspect of the educational experience; therefore, children with speech and language disorders can be expected to have more difficulty learning in the classroom. Children with complex communication needs, who rely on augmentative and alternative communication (AAC), will have additional challenges accessing the educational curriculum. The response to intervention (RTI) model, designed to provide early identification of student needs as well as the supports needed for academic achievement, can be used to determine effective services for any student having difficulty in the classroom (Grether & Sickman, 2008). While the RTI model addresses school-aged children, the Recognition and Response Project is using this multi-tiered model with 3- to 5-year-olds in preschool settings (Horowitz, 2006; National Center for Learning Disabilities [NCLD] RTI Action Network, n.d.). This article will address how students using AAC can benefit from the levels of R&R support in the preschool classroom.

Defining RTI

A RTI model is a multi-tiered intervention approach, with universal screening, progress monitoring, and the identification of individual students struggling in the classroom. The nature of the academic intervention changes at each tier, becoming more intensive as a student moves across the tiers (Fuchs & Fuchs, 2001). The hallmark of the RTI approach is to use high quality instruction and evidence-based intervention and to monitor and maintain data on the individual student's progress (Ehren, Montgomery, Rudebusch, & Whitmire, 2006). Data collected determines if the intervention needs to be (a) more/less intensive, (b) teacher-centered, systematic, and explicit instruction, (c) conducted more/less frequently, (d) conducted for a shorter/longer duration, (e) delivered in small, homogeneous student groupings, and/or (f) reliant on instructors/professionals with greater expertise (Fuchs & Fuchs, 2006).

Recognition and Response (R & R) applies the RTI principles to the preschool environment by first aligning assessment and instructional practices to early learning standards and then ensuring that classroom assessment is tied to effective or promising instructional practices. Frequent screening and progress monitoring provide the teacher with the means to identify children who would benefit from additional instructional supports. It also allows teachers to track both the level and rate of academic growth in her students. A hierarchy of increasingly intense interventions is used as part of the R & R system (NCLD: Recognition and Response in Action, n.d.).

Tier 1 provides teachers with the means of determining whether instruction for the whole class may need to be modified and helps them identify children who require additional supports. Tier 2 provides teachers with specific instructional practices that have been shown to be effective in addressing a particular learning problem using strategies that require minimal adjustments to classroom routines (e.g., working with small groups). Tier 3 provides teachers with more intensive, individualized approaches. A collaborative problem-solving process that includes parents and specialists assists teachers in selecting appropriate interventions linked to assessment data at each level of the intervention hierarchy (NCLD: Recognition and Response in Action, n.d.).

Students using AAC will generally qualify for intervention support at both Tier 2 and Tier 3. Tier 2 supports are typically provided in the classroom with the speech-language pathologist (SLP) collaboratively problem solving with the classroom teacher to design a supplementary, diagnostic instructional trial tailored to the needs of the student (Fuchs & Fuchs, 2001). As Tier 2 interventions are set up in the classroom, a primary consideration for students using AAC is to define the response modes that will allow them to effectively and efficiently participate (i.e., vocalizations, verbalizations/approximations, pointing to pictures/words/letters, gestures/sign language, speech generating device/computer). The preschool environment should allow a child to initiate activities through choice making, creating, interacting, playing, and discovering. For example, will s/he use vocalizations/verbal approximations to invite a peer to play, point to a low technology communication board with words/picture to choose the activity center, and/or use a speech generating device/computer to answer questions during circle time? An intervention plan should define the most efficient and effective response mode for each task, because many students using AAC do not exclusively use one mode and may change modes based on the task and the required outcome. The SLP and teacher should work collaboratively on this plan, breaking down the tasks for each activity type to maximize the participation of the student using AAC.

Collaboration with classroom teachers to set up AAC based interventions can benefit every student in the classroom, because many students are also visual learners and may benefit from the symbol-based support for instruction. Additionally, the SLP can participate by modeling interactions, training instructional aides and peers, and identifying additional opportunities to respond and participate.

Best Practices

The classroom environment is the most natural setting to integrate language, and a language-rich classroom helps teachers to support children's engagement in the curriculum. Even though most preschoolers cannot read any words when beginning preschool, it is important to label everything. Using both symbols and words will support both those children using AAC and the typical children in the classroom. Justice (2004) elaborated on five basic principles for creating language-rich interactions, which address best practice for a Tier 1 environment for learning. These principles are

1. Language is experienced in various contexts and with frequent opportunity.
2. Language is intentionally used surrounding the children's activities so as to expose the children to new skills.
3. Language is repeatedly used so that children engage in many opportunities to use their language skills.

4. Language in the classroom involves many different words and word types (e.g., nouns, adjectives), is combined in many different ways, such as in declarative sentences or wh-questions, and is implemented in a variety of situations and classroom activities.
5. Additionally, language is used to recognize and validate children's communicative attempts.

Children who use AAC typically have minimal control over the acquisition of new vocabulary and are reliant on the SLP and teacher to provide not only curriculum-based vocabulary, but also developmental vocabulary to allow students to participate in this language enriched environment (Justice, 2004). Frequently, they have access to vocabularies that are insufficient to meet their communication needs. Their AAC systems rarely provide them with more than a few hundred concepts (Light, 1997). Effective participation in interactions is largely dictated by the appropriateness of the vocabulary available (Beukelman & Mirenda, 2005; Light). The preschool environment places unique demands on children as they move through lessons that involve a range of topics (e.g., circle time, calendar and weather; dramatic play; art; science; writing) and have specific rules for participating in each type of lesson structure (e.g., direct instruction, teacher directed, small or large group discussion, cooperative learning groups, or partner work; Sturm, Erickson, & Yoder, 2003). In all classrooms, language is the medium for reading, writing, and communicating. To be successful, children need language skills that support them in sharing what they know in appropriate forms. (Sturm & Clendon, 2004).

Because approximately 70-90% of individuals who use AAC have already been identified as reading and writing at levels significantly below their same-age peers without disabilities (Koppenhaver & Pierce, 1994), early literacy instruction should be addressed using R&R levels of support. Creating curriculum-based communication boards, either low tech or electronic/speech-generating, can be a Tier 2 intervention that will allow students using AAC access to the curriculum. They can be used in a variety of ways from a basic choice board that would allow the child to select the book that she wants to read to boards/overlays with extended vocabulary sets of nouns, verbs, adjectives, objects, and morphological markers that will allow the child to generate novel syntactically age-appropriate multi-word utterances. Consultation with the classroom teacher will determine needed vocabulary and how it will be represented graphically using digital images and symbols.

The organization of the communication pages is determined next, whether the child is using a low-tech picture board or a sophisticated speech-generating device. Teachers and SLPs should develop templates prior to creating the first communication board so that the location of vocabulary on each board will be as predictable as possible; thus, the child does not have to search randomly each time a new board/overlay is used. Single word vocabulary and messages should always be sequenced left to right and top to bottom, whenever possible, so the child follows the natural pattern for reading. When visually scanning any new symbol page/overlay, the child should be encouraged to look for the symbol/word by following the left/right/top/bottom pattern. Many vocabulary sets follow the left to right progression of question words, people/pronouns, verbs, prepositions, adverbs, adjectives, and object words and are color-coded syntactically to assist with quick categorical recognition of vocabulary (Beukelman & Mirenda, 2005).

Any message, command, or word that appears on all overlays should be placed in the same location on each communication board/overlay, and then new vocabulary can be added into the other available locations. Vocabulary should never be moved around on a board to "test" a child, so that the child will begin to build automaticity and speed when accessing his communication system for speaking, reading, and writing tasks. It is more important to err on the side of giving a student more vocabulary and modeling appropriately in context, than giving them less vocabulary and waiting for him to "master" it before adding additional words.

At Tier 2, our ultimate goal is for the student to understand and have access to the vocabulary needed for all levels of participation; however, the teacher may need to adjust how

questions are asked and information gathered based on the vocabulary available and understood by the student. Questions that require short answer or single word responses are appropriate with topic specific vocabulary. Although yes/no questions do not allow the child to expand, they may be used if there are no other ways to assess a student's knowledge. Preteaching of activity-based vocabulary can be most effective for all learners when taught in an inclusive classroom setting (Helmer & Toner, 2008).

In Tier 2, expressive language expectations should be based on a thorough analysis of the student's receptive language and cognitive levels of development, before setting up vocabulary systems. The SLP and teacher should work together closely when choosing vocabulary to ensure it meets not only the linguistic needs of the student, but also provides opportunities for participation and interaction with teachers and peers. It is also important to take into consideration the social/pragmatic needs of the classroom environment. Classroom communication involves more than just requesting. Students must be able to share stories, ask clarifying questions, participate in discussions, and demonstrate understanding of key concepts and topics. Place low-tech communication boards at each center with vocabulary appropriate for the activities that will occur there. Encourage both the child using AAC and his/her peers to use these together.

Literacy Learning

Literacy learning is a key academic area addressed through RTI intervention; therefore, beginning at the preschool level, there must be high expectations that both users of AAC and typical peers will move from emergent readers and writers to fluent readers and writers. Research has demonstrated that AAC strategies support literacy learning in children with special needs (Fallon, Light, McNaughton, Drager, & Hammer, 2004; Hetzroni, 2004; Sturm et al., 2006).

An important part of any literacy program is reading interesting texts to students, talking about the stories, and relating them to students' experiences. Active participation needs to be encouraged, comprehension needs to be built, and repeated readings need to be provided in order to build competence. To support literacy development, we need to build semantic and syntactic language skills, phonological awareness skills, letter-sound correspondences, early reading skills, and early writing skills (i.e., dictating, telling, writing stories).

For all students, principles of effective instruction (Tier 2) should guide us to use meaningful materials and to provide direct, explicit instruction in basic skills (i.e., model the skills, prompt the student and provide guided practice, check the student's performance). Scaffolding should be provided as support initially for oral production/rehearsal for the student and then gradually faded.

Meaningful writing opportunities need to be provided to engage preschoolers. These could include dictating/telling stories, patterned story telling (rewriting a familiar story such as "Brown Bear, Brown Bear What Do You See" [Martin & Carle, 1992] with new characters or scenarios), or expanding a familiar story (Grether, 2006).

Children need time for independent practicing of both pre-reading and pre-writing at Tier 2, within the general classroom activities. Books shared with students will be most effective if the materials are available for further exploration, because students will naturally want to practice what was presented in order to assimilate any new information.

Peer Interactions and Support in the Classroom

All typical peers can support diverse learners including children who use AAC. These students can be the models for classroom interactions. The benefits of R&R can be layered to provide not only benefit to the individual student who uses the AAC system in the classroom, but also the other students in the classroom through the teacher's facilitation of language during daily preschool activities.

Because children with significant disabilities tend to be passive listeners and do not ask questions, initiate topics, or elaborate on a story during shared story reading (Rabidoux & McDonald, 2000), peer and support staff training goals could focus on turn-taking, listening, and maintaining conversation (Lilienfeld & Alant, 2005). For example, during book reading, the student who uses the AAC system/device can be partnered with a typical peer with the support of the classroom teacher or aide. The enthusiasm of the typical peer can encourage the student who uses the AAC system to be more engaged in the book reading. Also, the teacher or aide can facilitate the language surrounding the specific literacy skills targeted during the book reading activity.

General communication training for all communication partners, including peers, teachers, and aides, should address a number of basic principles around attention, waiting, and prompting (Carter & Maxwell, 1998). First, partners need to allow for a slower pace of interaction, remembering that the typical peers will have significant difficulty with this skill at the preschool age. During activities such as circle time, the student using AAC could be called on later so he has time to construct his message while the other children are responding. In one-on-one interactions, once a question is asked or a comment made, wait/pause time is needed until the student using AAC finishes constructing his message before asking another question or initiating another comment. It takes significantly longer to construct a message using an AAC system than it does to speak that message. Communication partners need to have at least a basic understanding of the alternative form of communication (Von Tetzchner, Brekke, Sjothun, & Grindheim, 2005). During training with staff, it may be helpful to have the communication partner actually use a communication board or device to increase his understanding of the experience of what it takes to find the vocabulary in order to ask or answer a question or share a story. It is also important for all communication partners, both peer and staff, to learn to accept a combination of communication modes, not just the AAC system. The communication partner should allow the preschooler to vocalize, gesture, and sign parts of his message in order to respond in the quickest, most efficient way possible. Interacting at eye level allows the communication partner to pay attention to facial expressions and gestures which the student may be using in addition to his communication system to convey meaning. Communication partners need to be honest and request clarification if they do not understand the student's message.

Typical children hear thousands of words before they speak their first word. An individual who uses AAC should not be expected to have comparable expressive language production using his speech-generating device or low-tech communication board unless he has had that usage modeled as frequently. We cannot expect students to "naturally" know what to do without demonstration. Aided language stimulation modeling is a technique that encourages partners to model the use of a child's AAC system (Binger & Light, 2007; Goosens, Crain, & Elder, 1992; Harris & Reichle, 2004; Romski & Sevcik, 1996) to facilitate both symbol comprehension and production. Using this technique, teachers and aides of preschoolers using AAC systems (low tech or speech generating) touch the graphic symbol as they speak the word, teaching both vocabulary location as well as socially/pragmatically when to use it. If used naturally during conversation, this technique could facilitate/teach when to ask questions, initiate comments, and/or expand on the topic.

Summary

RTI, when used appropriately in the preschool setting, will, one hopes, reduce the number of students later referred to the special education process and provide support for all students. Preschoolers with complex communication needs using AAC systems will especially benefit from the support offered through Recognition and Response. Collaboration between the SLP and the preschool teacher is essential in supporting all students across the R&R tiers. The goal of delivering more support services in the classroom setting allows other professionals and peers to participate in service delivery to maximize opportunities for learning for preschoolers using AAC. The time needed for planning, collaborating, and implementing surrounding R&R can be a positive change for everyone involved in the classroom. Remember, the primary goal

for all students, including those using AAC, is to become fluent speakers, readers, and writers and to participate maximally in their education. The principles of RTI facilitate this process.

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Assistive Technology Toolkit to Increase Access to Early Learning Environments for Young Children With Disabilities

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Abstract

The development of assistive technology (AT) and augmentative and alternative communication (AAC) interventions for young children with disabilities is rapidly expanding with a range of no-tech, low-tech, and high-tech approaches to provide access to adapted and augmented tools for participation in inclusive early childhood settings. Discrepancies exist in the legal requirements to consider AT and AAC for all children in the IFSP/IEP planning process. Researchers in the applications of AT and AAC with young children identify the importance of activity-based approaches that infuse AT methods and AAC systems within natural routines for young children. This article focuses on the development of an AT Toolkit Guide for early intervention and early childhood providers. The development of the AT Toolkit concept, content, and applications is based on research-based methods and tools with demonstrated effectiveness to promote language development, emergent literacy skills, play, mobility, and interaction with the environment for young children with disabilities. Suggested items, sources, applications and development guidelines for the SWEET AT Toolkit are provided.

For many young children, experiencing the world around them is a natural progression of the development of sensory, motor, and cognitive processes. Young infants explore their environment through play and experimentation with their own bodies, objects, and people. Communication is seen as a bridge to language development, learning, and socialization through interactions with others. For some young children, accessing learning environments may be inhibited by delays in the development of language, cognitive, and motor skills. When this occurs, assistive technology (AT) and augmentative and alternative communication (AAC) strategies are considerations to connect young children to learning environments that they may otherwise be unable to access on their own without specific supports.

As required by the Individuals with Disabilities Act of 2004, AT (including AAC) must be a consideration for every child during the development of the Individualized Family Service Plan (IFSP)/Individualized Education Program (IEP). The law specifies that an AT device is “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability. The term does not include a medical device that is surgically implanted, or the replacement of such device” 34CFR 300.5 (NECTAC, 2008). AT can also be considered a required service under IDEA, depending on the needs of the child. Assistive Technology service provision encompasses training or technical assistance for professionals who provide the

services. As defined by Mistrett (2004, p. 1), "AT is a range of supports that help young children with disabilities to increase, maintain, or improve their functional capabilities."

AT can be used as a vehicle to enhance language development through play by providing devices, materials, and sometimes systems that help engage them in exploration during daily routines (Campbell, Milbourne, Dugan, & Wilcox, 2006; Langone, Malone, & Kinsley, 1999; Mistrett, 2004; Sullivan & Lewis, 1995). Mistrett (2004) identifies three categories of AT tools and strategies that increase participation in daily activities: movement, communication, and use of appropriate materials for daily activities. Similarly, Judge, (2006) categorizes AT items into the areas of communication, movement, and learning. Sadao, Robinson, and Grant (2007) include assessment, early literacy, communication, play, and computers for AT use. However, research regarding the efficacy of AT devices and AAC systems with young children is minimal at best. Grant and Singer (2004) studied the use of computer-assisted instruction (CAI) with infants and toddlers with disabilities. They incorporated a variety of software programs and hardware modifications, such as touch screens. They found that the use of a touch screen for activating photo choice was as good as, or better than, using laminated pictures. Their qualitative observations using a single subject design over a 3-year period challenged earlier assumptions that computer use was not appropriate for very young children. During the 3-year CAI study, the authors reported that children increased verbal interactions and the time that each was engaged in computer use. The authors concluded that CAI provided potential applications for developing attention, turn-taking, and language development with very young children. There is evidence that embedding language and learning activities within daily routines supports positive learning outcomes for children (Pretti-Frontczak & Bricker, 2001). In a review of research, AT applications with infants and toddlers with disabilities, Weikle and Hadadian (2003) summarized several promising assistive technology efforts. Their review identified several studies that have promoted the use of various technologies, such as computers to increase emergent literacy skills and receptive and expressive communication.

Although the literature to date has offered some positive results when considering AT and AAC for young children with disabilities, findings from studies examining parent and professional attitudes toward AT and AAC use have revealed that parents and professionals often lack the knowledge and skill levels for successfully obtaining and integrating AT supports in the learning plans for their young children with disabilities (Judge, 1998; Sawyer, Millbourne, Dugan, & Campbell, 2005; Weintraub, Bacon, & Wilcox, 2004). Additionally, studies measuring the perceptions of parents and providers about using AT with young children found that there was a lack of understanding about the potential benefits of AT as well as limited opportunities for training on how to include AT options for young children on IFSPs/IEPs (Judge, 1998; Sawyer, Millbourne, Dugan, & Campbell, 2005). AT training appears to be missing from many early intervention programs where AT use depends on building awareness and skills (Dugan, Millbourne, Campbell, & Wilcox, 2004; Judge, 2002; Lane & Mistrett, 2002; Sadao, Robinson, & Grant, 2007). When parents consider AT use for their young children, they typically are referring to low technology items, such as adapted toys and books or single message voice output communication devices, that have been suggested to them by family and friends (Campbell & Wilcox, 2004; Mistrett, 2004). In comparison, service providers tend to associate AT devices with more sophisticated computer systems, thereby hesitating to recommend more readily available, off the shelf items to parents (Mistrett). Limited opportunities for training about AT and AAC in early intervention and early childhood programs; differences in parent and provider perceptions AT; and the potential for AT to support a child's growth and development create a gap between consideration of AT by professionals and the actual implementation of AT in both home and classroom environments. However, in a study concerning provider perspectives on AT use, findings indicated that providers with more training tended to incorporate AT into the daily routines of young children (Wilcox, Guimond, Campbell, & Moore, 2006). Adequate training opportunities and resources would likely increase the consideration of AT during the IFSP and IEP processes and more

likely result in the effective use of AT to enhance the learning experiences of young children within natural environments.

Toolkit as Support to Team-Based Intervention

A team approach of partnering families and professionals together to determine the appropriateness and usefulness of AT devices is considered recommended practice in the field of AT and AAC (Hanline, Nunes, & Worthy, 2007; Hunt, Soto, Maier, Muller, & Goetz, 2002,; Judge, 1998; Mistrett, 2004). The collaboration among families and professionals has been outlined in several AT assessment processes (Judge, 1998; Mistrett, 2004). A six-step framework for deciding on AT devices for young children provides a sequence of the necessary components to AT selection, experimentation, and utilization in daily routines (Mistrett, 2004). Early intervention assessment teams provide developmental information that may be applicable to and assist with the consideration of AT services for a young child. Collecting child and family data about preferences, developmental needs, and the family beliefs about AT is the first step in the process. Next, team members identify the child's daily activities, such as feeding, bathing, and playing. The third step is evaluating how other children participate in the identified activity. Mistrett encourages team members to think about what might be the expected outcome for increased participation in a particular activity. Once the team has documented the activity to be addressed by AT infusion and the expected outcomes, it begins to address AT solutions. Mistrett stresses the importance of starting with what is available in the environment and making adaptations, such as adding page fluffers to existing board books. Once the AT material or device is identified and adapted to work in the activity selected, a series of trials is then necessary to measure the effectiveness of the strategy or material. Step six requires the team to evaluate the effectiveness of the AT intervention.

In order to effectively implement AT use with young children, parents, and professionals need to

1. Have a basic awareness of AT devices
2. Understand the potential benefits of AT
3. Consider a wide range of low tech to high tech devices
4. Adhere to a team-based, step-by-step assessment process that will determine appropriate AT supports.

Additionally, there needs to be a method for bridging the gap between consideration of AT strategies and the actual implementation of AT devices with young children. An AT toolkit is considered in this article as a solution to achieving an effective approach to AT consideration and implementation for young children with disabilities. Judge (2006) provides a framework for creating a toolkit that can be used by professionals and parents to promote AT use by making available easy to learn and use items that can be applied in both home and classroom settings. The toolkit concept enhances successful implementation of Mistrett's (2004) assessment and intervention process. As revealed by Judge, toolkits have been used in academic situations, but have not been considered for the learning, sensory, motor, and communication needs of young children. Through surveying early childhood special education professionals, Judge found that they had specific preferences for what items had the highest utility value in the classroom. As a result of the study, Judge provided a conceptual model and suggested AT toolkit list that includes the purpose, suggested toolkit items and features of each item. Purposes for AT toolkit items suggested by Judge included communication, movement and learning. Within these categories, AT toolkit items for communication included: a visual schedule, c alendar and lists; picture communication symbols and BoardMaker software; boards with objects, pictures, and symbols; picture symbol display books/boards; and simple SGDs. Items suggested for movement included: a weighted vest; positioning devices (sitting, standing, etc.); switches; and adaptive seating equipment. Further, items suggested for learning included: adaptive scissors; a touch screen for computer use; pencil grips; electronic toys; switch-accessible toys/games; a slant board/clipboard; talking books; and adaptive keyboards. A toolkit approach to training and service provision allows low-tech devices to be made available to parents and

professionals, thus increasing their knowledge base of AT devices and providing tools to assist them in AT consideration within daily routines.

The SWEET AT Toolkit was developed to meet the needs for access to low-tech, inexpensive tools and adaptations designed to assist young children with disabilities to learn, communicate, play, and participate with peers and family members. As a special initiative of the Supporting Early Education Development Systems (SEEDS) Project, a statewide technical assistance project for early childhood special education operated through the Sacramento County Office of Education in California, the SEEDS Workgroup on Early Education Technology (SWEET) formed to develop training and resources for providers and families in early childhood programs to increase awareness and use of AT for young children. The purpose of the SWEET group is to increase access for parents and professionals to AT information, resources and training materials. All materials are posted on the SEEDS Web site (http://www.scoe.net.SEEDS). Second, the group provides onsite training using the modules as a training format. The SWEET team uses research supported guiding principles to maintain an evidenced based practice approach to the formulation of materials on AT. These principles are listed below, adapted from Sadao et al., 2007).

SWEET Guiding Principles are

1. Focus on family involvement in all aspects of the formulation and employment of assistive technology devices, both high and low technology (Parette & Brotherson, 1996).
2. The participation of the families in the use of assistive technology occurs in the child's daily routines taking place in the home and child care settings (Dugan, Millbourne, Campbell, & Wilcox, 2004; Judge, 2002; Mistrett, 2001; Stremel, 2005).
3. The tools must be user friendly and easily adapted to the environments of the child and family (Judge, Floyd, & Jeffs, 2008; Sadao, 2008).
4. Information sheets are easily accessible and provide simple directions on adapting and using AT equipment or activities.
5. Families are able to readily access materials to adapt equipment, as well as devices from various resources such as providers and lending libraries.
6. Assistive technology assessment and intervention is addressed in a team-based collaborative manner with the family as an integral member of the decision-making team (Judge, 2002; Long, Huang, Woodbridge, Woolverton, & Minkel, 2003; Mistrett, 2004).
7. AT (to include AAC) is a consideration for every child during the development of the IFSP/IEP (Stremel, 2005).
8. AT is a strategy to foster learning and independence (Long, et al. 2003; Sullivan & Lewis, 1995).

SWEET Toolkit Components

The SWEET AT Toolkit is premised on the need to have AT tools readily available for children, families, and providers to apply in daily routines and activities. The SWEET AT Toolkit is actually a guide for the development and use of AT Toolkits in early intervention and early childhood settings. The contents of the SWEET AT Toolkit are based on surveys by several researchers including Judge (2006), Mistrett (2004), and others who have identified a range of AT tools from no-tech to low-tech through high-tech options that are essential for practitioners to have available in order to determine AT needs for individual children with disabilities. The toolkit creators used the Judge framework as a guide for the SWEET AT Toolkit. Furthermore, the SWEET group incorporated a brainstorming process for item selection and development.

The SWEET group reviewed current research-based AT Toolkit content in order to provide guidelines, activities, recommended items, and applications of the AT Toolkit with young children. Most items can be obtained inexpensively at Dollar Stores, online companies

and discount retailers. The items include clear contact paper, zip-lock baggies, Velcro ®, sticky-back foam, and page protectors. Certain items, such as battery-operated toys, Voice Output Communication Aids (SGDs), may be purchased commercially. The content of the SWEET AT Toolkit Guide includes a list of all items needed, sources, general cost, directions for assembly (when needed) and applications.

The development and application of the SWEET AT Toolkit also requires appropriate containers. Extensive field research conducted by the SWEET members has produced a number of suitable containers that can be found at discount stores such as Wal-Mart or craft and scrapbooking supply stores. Containers with wheels and many compartments are advisable. Further, SWEET members have found that two containers are needed, one for AT tools and equipment and one for materials and supplies to create AT tools.

The SWEET AT Toolkit Guide features a list of Containers: Container 1 includes Equipment such as SGDs, computer-related items, and toys and Things to Make; Container 2 is the Supply Kit. Also included are suggestions for type of container, trial software, resources, activity based handouts and a list of resources.

Tables 1 and 2 include a complete list of suggested items for each container that can be used to build individual toolkits for providers.

Table 1. SWEET Toolkit Contents: Container 1

Equipment	**Materials to Make**
Voice Output Communication Aids • Single message SGD with switch • activation-I talk-Ablenet Company • Step by step SGDs (Ablenet) • Talking photo album-Attainment • Company • Talking picture frame, Attainment • Company • Voice recording module-Aug. • Resources • *Computer related Items* • USB computer switch-TASH, Don • Johnston • Laptop computer • Software programs-MarbleSoft cause • effect, Reader Rabbit • Battery operated toy switch-Jelly Bean • (Ablenet), Big Mac (Ablenet), buddy • button (TASH), Soft Switch (TASH) • Boardmaker -Picture Communication • Symbols (PCS) *Toys* • Battery operated bubble machine • Battery operated toy-doggy- Enabling • Devices • Bubbles • Fan • Farm Board Books • Stuffed animals: lamb, frog, cow, • duck, horse, dog, butterfly *Other* • Digital Camera	• Adapted book • Baggie Book • Communication board • Communication Book (photo • book) • Game Spinner (ceramic, • battery operated pottery • wheel) • Head pointer baseball • cap/visor- • Homemade SGD • Laminated photos of all materials in kit • Mouse House • Set of communication • symbols • Visual Scene-Playground • activity

Table 2. SWEET Toolkit Contents: Container 2

Supply Kit and Type of Store to Purchase	**Trial Software**
• Baseball cap/visor (General Merchandise) • Batteries (AA, 9 Volt) (general merchandise) • Binder (Office Supply/Drug Store) • Clear contact paper (General merchandise) • Clipboard/clear picture board (Office supply/Drug Store) • Drawing paper (Office Supply) • Felt squares (Discount, Crafts) • Glue stick (Office or Crafts)	Boardmaker download Prentke Romich Company Dynavox/Mayer Johnson Company

• Hot glue sticks and glue gun (Office or Crafts) • Magnetic Paper (Online source) • Markers (Office Supply) • Non slip shelf liner (Discount) • Page savers-non glare (Office Supply) • Pencil with eraser (Office Supply) • Pom poms- page fluffers (Discount or Crafts) • Rubber bands, cloth page turners (Discount) • Scissors (Office or Crafts) • Small, 20 picture photo albums (Discount) • Sponge Curlers (Discount) • Sticky back foam (General Merchandise) • Sticky tack (Office Supply) • Velcro dots (Office Supply, General Merchandise) • Zip lock bags (2 ml thickness-6"x8"www.papermart.com) • Zip ties (General Merchandise) • Magnetic paper (Office Supply, online crafts) • Magnets (Office supply, crafts)	

As mentioned previously, several tools in the AT Toolkit can be made with inexpensive materials, while others must be ordered commercially. The development and gathering of tools will provide powerful demonstrations to support young children with complex disabilities to demonstrate potential skills that may not be supported otherwise.

Applications of SWEET Toolkit

Table 3 provides an overview of applications for each item in the toolkit, including an item description, targeted developmental area(s), goals, and examples.

Table 3. SWEET AT Toolkit Item and Activity List

Toolkit Item	Description	Developmental Area	Goals/Outcomes	Examples
Page Fluffers	Attached to book page to increase space between pages for turning them.	Communication and early literacy, assistance for fine motor difficulty	Increase access to books by allowing page turning with hand or wand.	Sponges, furniture stoppers, clothes pins, paper clips
Adapting Toys	Battery operated toy with switch capacity	Play, motor, communication, early literacy	Increase participation in circle time by activating toy when responding to story's repetitive line sequence	Frog with moving tongue and legs; voice Enabling Devices
Baggie Book	Baggies stapled together to form a binding with separate book pages inserted for protection and easy access	Early literacy, communication, motor	Opportunities for picture labeling using props attached to book pages with Velcro	Frog is Hungry Book with repetitive lines and props of items frog will eat.
Battery Interrupter	Adapter which allows switch activation of battery operated toys	Motor, play, communication	Experience cause and effect through hitting switch through battery interrupter to make the toy go.	Attach battery interrupter to battery casing between battery connection and toy. Connect plug to switch or SGD.
Plug Adapter	Adapter which allows various sized switch plugs to fit and work with a variety of jack sizes	Use with all switch activated toys, devices, environmental controls, and computers when necessary	Allows goals for switch use to be worked on if adapter is necessary	Purchase of plus adapters of various sizes as they are needed from electronics stores or internet
Battery-operated Spinner	A device which rotates like a clock at variable intervals and can be adapted to be activated by a switch	Used for games requiring random responses like "rolling the dice", recreation choices, random social responses	1.Allow child to play a game with peers using a switch to "roll the dice" (increase peer to peer interactions) 2.Use the spinner by hitting the switch to indicate random greetings	Adapt battery operated spinner for switch activation by hardwiring a jack into the spinner circuitry or use battery interrupter
Communication Book	Digital photos of favorite toys, people,	Communication, motor, early literacy	Increase expressive vocabulary through pictures that represent	Categorize photos with a list of categories on the

	activities and places organized in a photo album		familiar objects and activities	front page. Ask the child what section he wants to talk about. Go to the section and have them point to topics of interest.
Communication photos of kit items	Digital photos of every item in the toolkit, stored in a photo album	Play, motor, communication, early literacy	Child will indicate choice of toy/game by choosing photo out of two choices	Ask child to pick the next toy/game he wants to play with; build choices as needed.
Eye-gaze board	Allows photos, symbol cards, or small objects to be attached for hands free viewing by child/user. Usually oriented vertically in between child and communication partner, so joint referencing is clear.	Main area of focus is communication, both expressive and receptive; however eye gaze is usually used for children who have severe motor impairments. Applicable to areas of cognitive, social, and early literacy as well.	1, Identify child's understanding of objects, pictures, symbols, gestures and/or spoken words. 2. Improve expressive language skills. 3. Help to establish choice making skill. 4. Improve ability for joint attention during communication.	Can be fabricated from clear plastic, PVC pipe, wood, cardboard, or other suitable materials to hold more that 2 choices during communicative exchange
Head pointer baseball cap/visor	Allows easier physical access to a child's environment if head control is a strength.	A head pointer is primarily used if fine motor control is severely impaired. Can be used to facilitate all developmental areas: cognitive, language, early literacy, and play.	1.Child will be able to touch and manipulate objects with mouth stick or head pointer when positioned appropriately for independent play. 2.Child's will be able to turn pages of a book with mouth stick or head pointer when positioned appropriately. 3.Child will be able to access touch screen or computer keyboard for learning opportunities.	Can easily and inexpensively be fabricated from ball cap, visor, or strapping material, pencil, a small amount of shelf liner, and electrical zip ties.
Homemade Switch	Allows easier physical access to switch adapted toys, computers & environmental controls through the use of a single device/switch. Homemade switches require some knowledge of electrical circuitry and soldering.	Switch use is primarily used when there is physical challenges & access difficulty, however switch use is applicable for all areas of development.	1.Child will be able to activate switch-adapted toy for independent play. 2.Improve child's participation in peer group activity through the activation of SGD 3.Child will make choices by activating switch.	Fabricated with speaker cable, copper conduction plate/tape, material for switch plate, Velcro, and speaker jack. Optional materials are padding and a covering material.
Low Tech Visual Scene	Photo or graphic of a familiar environment with associated vocabulary props	Communication	1.To increase number of words expressed by locating familiar pictures and pairing them with the activity. (slide/playground scene)	Create a scene for every environment to use in communication of "what did we see?" Activity. File folders, page covers, contact paper, Board Maker symbols or pictures, sticky back foam
Mouse House	A home-made adaptation to a computer mouse that allows it to function like a single switch	Using a switch, purchased or hand-made, allows for easier access for those with motor challenges	1.Switch use is can be used to facilitate development in all areas. 3.See goals from Home made switch	This can be fabricated using a small photo album, sponge or foam, Velcro, and simple tools.
Photo Album SGD	Single message SGD made from a photo album	Communication	1.To use single words and messages to request favorite activities.	Velcro, photo album, glue stick, sponge, voice over recorder
Software	Adaptive software is useful to practice motor accuracy with switches, enhances play and social interactions, useful to reinforce learning in all areas of development	All areas of developmental skills: cognitive, communication, motor, visual training, play, social/recreation, academic (math, etc.),	1.To develop the concept of cause & effect 2.Switch training for motor accuracy 3.Recreation/Game programs 4.Pre-academic and academic programs	Computer software is available which is compatible with switch use. Will need to use a computer interface device to adapt for switch control

Step by Step Communicator	Switch activated Speech Generating Device (SGD), record voice messages for playback when switch is activated	Communication, social and peer interaction, play, activities of daily living, motor	1.Participate in story telling by having repetitive lines of a story recorded and ready to be activated. 2.Enhance anticipatory skill, attention and listening skills. 3.Reinforce language development	Now available in single message playback, a series of messages played back randomly, or messages played back in a sequential series
Switch Interface	Adaptive device which is connected to a computer that allows a switch to control various mouse functions.	Using a switch use to control the mouse function of a computer allows an individual to interface with a wide variety of software programs and the internet. Its use is applicable to facilitate learning in all areas of development.	1.To develop the concept of cause & effect 2.Switch training for motor accuracy 3.Recreation/Game programs Pre-academic and academic programs	Computer switch interfacing device can be purchased from distributors of AT products through catalogue or internet orders
Touch Window/Screen	Touch Windows or Screens for computers allow items on the computer screen to be selected directly by touching the items with fingers or stylus	All areas of developmental skills: cognitive, communication, motor, visual training, play, social/recreation, academic (math, etc.),	1.To develop the concept of cause & effect 2.Switch training for motor accuracy 3.Recreation, games & independent play 4.Pre-academic and academic programs	Touch Windows/Screens are now available as add-on devices to existing computers or computers can now be purchased with touch Windows built into them

Further, there are 19 activity-based handouts included in the toolkit. Each activity handout includes information about the tool, how to make it or where to buy it, what materials are needed, learning goals associated with the activity, and how to choose daily routines where the item might be used. In addition to guidelines for materials and development of the SWEET AT Toolkit, many handouts on toolkit components are provided in pdf format for downloading purposes. Each handout covers descriptions of the item, goals, activities, sources, and further resources to support the item's implementation. For example, handouts support the development and use of tools such as the Communication Photo Book, Battery-Operated Toy, and Eye-Gaze Communication Board. Each handout provides specific instructions for making or purchasing the item and several activities for each.

SWEET AT Toolkit handouts can be used for both AT assessment and intervention. For example, the Baggie Book may be used in joint-book reading to observe and assess the child's comprehension through response to photos or pictures in the book. Further, when used as a teaching tool, the Baggie Book can be used to support associations between "prop" pictures that can be detached from each page to the pictures and actions in the book. Additionally, the activity could be extended by using an adapted toy attached to a SGD as a vehicle to responding to actions in the story. An example would be using the baggie book "Frog is Hungry" and encouraging the child to hit the switch and activate the toy and voice response at the appropriate time in the story. A talking photo album that lists the days' events can be used to help a child transition from an early literacy activity to another area, such as puzzles or games by identifying the next step in the schedule indicated in the photo album of the day's events. Many other ideas are provided within the nineteen activity sheets.

Summary

AT toolkits support a universal design approach to early education by engineering classrooms and home environments with adaptations that work for all children. AT toolkits can assure that trans-disciplinary team members consider AT for children with IFSPs/IEPs and use the kit to promote inclusion efforts in home, school, and community settings. Creating toolkits for every inclusion team increases the likelihood of successful inclusive opportunities for young children by providing basic, easy to use adaptations that may support a child's integration into learning environments not readily accessible without such accommodations. Having the tools readily available for professionals, early intervention, and early childhood staff, special education providers, other educators, and therapists to demonstrate to parents and general education teachers promotes the ease of use and access. Judge et al. (2008) emphasize that an

AT toolkit offers a solution to the challenge of limited access to AT equipment and related services by providing the tools in the classrooms where opportunities for participating in classroom activities generally occur. The SWEET AT Toolkit incorporates not only toolkit items, but also strategies on how to apply them in assessment and intervention activities. Furthermore, coupling the SWEET AT Toolkit with a training approach bridges the gap between AT awareness and AT availability to AT skill development. The next step in the development of the toolkit model is to complete a team approach to AT use through a PowerPoint presentation that will accompany the toolkit materials. Please check the SEEDS Web site for more information on the toolkit and materials.

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Language Modeling as an Efficacious Early Language Intervention Approach With Young Children Demonstrating Complex Communication Needs

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Abstract

This article highlights evidence supporting the efficacy of adult language modeling and child imitation, including use of aided AAC modeling, during language intervention with young children demonstrating complex communication needs. First, four evidence-based language intervention approaches that incorporate adult language modeling and child imitation with young children demonstrating language delays are described. Second, two additional evidence-based language intervention approaches that incorporate aided AAC modeling during communication partner training, and direct clinical intervention with young children using aided AAC are further discussed. The article concludes with suggestions for strategies to use during language intervention with young children who use aided AAC.

Social constructivist theory informs the speech-language pathologist that typically developing young children learn language through guidance from more competent language users, such as parents and other caregivers (Bruner, 1975, 1978). Words and sentences gain meaning for young children through social interaction occurring during meaningful activities. Language is, therefore, jointly constructed with others before becoming individually internalized (Vygotsky, 1962). Young children become skillful imitators between the ages of 1 and 3 as they attempt to understand and learn the meaning of cultural activities around them (Tomasello, 2000). Adult language modeling and child imitation of early vocabulary, grammar, and syntax are important tools that facilitate linguistic competence in young children (Bruner, 1975, 1978).

Social constructivist frameworks that support adult language modeling and child imitation in the language development of typically developing children can also be applied to the development of linguistic competence in young children with language delays, including young children with complex communication needs who benefit from AAC. The purpose of this article is to highlight evidence supporting the efficacy of adult language modeling and child imitation through use of aided AAC modeling during language intervention with young children demonstrating complex communication needs. The article begins by describing evidence-based language intervention approaches that incorporate adult language modeling and child imitation for young children with language delays, followed by other approaches which incorporate adult language modeling and child imitation for young children who use aided AAC. The article concludes with suggestions for strategies to implement during language intervention with young children using aided AAC.

Adult Language Modeling

A large body of research supports the use of adult language modeling paired with child language imitation as an efficacious combination during language intervention with young children who demonstrate expressive language delays. Language intervention approaches that incorporate adult language modeling and child imitation to facilitate the onset of intentionality (e.g., purposeful use of eye gaze, gesturing/pointing, and vocalizing), initial words, two- to three-word combinations, and early linguistic morphology include responsivity education paired with prelinguistic milieu teaching, responsivity education paired with focused stimulation, enhanced milieu teaching, and recast intervention (Fey et al., 2006; Gillum, Camarata, Nelson, & Camarata, 2003; Girolametto, Pearce, & Weitzman, 1996; Girolametto, Weitzman, & Clements-Baartman, 1998; Kaiser & Hester, 1994; Kaiser, Hancock, & Niefeld, 2000; Proctor-Williams, Fey, & Loeb, 2001; Yoder & Warren, 2002).

In the context of language intervention, responsivity refers to the technique of using an adult communication partner to produce language that reflects the semantic content of a young child's preceding nonverbal or verbal communication or a young child's play or focus of interest. Responsivity education combined with prelinguistic milieu teaching has been found to be an efficacious early language intervention approach to facilitate the onset of intentional communication with toddlers demonstrating intellectual disabilities (Fey et al., 2006; Yoder & Warren, 2002). In two separate studies, responsivity education was initially provided from the clinician to the caregiver, which empowered the caregivers to become their child's primary language facilitator, thereby maximizing the child's opportunities for communication development in everyday situations within the natural environment. Responsivity education consisted of training parents in three clusters of responsive interaction strategies found in It Takes Two to Talk, The Hanen Program for Parents (Manolson, 1992). The first cluster included child orienting behaviors (e.g., waiting for the child to respond and listening to what the child says, following the child's lead during play, actively joining in with play after following the child's lead, and playing face to face with the child). The second cluster incorporated a number of interaction promoting behaviors (e.g., using a variety of questions, waiting expectantly for the child to respond and telling the child it is his/her turn, and responding to the child by taking a turn in a similar way to the child). The third cluster incorporated language modeling strategies (e.g., imitating the child's verbalizations, naming many items during play, imitating what the child says and adding one or two additional words, expanding what the child says and then adding a comment or two more about the topic).

Prelinguistic milieu teaching was also provided through direct clinician intervention with the toddler in the same two studies (Fey et al., 2006; Yoder & Warren, 2002). Prelinguistic milieu teaching consisted of incorporating environmental arrangement to stimulate interaction, following the child's attentional lead, building social routines, providing prompts (e.g., "show me what you want"), incorporating expectant time delays, and using language modeling techniques. The results of the two studies revealed that parental training effectively changed parent behavior, and the use of language modeling in combination with other prelinguistic milieu strategies resulted in increased toddler intentional communication acts.

Responsivity education combined with focused stimulation has been found effective in increasing the single-word vocabularies and frequency of multi-word utterances in toddlers with severe expressive language delays, as well as increasing the use of focused vocabulary in toddlers and preschoolers with Down's syndrome (Girolametto et al., 1996; Girolametto et al., 1998). Focused stimulation consisted of training parents to specifically target 10 vocabulary words that were repeatedly modeled during intervention with their child.

Enhanced milieu teaching is a language intervention approach that combines responsivity education with milieu teaching. Enhanced milieu teaching has been found efficacious in enhancing the multi-word productions and early morphological skills of preschoolers with language delays who produce language with an MLU between 1.0 and 3.5 words and who have developmental delays, autism, developmental apraxia, and cerebral palsy (Kaiser & Hester, 1994; Kaiser et al., 2000). Responsivity education in these studies consisted

of training teaching assistants and parents in environmental arrangement and responsively interacting with the preschoolers. Milieu teaching strategies included training in child-cued modeling (e.g., establishing joint attention, verbally modeling, imitating, providing corrective feedback), mand-modeling (e.g., providing verbal prompts with a wh-question, a choice, or a mand such as "tell me what you want"), time delays, and incidental teaching (e.g., expanding and extending the preschooler's verbal production). The results of the studies revealed increased use of targeted language skills and increased frequency, complexity, and diversity of language use during intervention sessions for most of the preschool participants.

Finally, recast intervention can be combined with any of the above language intervention approaches to facilitate prelinguistic and early linguistic skills in children with language delays. Recast intervention parallels natural language acquisition as adults respond to a child's prelinguistic and early linguistic productions with a recast that expands the child's utterance (e.g., child produces "Cow jump" and adult responds with "Yes, cow jump, the cow is jumping"). This language intervention approach was effective in improving productions of specific morphological structures when parents were trained to use recasts at high rates of presentation with their language delayed preschoolers demonstrating MLUs between 1.5 and 2.5 (Proctor-Williams et al., 2001). In addition, clinician-based recast intervention using open-ended statements, such as "tell me what happened," followed by recasts was found to be more efficacious in comparison to use of imitation drills with preschoolers demonstrating expressive language delays and poor verbal imitation skills. Preschoolers learned targeted grammatical structures with fewer presentations using recast intervention in comparison to the imitation drills (Gillum et al., 2003).

In summary, four language intervention approaches have been found to be efficacious in supporting young children with language delays towards the development of intentionality, initial word production, two- to three-word phase production, and early linguistic morphology: responsivity education combined with prelinguistic milieu teaching, responsivity education combined with focused stimulation, enhanced milieu teaching, and recast intervention (Fey et al., 2006; Gillum et al., 2003; Girolametto et al., 1996; Girolametto et al., 1998; Kaiser & Hester, 1994; Kaiser et al., 2000; Proctor-Williams, Fey, & Loeb, 2001; Yoder & Warren, 2002). Adult language modeling paired with child imitation is an important dimension common to all these intervention approaches in addition to (a) use of positive reinforcement, (b) language training at a level slightly more complex than the current language level, (c) scaffolding to support language attempts, (d) collaboration with caregivers and teachers, and (e) engagement in contextually based social routines and scripts. While many of the participants in the studies described demonstrated complex communication needs—such as developmental apraxia, Down's syndrome, and autism—none of the participants used aided AAC as a means to facilitate expressive language. The following section describes language intervention approaches that utilize adult language modeling and child imitation with young children demonstrating complex communication needs who use aided AAC.

Aided AAC Modeling

Research with young children with complex communication needs who benefit from AAC also provides evidence supporting the use of adult modeling and child imitation, referred to as "aided AAC modeling." During aided AAC modeling, an adult concurrently models use of a child's AAC device in conjunction with ongoing verbal language productions. This language intervention approach was initially developed by Goosens, while working with a 6 year old who used AAC and her parents (1989). Since that time, a number of studies have been completed providing additional support for the use of aided AAC modeling as an efficacious language intervention approach with young children.

Two studies have been completed targeting indirect communication partner training. Communication partners were taught to use aided AAC modeling with preschoolers using AAC (Binger, Kent-Walsh, Berens, Del Campo, & Rivera, 2008; Schepis, Reid, Behrmann, & Sutton, 1998). Schepis and colleagues (1998) evaluated the effect of VOCAs and naturalistic teaching

procedures on the communicative interactions of four children diagnosed with autism between the ages of 3 years and 5 years. A teacher and three assistants were taught to use naturalistic teaching strategies to provide opportunities for VOCA use in the context of two regularly occurring classroom activities (i.e., snack and play). Naturalistic teaching strategies consisted of using child-preferred stimuli available within natural routines, using child-initiated responses as part of the intervention, and providing verbal and gestural prompts with minimum use of physical guidance. Natural cues, such as physical approach, expectant time delays, questioning looks, and eye contact, were taught as ways to evoke child initiation. VOCAs consisted of three Cheap Talks and one Black Hawk containing either four or eight messages. None of the preschoolers had used VOCAs prior to the study. The adults initially modeled use of the VOCAs by pressing the keys on the device and directing the preschooler's attention to the graphic representation of each message during the targeted classroom routines. The results revealed that all children showed increases in communicative interactions using VOCAs, most VOCA use was not physically guided by the adults, and use of VOCAs did not decrease the frequency of other communicative behaviors but rather, a limited increase was observed.

A second study by Binger and colleagues (2008) evaluated the effectiveness of an instructional program on the multi-symbol utterances of three preschoolers using AAC during a storybook reading activity. Participants consisted of three Latino caregivers and their children, ages 2;11 through 4;1, who produced unintelligible speech, did not consistently produce two-word phrases, demonstrated age-appropriate receptive language skills, and were diagnosed with either a profound phonological process disorder or profound velopharyngeal insufficiency. None of the children used VOCAs or symbol systems prior to the study. Aided AAC systems used during the study included a Mercury™, a low tech communication board, and a MightyMo™. Caregivers were taught to (a) read text plus provide a two-symbol aided AAC model, (b) ask a wh-question plus provide a two-symbol aided AAC model, and (c) answer the wh-question plus provide a two-symbol aided AAC model if their child did not answer the question. Caregivers were also instructed in use of time delays and how to respond to their child's turns by providing a two-symbol AAC model combined with grammatically complete verbal productions incorporating imitations, expansions, and recasts. The results of the study revealed that caregivers consistently used the strategies, the children consistently and increasingly used multi-symbol combinations, mean number of multi-symbol messages increased dramatically during intervention, and use of multi-symbols generalized when using a novel storybook.

Three studies have been completed using direct speech-language pathologist intervention incorporating aided AAC modeling with toddlers and preschoolers who use aided AAC (Binger & Light, 2007; Harris & Reichle, 2004; Romski, Sevcik, Cheslick, & Barton, 2006). Harris and Reichle examined the use of aided AAC modeling with three preschoolers who were functionally non-speaking and demonstrated moderate cognitive disabilities. The purpose of the study was to determine whether aided AAC modeling using low tech communication boards would increase symbol comprehension and production. The three participants ranged from ages 3;10 to 5;4, were diagnosed with either Down's syndrome or unspecified developmental delay, comprehended 87 to 143 words, and produced 3 to 14 words. None had used gestural or graphic symbols prior to the study, and all demonstrated fast-mapping and symbol identification skills during pretesting. Twelve new vocabulary words were introduced in three sets using fast mapping and aided AAC modeling with a communication board during scripted routines designed for preferred activities. The instructor pointed to a referent in the environment and sequentially pointed to the graphic symbol on the communication board while saying the name of the referent. The results of the study revealed that all three children displayed increased symbol comprehension (e.g., correctly responding to "show me the __") and production (e.g., correctly responding to "what is this?") following implementation of aided AAC modeling, although the number of instructional opportunities required to reach criterion varied across the participants.

Romski and colleagues (2006) adapted the system for augmenting language (SAL) for use with toddlers and young children. SAL was originally designed for school-aged children with moderately to severely impaired cognitive abilities who demonstrated primitive intentional communication, spoken language vocabularies of less than 10 intelligible words or word approximations, and gross pointing skills. The purpose of SAL is to provide a method for effectively facilitating the communication, language, and speech for this population. SAL consists of five components:

- A speech generating device ranging from low to high tech
- Individually chosen, age-appropriate graphic symbols
- Aided AAC use in natural, everyday environments that encourage but do not require the child to produce symbols
- Direct intervention with clinicians using aided AAC modeling and indirect training of other communication partners using aided AAC modeling
- Ongoing monitoring and adaptation of the AAC program.

A one-year exploratory study of SAL with 10 toddlers was recently completed. The toddlers demonstrated significant developmental delays and severe communication difficulties and spoke fewer than 10 words. Upon completion of one year of SAL intervention, the toddlers were using a mean of 63 symbols and five of the toddlers were producing substantial spoken-word vocabularies.

Finally, Binger and Light (2007) studied the effects of aided AAC modeling with five preschoolers who had severe communication difficulties. The purpose of the study was to evaluate the impact of using aided AAC modeling to support multi-symbol message production during imaginative play scenarios. The participants ranged in age from 3;6 to 4;6, were diagnosed with a variety of developmental delays, were 0% intelligible out of context, demonstrated moderately delayed to within normal limits receptive language skills, had expressive vocabularies of at least 25 words/symbols, produced single words at least 90% of the time, and had prior experience with AAC. AAC systems included Speaking Dynamically Pro™, Easy Talk™, low tech communication boards, and low tech communication books. Intervention consisted of instructor aided AAC modeling (e.g., touching a combination of two symbols on the child's AAC system, labeling each of the symbols while touching them for non VOCA systems, and providing a spoken model using a grammatically complete sentence) while engaging in the play activities with the child. The results revealed that four of the five preschoolers learned to consistently produce multi-symbol messages, while the fifth preschooler did not demonstrate consistent gains. The criterion was met with less than 4 hours (12 sessions) of instruction and the four preschoolers who met the criterion evidenced long-term use of symbol combinations. The children using VOCAs produced two-symbol messages faster than the children using communication boards. The child with the most severe cognitive impairment did not reach the criterion.

In summary, both indirect communication partner training and direct speech-language pathology clinical intervention using aided AAC modeling have been found effective towards increasing vocabulary and two-word combinations in young children with severe communication needs who use aided AAC (Binger et al., 2008; Binger & Light, 2007; Harris & Reichle, 2004; Romski et al., 2006; Schepis et al., 1998). Adult language modeling paired with child imitation is an important dimension of aided AAC modeling. In addition, these strategies were also used during language intervention with young children who use aided AAC: (a) positive reinforcement, (b) language training at a level slightly more complex than the current language level, (c) scaffolding to support language attempts, (d) collaboration with caregivers and teachers, (e) engagement in contextually based social routines and scripts, and (f) fast mapping.

Suggestions for Language Intervention Strategies

In conclusion, evidence-based research supports the use of adult language modeling, including aided AAC modeling, as a viable tool in one's clinical arsenal when providing language intervention for toddlers and preschoolers with complex communication needs who benefit from aided AAC. This article described use of responsivity education in combination with prelinguistic milieu teaching, responsivity education in combination with focused stimulation, enhanced milieu teaching, and recast intervention as efficacious language intervention approaches that support language development for intentionality, initial word production, two- to three-word combinations, and early morphology for young children with complex communication needs. In addition, this article described a number of empirical studies that combined communication partner training and direct clinical instruction with aided AAC modeling as effective language intervention approaches for teaching vocabulary and two-word combinations to toddlers and preschoolers who used aided AAC. Taken as a whole, research suggests these strategies be implemented during language intervention with young children who use aided AAC: (a) aided AAC modeling, (b) adult modeling of language stimuli, (c) child imitation of language stimuli, (d) positive reinforcement, (e) language training at a level slightly more complex than the child's current level, (f) scaffolding to support language attempts, (g) collaboration with communication partners, (h) engagement in contextually based social routines and scripts, and (h) fast mapping as a facilitator to make meaning.

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Internet Resources for Augmentative and Alternative Communication in Early Intervention and Early Childhood Services

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Abstract

The development and implementation of augmentative and alternative communication (AAC) tools for children in the earliest stages of communication and language development may include a range of communication modalities that include gesture, vocalization, actual objects, photos, picture icons, Speech Generating Devices (SGDs), and higher-tech AAC devices. Internet resources for AAC in early intervention settings include assessment tools, communication aids, early literacy supports, educational tools for professionals and families and much more. Some of the key resources that have been reviewed by a team of professionals through the Supporting Early Education Development Systems (SEEDS) Project in the Sacramento County Office of Education, Sacramento, California, are described.

AAC Information and Training Resources

The development and implementation of augmentative and alternative communication (AAC) tools for children in the earliest stages of communication and language development may include a range of communication modalities that include gesture, vocalization, actual objects, photos, picture icons, Speech Generating Devices (SGDs), and higher-tech AAC devices. Internet resources for AAC in early intervention settings include assessment tools, communication aids, early literacy supports, educational tools for professionals and families, and much more. Some of the key resources that have been reviewed by a team of professionals through the Supporting Early Education Development Systems (SEEDS) Project in the Sacramento County Office of Education, Sacramento, California, include

- http://depts.washington.edu/enables/myths/myths_aac_inter_infants.htm Patricia Dowden at the University of Washington has developed a Web site on AAC, including video excerpts of young children benefiting from AAC interventions.
- http://www.unl.edu/barkley/present/cress/resources.shtml Cynthia Cress is featured in this section of the University of Nebraska's Web site on AAC. She has developed several tools for assessment and intervention planning that demonstrate links to best practice in naturalistic communication and participation in natural environments for young children and families.
- http://www2.edc.org/ncip/videos/ec.htm The National Center to Improve Practice in Special Education Through Technology, Media and Materials (NCIP) states on their Web site, "Visit an integrated preschool classroom where students with disabilities have full access to the typical curriculum through the innovative use of high and low technology tools. Students with communication difficulties interact with peers and staff through the use of picture communication boards and electronic devices that incorporate

synthesized speech output. Children who have difficulty manipulating books access rich language and literacy materials via the computer. Teacher, Barbara Smith, discusses the range of simple technologies that enable her students to participate in all aspects of the dynamic learning environment that she and her colleagues have created." The video from Baby Power can be purchased for $29.99. It is an excellent overview of using technology with young preschool children with disabilities.

- http://atto.buffalo.edu/registered/ATBasics/Populations/aac/index.php AT Basics: Communication Needs by Julie Maro and Lori Tufte: An introduction to augmentative and alternative communication (AAC) for students 5-10 years old is addressed in this training module. However, the information can be adapted and applied with preschool children. The focus of the training module is designing quality programs for students who have AAC needs, engineering communication environments, organizing and training team members, and developing appropriate lessons and materials.
- http://www.jfkpartners.org/publications.asp#AT%20Quick%20Guide JFK AT Quick Guides: The AT Quick Guides were carefully developed by an interdisciplinary group of experienced health care providers and educators from both JFK Partners and HCP. They are intended to provide a very brief overview of when and how assistive technology (AT) might be beneficial for a child who has developmental delays in one or more of the following domains: communication, adaptive skills and cognition, fine motor, gross motor, self-help, and sensory.
- http://www.askaspeciaslist.ca.gov/archives/2004/at/Nov_2004.htm AT Discussion Page/CA Dept. of Ed.- Jill Rivers, Speech/Language and Assistive Technology Specialists in California answers questions about AT preschool including using a communication device with a preschooler and a review of AAC with young children.
- http://aac.unl.edu:16080/yaack/ Ruth Balinger (1999) and YAACK-"Augmentative and Alternative Communication (AAC) Connecting Young Kids (YAACK) is a Web site that covers issues related to AAC and young children. Its purpose is to provide information and guidance to families, teachers, speech/language pathologists and anyone else who is involved with a child with special communication needs. It is intended to be easy to understand and practical, and to cover a wide range of topics dealing with AAC and AAC-related issues of children at various ages and stages of communication ability, and with different strengths, disabilities and learning characteristics." The Web site was produced as part of her Master's project.
- http://www.aac-rerc.com/aac-rerc.htm According to the description on the Web site, "the AAC-RERC conducts a comprehensive program of research, development, training, and dissemination activities that address the NIDRR priorities and seek to improve technologies for individuals who rely on augmentative and alternative communication (AAC) technologies." While the focus of the AAC-RERC includes persons of all ages, the webcast by Janice Light focuses on early AAC with young children. Further, the sections on funding and report-writing to access AAC devices support advocacy by professionals and family members.

Early AAC Assessment Resources

Early AAC assessment Web resources include

- http://med.stanford.edu/ataac/products.html Preschool AAC Checklist by Judy Henderson : The Preschool AAC Checklist and video "Getting Ready for ABCs with AAC" was developed through a grant from United Cerebral Palsy and is designed to monitor a student's development in AAC skills and technology use through the developmental ages of nine years. This tracking system is to be used by teachers, parents, and therapists and is distributed through Mayer-Johnson Co. (http://www.mayer-johnson.com) and Saltillo Corporation (http://www.saltillo.com).
- http://letsplay.buffalo.edu/toys/special-toys.htm Every Kid Can (EKC) AT Wheel - Draft--download from Let's Play Project at the University of Buffalo: The EKC Wheel was developed by national experts in assistive technology in early childhood. A table is

provided with many ideas for activities to integrate AT into daily routines with young children and to support inclusion and full participation with peers.

- http://www.gpat.org/ The Georgia Project for Assistive Technology (GPAT) AT for AAC in Preschool provides a range of assistive technology professional development and technical support services to local school system staff, students, and their families. The Assistive Technology Resource Charts, particularly the AAC Devices for Preschool, is a downloadable resource guide to determine appropriate devices for individual children.

Low-Tech AAC Intervention Resources

Low-tech resources include

- http://www.projectparticipate.org/communications.asp Project Participate: Project Participate provides ideas for low-tech communication aids using inexpensive materials that are readily available in addition to low-tech devices that are relatively inexpensive for beginning communicators and supplemental communication aids for more advanced AAC users.
- http://aac.unl.edu University of Nebraska Web site on AAC-Augmentative and alternative communication (AAC) strategies assist people with severe communication disabilities to participate more fully in their social roles including interpersonal interaction, learning, education, community activities, employment, volunteerism, care management, and so on. This AAC Web site is designed to provide access to a wide range of information and resources related to the AAC effort. It is maintained by the Barkley AAC Center and the Munroe-Mayer Institute for Genetics and Rehabilitation at the University of Nebraska. Several useful links for preschool communication development are provided, including Early Vocabulary lists to assist in the development of communication aids.
- http://dir.groups.yahoo.com/group/boardmaker/ BoardMaker User's Group. This Yahoo user's group provides a repository for sharing communication and curriculum materials created with Boardmaker Software available through Mayer Johnson at http://www.mayer_johnson.com. Members will receive daily emails with extensive resources and ideas to share and download at no cost. In order for downloads to open, installation of Boardmaker on the host computer is required.To join the group, you need to provide some basic information about yourself. There is no cost to join.
- http://www.lburkhart.com/main.htm AAC integrated into environments-The Linda Burkhart site called Simplified Technology includes handouts on making a mouse house and making a talking switch from Radio Shack. The site also reviews AAC suggestions for classrooms.

Visual Communication Tools

Visual tools include

- http://www.swaaac.com/professional.htm This Web site is part of a larger Web site at the University of Colorado for Assistive Technology Training and Statewide AAC teams. This section of the StateWide Augmentative and Alternative Communication (SWAAAC) Web site provides a wealth of resources for developing literacy, with links to materials and training in the use of Webbebooks, Intellipics, PixWriter and many other pre-made resources for creating communication and visual language support in activities and intervention.
- http://aacintervention.com/resources.htm This particular section of the larger AACIntervention.com Web site provides resources for EC professionals to create communication and visual environments for children through emerging literacy approaches. Links and key resources for where to begin with early AAC are listed including books and with demonstrated strategies by Pati King DeBaun, Carol Goosens, and Linda Burkhart.

- http://trainland.tripod.com/pecs.htm This particular section of the Trainland.tripod.com Web site provides links to many, many more pre-made overlays in Boardmaker and pdf files that can be used to support communication in daily routines and adapted stories. Have fun!
- http://www.speakingofspeech.com/generic26.html Speaking of Speech: Speaking of Speech offers ready made overlays for songs, games, activities in Boardmaker and PDF formats.

Emergent Literacy Tools

Tools related to emergent literacy include

- http://www.onemorestory.com/ One More Story.Com provides online story books with animation and voice output for parents and children to enjoy together. An annual subscription is required to obtain an account for unlimited use.
- http://prekese.dadeschools.net/resourcepages/resources_teacher_resource_room_main.htm Dade County Preschools: Explore all of the resources on this Web site to use with children's books, single-message output, creating visual environments, overlays, English/Spanish resources, etc. This is very extensive and very valuable for all ESE professionals, families, and providers. Note: While there is no cost to download all created materials, BM for Windows is required to open and to use.
- http://schools.nyc.gov/Offices/District75/Departments/Literacy/AdaptedBooks/default.htm The New York City Department of Education, Special Education District 75, has created many adapted books for use with young children with disabilities in several formats. All books are downloadable and free in several formats including Power Point, Boardmaker, and Writing with Symbols. For some books, you will need software in order to download and open files for use with children.
- https://www2.uchsc.edu/swaaac/ProDev/NewsletterArchive/0505/May2005.htm This Web site is part of a larger Web site at the University of Colorado for Assistive Technology Training and Statewide AAC teams. This section of the SWAAC Web site provides a wealth of resources for developing literacy, with links to materials and training in the use of Webbebooks, Intellipics, PixWriter and many other pre-made resources for creating communication and visual language support in ESE activities and intervention.
- http://www.accpc.ca/earlyliteracy.htm Augmentative Communication Community Partnerships-Canada (ACCPC) collaborated with KidsAbility-Centre for Child Development and Bridges-Canada to develop downloadable props for familiar children's books and interactive electronic books in Boardmaker and Intellitools program formats.

Related Assistive Technology Resources

Other related resources are

- http://www.scoe.net/seeds/at/index.html The SEEDS workgroup on Early Education Technology (SWEET) was created in August 2005 to address one of the seventeen topical areas identified by early intervention staff throughout the State of California. The purpose of the SWEET is to connect California's early intervention programs and families to Assistive Technology (AT) resources for infants and toddlers with disabilities.
- http://www.wiu.edu/users/ectiis/ The Early Childhood Technology Integrated Instructional System (EC-TIIS) has a free online training program for families and early childhood professionals. Consisting of nine high quality workshops, the project is sponsored by the Center for Best Practices in Early Childhood Education at Western Illinois University. http://www.wiu.edu/users/ectiis/resources.html The Early Childhood Technology Integrated Instructional System (EC-TIIS) also has an extensive list of resources in the area of assistive technology.
- http://www.asu.edu/clas/tnt/ Arizona State University has an extensive and applied Web site called Tots-n-Tech. The Tots 'n Tech Research Institute (TnT) is an inter-university collaboration between Thomas Jefferson University (TJU), Philadelphia, and Arizona State University (ASU), Tempe. TnT conducts a national research program

about use of assistive technology (AT) to enhance the development of infants and toddlers with disabilities. A major component of the TnT's mission is to produce new knowledge and information about AT use and practices and, specifically, about the ways in which AT may optimize children's development and learning. http://www.asu.edu/clas/tnt/home_files/i_play.html - This section of the Web site has many downloadable files on adapting toys for play for special needs children. http://www.asu.edu/clas/tnt/home_files/ideas.htm The newest section of Ideas to Share features AT ideas from early interventionists around the United States. They are updated weekly with new categories and new ideas, so keep checking. The areas they cover are communication, eating, getting around, and others.

- http://www.ablenetinc.com/wiz.asp The Wiz is a searchable database for curriculum-based lesson plans using AT in the classroom. Professionals and parents can search by age level, curriculum theme, skills and AT devices to search for. Lesson plans with particular themes and skills targeted for school inclusion result. These lesson and activity plan resources are continually expanding and provided at no cost by Ablenet.
- http://www.circleofinclusion.org/ The Circle of Inclusion Web Site is for early childhood service providers and families of young children. This Web site offers demonstrations of and information about the effective practices of inclusive educational programs for children from birth through age 8.

Assistive Technology for Infants and Toddlers With Disabilities: Who Will Pay?

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Part C of the Individuals with Disabilities Education Act (IDEA) addresses the provision of services to infants and toddlers with disabilities from birth through age 2. Each state establishes its own definition of the amount and extent of delay or disability that will qualify a young child for services under the state's Part C system. Part C provides for federal grants to states to assist each state in implementing and maintaining a statewide, comprehensive, coordinated, multidisciplinary, interagency system to provide early intervention services for infants and toddlers with disabilities and their families. The statewide system must include, at no cost to the family, assessment/evaluation and the development of an individualized family service plan (IFSP) that documents the early intervention services necessary to meet the needs of the infant or toddler and their family,

However, unlike Part B of IDEA (which serves children with disabilities 3-21), Part C does not guarantee a free appropriate public education States *may* charge families for some services, e.g. therapies. Some states have "cost sharing" obligations that require families to pay something (usually on a sliding fee scale) towards the provision of services. Federal regulations state that Part C programs are "payers of last resort." This means that Part C dollars can only be used if the family has exhausted all other possible sources of funding (34CFR§ 303.527). However, according to Part C, no eligible child should be denied services because of a family's inability to pay.

Assistive technology (AT) devices and services are listed among the services that can be provided to young children with disabilities (from birth to the third birthday) and their families under Part C. Assistive technology devices are defined in IDEA (inclusive of Part C) as any item, piece of equipment or product system, whether purchased directly "off the shelf," adapted, or customized, used to increase, maintain, or improve the functional capabilities of children with disabilities. The term does not include a medical device that is surgically implanted, or the replacement of such device. AT devices may range from low tech to high tech. AT services include those that help a child with a disability (and her family) choose, obtain, or use AT, and may include finding and paying for the device, customizing/programming a device, repair, evaluation, training (including training for the child's family), and training and technical assistance for professionals providing early intervention services. Frequently, the AT that can assist infants and toddlers with disabilities includes augmentative and alternative communication (AAC) devices and services.

The Individual Family Services Plan (IFSP) team, which includes the family, will discuss and decide the services needed to meet the child and family's unique needs and specify these in a written plan. The use of the assistive technology should be associated with an intervention and related to an outcome. If assistive technology is identified as part of a child's IFSP, the team must identify those resources that may pay for it, including (as a last resort) Part C funds. There are many funding possibilities that the IFSP team, including the speech-language pathologist, may pursue in seeking coverage for services specified in the IFSP.

Public and private health insurances are likely sources of funding for AAC devices and services for infants and toddlers with disabilities. In particular, AAC services (e.g., assessment, customization/fabrication, instruction in device utilization) may be a part of the services provided through covered speech therapy. Find out if the child is covered by private insurance, your state's Medicaid program, or the state Children's Health Insurance Program (SCHIP).

If the child is covered by private insurance, you will need to learn what the limits of the policy are. If speech generating devices (SGDs) are "named exclusions" specifically listed as not covered by the policy, it is unlikely that you could convince the insurance company to pay. However, if the policy has no mention of the kind of AAC devices or services for which coverage is sought, you should encourage the family to submit for payment. This may result in an initial denial, but the family is likely to "win" if they appeal that decision. For more information about private insurance, go to http://www.asha.org/members/issues/reimbursement/private-plans/php_main.htm

In order to be covered by public programs such as Medicaid, the AAC device or service must be an item that is prescribed by a physician (or in some cases, by an allied health professional), and accompanying documentation should support how the device is "medically necessary." Because SGDs are most likely to be classified or covered as durable medical equipment (DME), the purpose of the device must be "medical" in nature and not be something used in the absence of disability or disease or injury (like a laptop computer). For general information about Medicaid, go to http://www.asha.org/members/issues/reimbursement/medicaid/medicaid_intro.htm (Also refer to the article about Medicaid funding of speech generating devices in *Perspectives*).

The state's Children's Health Insurance Program (CHIP) is a resource for children whose parents do not have insurance and where there is too much income to qualify for Medicaid. There is often some coverage for assistive technology (including hearing aids), although this may vary from state to state. http://www.asha.org/members/issues/reimbursement/medicaid/SCHIP

Organizations That Assist Families in Obtaining AT

Foundations, disability-specific organizations, and community and civic groups may be resources for obtaining assistive technology when families cannot obtain assistive technology devices and services, including AAC, for their infant or toddler with disabilities through public programs or private insurance. Organizations such as these typically have their own eligibility guidelines, restrict the types of assistive technology they will donate, and determine the amount of financial contributions they will make.

Some good venues for identifying foundations or disability-specific organizations include the United Way; "blue pages" of local telephone directories; community newspapers; and public libraries, friends, family members, and colleagues. Many foundations (e.g., Make-A-Wish) and disability-specific organizations (e.g., United Cerebral Palsy) have national headquarters that also serve as resources for information about local chapters and their initiatives to provide funding for assistive technology.

Other Resources

A state's assistive Technology Act (AT Act) program may be able to provide information and assistance about public as well as alternate resources for funding AAC devices and services. Contact a state's Assistive Technology Act program (listed on the Web site of the Association of Assistive Technology Act programs www.ataporg.org). Many state AT Act programs operate "reuse" centers or "classifieds," which can be a source for previously owned devices at no or low cost. Some programs also run or collaborate with a low-interest cash loan program in their state for families who wish to consider financing the purchase of assistive technology. The state's AT Act program may also have a device lending program, which might provide a short-term solution to meeting the needs of young children with disabilities (e.g., while waiting for funding from other sources).

In addition, every state has a designated “Part C Coordinator”, as well as an Interagency Coordinating Council (ICC) for Early Intervention. These may be able to direct providers and families to other state-specific resources as well as specific state rules and regulations (http://www.nectac.org/contact/contact.asp).