

own ideas. Expressively, we “feed the child a line” to expand their message right when they need it and show them a more specific way to express that idea.

Finally, practice

- Choose one hard thing at a time
- Follow the child’s lead and intent
- Function over form (the message matters)
- Add the formal AAC onto child’s behavior
- Show that formal AAC gets results early
- Don’t wait for a child to be ready for AAC
- Work on “emergent AAC”

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Aided AAC Intervention for Children With Suspected Childhood Apraxia of Speech

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Children with severe motor-speech disorders, particularly those with suspected childhood apraxia of speech (CAS), have long presented significant challenges for speech-language pathologists (SLPs). (An ASHA ad hoc committee is currently constructing a position statement and comprehensive technical report on CAS which is due for release this year). Due to challenges with diagnosing this disorder, the committee recommends using the term *suspected CAS* (ASHA, in press, 2007). Children with suspected CAS not only exhibit compromised intelligibility but also subsequent communication frustrations, challenging behaviors, learned passivity, compromised social interactions, and delayed language development (e.g., Binger et al., 2006; Binger & Light, 2007; Cumley & Swanson, 1999; Harris, Doyle, & Haaf, 1996; Waller et al., 2001). Given the impact that suspected CAS has not only on speech but also on behavioral, pragmatic, and language skills, a two-pronged approach to intervention is warranted for children with suspected CAS. First, all children with CAS require ongoing, intensive speech therapy to improve their speech skills. In addition, many children may benefit from augmentative and alternative communication (AAC) solutions to address both their immediate and longer-term functional communication needs (ASHA, in press, 2007).

A number of researchers have reported using a variety of AAC technologies to address short- and long-term communication needs with children who have suspected CAS, and in nearly all published

investigations, the need for a multimodal approach to communication when working with children with suspected CAS is stressed. It should be noted that relatively little research with only a small number of children has been conducted to examine the impact of using AAC with children who have suspected CAS. Much of this research has been in the form of case studies (e.g., Bornman, Alant, & Meiring, 2001; Cumley & Swanson, 1999; Waller et al., 2001), with a few researchers reporting experimentally controlled data (i.e., Binger et al., 2006; Binger & Light, 2007; Harris et al., 1996; Kent-Walsh, 2003). The aided AAC tools that have been used with children with suspected CAS include (a) remnant books; (b) theme-specific boards (e.g., a board for playing with vehicles; a board for going to a particular restaurant); (c) communication dictionaries (e.g., a book of graphic symbols arranged by category, such as food, people, places); and (d) pre-programmed messages on a voice output device (Binger et al.; Binger & Light; Bornman et al.; Culp, 1989; Cumley & Swanson; Harris et al.; Waller et al.).

These AAC tools have been used to support various aspects of communication with children with suspected CAS, including communication repairs, topic initiation, small talk, narrative discourse, message length, and message complexity. An example from Cumley and Swanson (1999) illustrates the multiple roles that AAC might play for a child with suspected CAS. One child in this case study report used a remnant book to establish topics and provide contextual cues. In addition, this child used a communi-

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cation dictionary for support in a variety of communicative situations, and she used a voice output device containing theme-specific boards (e.g., a board for "ball play"), with each symbol representing one word, that was organized by using a Fitzgerald key (e.g., agents, actions, and objects set up from left-to-right, respectively) to assist with increasing message length. Several children with suspected CAS in studies reported by Binger and colleagues (Binger et al., 2006; Binger & Light, 2007) also used theme-specific boards with the symbols arranged using Fitzgerald keys to increase message length and complexity, thereby supporting expressive language development. Using pre-programmed phrases on high-tech AAC devices to assist with small talk and to share stories also may benefit some children with suspected CAS by supporting social interactions, alleviating communication frustrations, and decreasing challenging behaviors (Cumley & Swanson; Waller et al., 2001).

Often, the role of AAC may be more one of speech supplementation rather than speech replacement for a child with suspected CAS, because most of these children will rely primarily on their speech for communication. For example, a child might use a topic board (e.g., a board containing symbols representing the people and places in the child's life) and/or first letter cueing on an alphabet board to provide contextual information for a listener. Providing such topic cues has been shown to improve intelligibility with adults who have dysarthria (Hustad & Beukelman, 2000) and may be a valuable tool for children with suspected CAS as well. Research is needed to investigate using these approaches with children with suspected CAS.

Researchers have used a variety of intervention techniques to teach children with suspected CAS how to improve their functional communication skills, although not

all of the techniques listed below have been validated in experimentally controlled research studies.

Acknowledging breakdowns: Cumley and Swanson (1999) stressed the need for communication partners to acknowledge communicative breakdowns so that the child knows that he needs to repair his speech. The specific repair strategy used may depend on the context; for example, the partner may request repetition or may suggest using another communication mode, such as a topic board or a manual sign. One mother in the Cumley and Swanson investigation reported that once the child had AAC options available, acknowledging her child's communication breakdowns was helpful for both the child and the family, and the family's expectations for communication increased.

Providing models. To provide an aided AAC model, the communication partner uses the child's AAC device while communicating with the child. This technique is often used in conjunction with other intervention techniques; for example, the partner may use aided AAC modeling while asking open-ended questions (e.g., Binger et al., 2006; Binger & Light, 2007; Bornman et al., 2001), or the partner may model an appropriate way to repair a communication breakdown (Cumley & Swanson, 1999).

Providing expectant delays. The purposes of providing expectant delays are to provide the child both with the time and the expectation for communication. When using this technique, the communication partner provides a pronounced pause that sometimes is accompanied by an expectant facial expression. This technique has been used as a part of intervention packages that have resulted in positive outcomes (i.e., increased turn-taking, increased message length) for several children with suspected CAS (Binger et al., 2006; Binger & Light,

2007; Culp, 1989; Kent-Walsh, 2003).

Asking open-ended/higher level questions. To facilitate language-rich responses, it is important for communication partners to ask open-ended questions instead of yes/no questions. Binger, Kent-Walsh and colleagues included asking open-ended questions (in conjunction with aided AAC modeling) as one component of a cueing hierarchy designed to increase turn-taking (Kent-Walsh, 2003) and multi-symbol message production (Binger et al., 2006; Binger & Light, 2007). Bornman and colleagues (2001) stressed the need to ask higher level (i.e., more cognitively complex) open-ended questions, based on Bloom's taxonomy (Wilson, Lanza, & Barton, 1988). In Bornman et al., a clinician demonstrated asking higher-level open-ended questions to the mother of a child with suspected CAS and encouraged the mother to ask these types of questions with her child at home. For example, the mother was encouraged to ask synthesis questions such as "What was Big Ben's plan to help his friends?" instead of knowledge questions such as "Who sat on the chair?" Asking these types of questions might assist the child with both cognitive and language development.

Responding contingently to the child's communicative attempts. Providing a contingent response to a child's communicative attempt is crucial for letting the child know that her attempt was not in vain. There are many ways to respond contingently to what a child says. Some common contingent responses include requesting clarification if the child's communicative attempt is not understood, confirming the child's message, asking a follow-up question, or expanding on the child's message. Binger, Kent-Walsh and colleagues (Binger et al., 2006; Binger & Light, 2007; Kent-Walsh, 2003) taught the communication

partners of several children with suspected CAS to respond consistently and contingently to the children's communicative attempts. These responses took various forms (e.g., confirmations, open-ended follow-up questions, expansions) and included the use of aided AAC models. Three of Culp's (1989) goals for the parent of a child with suspected CAS were to confirm the child's messages, reinforce the child's initiations, and to elaborate on topics that the child established—all of which addressed the need to provide contingent responses.

It is evident from examining the list of intervention techniques above that one critical component of intervention is partner instruction. Decades of clinical and research experiences have clearly indicated the key impact that communication partners have on the communicative success of children who use AAC. With proper instruction, all of the intervention techniques discussed above can be implemented not only by the SLP but also by other communication partners (e.g., family, educators). Although partner instruction was part of many of the studies discussed above, only a few researchers who have included children with suspected CAS in their investigations have used systematic instructional protocols for providing such instruction. Recent research by Binger, Kent-Walsh, and colleagues (Binger et al., 2006; Binger & Light, 2007; Kent-Walsh, 2003) provides preliminary evidence that teaching partners in a systematic fashion can help children with suspected CAS to improve their functional communication skills. These researchers used a cognitive strategy approach to partner instruction (see Kent-Walsh & McNaughton, 2005, for a detailed description of this approach) that synthesized many of the intervention techniques discussed above and resulted in positive communi-

cation outcomes. However, only a few children with suspected CAS were involved in these investigations, and a limited range of communicative behaviors were targeted (i.e., turn-taking and multi-symbol message production).

In summary, a wide range of AAC tools and intervention techniques hold promise for improving the functional communication skills of children who have suspected CAS. Additional research is clearly required to further validate the techniques described above, but these initial reports indicate that well-planned AAC interventions can provide children with suspected CAS with helpful tools to cope with their challenging communication needs as well as provide partners with viable techniques to contribute to positive outcomes for these children.

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