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Augmentative and Alternative Communication

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Defining and Describing Augmentative and Alternative Communication

Augmentative and alternative communication (AAC) is an area of research and clinical specialization within the broader field of speech-language pathology. The American Speech-Language Hearing Association (ASHA) described AAC as the effort "to study and when necessary compensate for temporary or permanent impairments, activity limitations, and participation restrictions of persons with severe disorders of speech-language production and/or comprehension, including spoken and written modes of communication" (ASHA 2005 1). Beukelman and Mirenda (2005) noted that AAC should be described as "a system with four primary components: symbols, aids, strategies, and techniques." (4). Thus AAC not only refers to several various types of non-speech modes or systems of communication, but also to a range of strategies and intervention techniques for enabling effective communication with AAC symbols and aids.

Candidates for AAC

AAC is primarily used for two main purposes and with two main populations: (a) to augment the communication of individuals with dysfluent or unintelligible speech, or (b) to provide an alternative mode of communication for individuals who lack speech or who have failed to acquire a sufficient amount of speech for effective communication. While the exact number of people who require, or are likely to require, AAC at some point in their life is difficult to estimate, a conservative estimate is that this number is likely to be in the tens of millions worldwide (Cossette and Duclos 2003). Most often AAC is prescribed for individuals with little or no functional speech, which can arise from a

variety of medical and disability conditions. These conditions have been classified as congenital, acquired, progressive, or temporary (Kangas and Lloyd, 2005). Congenital conditions associated with complex communication needs and indicating the need for AAC include (a) autism, (b) cerebral palsy, (c) intellectual disability, and (d) developmental apraxia. It has been estimated, for example, that 30-50% of children with a diagnosis of autism will fail to acquire any appreciable amount speech and will therefore require AAC (National Research Council, 2001). Similarly, most individuals with severe to profound intellectual disabilities are likely to require AAC (Sigafoos et al. 2007).

Depending on the nature and severity of the condition, many individuals with acquired disorders may also require AAC. This latter group includes: (a) individuals with acquired brain injury, (b) people with various neurological disorders (e.g., motor neuron disease, amyotrophic lateral sclerosis, multiple sclerosis), and (c) individuals who have suffered a stroke or spinal cord injury.

Progressive conditions that may benefit from AAC include muscular dystrophy, AIDS, and others. Finally, there are numerous temporary conditions that could require the use of AAC, including surgery and other situations that result in a temporary loss of speech.

Types of AAC

AAC is typically classified as involving aided or unaided communication (Lloyd et al. 1997). Aided AAC systems are those that require supplemental materials, such as a communication board containing letters, line drawing symbols, or photographs. Other types of aided AAC involve the use of picture books, flashcards, texture-based symbols (e.g., Braille), and text telephones devices. Recent technological advances have lead to the commercial development of a number of AAC devices that produce digitized (i.e., recorded) or synthesized speech. These speech-generating devices (SGDs) are becoming more widely used in AAC interventions (Schlosser 2003a).

Graphic symbols that are intended to represent individual words or phrases are often used in conjunction with aided AAC. Examples of some simple graphic symbols often used with aided AAC devices are shown in Figure 1.

Figure 1. Examples of graphic symbols used in conjunction with aided AAC devices.

Within the area of aided AAC, researchers have devoted considerable attention to issues related to the selection of optimal symbols for individuals who require AAC. Generally, results from numerous studies (see Schlosser and Sigafoos, 2002 for a review) suggest that for object or noun referents concrete or more iconic symbols are easier to learn to use

as part of an AAC system. However, there does not appear to be any one best type of symbol for use in aided AAC.

Unaided AAC systems involve the use of gestures and manual signs. The gestures or signs that the person uses to communication might be formal or informal and conventional or idiosyncratic. Formal gestures include the conventional headshake gestures for yes or no, whereas informal gestures might involve an idiosyncratic movement, such as wiggling the right leg to communicate some specific intent. Many individuals who require AAC are taught to use manual signs for communication. The manual signs might be derived from a formal sign language system such as American Sign Language or represent a modified version of formal manual signs to meet the unique characteristics of a particular individual.

Research has frequently compared the relative merits of aided versus unaided AAC. For example, because unaided AAC does not require any supplemental materials, it is often assumed to be a more convenient and portable mode of communication. Aided AAC, especially the use of SGDs, in contrast, is often advocated because it may be easier for unfamiliar listeners to interpret. Generally the results of these comparisons have revealed little clinical difference in terms of ease of acquisition between aided versus unaided AAC. Based on this lack of difference, Schlosser and Sigafoos (2006) concluded that: “a more important clinical measure [more important than acquisition rate that is] may be a learner’s preference for using some type of device over another.” (21).

AAC Competencies

AAC use requires competencies that are often very different from those used when communicating via speech. For individuals with congenital or acquired disabilities that necessitate permanent use of AAC, assessment and intervention efforts focus on identifying an optimal AAC system and supporting the individual to gain competence in using the system for functional, vocational, and social communication. Light, Beukelman, and Reichle (2003) identified four areas of competence that are required for effective use of AAC and an alternative mode of communication. Linguistic competence refers to the degree of receptive and expressive language development and knowledge of the linguistic code that is intended for use on the AAC system. Use of an alphabet board, in which the AAC user spells out words and sentences by pointing to individuals letters in sequence, for example, requires a higher level of linguistic competence that selecting line drawings (e.g., a line drawing of a cookie) to communicate basic wants and needs. Operational competence refers to the skills required to use the AAC system or device. Social competence refers to social skills that are involved in communication, such as skills in initiating, maintaining, and terminating communicative interactions in a socially, culturally, and contextually appropriate manner. Strategic competence refers to special skills that are unique to AAC-based communication, such as the ability to gain the listener’s attention prior to selecting a symbol on a communication board, adjusting the

rate of symbol selection to the listener's speech of comprehension, and repairing communicative breakdowns by combining gestures with graphic-mode communication.

Effects of AAC on Natural Speech Production

Concern is often expressed that the use of AAC may inhibit the use of residual speech or inhibit the development of natural speech production. This concern is often most expressed when considering the use of AAC in young children with developmental disability. The concern is related to the fact that it is often unclear whether and to what extent speech and language might eventually develop in young children with developmental disabilities. Given this uncertainty there is often some hesitation in recommending the use of AAC until the child's propensity to acquire speech is clarified. However, the best current evidence suggests that AAC use does not hinder speech development and instead often has a facilitative effect on speech and language learning (Millar et al. 2006, Schlosser and Wendt 2008).

International Developments in AAC

AAC is an internationally recognised field of practice. Members of the International Society of Augmentative and Alternative Communication (ISAAC) represent over 50 countries (ISAAC 2006). In most western countries, a range of AAC services and equipment are available to children and adults with complex communication needs. In contrast, AAC services and equipment available in developing countries are often limited (Alant and Lloyd 2005). Reasons for this disparity include a lack of fiscal, clinical, and educational resources (Alant 2007). Research and advocacy in developing countries is aiming to increase acceptance and understanding of AAC among people from diverse cultural and language backgrounds. This includes determining ways to adapt and integrate AAC systems developed according to western communication styles, to non-western cultures. For example, common AAC intervention goals include developing children's ability to initiate conversations and question adults, however, these communication behaviors are not usually observed in children from many African cultures (Geiger and Alant, 2005). Therefore further progress is needed to develop AAC practitioners who are skilled and knowledgeable in working within different or diverse cultures.

Professional Development in AAC

Pre-professional training programs in speech-language pathology, occupational therapy, physical therapy, and special education now include some knowledge and skills related to AAC. Speech-language pathologists in the USA, for example, need to demonstrate knowledge and skills in AAC before they can graduate and get licensed (ASHA 2002). In the USA, there are Ph.D. programs that offer a concentration in AAC, including major programs at The Pennsylvania State University, the University of Nebraska, the University of Minnesota, and Purdue University.

The ISAAC is a worldwide alliance working to create opportunities for people who require AAC. In addition to regional and international conferences, ISAAC also has an official journal, called Augmentative and Alternative Communication. The journal is now in its 24th volume and has had an important impact of developing and disseminating the research base that underpins AAC assessment and intervention.

Areas of Research in AAC

AAC researchers are exploring new and innovative ways to support the social and academic aspirations of children and adults with little or no functional speech. A focus for some researchers is supporting the development of language and literacy skills among children with developmental disabilities, such as cerebral palsy (Soto and Zangari 2009). These skills are essential to maximise the generative capabilities of modern AAC devices and to support children in the development of effective communication and academic skills. Research is also determining how to best use AAC with populations that have traditionally challenged education and health professionals. For example, children with Autism Spectrum Disorders can use both electronic and non-electronic AAC systems for basic communication skills such as requesting (Lancioni et al. 2007, Mirenda 2001). Further research is now required to determine if AAC systems can be utilised to enhance these children's social interactions with peers and adults.

The AAC-Rehabilitation Engineering Research Centers (AAC-RERC) in the USA include University and Industry-based projects aiming to extend the capabilities of AAC technology. A sample of current AAC-RERC projects include; (1) designing new AAC systems that integrate contextual information to support communication for adults who experience linguistic or intellectual disability; (2) developing new interfaces between AAC systems and people with severe motor impairments; and, (3) investigating AAC systems dedicated to interpersonal face-to-face communication by integrating emerging technology and social interaction knowledge (AAC-RERC, n.d.).

Emerging Trends in AAC

Recently, the field has begun to embrace evidence-based practice (EBP) as the preferred mode of service delivery (Schlosser 2003b, Schlosser and Raghavendra 2004). While adopting several aspects of EBP from other fields, the conceptualization and implementation of EBP has shown to be mindful of the needs of the AAC field as well; this is signified by its consideration of relevant stakeholder perspectives as part of evidence-based decision-making, a focus on empirically-supported intervention principles rather than interventions per se (Sigafoos et al. 2003), and the recognition of single-case experimental designs and meta-analyses thereof (Schlosser and Sigafoos 2008) as viable methods to demonstrate whether an intervention is efficacious. Embracing the concept of EBP on the one hand should go hand in hand with the continued development of the AAC research base.

Due to recent advances, the field of AAC has also seen increased access (and empirical demonstrations of its effectiveness) to aided AAC systems via switch technology for people with multiple disabilities (Lancioni et al. 2008). Thus, many individuals who require AAC but have physical disabilities that impair the ability to access AAC symbols and aids have been enabled to use such devices through the use of additional assistive technologies, such as microswitches linked to a speech-generating device.

Wilkinson and Henning (2007) highlighted several recent technological advances in the field that aim to expand access to AAC. One such advance involves the development of scanning strategies that aim to maximize the ability of individuals to access AAC symbols on aided devices, such as a electronic communication board with synthesized speech output. The different requirements associated with accessing fixed (display does not change into another display unless the overlay is removed) versus dynamic displays (e.g., the selection of the "apple" symbol opens up the fruits or food display) continues to receive empirical attention and is bound to result in greater understanding which displays are appropriate for what kinds of user characteristics.

While AAC is intended to enable communication in the absence of speech, the effects of various AAC systems for the user and his/her communication partners is an under-researched area. There is however, a growing interest on the effects of AAC-based communication of the behavior of communicative partners, particularly with respect to identifying partner behaviors that may facilitate communicative interactions involving people who use AAC.

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