1

Introduction to AAC for Individuals with Autism Spectrum Disorders

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> - - - - - Because some alternative nonspeech communication systems have become increasingly employed in cases of language deficiencies, it needs to be determined whether such systems hold promise for the autistic individual and which systems are most suitable. (Schuler & Baldwin, 1981, p. 246)

Since Schuler and Baldwin made this proposal in 1981, both research and practice in the use of augmentative and alternative communication (AAC) for individuals with autism spectrum disorders (ASDs) have evolved rapidly—so much so that this edited volume is now possible, which was not the case even a decade ago! AAC does indeed "hold promise" for individuals with ASDs; in many places, it has become the cornerstone of interventions aimed at increasing communication and literacy skills and/or decreasing problem behavior. This chapter will provide 1) a brief history of AAC modality and assessment issues related to individuals with ASDs, 2) an overview of evidence-based practice and its relevance to ASDs, and 3) an overview of some of the key conundrums and controversies that affect AAC practice today.

ASDs AND AAC

Autism spectrum disorder is an increasingly popular term that refers to the pervasive developmental disorders described in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (American Psychiatric Association, 2000). The ASDs include the following:

- Autistic disorder (more commonly called *autism*)
- Pervasive developmental disorder-not otherwise specified, "a collection of features that resemble autism but may not be as severe or extensive" (Dunlap & Bunton-Pierce, 1999)
- Asperger syndrome, a diagnosis assigned to individuals who display the social criteria for autism but have intact language and cognitive abilities
- Rett syndrome, a degenerative genetic condition with neurological signs that affects only girls
- Childhood disintegrative disorder, a rare regressive disorder characterized by a loss of communication and other previously acquired skills

The symptoms of autism are evident within the first 3 years of life and include significant difficulties with social interaction, delayed or abnormal functioning in verbal and nonverbal communication, and unusual patterns of behavior (e.g., restricted interests, repetitive activities, stereotyped movements, unusual responses to sensory stimuli). The ASDs occur in all racial, ethnic, and socioeconomic groups and are 4 times more likely to occur in boys than in girls. A recent report by the Autism and Developmental Disabilities Monitoring Network indicated that about 1 in 150 eight-year-old children in multiple areas of the United States have been diagnosed with one of the ASDs (Centers for Disease Control and Prevention, 2007).

All disorders on the autism spectrum are characterized by communication impairments of some type, although the specific symptoms vary widely. The increased availability of early diagnosis and intervention over the past decade or more has been accompanied by changes in the prognosis for speech development (Tager-Flusberg, Paul, & Lord, 2005). Nonetheless, a significant proportion of individuals with ASDs of all ages are likely to require AAC for expressive communication, either temporarily (i.e., until speech develops) or permanently. In addition, many individuals with ASDs—even those with relatively intact speech and language—may benefit from AAC support to enhance comprehension (American Speech-Language-Hearing Association [ASHA], 2005).

AAC MODALITIES AND TECHNIQUES

A variety of both unaided and aided communication techniques have been implemented for individuals with ASDs over the years. Unaided communication does not require any equipment that is external to the body and involves the use of symbols such as manual signs, pantomimes, and gestures. Aided communication incorporates devices that are external to the individuals who use them (e.g., communication books, speech-generating devices) and involves the use of real objects or graphic symbols such as photographs, line drawings, letters, and written words. Most people, including those with ASDs, use a combination of unaided and aided communication techniques, depending on the context and the communication partner (Beukelman & Mirenda, 2005).

Chimps, Chips, Signs, and Lexigrams

For the most part, the individuals with ASDs for whom AAC techniques were first introduced lived in institutions or attended state schools for people with intellectual disabilities. They were presumed to be essentially subhuman and, if they were unable to speak, largely incapable of acquiring communication or language skills. Therefore, it is perhaps not surprising that many of the early AAC experiments with these individuals were based on research aimed at examining the extent to which various language elements could be taught to nonhuman primates (e.g., chimpanzees). The sad and distasteful logic inherent in these early AAC experiments was that if chimps could learn to communicate, perhaps people with autism also could.

Plastic Chips One of the earliest descriptions of "nonspeech communication" with a child with autism is from Premack and Premack (1974). Prior to this, the Premacks taught Sarah, a female chimpanzee, to associate plastic pieces of various colors and shapes with more than 130 words in semantic categories that included nouns, verbs, adjectives, and prepositions, among others. Sarah not only understood the meanings of these plastic chips, but she also used them to both produce and respond to a variety of simple sentences and questions (Premack, 1971). The Premacks later extended this research to teach an 8-year-old boy with autism and severe visual impairment to use plastic chips to communicate, noting that "the plastic visual system is clearly preferable to no language at all, and it may also prove helpful in speeding the acquisition of natural language" (Premack & Premack, 1974, p. 375). The success of this intervention was followed by a number of additional research projects documenting the efficacy of the plastic chip system, which was later published and marketed as the Non-Speech Language Initiation Program (Non-SLIP; Carrier & Peak, 1975). Early research reports suggested that this could be a useful system of communication for at least some children with ASDs (deVilliers & Naughton, 1974; McLean & McLean, 1974).

Manual Signs Simultaneous with the efforts of the Premacks, another pair of language researchers was teaching a chimp named Washoe to communicate using American Sign Language (Gardner & Gardner, 1969). Shortly thereafter, a few references to attempts at teaching gestural language to children with autism appeared in the published literature (e.g., Churchill, 1972); however, Margaret Creedon's (1973) presentation to the Society for Research in Child Development is generally acknowledged as the first public report of the successful use of a formal "simultaneous communication system" (i.e., speech plus manual signs) with these individuals. In her paper, Creedon described the outcomes of simultaneous communication instruction with 21 children with autism over a 3-year period. Later that same year, two published case studies described the results of quite different instructional approaches that were used to teach children with ASDs to both understand and communicate using a small number of manual signs paired with speech (Miller & Miller, 1973; Webster, McPherson, Sloman, Evans, & Kuchar, 1973).

Over the next decade, numerous research reports on the use of simultaneous communication (also referred to as *total communication*) were published (for a review, see Goldstein, 2002). By the mid-1980s, total communication in one form or another was the most commonly used AAC technique for individuals who were labeled as *autistic* or *severely/profoundly intellectually disabled* in the United States (Bryen & Joyce, 1985; Matas, Mathy-Laikko, Beukelman, & Legresley, 1985), the United Kingdom (Kiernan, 1983; Kiernan, Reid, & Jones, 1982), and Australia (Iacono & Parsons, 1986). In addition, this decade saw dissemination of the Makaton Vocabulary, a method for teaching British Sign Language that was originally developed for institutionalized deaf adults with intellectual disabilities in the United Kingdom (Cornforth, Johnson, & Walker, 1974). The Makaton method was expanded in the mid-1980s to incorporate pictorial Makaton symbols and speech in addition to manual signs; the method was used internationally with individuals with a wide range of developmental disabilities, including autism (Walker, 1987).

Lexigrams A third pair of researchers initiated a longitudinal project (the Lana Project, named after its first subject) that was designed to teach chimpanzees to communicate using abstract lexigrams composed of nine geometric forms (Rumbaugh, 1977; Savage-Rumbaugh, Rumbaugh, & Boysen, 1978). The lexigrams were accessed through computer-linked, touch-sensitive display panels that produced illuminated symbols (in the early phases of the project) or synthetic speech (in later phases). The results of the Lana project were later applied successfully to 13 boys with severe cognitive impairments—two of whom had autism—in a project called the System for Augmenting Language, discussed further in Chapter 8 (Romski & Sevcik, 1996).

Written Words

Orthographic symbols (i.e., alphabet letters) were used with people with autism in the early days of AAC. Structured operant conditioning interventions were initiated by several researchers to demonstrate that at least some of these individuals could learn to associate printed words with their referents (e.g., Hewett, 1964; Marshall & Hegrenes, 1972; LaVigna, 1977; Ratusnik & Ratusnik, 1974). Interestingly, although these interventions proved at least as efficacious as the early demonstrations using other types of symbols, orthography was not widely used with this population for communication, even after a flurry of interest in the mid-1980s related to hyperlexia (i.e., the precocious, self-taught ability to read printed words that is seen in many individuals with autism; e.g., Frith & Snowling, 1983; Whitehouse & Harris, 1984). In recent years, the advent of balanced literacy practices and the availability of a wide range of technologies to support reading and writing have enabled many individuals with ASDs to participate meaningfully in literacy experiences alongside their typically developing peers, as discussed further in Chapter 14 (Kliewer & Biklen, 2001; Koppenhaver, 2000; Mirenda, 2003a).

Visual-Graphic Symbols

Reports of the successful use of visual-graphic pictorial systems with individuals with autism began to appear in the 1980s (Lancioni, 1983; Mirenda & Iacono, 1988; Mirenda & Santogrossi, 1985; Reichle & Brown, 1986). Over the next decade, their use became widespread and, at least in the published literature, has largely replaced manual signing as the predominant AAC approach used with individuals with ASDs today. Among the most popular approaches to teach these individuals to communicate with visual-graphic symbols is the Picture Exchange Communication System, which was first introduced in the mid-1990s (Bondy & Frost, 1994) and is discussed further in Chapter 10.

Speech Output

Speech output was first introduced to students with autism in the 1970s by Colby and his colleagues at Stanford University (Colby, 1973; Colby & Kraemer, 1975; Colby & Smith, 1974). Their goal was to "stimulate or catalyze a damaged or slow-developing natural process of language

acquisition" (Colby, 1973, p. 259) by engaging children in exploratory games that enabled them to activate symbols on a computer screen (e.g., the letter *H*) paired with auditory stimuli (e.g., a voice saying "H"). They reported that 13 of 17 children began "voluntarily to use speech for social communication" (Colby, 1973, p. 259) after exposure to this treatment.

With the exception of a few additional early case reports (e.g., Hedbring, 1985), it was not until the 1990s that research in this area began in earnest (for a review, see Schlosser & Blischak, 2001). Some of this work was aimed at examining the use of speech output for individuals with autism in the context of computer-assisted learning (e.g., Bernard-Opitz, Ross, & Tuttas, 1990; Chen & Bernard-Opitz, 1993; Heimann, Nelson, Tjus, & Gillberg, 1995; Parsons & LaSorte, 1993; Tjus, Heimann, & Nelson, 1998). Other research involved the use of portable speech-generating devices (SGDs) in interventions designed to facilitate communicative interactions (Schepis, Reid, Behrmann, & Sutton, 1998), decrease problem behavior (Durand, 1999), or teach specific skills such as spelling (Schlosser, Blischak, Belfiore, Bartley, & Barnett, 1998). Over the past decade, research on the use of various technologies for individuals with developmental disabilities such as ASDs has expanded rapidly (e.g., Lancioni et al., 2007).

Facilitated Communication

Facilitated communication involves the use of a letterboard or keyboard on which messages are typed on a letter-by-letter basis. The typist's forearm, wrist, and (if necessary) index finger are physically supported by a facilitator, who also provides emotional and instructional support. Gradually, the supports provided by the facilitator are faded, with the goal of independent typing. Facilitated communication was first mentioned in a 1974 manual describing "effective teaching methods for autistic children" (Oppenheim, 1974). In Australia, facilitated communication was first used for individuals with ASDs by Rosemary Crossley in 1986 (see Crossley, 1993) and was later introduced to North America by Douglas Biklen (1990).

Facilitated communication is controversial, primarily because of the authorship question: Who is actually typing the message, the typist or the facilitator? The controversy stems from the fact that many facilitated typists are able to compose sophisticated messages that far exceed their perceived cognitive and language abilities, often in the absence of formal literacy instruction. In addition, whenever a facilitator supports the hand or arm of a typist, the potential exists for the facilitator to guide the typing process, albeit unintentionally.

Numerous publications have attempted to answer the authorship question through various research approaches. The vast majority of this research indicates that typists with ASDs are easily influenced by their facilitators when composing messages and that facilitators often influence typists' messages without realizing they are doing so (for reviews, see Jacobson, Mulick, & Schwartz, 1995; Mostert, 2001; and Simpson & Smith Myles, 1995). Given this, many professional organizations, including ASHA (1995), have issued position statements or resolutions recommending that facilitated communication not be used at all or that it be used very cautiously. Some typists, however, seem to compose messages without facilitator influence (Biklen & Cardinal, 1997). Other individuals began communicating through facilitated communication but are now able to communicate independently, without physical contact from a facilitator (Biklen, 2005; Biklen & Kliewer, 2006). Therefore, although facilitated communication remains controversial and is not accepted by most AAC clinicians or researchers, the issue is not as straightforward as it may seem (Mirenda, 2008).

AAC ASSESSMENT

One of the goals of an AAC assessment is to determine whether an individual requires AAC supports. This might appear to be an easy task, as it seems obvious that individuals who are unable to meet their daily communication needs through natural speech require AAC interventions. Nevertheless, in the 1970s and 1980s in particular, considerable controversy was generated about candidacy or eligibility criteria for AAC services. In many cases, individuals with ASDs were considered to be too "something" (e.g., too young; too old; too cognitively, behaviorally, or linguistically impaired) to qualify for AAC services. Other individuals were excluded from AAC services because they were perceived as having too many skills, especially with regard to natural speech. For example, AAC supports were often withheld from individuals with ASDs who could say a few words, in the hopes that their speech abilities would improve.

One of the most notable advancements in this field is the number of official documents that address the inappropriateness of such eligibility practices. For example, in 2005, ASHA noted that although there are no evidence-based procedures for determining whether a given individual is likely to benefit from AAC, "[n]o individuals should be denied this right, irrespective of the type and/or severity of communication, linguistic, social, cognitive, motor, sensory, perceptual, and/or other disability[ies] they may present" (p. 1). ASHA's statement is aligned with that of the National Joint Committee (NJC) for the

Communication Needs of Persons with Severe Disabilities (2003a, 2003b), which asserted that eligibility for communication services and supports should be based on communication needs alone, rather than on criteria such as discrepancies between cognitive and communication functioning, chronological age, diagnosis, absence of cognitive or other skills purported to be prerequisites, or other factors. Together, the ASHA and NJC statements are important advances in the AAC field because they emphasize that assessment can no longer be used as a gate-keeping mechanism for determining who may or may not receive AAC services. The question to be addressed by AAC assessment is *how* AAC interventions and supports can best be applied to a given individual rather than *if* an individual should have access to AAC interventions and supports. This advancement is especially important for many older individuals with ASDs, who may have access to AAC assessment and intervention for the first time as a result of these statements.

Another goal of AAC assessment is to identify discrepancies between an individual's communication needs and current capabilities to determine which AAC techniques may result in improved receptive and expressive communication. AAC assessment for individuals with ASDs is often quite challenging because of the effects of the social, language, sensory, and/or cognitive impairments they may experience. When conducting an AAC assessment, ASHA (2004) recommends the use of the Participation Model (Beukelman & Mirenda, 2005), which focuses on procedures aimed at identifying current and potential strengths and needs to guide the development of AAC interventions for both the present and the future. The use of this model was illustrated in a case study describing the process used by a school team to design AAC supports for a 6-year-old boy with autism (Light, Roberts, Dimarco, & Greiner, 1998). The authors used the general structure of the Participation Model to gather information about 1) the child's current and anticipated future communication needs; 2) his current abilities with regard to the sensory, receptive language, expressive communication, symbol representation, lexical organization, and motor skills needed for communication; 3) the communication opportunities that were available to him; and 4) the interaction strategies used by his frequent communication partners. The authors used a combination of parent and teacher interviews, a communication needs survey, ecological inventories, systematic observations, and both formal and informal (i.e., criterion-referenced) assessment tools to gather this information. They then designed a multimodal communication system that incorporated the child's existing natural speech, conventional gestures, a communication book and dictionary, and an SGD with software to support his writing and literacy development. This case study exemplifies the holistic, systematic assessment process that is required

to make individualized AAC decisions for people with ASDs. See Chapter 2 for more information on assessment issues.

EVIDENCE-BASED PRACTICE

A relatively recent development in the field of AAC is an increased emphasis on evidence-based practice (EBP) for assessment, intervention planning, and implementation. EBP is "the integration of best and current research evidence with clinical/educational expertise and relevant stakeholder perspectives to facilitate decisions for assessment and intervention that are deemed effective and efficient for a given stakeholder" (Schlosser & Raghavendra, 2003, p. 263). EBP does *not* mean that either clinical reasoning or the perspectives of individuals who use AAC and their families are discounted during the AAC assessment or decision-making processes. Rather, in addition to these important elements, a third component—current research evidence—is added to the mix.

The EBP process, described by Schlosser and Raghavendra (2003), can be used to make decisions about the intervention components that are most likely to lead to positive outcomes for a given individual. The six steps of this process are

1. Ask a well-built question, such as "Should we use manual signing or should we use graphic symbols to teach requesting to this adolescent with autism?" or "Should we use an SGD to teach social interaction skills to this child with Rett syndrome?"
2. Select evidence sources (e.g., textbooks, research databases, journals).
3. Search the literature.
4. Examine the evidence systematically.
5. Apply the evidence to make decisions on behalf of the specific individual who requires AAC.
6. Evaluate the outcome of the decision over time.

One of the practical outcomes of the emphasis on EBP has been the generation of a number of integrative reviews of AAC research. In such reviews, authors examine research related to a specific type of AAC intervention (e.g., SGDs) with a specific population (e.g., children with ASDs), using either statistical or narrative techniques. They also provide summary statements regarding, for example, the benefits that have been shown to result from the use of a specific intervention or the optimum conditions for generating positive outcomes. Many authors in this book have used this process or a variation thereof to integrate existing research on specific aspects of AAC. In addition, integrative reviews on AAC for individuals with ASDs have addressed topics such as manual

signing (Goldstein, 2002; Mirenda, 2001, 2003b; Wendt, Schlosser, & Lloyd, 2005), graphic symbols (Mirenda, 2001, 2003b; Wendt et al., 2005), SGDs and computers with speech output (Schlosser & Blischak, 2001; Wendt et al., 2005), functional communication training (Bopp, Brown, & Mirenda, 2004; Wendt et al., 2005), and visual schedules that use graphic symbols (Bopp et al., 2004).

Decision making that incorporates research evidence is important when designing AAC interventions for individuals with ASDs for a number of reasons. First, these individuals constitute an extremely heterogeneous group with regard to the social, cognitive, motivational, and motor abilities that underlie successful communication. Thus, AAC decisions must be made on the basis of individual skill and preference profiles, rather than on the basis of an ASD diagnosis alone. Researchers have therefore examined strategies for incorporating the modality preferences of individuals with ASDs into the decision-making process (Sigafoos, O'Reilly, Ganz, Lancioni, & Schlosser, 2005; Son, Sigafoos, O'Reilly, & Lancioni, 2006).

Second, the field of ASDs in general is "littered with the debris of dead ends, crushed hopes, ineffective treatments, and false starts" (Schreibman, 2005, p. 7). With regard to AAC, this was highlighted in 1970s by the wholesale adoption of total communication as "the answer" for all individuals with ASDs who were unable to speak; in the 1990s, a similar furor focused on facilitated communication. The tendency of many professionals and families to adopt the latest fad intervention, regardless of the quantity or quality of research evidence to support it, can be counteracted by the adoption of an EBP approach to decision making.

Third, for professionals in the field, EBPs are guaranteed to keep us humble by making us aware of just how much we still have to learn. The fact is that we do not know even more than we *do* know about AAC for individuals with ASD. We do not know how to select the combination of AAC modalities that will result in optimal communication for each individual; how to design comprehensive AAC instructional interventions that truly build on each person's abilities and strengths; or how to maximally support social, language, and literacy development through AAC. If it is indeed true that with humility comes wisdom, the systematic examination of research evidence for decision making is essential for the field to move forward.

CONUNDRUMS AND CONTROVERSIES

The Merriam-Webster Online Dictionary (2007) defines a *conundrum* as "an intricate and difficult problem." In the field of AAC, as in all other

fields of scientific endeavor, a number of conundrums have come an
gone over the years, while several have lingered and are still activ
today. Many of the currently controversial issues as they pertain t
individuals with ASDs are examined in individual chapters of thi
book, including the use of SGDs for individuals with ASDs (Chapter 5
and how various AAC modalities affect the likelihood of speech pro
duction (Chapter 6). Additional chapters examine the use and effec
tiveness of both behavioral and social/developmental instructiona
approaches, including the Picture Exchange Communication Syster
(Chapter 10; see also Frost & Bondy, 2002); the Social Communicatior
Emotional Regulation, and Transactional Support (SCERTS®) Mode
(Chapter 8; see also Prizant, Wetherby, Rubin, Laurent, & Rydell, 2005a
2005b); and various aided language models (Chapters 7 and 9). Chap
ters on the use of AAC techniques for problem behavior (Chapters 1
and 13), literacy development (Chapter 14), and inclusive educatio
(Chapter 15) also address conundrums that confront and challeng
many families and AAC professionals who support individuals wit
ASDs. This chapter explores three additional controversial issues: 1
integrating AAC with other early intervention approaches for youn
children with ASDs, 2) deciding whether or not AAC is appropriat
and choosing individualized AAC techniques, and 3) critically reex
amining conventional assumptions about ASDs as they apply to AAC

Early Intervention and AAC

The importance of early intervention for young children with ASD
is not a matter for debate. In a comprehensive, evidence-based repor
the U.S. National Research Council (NRC) Committee on Educationa
Interventions for Children with Autism (2001) strongly recommende
that entry into intervention programs should begin as soon as an ASI
diagnosis is seriously considered, rather than waiting until it is con
firmed. The NRC Committee also concurred that "active engagement i
intensive instructional programming" (p. 219) should be provided t
children at least up to age 8 years for a minimum of 25 hours per wee
on a year-round basis, and should consist of "repeated, planned teach
ing opportunities" (p. 219) conducted in both one-to-one and very smal
group sessions. They also recommended that emphasis be placed on th
use of evidence-based instructional techniques in six main instructiona
areas: 1) functional, spontaneous communication using speech and/o
AAC; 2) developmentally appropriate social skills with parents anc
peers; 3) play skills with peers; 4) various goals for cognitive develop
ment, with emphasis on generalization; 5) positive behavior support
for problem behaviors; and 6) functional academic skills, as appropriate

The NRC Committee (2001) acknowledged that a wide range of instructional approaches may be used to accomplish these goals. These approaches include structured teaching based on the principles of applied behavior analysis such as discrete trial teaching (Smith, 2001), incidental teaching (McGee, Morrier, & Daly, 1999), applied verbal behavior (Sundberg & Partington, 1998), and pivotal response training (Koegel & Koegel, 2006). They also include social/developmental approaches such as the Developmental, Individual-Difference, Relationship-Based (DIR) model (Greenspan & Weider, 1999) and the SCERTS Model (Prizant et al., 2005a, 2005b). Although the NRC Committee did not recommend a specific curriculum or approach, they stressed the importance of goal-directed, evidence-based, individualized programs that meet the needs of both children with ASDs and their families.

Because of these recommendations, immediately after receiving a diagnosis for their child, families are faced with the daunting task of deciding what to do for their child with ASD and how best to do it. Some of their decisions may affect the extent to which AAC techniques of various types will be accepted and used (e.g., in an applied verbal behavior approach, manual signing may be accepted but graphic symbols may not be; see Mirenda, 2003b; Sundberg, 1993). Even when there is agreement about the techniques to implement, AAC practitioners will almost always need to work with other professionals whose views may be quite divergent from (and perhaps even incompatible with) their own. The potential for controversy is considerable and the potential for conflict is high; therefore, the ability to negotiate and collaborate is required of all involved.

To AAC or Not to AAC?

If the goal of an AAC system is to "enable individuals to efficiently and effectively engage in a variety of interactions and participate in activities of their choice" (Beukelman & Mirenda, 2005, p. 8), it is critical that AAC interventions be maximally individualized. This principle raises a number of contentious issues, the first and foremost of which is that many parents of young children (and some practitioners as well) are reluctant to implement AAC interventions out of concern that they will prevent speech production (Cress & Marvin, 2003). Despite credible research evidence to the contrary (Chapter 6; see also Millar, Light, & Schlosser, 2006), this reluctance continues to limit the extent to which individuals who can benefit from AAC have access to it. In addition, AAC is no less immune to "one-size-fits-all" thinking than is any other type of educational intervention. Some practitioners who ascribe to this

way of thinking institute one or more AAC techniques with everyone whose social-communication interactions are lacking, regardless of whether AAC is actually required. Other practitioners espouse the superiority of a particular instructional technique over all others, regardless of the abilities and preferences of individuals with ASDs or their families. Still others may always prescribe the specific AAC modality with which they have experience, rather than considering the entire range of available options. For example, some practitioners claim that manual signing is the best AAC technique for all individuals with ASDs, based largely on theoretical arguments rather than on empirical evidence (Mirenda, 2003b). Regardless, this one-size-fits-all thinking invariably limits the communication options that are available to individuals with ASDs and can be avoided by adopting the general EBP approach that was described in a previous section of this chapter.

(Mis)conceptions About ASDs and AAC

Research has called into question at least two of the assumptions that most people accept about ASDs in general: 1) motor impairments are not part of the disorder and 2) in most cases, intellectual disability is. Mirenda (2008) noted that these two assumptions directly affect both the design and the goals of AAC interventions for many individuals with ASDs. Alternative access or instructional supports are rarely provided to compensate for the types of motor planning or coordination problems that appear to be more common than previously thought (e.g., Dziuk et al., 2007; Hardan, Kilpatrick, Keshavan, & Minshew, 2003; Ming, Brimacombe, & Wagner, 2007; Minshew, Sung, Jones, & Furman, 2004). AAC goals are often focused solely on basic requesting skills, under the assumption that most individuals with ASDs will be unable to acquire a broad range of communicative functions because of limited cognitive capacity. Edelson (2006) and others (e.g., Dawson, Soulières, Gernsbacher, & Mottron, 2007), however, have provided empirical evidence to challenge the conventional presumption that intellectual disability usually co-occurs with ASDs. In addition, some researchers have started to demonstrate that individuals with ASDs can become much more communicatively competent through the use of AAC than might be expected in the presence of intellectual disability (e.g., Light et al., 2005). Given all of this, Mirenda (2008) urged AAC clinicians and researchers to "question what we think we know about people with ASD in general and how we support those individuals whose speech does not develop to communicate through AAC in particular." It remains to be seen whether the AAC community will take up this challenge both to reconceptualize ASDs in general and to

design innovative AAC interventions that push traditional boundaries and presume the potential for competence.

CONCLUSION

Decision making related to AAC interventions for individuals with ASDs is a complex and challenging endeavor. Because of the wide heterogeneity of this population, decisions about appropriate AAC techniques cannot and should not be made in the abstract; rather, they must be made for specific learners, in specific contexts, to meet specific needs (Beukelman & Mirenda, 2005). It is clear that that the success or failure of any AAC intervention is not simply a matter of choosing symbols or devices; instructional variables are also critically important. Indeed, when AAC fails to result in spontaneous, functional communication, this failure usually reflects limitations in the procedures and methods used for instruction rather than an inherent problem with AAC itself. In the end, the combination of research-based modality selection, excellent instruction, and goodness-of-fit (Bailey et al., 1990) with regard to environments, communication partners, and communication needs are all needed to maximize the possibility of successful communication for individuals with ASDs.

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