

**Autism Spectrum Disorder (ASD) and  
Augmentative and Alternative Communication (AAC):  
A Brief Guide for Professionals and Families**

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*Superheroes social skills training, rethink autism internet intervention, parent training,  
evidence-based practices classroom training, functional behavior assessment: An autism  
spectrum disorder, evidence-based practices training track for school psychologists*

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## Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in social communication and reciprocal social interaction, as well as stereotyped behaviors and interests (American Psychiatric Association, 2013). It is estimated that approximately 1 in 68 children in the United States have ASD, with a significantly larger number of males identified compared to females (Centers for Disease Control and Prevention, 2014). Given the proportion of children in the United States who have ASD, it is imperative that providers better understand the disability, including common comorbid disorders and effective treatments.

According to Jang and Matson (2015), approximately 70% of individuals with autism have at least one comorbid disorder and 41% have more than two comorbid conditions. Common conditions include the following: ID; speech/communication impairment; attention-deficit/hyperactivity disorder (ADHD); mood and behavior disorders; anxiety, obsessive-compulsive disorder (OCD), and specific phobias; gastrointestinal disorders; sleep disturbances; and epilepsy (Tsai, 2014; Matson & Nebel-Schwalm, 2007; Manninon, Leader, & Healy, 2013; Lubas,

Mitchell, & De Leo, 2014). While it is crucial to accurately assess and identify all comorbid symptoms, this is especially true for significant speech impairment.

To date, it is estimated that approximately 25-30% of individuals with ASD are minimally verbal (Lubas, Mitchell, & De Leo, 2014). This prevalence rate is much lower than once believed, with past estimates stating that over half of all children with ASD would not acquire language. This decrease is likely due to changing diagnostic criteria and the emphasis now placed on early identification and intervention. Still, no single explanation accounts for all minimally verbal children with ASD and heterogeneity clearly exists among the cognitive and linguistic profiles. In some instances, minimally verbal children lack all spoken language, consisting of only atypical non-speech sounds and vowel approximations. In other cases, their expressive language is extremely limited and consists of a few words or fixed phrases, such as “want X.” Other individuals in this category may be primarily echolalic or use stereotyped or scripted language in ways that are non-communicative. Researchers have found that useful speech by age five consistently predicts better social and adaptive functioning later in life (Tager-Flusberg & Kasari, 2013), and that

spontaneous, functional communication also allows children to access and learn from their environment (Lubas, Mitchell, & De Leo, 2014). Given the importance of communication, it is clear why effective communication interventions have been, and are, a high priority.

### **Augmentative and Alternative Communication (AAC)**

In the past 45 years, numerous augmentative and alternative communication (AAC) interventions have been created and implemented in an effort to meet the complex communication needs of youth with ASD (Lubas, Mitchell, & De Leo, 2014). Cafiero and Meyer (2008) define AAC as “any tool, strategy, or technology that compensates for, enhances, expands or helps develop communication skills” (p. 28). According to Lubas, Mitchell, and De Leo (2014), first attempts to augment the communication of individuals with ASD began in the 1970s with non-technological tools, such as sign language and gestural symbols. Soon after, the Picture Exchange Communication System (PECS) was developed to help individuals with ASD communicate utilizing photographs and drawings as communication symbols. PECS became a quickly preferred system because the pictures allowed for a longer processing

time for the communicator. Moreover, PECS was found to improve functional communication and spontaneous initiations of children with ASD. Despite noted benefits, it was clear that PECS left room for improvement. Consumers realized that creating and storing laminated images as children’s language grew was both time-consuming and difficult. This realization gave way to various AAC technologies.

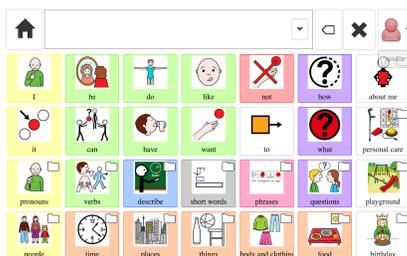
The first devices were dedicated speech-generating devices (SGDs) with pre-loaded software, which were introduced into schools in the early 1990s. Parents, teachers, and school systems soon learned, however, that dedicated SGDs were expensive, difficult to personalize, and even stigmatizing for the child. In an effort to provide a more affordable and convenient tool, AAC apps were developed. AAC apps are not only more affordable and customizable; they are also more accessible, especially with the growing presence of smartphones and tablets in our world today. As of February 2014, the Apple Store had more than 250 AAC apps that ranged in price from free to a few hundred dollars (Lubas, Mitchell, & De Leo, 2014). The number of available apps continues to rise, increasing opportunity for use by individuals with ASD. Today, AAC systems are largely divided into two separate categories: (1)

unaided systems and (2) aided systems.

### Unaided and Aided Systems

Unaided systems are those that are non-electronic and require no external equipment, such as gestures, body language, and sign language (Gevarter et al., 2013; Ganz & Simpson, 2004). In contrast to unaided systems, aided systems are those that require external equipment, such as PECS and SGDs (Gevarter et al., 2013).

### AAC System Spotlight



Recognizing the limitations of the many available AAC apps, several developers sought out to create a cloud-based AAC app that would be accessible not only across platforms, such as Apple and Android, but also across multiple devices. This inspiration gave birth to one of the newest and increasingly popular AAC apps – *CoughDrop*. According to the *CoughDrop* website, the app is designed to run on all major devices, including desktop computers, laptops, iPads, iPhones, and Android tablets and phones. The user and communicative partners are able to access the app simultaneously, and devices can be swapped out with minimal interruption and confusion.

The app is accessible offline when Wi-Fi or network connection is unavailable, making it easy to travel and use the device in diverse locations. *CoughDrop* also allows therapists, specialists, parents, and other team members to modify communication sets for users and access data about time of use, location of finger touch, and used vocabulary. All of this data can be exported into useful reports that can aid in decision-making about communication goals and progress. The app is also highly customizable and offers many pre-made communication sets/boards for free. Finally, the app is available for purchase either monthly or long-term (5 years), offering accessible and affordable options for consumers and families (CoughDrop, n.d.).

### Is AAC the answer for my loved one or me?

It is most important to remember that no single system best meets the diverse needs of all children with ASD (Tincani, 2004). Learner characteristics should be assessed, and the intended goals and desired outcomes of the AAC intervention should be clearly outlined in order to ensure that the most effective and efficient system is chosen. Systems that present accessibility and mobility challenges are likely to be ruled out early in the AAC assessment process (Gevarter et al., 2013).

Communicator preference is also a crucial aspect of intervention to consider. Research suggests that most individuals with developmental disabilities show a preference for aided systems, specifically SGDs, and also tend to acquire these systems quicker. Using a person's preferred communication modality has been found to improve learning and maintenance, with problem behavior occurring less frequently (Gevarter et al., 2013).

Speech and AAC evaluations are often available at medical facilities, private practice offices, school districts, and center-based programs. Evaluation team members may include the following: AAC user, family/caregivers, speech-language pathologist (SLP), physician, occupational therapist (OT), physical therapist (PT), psychologist, vision specialist, vocational counselor, and others, as the team sees fit.

### **Important Considerations**

When deciding which SGD or app is appropriate for a communicator, it is important to keep the following in mind: the device should be kept in an accessible location; the device should be regularly charged; use of the device should be modeled and consistently used; the settings of the device should be customized for the communicator; and the device should be treated like a true voice.

### **Case Example**

Van der Meer and colleagues (2013) conducted a study of AAC preference and ease of use with two, school-aged children with ASD and comorbid ID – Hannah and Ian (pseudonyms). During intervention, Ian learned each AAC system with comparable ease and speed. Ian also reached criterion for each AAC system and maintained correct use at high levels. In comparison, Hannah demonstrated slower acquisition and did not reach criterion for any AAC system. During baseline, Ian showed preference for the SGD, while Hannah showed preference for the picture exchange (PE) system. Both children's preferences stayed consistent despite the introduction of new communication systems, highlighting the importance of assessing communicator preference in order to avoid device or system abandonment; however, it must be noted that preference did not necessarily correspond to system proficiency (van der Meer et al., 2013).

Ian learned the iPod-based SGD at a much slower rate, but showed consistent preference for this AAC option. Ian also appeared to respond more favorably at follow-up with the introduction of an iPad as a SGD. Previous studies suggest that larger screen/icon size is often beneficial, which was demonstrated in Ian's case. Hannah, on

the other hand, showed preference for, and greater progress with, the PE system (van der Meer et al., 2013).

### **Impact of AAC on Speech**

While there is no shortage of AAC options available to individuals with ASD, some are still hesitant to use systems and devices due to fear of hindering speech. Research strongly indicates that AAC interventions do not hinder speech production. A small number of individuals may show minimal improvement as a result of AAC intervention, but declines in speech have not been observed. Some level of pre-treatment imitation skills and functional speech are two identified predictors of subsequent speech production. Still, for children who begin with little to no functional speech, small to moderate effects are often observed (Schlosser & Wendt, 2008; Ganz et al., 2014). In short, AAC should not be considered a last resort method, particularly given the likelihood of improved communication skills.

### **Helpful Organizations and Websites**

*American Speech-Language-Hearing Association*

<http://www.asha.org/public/speech/disorders/AAC/>

*AAC Institute*

<http://aacinstitute.org>

*United States Society for Augmentative and Alternative Communication*

<http://www.ussaac.org>

*International Society for Augmentative and Alternative Communication*

<https://www.isaac-online.org/english/home/>

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