AAC Evaluations and New Mobile Technologies: Asking and Answering the Right Questions

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Abstract

The latest mobile technology options have heightened the interest in AAC today. Due to the ease of access and the availability of this technology, there are considerably more device choices available for persons with complex communication needs (CCN). There is an opportunity to build upon the enthusiasm surrounding these new mobile technologies by including all stakeholders in the AAC evaluation process. The clinician needs to ensure the use of sound AAC evaluation principles and procedures and prioritize the individual needs of the communicator. Recommendations about the use of an AAC high-tech device should flow from the evaluation and feature-matching process. The purpose of this paper is to suggest new ways to revisit the basics of a comprehensive AAC evaluation in order to better ensure that individuals who use AAC are being provided with the tools and features they need.

Recently, new mobile technology options have heightened the interest in augmentative and alternative communication (AAC). Due to the ease of access and the availability of these new technologies, such as the iPad from Apple, there are more device choices available for those with a wide range of augmentative communication needs. First and foremost, we need to make sure that sound AAC evaluation principles and procedures are being applied. We need to ensure that recommendations about the use of an AAC high-tech device truly come from the individualized needs of the communicator. The danger is that the appeal of a low cost or easily acquired AAC solution will result in caregivers purchasing a system prematurely before the needs, skills, and abilities of the communicator have been identified.

Key stakeholders, including individuals with CCN, family members, teachers, therapists, and other staff, are now excited about the availability of these popular new options and are no longer intimidated by the idea of an AAC solution. It is an optimum time to capture that enthusiasm by partnering with all stakeholders through a comprehensive evaluation process.

The lack of an AAC evaluation process can have dire consequences for individuals with AAC needs. A survey (Scherz, Dutton, Steiner, & Trost, 2010) was recently sent to members of ASHA Special Interest Group 12 (DAAC) and Quality Indicators in Assistive Technology (QIAT) e-mail lists on the topic of mobile apps. Fifty-five respondents answered questions about a variety of issues. For individuals who already had an iPod/iPad, the survey asked, "Was an evaluation conducted to determine if the iPod/iPad would be the most appropriate communication system?" Of concern, only 54.4% responded "Yes." Schertz and colleagues also found that 68% had acquired their iPod or iPad through parent purchase. These findings, combined with the clinical experiences currently being shared over multiple online communities (e.g., DAAC e-mail list), bring us to some important and troubling questions. Is

9

the AAC evaluation process being widely abandoned? Are we trying to fit an individual with complex communication needs with technology that may be inappropriate or ineffective? Evidence that more individuals with AAC needs are missing out on a comprehensive AAC evaluation process is serious cause for concern.

The survey results could be due to many factors, including the ease and availability of the mobile technology and apps; access to information offered on the Internet that makes researching available tools simpler; use of social networking such as blogs and Twitter. for sharing information; and many other possibilities. Nonetheless, the essential issue remains: Are individuals who need AAC getting the individualized tools and support that they need? If the AAC evaluation process is circumvented, the consequences can be dire, including an inappropriate feature match for the individual, which could lead to abandonment of the device or even AAC altogether.

Principles and Processes of AAC Evaluation

The good news is that the AAC evaluation process is a viable way to ensure that the communicator can be matched with the appropriate AAC tools and strategies to meet their individual needs. Before proceeding to the question framework, we will review the basic principles of AAC evaluations. The principles and processes were well summarized recently at the Eleventh Annual Conference of the ASHA Division on Augmentative and Alternative Communication. In his introduction to the conference, Lyle L. Lloyd (2011) summarized the principles he uses in his basic AAC course as part of the AAC program at Purdue, and Iris Fishman (2011) provided a review of the literature for the important components of an evaluation. Important points from these presentations are described to aid in the review of basic principles and processes of AAC evaluations.

AAC evaluation is based on the premise that everyone can and does communicate (Wasson, Arvidson, & Lloyd, 1997). AAC evaluation services should relate to typical and functional routines in natural settings and environments and should build upon the strengths and abilities of users of AAC, rather than focus on weaknesses and impairments (Lloyd, 2011). An initial goal is to identify the current skill level of the individual as well as his/her participation patterns and communication needs. With that knowledge, the clinician can evaluate the client's potential to use AAC systems and/or devices and identiy appropriate features. The clinician needs to be sensitive to both short- and long-term goals, evaluating the effectiveness through ongoing assessment (Beukelman & Mirenda, 2005).

Lloyd (2011) also reminded us that AAC practice is transdisciplinary. Optimally, it involves the collaboration of a team of individuals who have a shared agenda and common goals. The team must assess for an overall AAC system including an integrated network of symbols, techniques, aids, strategies, and skills (Wasson et al., 1997; Vanderheiden & Yoder, 1986). A wide range of communication needs must be considered including speech, vocalizations, facial expressions, gestures, light tech tools (e.g. alphabet board, communication book), AAC devices, computer access, e-mail, and phone access (Blackstone & Hunt Berg, 2003).

The AAC evaluation must involve feature matching with the individual's needs. The determination of the desired features of the AAC system is based on an accurate evaluation of the individual's skills and abilities and communication needs (Quist & Lloyd, 1997). Data from the AAC evaluation defines the needed features and determines the specific device code. The recommendation of a specific device and accessories must include the rationale for why this device and these accessories will enable the individual to meet his/her communication needs (Beukelman & Mirenda, 2005). Lloyd (2011) pointed out that AAC assessment and intervention should be ongoing and co-occurring, so that they are responsive to changes in the user's abilities and needs, communication partners, and environments.

Questions Framework

Asking and Answering the Right Questions is a framework developed by AAC TechConnect (2011). It has been especially helpful when an AAC device has already been provided or requested by an individual, family, or team.

The framework provides information for the AAC evaluation by identifying and asking key questions that support an evidence-based evaluation process; describing how to find and review available assessment tools and resources; considering the types of AAC devices and their features and benefits; and providing examples of how to use the questions framework in a conversational way with all of the stakeholders in the AAC decision-making process.

There are no standardized tests for evaluating AAC and that can make the process more challenging. There are, though, a variety of tools and resources available that can assist in the evaluation process. To further assist with providing a strong evaluation process and collective collaboration, a website (AAC TechConnect, 2011a) was created as a resource for clinicians to share evaluation forms, tools, and resources they find useful.

Clinicians are encouraged to draw upon the proposed questions in the framework by changing, modifying, and formulating their own questions as needed. Though the questions are numbered, it is not necessarily a linear process.

Here are the questions to consider:

1. What does the communicator (individual with CCN) need, want, or desire to communicate? How is that expressed?

2. In order to further evaluate communication needs, where, when, and with whom will the individual communicate?

3. What are the communicator's current skills and abilities?

4. What is the communicator's language/linguistic ability (e.g., vocabulary, symbols, language representation, organization, etc.)?

5. What are the device functions and features required?

6. How does one make the "best choice for the best voice" (i.e., make appropriate decisions for the optimum communication device)?

7. Finally, if the device has already been provided, is the communicator currently using the AAC device?

The Framework of Questions

What does the communicator need, want, and desire to communicate? How is that expressed?

This question immediately focuses on the communicator as an individual. Information can be gathered in a variety of ways: case histories, direct observations, previously reported information, and other related sources. It is important to note current communication modes (including devices they may already have). One assessment tool, The Communication Matrix, (Rowland, 2005) is designed to pinpoint how an individual is communicating within the framework of communication skills. It is especially helpful for individuals at the earliest stages of communication. The Communication Functions chart (AAC TechConnect, 2001a) also can help clarify the skills and modes of communication the individual is currently able to use. The key issue is that there needs to be a roadmap of where the communicator is in order to set up where she needs to go and how that can be best accomplished.

Where, when, and with whom will the individual communicate?

It is certainly important to take an inventory of the individual's current communication contexts, taking into account her current interest and desire to use communication tools in

everyday routines. The SETT Framework (Zabala, Bowser, & Korsten, 2004) can help individuals with disabilities, family members, and professionals make appropriate assistive technology decisions through focusing on the student and the environment, including communication partners, tasks, and tools. By using the SETT Framework, stakeholders can focus on supporting student participation and achievement. Another helpful source, *Assessing Student's Needs for Assistive Technology* (WATI, 2009), has a chapter entitled "Assistive Technology for Communication" that includes many other relevant evaluation suggestions.

It may be equally important to do an inventory of the communication partners' perceptions of the needs of the communicator, along with their beliefs and attitudes about using communication tools. Communication partners should be involved from the beginning to enhance the implementation and use of an AAC device and/or reveal barriers that undermine the successful use of the device. With regard to devices provided by family members, the clinician should consider family issues that affect technology use and training strategies (Scherer, 1997; Scherer & Zapf, 2008).

The communicator's perceptions and preferences also are critical and need to be carefully identified, so that successful strategies and goals can more easily be implemented. It also may be important to note that a variety of communication tools can be appropriate depending on the situation (e.g., versatility vs. complexity of device). For example, from my own clinical experience, I observed a 12-year-old communicator who prefers verbal speech (though limiting) and had rejected use of her current traditional communication device for a variety of reasons. When she was presented with something that looked like a phone, her enthusiasm clearly increased. The new mobile technology was more socially acceptable, and she demonstrated an eagerness to use it. It showed the importance of considering context and social issues when choosing AAC tools.

What are the communicator's current skills and abilities?

There is no standardized assessment or battery of tests that make up an AAC assessment. Instead, "AAC specialists often use criterion-based assessment to determine whether an individual meets the performance thresholds necessary for successful implementation of specific communication techniques or devices" (Beukelman & Mirenda, 2005, p. 160). They go on to state the importance of assessing specific capabilities, including positioning and seating, motor capabilities for direct selection and/or scanning, cognitive/linguistic capabilities, literacy skills, and sensory/perceptual skills.

One helpful available resource to aid in the evaluation of required skills is the *Medicare Funding of AAC Technology-Assessment/Application Protocol* (AAC-RERC, 2004). This tool can help the clinician outline the information needed for the AAC evaluation process, both for the skills and abilities of the communicator and the AAC device features. In addition, two resource lists help the clinician identify AAC assessment tools and resources: AAC TechConnect (2011a) lists tools and resources that have become available since 2005, and Beukelman and Mirenda (2005) can be referenced for a comprehensive list of AT/AAC assessment tools prior to 2005.

Limited availability of communication tools and equipment can be a barrier and affects the quality of the AAC evaluations. One solution is to have a toolkit consisting of low-cost and commonly found communication tools that can evaluate the simplest to the most complex communication needs. For example, a low-tech solution, such as a laser light on a baseball cap, can be used to evaluate head movement for head pointing access. See AAC TechConnect, 2011a for a list of items for a low-cost toolkit.

Informal observations, such as watching a child playing with his mother's iPod to find music, can provide information about physical and cognitive abilities, navigation skills, and interests. The evaluation team might consider the advantages and disadvantages of using the same device for leisure/educational activities as well as his communication.

At this point, it also is important for the clinician to clearly communicate the skills and abilities of the communicator to all stakeholders, including parents, while minimizing the use of AAC jargon. The evaluation team needs to accurately describe the individual's vision, hearing, and physical abilities as well as access methods to use the considered devices. The clinician can use a diagram entitled "The Person Skills" (AAC TechConnect, 2011a) to simplify this discussion with parents or other stakeholders.

What is the communicator's language/linguistic ability?

A comprehensive AAC evaluation includes a thorough understanding of the individual's language/linguistic abilities. It is important for the clinician to remember that the AAC system comprises a number of linguistic features, including

- Symbolic representations (single-meaning pictures, multi-meaning pictures, words, spelling)

- Amount and type of vocabulary (nouns, verbs, adjective, pronouns, verb tenses)

- System use (number of messages, number of pages, use of message bar)

- Organization of vocabulary (situational, categories, use of core words, phrase-based, visual scenes)

- Message formulation (single-key messages, phrases, semantic compaction, simple sentences, complex sentences, grammatical/morphological use)

- Navigation (ability to remember location of vocabulary, number of pages),

- Access (use of device functions, such as clear, on/off, speak, ability to use programming features)

Once the communicator's language/linguistic abilities have been identified, they can be used to determine the appropriate language and organizational features. Whether the solution is a communication app for mobile technology or communication software developed for a traditional AAC device, the most effective system/systems will depend on meeting the language/linguistic needs of the communicator. It could possibly be both!

What are the device functions and features required?

General features of devices have been clearly defined for many years and include input method (direct contact, eye movement, mouse, keyboard, switch); selection techniques (direct selection, scanning); encoding (vocabulary expansion, rate enhancement); output capabilities (synthesized or digitized speech, visual display, printed); as well as portability, size, weight, transport/mount, case/carrier requirements, battery time required, and preprogrammed vocabulary features (Lloyd, Fuller, & Arvidson, 1997).

At this point, key differences between the types of devices (more traditional devices and mobile technology) need to be considered. The following comments reflect the current status of options at the time of this article. However, changes are occurring so rapidly that specific examples may not be current, even at time of publication. Therefore, the clinician should ask the following questions.

What access options best meet the needs of the communicator? In general, if the communicator needs a variety of access options, the more traditional devices currently include more parameters that can be modified. For example, if using direct selection, additional features like dwell, background color changes, beeps, zoom, and keyguards may be needed to enhance access. In scanning, the communicator may need a wide range of speeds, switch access options, number of switches, and types of scanning (e.g., linear, row/column, column/row, groups). Some features, like the use of head pointing or eye gaze, are available currently only on traditional AAC devices. If there are no challenges or features required for

access, then one of the new mobile systems could be appropriate and will most likely be less expensive.

What do the communication software/apps provide in terms of meeting language/linguistic and functional needs? Does the identified software/app maximize the individual's ability to communicate what he needs in the most efficient and complete way possible, whether the needs are simple or more complex? Is the software age appropriate? How much customizing is required? The evaluation team needs to ensure that all of the language/linguistic components are addressed.

Is the solution long-term or short-term? Long term, an AAC device must have language that can grow with the individual. A more traditional system has representation/organization that stays similar and just adds more vocabulary and language options, making the transition to more complex language easier. Short-term, mobile technology might be provided while the user or family is seeking funding for a more traditional AAC device. Long-term, mobile technology also could be a solution: A simple app may provide an introduction to the use of AAC technology; a linguistically complex app may be customized to meet the needs of the communicator and/or used with a keyboard app to spell out novel messages. Finally, the solution may be situation-specific; for example, mobile technology could be used "on the go" (e.g., playground, hanging out with friends), while a traditional AAC device could be used for situations that require more sophisticated language/linguistic options.

What are the other device features or functions that need to be considered? Optional features include durability, portability, speaker quality, battery time, and communicator accessibility to device functions (e.g., on/off, volume, programming). Additional functions including media/Internet options, educational/leisure uses, and texting, should be discussed, but should not take precedence over the communication needs. See AAC Device Features (AAC TechConnect, 2011a) for a form the clinican can use to discuss features with parents/stakeholders.

How does one make the best choice for the best voice?

Feature matching requires that the evaluator has an understanding of the general features of AAC devices, including knowledge of the most current devices or familiarity with how to find out about the most current technology (Wasson et al., 1997). Now it is time to start looking at options, including the most current apps. The challenge of keeping current is complicated by the variety of communication apps continuously coming on the market.

There are helpful Internet resources that compile lists of apps and/or AAC devices and include pictures, descriptions, and contact information (see AAC TechConnect, 2011a). In addition, Children's Hospital of Boston (2011) has announced that they will post an example of a feature-matching table used to select or rule out apps. Online clinical tools enable the user to search based on feature-matching and provide a side-by-side comparison of AAC devices. A free trial is available for Device Assistant from AAC TechConnect (2011b), a project of AAC-RERC, which includes an "apps assistant."

When choosing between the types of devices, the clinician might also consider as the merits of assembling a software/hardware solution (e.g., iPad plus apps) versus purchasing an "all-inclusive" traditional AAC device. The ATIA-AAC Special Interest Group recently compiled a list of 12 benefits for choosing an "all-inclusive device" (i.e., hardware, software, and supports), such as funding assistance, technical support, training for programming and adapting applications, and hands-on trials of devices. It is important to consider the amount of support available. AAC companies usually provide online training, manuals, trouble-shooting options, and technical support. Mobile technology companies may provide more limited support.

The client should be provided with hands-on opportunities for trials with potential AAC devices so that he/she can experience all hardware and the software features recommended for

optimum communication. This could include new devices not previously trialed, modifications of existing systems, or a combination of both.

Though hands-on trials are appropriate for the actual AAC devices, the technology may not always be readily available during the initial phases of the evaluation. The use of demonstration software provided by some traditional AAC manufacturers or a download of some trial or "lite" (simplified) versions of mobile communication apps will allow the team to see which systems or features are most effective. Though usually limited in terms of time and usability, these trials can provide important information for the evaluation team. It also is important to take advantage of training offered by many traditional AAC companies, either in person, and/or online, to learn more about the language/linguistics options. Several of apps have tutorials or training options online.. It will be important for the team to evaluate the advantages and disadvantages of each of the trials in light of the individual's communication needs.

If the device already has been provided, is the communicator currently using it?

If not, then return to question #1 to troubleshoot what is happening.

Summary

There is an enormous opportunity for clinicians to build upon the enthusiasm surrounding new mobile technologies by asking the right questions of all the stakeholders participating in the AAC evaluation process. I hope that this discussion contributes to new dialogues in a rapidly changing field and that clinicians now have some new and innovative strategies as well as additional tools and resources to provide the most effective solutions. We need to ensure that the AAC evaluation principles and procedures are being applied whenever AAC solutions are being considered. The individual needs of the communicator should guide all recommendations about the use of any AAC high-tech device. We then can see effective communication when the best choice for the best voice is made, both for today's and tomorrow's communication needs.

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