

**An Invitation to Use a Free Online Assessment Tool for
Early Communicators who are Deafblind**

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Children learn to use a variety of pre-speech behaviors to interact with family members and other people before they learn to speak. When it does appear, speech is only the culmination of an evolving communicative competence that begins at (if not before) birth (Bates, Benigni, Camaioni & Volterra, 1979; McCathren, Warren & Yoder, 1996). In other words, speech does not miraculously appear between the ages of 12-24 months; it is the result of an orderly progression from the earliest of parent-infant interactions to the use of formal language systems. This means that if speech does not appear spontaneously, we can look for other means of expression to replace speech or to fill the gap until the child is ready to use speech.

To begin this process, we need to determine which communication mode or system will capitalize on the child's current strengths, providing an immediate means of communication, as well as providing a foundation for future growth. An accurate assessment of a child's communication skills is the cornerstone of educational planning and intervention (Chen, Rowland, Stillman & Mar, in press). A thorough evaluation of the child's current functional means of expression will be far more illuminating than mere knowledge of his or her disabilities, diagnosis or etiology. A good assessment paints a clear picture of what the child can do, not a litany of what he or she can't do. The online Communication Matrix (Rowland, 2009) was developed to make this task easier for parents and professionals. It is widely used in the U.S. to evaluate the expressive communication skills of deafblind children. This article introduces this free assessment service and invites parents and professionals to use it to assess deafblind children and adults and who are operating at the earliest stages of communication.

<Insert Figure 1 about here (deafblind child with teacher)>

Description of the Communication Matrix

The Communication Matrix is designed to pinpoint exactly how someone is communicating, with or without speech, and to provide a framework for determining logical communication goals. The Matrix was first published in 1990 and was revised in 1996 and 2004. The original version (Rowland, 2004a) was designed primarily for speech-language pathologists and educators to document the expressive communication skills of children who have severe or multiple disabilities, including sensory, motor and cognitive impairments. Its format is concise, and it is designed for rapid administration by persons familiar with the instrument. A second version of the Matrix was developed especially for parents in English (Rowland, 2004b) and in Spanish (Rowland, 2006). This version is longer, but more “user friendly.” An online version, based on the parent format, has been developed as a free web-based service and is currently available in English and Spanish (Rowland, 2009). The online version was developed for several reasons: to make the Matrix easier to use; to make it widely and freely available to potential users; to encourage collaboration between professionals and parents; and to create a database of information that would advance scientific knowledge about communication development in specific populations with complex communication needs.

<Insert Figure 2 about here (home page of www.communicationmatrix.org)>

Design of the Communication Matrix

The Matrix is structured around seven levels of communication that occur in the typically developing child between the ages of 0-24 months. The levels range from Pre-Intentional Behavior (the very earliest behavior that is not under the child’s voluntary control) to Language

(combining 2-3 words, or any type of symbol, into phrases). Level V (Concrete Symbols) does not constitute a distinct stage in infants without disabilities, but may be a critical stage for some individuals who are deafblind. In contrast to abstract symbols, such as spoken words or manual signs, concrete symbols physically resemble the referents that they stand for. They look like, feel like, move like, or sound like what they represent. Concrete symbols include pictures, objects (such as a shoelace to represent “shoe”), “iconic” gestures (such as patting a chair to say “sit down”) and certain vocalizations (such as making a buzzing sound to mean “bee”). For some children, concrete symbols may be the only type of symbol that will ever make sense to them. For others, concrete symbols may serve as a bridge to the use of abstract symbols such as spoken words and manual signs.

<Insert Figure 3 about here (communication book with 3-dimensional symbols)>

The Matrix is further organized into four early reasons to communicate: to refuse things that we don't want; to obtain things that we do want; to engage in social interaction, and to provide or seek information. The Matrix is completed by answering questions about the messages expressed at each of the seven levels of communication. As an example, question C3 (Requests Attention) asks, “Does your child intentionally try to attract your attention?” These questions are answered by indicating which (if any) communicative behaviors are used to express each message. Many different behaviors may be used to communicate at any level. In the Matrix, behaviors are classified into nine categories: body movements, early sounds, facial expressions, visual behavior, simple gestures, conventional gestures/vocalizations, concrete symbols, abstract symbols and language. Specific representative behaviors are provided in each category for each of the 24 questions. For instance, under Question C2 (Requests More of an

Action), the body movements category includes these specific behavior options: whole body movements (example: lunge), arm/hand movements (example: bat arms) and leg movements (example: kick). To train users, three demonstration videos that explain how to use the Matrix and how to interpret results are included on the website. A 26-page handbook may be downloaded from the web site at no cost.

<Insert Figures 4 (hand-in-hand signing) and 5 (switch activation by deafblind child) about here>

Results Generated by the Communication Matrix

Once the evaluator has answered the 24 questions by indicating which behaviors the individual uses to express each message, results are generated online. The one-page profile reveals at a glance how the individual is functioning. The cells on the profile represent all possible combinations of messages with the seven levels of communication, are color coded to show skills as mastered, surpassed, emerging or not used. An individual with severe motor constraints, who has very limited means of expression, may have a similar profile to someone with an extensive repertoire of behaviors. Since the emphasis is on the number of messages that are expressed, the profile does not penalize the individual who is unable to produce many behaviors.

<Insert Figure 6 about here (sample Communication Matrix Profile)>

A comprehensive communication skills list is also generated that catalogs each message, the categories of behavior used to communicate each message, the specific behaviors used, as well as the level of mastery. See excerpt below.

<Insert Figure 7 about here (sample Communication Skills List)>

In-depth “mastery” views of each level are available online that quantify the depth of an individual’s behavioral repertoire graphically and quantitatively. The mastery view is useful for reviewing results online with a team. For individuals on whom two or more administrations have been completed, animated views of progress are available. To encourage sharing between professionals and family members, a link of the assessment results may be emailed to others. The research database associated with the assessment service collects all the information entered about an individual’s communication skills and demographics, while strict security measures ensure that the data cannot be linked to users.

<Insert Figure 8 about here (sample Mastery View)>

We have just developed a new customized report capacity to generate detailed individualized reports that include educational goals and suggestions for intervention. Users may specify which components to include in the report and may choose from sample goals and recommendations on the web site or generate their own free-text entries. This feature is in a beta-test mode and is free (although we hope that eventually this capacity may generate funds to support the web site). We are very interested in user’s impressions of this new feature and will incorporate feedback from users into the final version. At this juncture, we do not have support to provide the reports feature in non-English languages. See sample cover page, below.

<Insert Figure 9 about here (cover page, Customized Report)>

Widespread Use by the Deafblind Community

The online Communication Matrix is becoming widely used. At this writing, over 12,500 Matrix profiles have been completed on over 10,000 individuals, many of whom have been assessed multiple times. Currently, almost 300 new sets of data are entered per week.

Demographic information collected through the online version shows that 11% of users are family members, 43% are speech-language pathologists, 41% are teachers, other educators or therapists, and 6% are “other.” The relatively large number of family members using the service suggests that it is encouraging parents to participate in the assessment process, as hoped.

Although people of all ages are represented in the database, most of the individuals assessed are young children, including 32% between the ages of 0 and 5 years, 35% between 6 and 10 years, 17% between 11 and 15 years and the remaining 16% above 15 years of age. Users come from 104 different countries, with 72% of users from the U.S.

One of the hopes in developing the online version was that data could be collected on the communication skills of children with low-incidence disabilities on whom little data can be aggregated in any one geographical location. This expectation is being realized. Individuals assessed using the online Matrix represent many different etiologies, diagnoses and health conditions, but fully 11% have a primary diagnosis of deafblindness. As we know, deafblindness is a label that is associated with many different etiologies. As of this writing, the database includes data on 749 individuals aged 0-21 years with a primary diagnosis of deafblindness associated with 32 specific etiologies. This is approximately 8% of the 9,827 children ages 0-21 identified in the U.S. in the 2008 deafblind child count conducted by the National Consortium on Deafblindness. The information contained in the database will provide new insight into the development of communication skills in individuals who are deafblind. We plan to publish a series of scientific articles based on these data.

The Matrix has been suggested as an appropriate assessment tool for a variety of populations, including children who are deafblind (Holte et al., 2006), young communicators

using “augmentative and alternative” communication systems (Buzolich, 2009), children with severe disabilities or sensory impairments (Proctor & Oswalt, 2008), and users of alternative communication modes (Beukelman & Mirenda, 2005). The appropriateness of the Matrix for assessing deafblind individuals may be attributed to the fact that it accommodates all possible communicative behaviors and that it breaks down communication development into smaller steps than other assessment instruments.

Future Directions

Grants from the U.S. Department of Education have supported sweeping improvements to the online Matrix. The website is now available in English and Spanish and will soon be translated into the following languages: Chinese, Vietnamese, Korean, and Russian. The new language versions will encourage more non-English-speaking parents and professionals to use the service. Users who speak other languages occasionally volunteer to provide translations into additional languages. It is our desire to make new translations available, but this is a complex and expensive process. Individuals and organizations interested in facilitating new translations should contact the author. Although grant funds are temporarily available to support the web site, this funding will draw to an end in about a year. Maintaining and updating the burgeoning web site is not without cost. We are exploring mechanisms to support the service in the future, with the goal of continuing to offer the basic assessment capacity as a free service. Any suggestions in this regard are appreciated. In the meantime, please use the service and feel free to offer your suggestions for improvement. It is only with the input of users that we are able to continue to improve this collaborative web site.

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