



AAC Performance Potential: Perceptions vs. Actual Performance

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Introduction

The life experience of people who rely on AAC (augmentative and alternative communication) is determined by their communication performance. University pre-service education in the field of speech-language pathology (SLP) in the United States and Canada includes focus on imparting to students the knowledge and skills they will need to provide services to this population (ASHA 2004). Today many university programs in communication science and disorders include at least one course on AAC and for many SLP students in the United States and Canada it is a requirement for graduation.

Communication rate is highly valued by people who use AAC and recognized in clinical research as an important summary measure of performance. A significant factor influencing communication performance using an AAC system is the issue of language representation methods (LRMs). Three basic LRMs are used in AAC systems: single meaning pictures, alphabet-based methods, and semantic compaction. Many single meaning picture (SMP) systems are available. With such systems, a different picture represents each word or phrase. The primary alphabet-based method is spelling, but variations include word prediction, letter coding or abbreviations, and orthographic word selection or the use of whole words. Semantic compaction is the use of multi-meaning icons in sequence to generate vocabulary items.

Within the past decade, advances in the area of AAC performance measurement have contributed to the knowledge of LRM use in AAC systems. Using automated language activity monitoring (LAM), language samples are collected from people who use AAC (Hill, 2004). LAM data is then analyzed and the AAC Performance Report offers quantitative summary measures of communication performance that guide clinical decision-making and provide outcomes measurement.

Many people who rely on AAC use a combination of two or three basic LRMs and variations. One or more method(s) may be used for core vocabulary, the relatively small number of words that constitute the vast majority of what is said. Other method(s) may be used for extended vocabulary, the thousands of words that are not used often and are generally associated with a particular activity or topic. The communication rate that can be achieved using one method can be quite different from the rate that can be achieved using a different method. Since communication rate is so critical, it is important to know which method results in the fastest rate and to use that method for the most frequently used words, typically core vocabulary.

Research projects, case studies, and language samples collected in routine clinical practice all contribute to the external evidence needed to support evidence-based practice, the expectation of AAC service providers (ASHA, 2001). This evidence includes information on how the various LRMs compare in communication rate potential. Well over a decade ago, research showed that word prediction was not a rate enhancement strategy, despite saving keystrokes (Koester and Levine, 1994). Similarly, other research reported that semantic compaction could achieve rates faster than spelling (Gardner-Bonneau and Schwartz, 1989). No empirical data on communication rate has been reported for single meaning picture approaches.

Survey and Research

Beginning in 2004, AAC Institute has conducted an annual survey on pre-service AAC course content at the ASHA Convention. The survey includes a question on the perceptions of the potential performance of three specific LRMs. Inclusion criteria required that participants (N = 32 and 41 to date) were practicing SLPs or current students who had completed a university AAC course in the preceding two years. Respondents were from fifteen (15) and sixteen (16) different universities. They were asked to identify, from a list of five methods (single meaning pictures and semantic compaction along with the three alphabet-based methods of spelling, word prediction and orthographic word selection), the one that had the potential for the fastest communication rate. Then the other methods were to be rated on potential for speed in proportion to the fastest method.

Survey question: For a literate child or adult, what is your perception of how the following language representation methods compare in terms of the communication rate that they permit.

Step 1: For the method that you believe to be fastest, enter 100%.

Step 2: For each of the other methods, enter XX%. This number should represent the speed you believe is achievable for the other methods as a percentage of the fastest method.

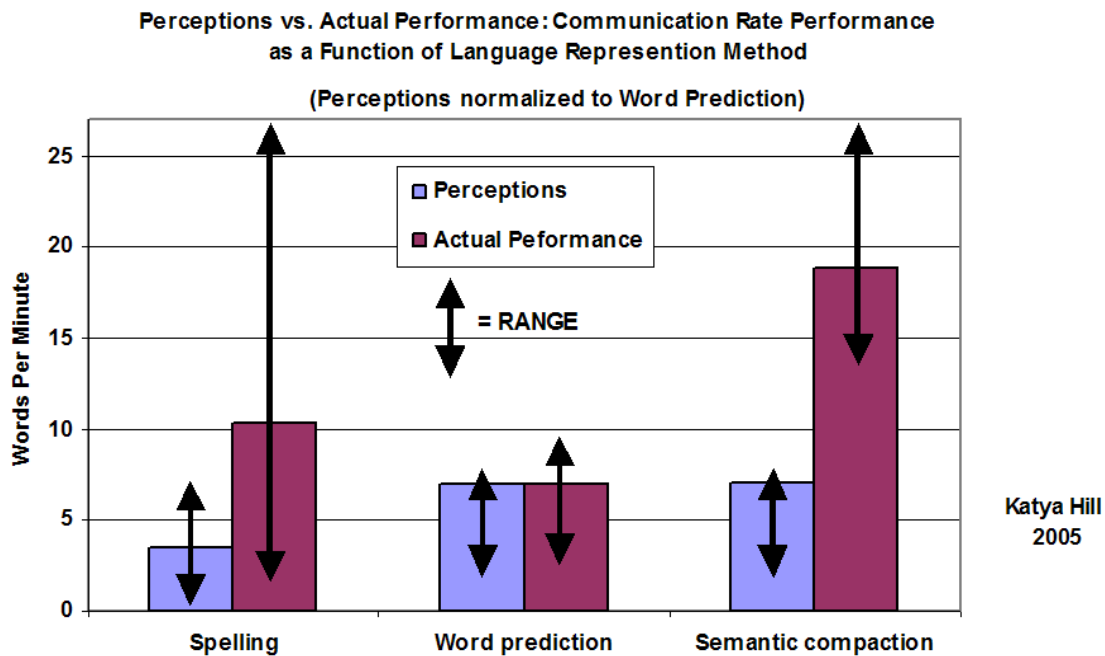
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Spelling	_____
Single meaning pictures	_____
Word prediction	_____
Semantic compaction	_____
Word selection	_____

The above data were analyzed and compared to actual communication rates from a study reported at the ASHA Convention three years before the first survey (Hill, Holko, and Romich, 2001). In this study, language samples from six (6) individuals who use AAC were randomly selected from those subjects in a pool of twenty (20) whose AAC systems supported spelling, word prediction, and semantic compaction. Subjects had self-identified as being good communicators, used direct selection, were adults with cerebral palsy, used AAC systems capable of supporting all three basic LRMs, and had long term experience with their systems. Two language samples from each subject had been collected: one interview and one picture description. Average communication rate as a function of LRM had been analyzed.

Results

The following bar chart shows the comparison of the 2004 perceptions of communication rate performance among the three selected methods (spelling, word prediction, and semantic compaction) and the actual communication rate performance exhibited by the individuals who use AAC. Perceptions were normalized to the word prediction results of the actual performance. Research has shown that word prediction is no faster than spelling, yet the average of the respondent perceptions rated word prediction as nearly twice as fast as spelling. Actual results showed spelling to be about 50% faster than word prediction. The performance of these six subjects who use AAC indicated that semantic compaction was 2.7 times as fast as word prediction, yet the average of the respondent perceptions of communication rate using semantic compaction was of performance only equal to word prediction.



A grade was calculated for each student. The grade was 1 minus the absolute value of the difference between perception and actual performance, weighted by actual performance. Grades were averaged for each year.

Year	2004	2005
Average Grade	77%	69%

Conclusions

Following recent AAC course participation, the average perceptions exhibited by 32 and 41 survey respondents of the relative performance potential of different AAC language representation methods related poorly to

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the actual average communication performance of six subjects who use AAC. AAC professionals who have not had the benefit of a recent AAC course may exhibit different results.

Evidence-based practice requires that practitioners disregard perceptions of effectiveness and use quantitative data to support clinical decisions. Language representation method use is a significant factor in determining overall communication rate using an AAC system. An improved understanding of LRM performance by AAC professionals could result in significantly improved communication performance by the people they serve who use AAC.

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