Spontaneous Communication in an Individual with Autism

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Abstract

Lack of speech is one of the hallmarks of many individuals with autism (Pickets et al., 2009), but even individuals who can speak are often surprisingly unable or unwilling to speak spontaneously. We hypothesized that, in one individual with late-developing speech, sparse spontaneous speech was caused by two major factors – oro-motor expressive difficulties, and his lack of appreciation for the situations in which spontaneous speech would have been useful. To address these two specific areas, we developed a training program that was begun at age 21:3. Over the 11 months of this training program, we succeeded in increasing the frequency of his spontaneous speech from 10 to 339 utterances per month, with evidence of increased intelligibility and increased length of utterance as well.

Introduction

Our subject had developed oral speech late (beginning at age 14). Over the subsequent years, he made considerable progress with oral speech production and auditory comprehension (O’Grady et al., IMFAR 2004, 2005). However, truly spontaneous speech was relatively uncommon even by age 21 and, when it occurred, was largely, if not entirely, self-generated rather than initiated in response to a specific cue. Consequently, any spontaneous speech he produced was often characterized by a lack of compelling communicative intent. We hypothesized that two major factors limited his spontaneous speech: (1) his difficulties with oro-motor expression, which made it difficult for him to express words and phrases that he may have formulated; and (2) that his initial training in speech had necessarily emphasized prompted and imitated responses, which led to a relative lack of exposure to teaching that would have fostered more spontaneous expressions. We sought to remedy both problems through a targeted training program, taking advantage of his full-time, home-schooled environment. Our specific end points were (1) to increase length of utterance, (2) to increase the intelligibility of expressive verbal communication, and (3) to increase the spontaneous use of words and phrases.

Methods

Subject

A.I. (not his real initials) is a regressive-type, low-functioning, and initially non-verbal male individual with autism whose characteristics have been previously described (O’Grady et al., IMFAR 2004, 2005). Although non-verbal for many years, he gradually became verbal starting at age 14 through an extensive training program (O’Grady et al., IMFAR 2004, 2005). He started using individual consonants and vowels, with prompting, for communicative purposes. By age 16, he was using words, and started using utterances that had been prompted. Although his speech capabilities had continued to improve, his intelligibility and initiation of communication continued to be limited. All instructor-observed spontaneous utterances consisted of requests for reinforcing items. The focused efforts to improve A.I.’s spontaneous initiation and fluency with oral speech, described here, began at approximately age 21:3. All elements of the work reported here that were done for research purposes were approved by the Institutional Review Board of The Johns Hopkins Medical Institutions with appropriate consent/assent obtained.

Procedures

In the actual curriculum, processes designed to improve intelligibility and length of utterance were coupled with those designed to enhance spontaneity. For purposes of exposition here, we have attempted to distinguish to some extent between communication goals (Table 1) and actual teaching procedures (Table 2). Target words and phrases were systematically chosen with respect to motor ability, language development, and reinforcing value at each stage of the individual’s development. The step-five teaching procedure included (1) errorless exposure, (2) errorless prompting, (3) expansion of utterance to a two-word phrase, (4) expansion to a three-word phrase, (5) expansion to a four-word phrase, and (6) expansion to an utterance not prompted use in novel context (Table 2). These teaching procedures were guided by the literature on errorless learning, inclusive plan for generalization (Carter & Hotchkis, 2002), feedback (Madsen et al., 2008; Hula et al., 2008), and effects of over-learning (Rohrer & Taylor, 2005). Intelligibility was addressed via the PROMPT method (Chumpney & Hayden, 1984; Hayden, 2006) and the addition of manual signs.

To maximize spontaneous use, all targets chosen were those deemed relevant to A.I., his communication ability, and communication needs. Targets were embedded into direct instruction, leisure activities, and communicative interactions with all staff (Table 2). Training was done for five days a week, except for one period of 2 weeks corresponding to a vacation time that occurred at age 21:11 (see Figure 1, age 21:11).

All sessions were audio- and video-recorded. In addition, instructors kept contemporaneous notebooks, including notes of times during outings when, for example, audio- and/or video-recording were not available. In addition, family reports were elicited for times when the student was not in the presence of instructors. The bulk of the data reported here came from audio- and video-recordings, supplemented by other sources of information.

For the purposes reported here, an utterance is defined as an intelligible word or phrase that seemed to represent a unit of communication for the subject. An utterance was considered spontaneous only if no external cues were evident, or, if there were a possible external cue, this was a negative object (in which case, this always proved to be an object with reinforcing value). In addition to [1] the frequency of spontaneous utterances, data was also collected on [2] the intelligibility of A.I.’s utterances (as determined by ratings given by the instructors with whom he interacted, but also checked on an approximately bimonthly basis of direct observations by an SLP not directly associated with the training program, E.P.), and [3] the length and apparent flexibility of A.I.’s utterances.

The collection of data on A.I.’s speech had been an ongoing part of his education program, preceding the specific efforts reported here. However, by age 21:7, it became evident that both the training methods and reporting methods had to be adjusted to accommodate the student’s varied utterances and his varied circumstances. After 2 months of refinement, the following system was implemented – beginning at age 21:9, instructors were observed for a 20-minute period interacting with A.I. during his lunchtime routine. The SLP (E.L.) recorded the types of communication used by the instructor, the number of spontaneous utterances by the student, prompting methods, and strategies for eliciting speech from A.I. The spontaneity continuum (Carter, 2002) was used to inform instructors of levels of spontaneity. Instructed strategies for utilising communication strategies that may elicit speech with less prompting. Observations and feedback meetings were conducted monthly, and instructors were encouraged to use the least-intrusive antecedent to elicit student speech.

Table 1: Communication Goals

<table>
<thead>
<tr>
<th>Language Goal</th>
<th>Articulation Goal</th>
<th>Targets</th>
<th>Rationale</th>
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<tbody>
<tr>
<td>Increase vocabulary</td>
<td>Use consistent-sounding increase phonological awareness</td>
<td>e.g., /k/, /g/, /t/, /d/</td>
<td>Improving articulation, increasing items Articulation: PROMPT Stage 1</td>
</tr>
<tr>
<td>Increase length of utterance</td>
<td>Increase verbal fluency, increase phonological awareness</td>
<td>e.g., /k/, /g/, /t/, /d/</td>
<td>Improving articulation, increasing items Articulation: PROMPT Stage 1</td>
</tr>
<tr>
<td>Social communication</td>
<td>Increase vocal volume, increase verbal fluency</td>
<td>e.g., /k/, /g/, /t/, /d/</td>
<td>Improving articulation, increasing items Articulation: PROMPT Stage 1</td>
</tr>
<tr>
<td>Primary goal: For A.I., use words with consistent emphasis to convey his wishes, needs, and preferences and to request information.</td>
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</table>

Discussion and Conclusions

There are many possible reasons why individuals with autism may have little or no spontaneous speech (e.g., Carter, 2002). Our observations of one individual led us to hypothesize that two issues were crucial in his particular case – difficulties with articulation, and a relative lack of specific training in spontaneous communication (the latter due to the focus that had been required to teach speech production initially). We, therefore, created a training program targeting these two factors simultaneously. In this program, the same words and/or phrases were targeted concurrently for intelligibility, functional communication, and receptive language. Target words/phrases were taught in their naturally occurring environment, and their spontaneous use resulted in contextual reinforcement. We hypothesized that it was the ever-evolving coordination, at each stage of the training effort, between [a] the choice of relevant and reinforcing communication targets and [b] considerations as to which targets could potentially be achieved, given his omotor-capabilities, that helped his spontaneous speech improve at the rate and degree that it did. Although a single-case study such as this one cannot, of course, prove either the underlying hypotheses, nor the utility of the training program, these improvements do provide some support for both.

Regardless of the specific basis or bases for these results, they do suggest that it is possible to improve spontaneity of speech even in a case that would have been expected to pose the greatest challenge for demonstrating spontaneity. Therefore, these results suggest that such improvements may be possible in other individuals with autism who have limited or no spontaneous speech at baseline.

References


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