Methodological questions in studying phonological acquisition

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Children learn to talk in an extraordinarily short period of time. They quickly progress from practicing the simple coos, squeals, and rudimentary syllables of early vocal play to saying words and longer utterances that contain recognizable forms of most of the sounds in their native language. Researchers have been investigating this developmental progression for nearly a century, beginning with the early 20th century diary studies that inspired Jakobson (1941). However, there is still much that we do not know even about how to study it. The development of cheap portable technology for making permanent audio recordings in the middle of the 1960s and 1970s and of inexpensive digital technology in the 1990s revolutionized our methods for analyzing children's productions of target forms. However, these technological advances did not resolve two fundamental methodological questions: how to elicit a representative sample of productions and how to analyze this sample once it has been collected.

This talk will use a cross-linguistic data base to address both questions. This data base is comprised of single word repetitions produced by children from two through five years of age and adults in six languages – American English, Greek, Cantonese, Japanese, Mandarin, and Korean. The repetitions are of familiar real words and novel words which contain most of the lingual obstruents in these languages in word-initial position followed by the five cardinal vowels /a, e, i, o, u/.

The first issue has to do with data collection. For our purposes, we chose to elicit single words rather than spontaneous speech, so that we knew what the target was and to ensure that all target consonants were elicited. We used a word repetition task so that we could elicit both real words and nonwords and to make sure that the response conditions were the same for all participants. Even within this straightforward paradigm, we found that there were a number of factors that influenced production accuracy. These included word familiarity, frequency of the consonant-vowel sequence, prosodic structure, and word length. Figure 1 shows the effect of word length on word-initial consonant accuracy for four languages, for example. The effects of all of these variables on consonant accuracy across languages will be presented and the clinical implications of these results will be discussed.

The second issue focuses on the role of transcription, a familiar tool to both researchers and clinicians. In clinical settings and in most research studies, we rely on transcription by a phonetically-trained native speaker to determine whether a production is correct or incorrect. Native-speaker transcription is an ecologically valid method of analyzing the young child's productions in the sense that ultimately a child must produce sound patterns that are reliably interpreted in terms of the phoneme categories of the speech community in order to be intelligible to people outside the immediate family circle. However, there are a number of phenomena that suggest that we need to rethink the status of transcription as an analytical tool. These include the documentation of "covert contrast" and the increasing evidence of systematic differences across transcribers, especially if they are first-language speakers of different language varieties.

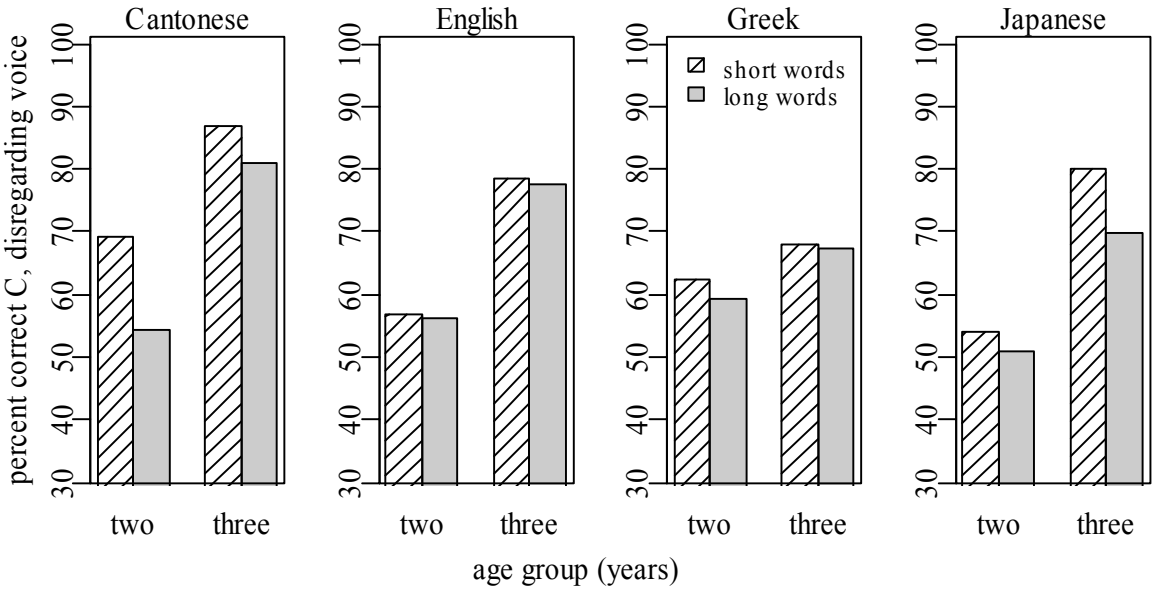

Figure 1. Mean percent correct for word-initial consonants in monosyllabic words versus polysyllabic words (in Cantonese and English) and in disyllabic and monosyllable words versus trisyllabic and longer words (in Greek and Japanese) for 2- and 3-year-old native speakers. The effect of word length on consonant accuracy was significant in Cantonese (mean difference=9.9%, $t(21)=3.8$, $p<0.001$) and Japanese (mean difference=5.9%, $t(19)=2.7$, $p<0.01$).