

Does child-directed speech really facilitate the emergence of phonological structure? The case of gemination in Arabic CDS

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Résumé:

Cette étude présente une description de l'acquisition des consonnes longues par des enfants en bas âge libanais, exposés depuis la naissance à l'arabe, au français et/ou à l'anglais. Des recherches sur l'impact du discours adressé à l'enfant suggèrent que les gardiens produisent des formes qui maximisent les oppositions phonologiques chez l'enfant afin d'améliorer l'apprentissage de la langue maternelle. Les résultats de cette étude à propos de la durée des consonnes longues suggèrent autrement.

1. Introduction

Studies of child-directed speech (CDS) suggest that input to children is often simplified in terms of several aspects of the grammar, e.g. syntax, vocabulary, and phonetic/ phonological structure (Gallaway & Richards, 1994; Garnica, 1977; Snow, 1995). The simplified input is thought to facilitate learning and to help children make progress in their acquisition by maintaining their attention and engaging them in meaningful communication. CDS is also thought to vary depending on the age of the child, gradually giving way to more mature speech styles over time (Bellinger, 1980; Garnica, 1977). In terms of temporal aspects of CDS, research suggests that speech to children is often slower in rate, contains shorter utterances and repetitions, uses a wide pitch range, and maximises phonological distinctions. The latter can be achieved by maximising the acoustic vowel space and producing peripheral/canonical vowels (e.g. Kuhl, 1994; 1997; Bernstein Ratner, 1984), or exaggerating phonological differences like voicing distinctions (Malsheen 1980). Despite those last two examples, however, relatively little attention has been paid to the segmental phonological and phonetic properties of CDS.

2. Current study

If care-givers really maximise phonological distinctions in order to emphasise the relevant phonological features that are considered important for the child's phonological acquisition, then contrasts that rely on durational differences are expected to be maximised. Gemination is one such phonological feature that plays an important role in Lebanese Arabic, with all 24 consonants having a singleton and a geminate form. The present study reports on early signs of acquisition of geminate consonants by Arabic children who are also exposed to French or English. Studies of children exposed to languages that make a quantitative length contrast in medial consonants have found a correlation between the input that the children receive and the rate at which they acquire their production (Kunnari, Nakai, & Vihman, 2001; Vihman & Velleman, 2000). Little is known, however, about the acquisition of gemination when it is a feature of only one of the languages being acquired. The purpose of the study was to:

- a) examine when Arabic children begin to distinguish quantitative contrasts in medial consonants
- b) compare the ratio of singleton and geminate consonants in CDS with that found in adult productions of the same consonants
- c) investigate whether phonological features in CDS display phonetic consistency in order to aid acquisition

Five Lebanese children aged 13 to 18 months were recorded in unstructured play sessions with their mothers at the beginning and end of the one-word period. Target singleton and geminate consonants as produced by mothers and children in disyllables were extracted and acoustically analysed. The same target words were then extracted from the mothers using picture descriptions tasks and question and answer sessions. The procedures for analysis included the following:

- (i) The productions of target words by both children and adults were acoustically analysed. Measurements were made of the duration of the first vowel, medial consonant, and final vowel of the disyllables.
- (ii) The children's productions of geminates were compared in relation to those two developmental points.
- (iii) The difference in the relative duration between singleton and geminate consonants, along with the relationship between consonant and vowel duration, were monitored and compared across age and between CDS and adult-directed speech.

3. Results

Results suggest that adult input is extremely variable across- and within-subjects with respect to durational differences between singleton and geminate consonants. More importantly, there was no significant difference between the ratio of singleton to geminate consonants in CDS and that found in adult-to-adult speech. These results question the simplified nature of CDS both in terms of consistency and the provision of maximal contrast, and add to the rising number of studies arguing that input structures may sometimes be similar to (e.g. Bard and Anderson, 1994; Baran, Laufer, and Daniloff, 1977; Davis and Lindblom, 2001; Shockey and Bond, 1980) or even more complex than adult-to-adult input (e.g. Foulkes, Docherty, & Watt, 2005; Gleitman, 1977). A discussion based on culture-specific CDS, the other functions of CDS, and the notion of simplified input in terms of phonological structure as opposed to the other aspects of the grammar is used to explain the results.

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