

# Constraints on prosodic word development in typically developing children and in early cochlear implant users

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Early phonological development is the result of a series of conflicting constraints (Thelen, 1991, Vihman, 1996). This study will explore two of them: language specific prosodic constraints (Lleó & Demuth, 1999) and presumably universal phonetic constraints (Prince & Smolensky, 2004). While earlier studies have obtained data mostly from spontaneous speech samples, this study will explore phonology with a non-word repetition task, which will make it possible to control different variables. Two populations will be studied: typically developing children and children born deaf and implanted with a cochlear implant before 24 months of age. The second group of children is an interesting population for the study of phonological development in that, at least for some of them (Edwards, 2007), their only limitation is auditory perception (i.e. no associated impairments). For that reason, it should be easier to explore phonological development.

**Method.** Subjects were 4 CI users (CI experience range: 18-27 months), and 24 months old TD children. Non-word repetition task (34 items): The items include only the most basic syllable types in Spanish language: CVV (consonant-vowel-vowel; with the vowels forming different syllables) (5 items), VCV (5), CVCV (12), and laCVCV (12). The tri-syllabic items (laCVCV) are identical to the CVCV forms except for the addition of the unstressed syllable "la" (i.e. identical to Spanish feminine form of the determinate article). Items are balanced for prosodic structure (trochaic-iambic); with a small set of occlusive and fricative consonants being used in all position (k/t/g/d/s/j). Items were analyzed prosodically and phonologically. Prosodically, an item is wrong if the accent is misplaced. Phonologically, errors were classified either as fortition (insertion, devoicing, occlusivization, etc.) or lenition (omission, voicing, fricativization, etc.) or other (changes in place of articulation).

**Initial results** (for 4 TD children and 4 CI users). There was a considerable variety (total number of correct words) both in TD and in CI users, though general results were clearly better for TD group. Results were similar to those obtained in a control elicitation tasks. TD made few or no prosodic errors (1/34, 2/34, 0/34 and 0/34). Three of the CI users made a relatively important number of prosodic errors (7/34, 7/34 and 8/34), while the third child made no errors. Syllable omission was mostly guided by position in prosodic structure in both groups. As for segmental errors, TD children did not show a marked tendency either to lenition or to fortition. On the contrary, in CI users there was a clear preference for fortition.

**Discussion.** Results confirm that the two constraints explored in this study are relevant for the study of phonological development. The fact that fortition was not relevant in TD children suggests that it might be relevant only in an earlier period. The fact that no interaction between these constraints was observed (i.e. phonetic errors were independent of prosodic position) shows that they are independent skills. The differential importance

of these constraints in both groups will be discussed in terms of the motivations for each of constraints.

### **References**

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