

A Multidimensional Investigation of the Acquisition of sC Onset Clusters in Second Language Phonology: A Variationist Approach

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This study provides a multidimensional analysis for the acquisition of /s/ + consonant onset clusters (sC henceforth) in second language (L2) phonology, adopting a variationist approach for data collection and analysis that includes insights from a variety of linguistic disciplines (e.g. theoretical phonology, psycholinguistics, L2 acquisition, sociolinguistics). More specifically, the study extends a previous investigation that examined the effects of markedness and input frequency in the development of English homorganic /sl/, /sn/ and /st/ among Brazilian Portuguese (BP) native speakers learning English in a classroom environment (Cardoso 2006). These clusters, which do not exist in BP, are of particular relevance to test the effects of markedness and input frequency because they make opposite predictions regarding their order of acquisition: While markedness (based on Clements' 1990 Sonority Cycle) predicts that the least marked /sl/ and /sn/ should be acquired before the most marked /st/, input frequency predicts the exact opposite, i.e. that the highly frequent /st/ (89% in student-directed teacher talk) should be acquired before all other (less frequent) clusters (e.g. Bybee 2001). These predictions were compared with the results obtained in a production study that consisted of sociolinguistically-based interviews with English learners. The Goldvarb results of this study showed that learners acquire /sl/ and /sn/ clusters earlier than the most marked /st/, corroborating the hypothesis that markedness on sonority sequencing, and not input frequency, determines the order of acquisition of sC clusters in L2 development.

In this study, we examine how perception (defined as the participants' ability to discriminate sound sequences) may affect the acquisition of sC clusters. The hypothesis is based on the assumption that forms that are harder to perceive or less salient in the input will be more difficult to acquire (e.g. Goldschneider and DeKeyser 2001). To explore this hypothesis, a *phone discrimination task* was designed using Smith's (1997) Windows Stimulus Presentation and Response Collection System. In the experiment, participants (distributed into three levels of proficiency: No English, Beginners, Intermediate) listened to a set of audio stimuli containing English-like sC-initial pseudowords (e.g. [stowp], [slub]). To obscure the audibility of the clusters, the sC sequences in each word were manipulated to include a constant amount of noise. After hearing each word, participants decided on whether the word initiated with /st/, /sn/ or /sl/. The results of the Goldvarb X (Sankoff et al. 2005) statistical analysis show that, as expected, sC perception increases as a function of increased proficiency; surprisingly, the results also indicate that learners are more likely to perceive the most marked (and highly frequent) /st/ and the least marked (and considerably less frequent) /sl/ sequences. Comparing these results with the order in which they were acquired in the production study discussed above (/sl/, /sn/ >> /st/ – see (1) and (2) on the next page for a synopsis of the predictions and the results of the production study; see also Carlisle 1991, 2006, Escartin 2005 for similar outcomes), we conclude that the ability of participants to discriminate between the three clusters has no influence (at least in the context of /st/) in the production of sC sequences.

References

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(1) Developmental order of sC onset clusters: Three learning paths

Hypothetical developmental sequences:

Predictions – Rationale:

- a. Markedness effect: sl => sn => **st** (- marked = acquired first)
- b. Frequency effect: **st** => sl => sn (+ frequent = acquired first)
- c. Perception effect: **st** / sl => sn (+ perceived = acquired first)

(2) Results of the production study (reported in Cardoso 2006):

Acquisition order: sl, sn >> st (similar to (1a) above)