Saudi Arabic Coda Cluster Modification and Sonority Distance

Much work has been done on the syllable structure of Modern Standard Arabic (MSA) (Al Tamimi & Al Shboul, 2013), but there is a relative paucity of research done on similar structures in native language varieties of Arabic. This study looks at the nature of final coda clusters in Saudi Arabic. According to Al Tamimi & Al Shboul (2013), MSA allows super heavy syllables in the form of CVCC, and they can be categorized in terms of the Sonority Sequencing Principle (SSP) (Clements, 1992). There are sonority conforming coda clusters such as [fɑrm] 'cutting', sonority plateaus such as [wɑqt] 'time', and sonority reversals such as [tˤɪfl] **'**child'. Al Tamimi & Al Shboul, (2013) believe that for MSA, these three categories can be collapsed into two categories: *insurgent* clusters (plateaus and reversals) and conforming clusters because they each exhibit different frequencies in the lexicon.

But how exactly do native speakers treat these different categories of coda clusters? Are they modified by vowel epenthesis or consonant deletion? Are *insurgent* clusters treated differently than conforming clusters? Or do speakers represent the full set of three categories of clusters (conforming, plateaus, reversals)? We will be invoking a sonority distance analysis (Hooper, 1976; Gouskova, 2004), where the sonority value of C_1 minus the sonority value of C_2 = sonority distance (sd). If sd is a positive integer, the cluster is considered to be conforming. If the sd = 0 the cluster is considered to be a plateau. And if the sd is a negative integer, the cluster is a reversal.

Saudi Arabic is similar to MSA with respect to the underlying types of coda clusters it allows, and this paper examines real native speaker behavior when producing these codas. We address two issues: 1) Do native speakers represent the categories of clusters categorically or in a scalar fashion, and 2) What method do these speaker use to indicate these distinctions.

Twenty Saudi speakers of Arabic participated in producing 75 lexical items from the three coda types. A range of sd values was included in each category. These lexical items were all tautomorphemic deverbal or underived nouns which do not have underlying vowels in their canonical coda structure (Kenstowicz, 1986). Productions were recorded and phonetically transcribed.

Results indicate that when these speakers modified coda clusters, they employed vowel epenthesis almost exclusively. To test the effects of coda type and sd on coda cluster modification, a mixed-effects logistic regression model was performed, with coda type and sd as fixed effects, and word and participant as random effects with maximal random effect structure. Comparisons of models fit indicate that the interaction between sonority distance and the coda type contribute significantly to model fit, ($\chi2 = 14.564$, $p < 0.001$). For reversal codas, a larger negative sd resulted in more coda cluster modifications ($\beta = 1.10$, SE = .33, $p < .001$).

This study shows that Saudi speakers produce the three categories of coda clusters differently. This is not the suggested result if we assume Al Tamimi & Al Shboul's MSA analysis. Saudi speakers tend to modify the coda clusters in the reversal category significantly more often than the plateau types, and plateau types were treated differently than conforming types. The findings of this study show that sonority distance (sd) is a crucial factor in the representation of coda clusters in Saudi Arabic.

[Field: phonology]

References

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