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Sonority, frequency and markedness in errors of aphasic patients

Romani C.[a,*], Galluzzi C.[b], Goslin J.[c], Bureca I.[b], Olson A.[d]

[a] *Aston University*
[b] *Fondazione Santa Lucia*
[c] *University of Plymouth*
[d] *University of Birmingham*

Introduction

Sonority is a characteristic of speech sounds which, acoustically, refers to their loudness or saliency and, articulatorily, to the openness of the vocal tract. Sounds which are *low in sonority* are best at the margin of the syllable since they provide the largest contrast with the syllable peak. Instead, sounds *high in sonority* should be best in coda to provide maximum contrast with the following syllable (e.g., Clements, 1990). There is evidence that aphasic patient simplify the syllable sonority contour (Beland et al., 1990; Den Ouden & Bastiaanse, 1998; Romani & Calabrese, 1998; Romani et al., 2011). However, phoneme sonority, frequency and markedness are largely overlapping variables, so that it unclear which one is really responsible for the error patters. We considered the relative contribution of these variables in two groups of Italian aphasic labeled as '*apraxic'* (N=11) and '*phonological'* on the basis of rates of phoneme errors (e.g., Romani et al., 2011).

Results

The apraxic group showed strong effects sonority, frequency and markedness, while the phonological group showed no significant effects. When sonority was pinned against frequency, it was sonority to show the strongest effect in the apraxic group. There are many more errors which bettered sonority although decreased frequency than errors with opposite characteristics. Other characteristics of performance, however, did not support a sonority account. Substitution errors did not show an asymmetry between onsets and codas. In complex onsets, deletions systematically targeted the most sonorous consonant as predicted by the sonority dispersion principle. However, when we ordered complex onsets according to how good was their sonority profile, we did not found any increase of errors with worse profiles. Finally, when looked at in more detail the direction of the errors did not support a sonority account. Table 1 shows two main effects:

1. Featural similary. Many substitutions occur within category --Affricatives are substituted with other affricates, fricatives with other fricatives and so on—or between similar categories -- fricatives and affricatives are substituted with one another and so are liquids and nasals.
2. Tendency to simplify. Many substitutions produce a stop (easier) consonant.

Beyond these two dimensions, there was little evidence that sonority had any additional effect. Affricates are lower in sonority than fricatives, but they were not used in error more often. Similarly nasals are less sonorous than liquids, but again they were not used in error more often.

* Corresponding author.
E-mail address: c.romani@aston.ac.uk .

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Conclusion

Our results suggest that constraints in terms of sonority contour rank lower than constraints which operate on individual segments or on the overall template of the syllable. For this reason, sonority constraints may restrict the output of some patients, but not of others.

References

Beland, R et al. (1990). *Journal of Neurolinguistics* , 5, 125-164.

Clements, G.N. (1990). *Papers in laboratory phonology I. Between the grammar and the physics of speech* (pp. 238-333). Cambridge: CUP.

Den Ouden, D-B, & Bastiaanse, R. (1998). *Brain & Language*, 65, 222-4.

Romani, C. & Calabrese, A. (1998). *Brain and Language*, 64, 83-121.

Romani, C., et al.(2011). *Cognitive Psychology*, 62, 151-192.