Aspects of vowel-consonant coordination in Italian

Mario Vayra*, Cinzia Avesani **and Carol Fowler***

Università di Siena*, Istituto di Scienze e Tecnologie della Cognizione-CNR**, University of Connecticut-Yale University-Haskins Laboratories***

vayra@unisi.it*

This study reports the findings of a research aimed to explore the processes governing the serial ordering of consonants and vowels in Italian, ostensibly a syllable-timed language.

As a source of information about the opening-closing gestures involved in V-C coordination, the experiment compares durations and F1 trajectories of the low vowel /a/ in the following experimental conditions: i) presence/absence of stress; ii) syllable-level "compensatory shortening"; iii) word/foot-level "compensatory shortening". Of particular interest here are: i) anticipatory shortening effects induced on a vowel by the following consonantal context, within a syllable domain (so called "Closed Syllable Vowel Shortening" [5]; and ii) anticipatory shortening effects induced on stressed vowels by the following unstressed syllables, within a word/foot domain [4, 2].

As for stress effects on the vowel, the results replicate evidence from our and other's previous work [8, 9], with references) showing that in Italian as well as in English, a (low) unstressed vowel is highly significantly shorter compared to its stressed counterpart, and exhibits reduction in the height (F1) dimension, involving the global opening gesture for the vowel (see [1] for articulatory evidences). Unstressed vowels reduction - a feature often attributed to stressed- as opposed to syllable-timed languages - therefore plays a role in the phonetics of Italian stress, according to a general tendency across the world's languages to reduce in unstressed position [3].

As for the effects of syllable type (open vs. closed) on the vowel's temporal and spacial characteristics, we find that vowel durational shortening is statistically very reliable, for all the subjects. Comparing F1 trajectories of stressed /a/ in pairs of open vs closed syllables, we observe no evidence of articulatory shortening of the vowel opening gesture when a consonant is added to the syllable in coda position. Unlike unstressed vowel shortening, syllable-level shortening seems to be localized in anticipation of the closing gesture for the following coda consonant. Thus, our acoustic results are perfectly compatible with articulatory findings on jaw kinematics obtained for English by [6]. On the whole these studies suggest that Closed Syllable Vowel Shortening is the acoustic byproduct of coarticulatory sliding of the coda on the preceding vowel [7].

As for word structure effects on vowel duration, our experiment confirms previous evidences of weak but significant word-level shortening of stressed vowels by following unstressed syllables within a word or foot. In this shortening context, some inter- and intra-speakers variability seems to emerge in the behavior of the three subjects. For two subjects word-level compensatory shortening seems to have an articulatory origin similar to that of syllable-level shortening. However, data for the
third subject - which at the present time are still under scrutiny - seem to suggest that both overlapping of the opening and closing gestures, and reduction of the global vowel gesture are strategies related to the shortening of the vowel. Compatibly with the equivocal scenario of Italian timing typology [9] variability in the articulatory strategies underlying word/foot level compensatory shortening might indicate that, at least in the Florentine variety of Standard Italian examined here, articulatory constraints on C-V sequencing above the syllable level, if present, are not stable.

References


