

The aim of this contribution is to investigate the conditions under which laterals change into rhotics, and rhotics change into laterals.

Both liquid categories – laterals and rhotics – consist of sounds of different perceptual-acoustic qualities and underlying different articulatory mechanisms. Among the laterals the main parameter of difference is the darkness-clearness continuum created by different positions of the tongue body. In rhotics, on the other hand, differences arise mainly in the strength of interruption of the vocalic carrier as an effect of tongue tip movement. This continuum is perceptual-acoustic rather than articulatory, since trills, taps, and approximant rhotics each require distinct articulatory strategies.

Given this variability in liquids, it may be asked whether some laterals and some rhotics along their respective continuum resist confusion with the other liquid category better than others. And if some laterals and some rhotics do get mistaken for the other category, to which lateral or rhotic variant would they be assimilated?

The perception experiment presented here examines the role of lateral and rhotic variants picked from their respective continua, of the syllable position in which they occurred in a word, as well as hearer’s goodness ratings as members of their categories on their propensity to be mistakenly identified as members of the other category. Modern Greek was used to investigate the issue at hand. This language has one phonemic lateral and one phonemic rhotic. The lateral can be along a continuum from clear to dark according to regional accent, while the rhotic is canonically a tap, in casual speech very often an approximant, and under prosodic emphasis a trill.

*Stimuli.* Hearers were presented with disyllabic nonsense words (see templates in table 1). Stress was on the first syllable, except for the word-final condition. This was judged not to affect the stimuli’s quality since in previous studies, stress placement had not been found to have a significant influence on rhoticisation and lambdacisation processes (Müller 2010, 2012). The stop and the vowel in the stimuli were also kept constant.<sup>1</sup>

The stimuli were read by two speakers of Modern Greek in a sound-isolated booth and recorded with a high quality microphone. They were free to use their usual lateral and rhotic variants. One of several repetitions for each stimulus and each speaker was selected for further manipulation. From each stimulus containing a lateral, a five-point-continuum from very dark to very clear laterals was created by manipulating the first and second formants (values in Bark). Values for the dark and clear laterals, points 2 and 4 on the continuum, were taken from the averaged values for dark and clear laterals in the sound sequence /ala/ from 23 languages in Recasens 2012. All steps in the continuum are equally distanced from each other. For the stimuli containing rhotics, three types were selected: trills produced by speaker 1, taps produced by speaker 2, and approximants synthesised from the taps of speaker 2. The rationale for this choice were different production strategies displayed by the two speakers (none produced true approximants in the laboratory setting). All stimuli were manipulated so that they had equal duration; all laterals were also manipulated to have two different durations each: 60 ms, which is about average duration of laterals in spontaneous speech, and 30 ms, which is a more tap-like duration (see Müller 2011).

*Hearers.* All hearers are native speakers of Modern Greek and are paid for their partici-

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<sup>1</sup>With the exception of /kataL/ where /t/ was used to prevent undue association with the word /kaka/ “poo”.

| onset cluster | coda cluster | intervocalic | word-initial | word-final |
|---------------|--------------|--------------|--------------|------------|
| /pLaka/       | /kaLpa/      |              |              |            |
|               | /kaLta/      | /kaLa/       | /Laka/       | /kataL/    |
| /kLaka/       | /kaLka/      |              |              |            |

Table 1: Templates for stimuli creation. L = liquid (lateral or rhotic).

pation. Their regional background (from a dark-lateral or a clear-lateral dialectal area) is a variable in the statistical analysis. Data collection is currently in progress. A minimum of twenty hearers will be analysed.

*Presentation method.* Two repetitions of each stimulus are presented to listeners over headphones. They are asked to make a forced choice as to whether they heard a word containing a lateral or a rhotic by clicking on one of two buttons labelled with the nonsense word presented, e.g. “άρα” and “άλα”. As soon as they make their choice, a five-point-rating scale appears where they rate the goodness of the presented sound, in order to assess which liquid variants are poor versus good members of the categories listeners ascribed them to. After the task, a short questionnaire is presented to elicit sociophonetic aspects of different liquid variants in Greek that might have influenced the goodness ratings.

*Analysis.* The statistical method used for carrying out the analysis of the data collected from participants is Binary Logistic Regression, and Scalar Logistic Regression for the goodness ratings. In particular, independent variables are: correct identification of stimuli (yes, no), lateral resp. rhotic variant (very dark to very clear for laterals, trill, tap, or approximant for rhotics), lateral duration (60 ms, 30 ms), syllable structure (onset cluster (with /p/ or /k/), coda cluster (with /p/, /t/, or /k/), intervocalic, word-initial, or word-final position), speaker identity (speaker 1 or 2), hearer dialectal background (dark or clear lateral).

*Expectations.* Based on an empirical analysis of the literature on rhoticisation and lambdacisation of liquids (Müller 2011), it is expected that laterals in the middle of the five-point-continuum are most prone to rhoticisation, that short duration enhances the tendency to rhoticisation for all laterals, that approximant rhotics undergo lambdacisation more easily than taps, that trills are almost never mistaken for laterals, that liquid variants judged as bad members of their categories are more readily misidentified, and that overall, laterals rhoticise more than rhotics lambdacise.

References:

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