ON PHONETIC FACTORS IN LAMBDACISATION AND RHOTICISATION. EVIDENCE FROM GREEK

Daniela Müller
Universitat de Tolosa 2 – Lo Miralh
daniela.muller@univ-tlse2.fr

Definitions

Liquids: Sounds that have both vocalic and consonantal components. There are two main types of liquid: laterals and rhotics.

Rhoticisation: /l/ →/ɾ/
Lambdacisation: /ɾ/ → /l/
These kinds of sound changes are observed all around the world.

What is the perceptual mistake involved in these sound changes? Listeners identify the sound in question as a liquid, but not as the correct liquid-type.

Duration as a factor in these sound changes:

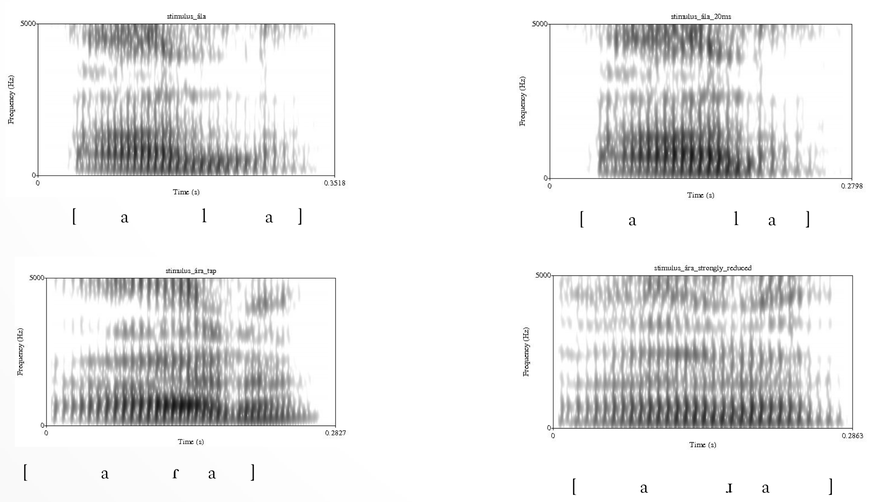
Temporal reduction leads to rhoticisation (Müller 2010 on /l/-rhoticisation, Romero & Martín 2003 on /z/-rhoticisation).

Conversely, temporal expansion should give rise to lambdacisation.
However: A tap can be articulatory undershot, but not easily lengthened.
Prerequisite: Articulatory reconfiguration of the tap to an approximant:
/ɾ/ → /ɹ/

Experimental design

Stimuli:

/ala/ and /aɾa/
Three stress patterns: unstressed, stress on V1, stress on V2
/ala/: duration of /l/ varied from 20ms – 70ms in 5ms-steps, by manipulation in Praat
/aɾa/: three levels of rhotic reduction: unreduced, slightly reduced, strongly reduced (from different tokens)
Extracted from read speech (meaningful sentences)



Spectrograms of four stimuli: upper left: unmanipulated /ala/; upper right: /ala/ (20-ms-lateral); lower left: /aɾa/ (unreduced rhotic); lower right: /aɹa/ (strongly reduced rhotic)

Speaker:

male adult speaker from Athens

Listeners:

20 native Greek listeners without any phonetic training

Presentation:

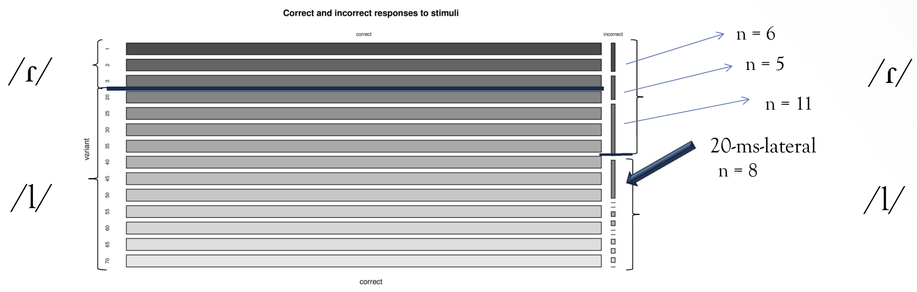
Forced-choice test
5 repetitions of each stimulus
Randomised order
Presented over head-phones

Differences in experimental design to Müller (2010)

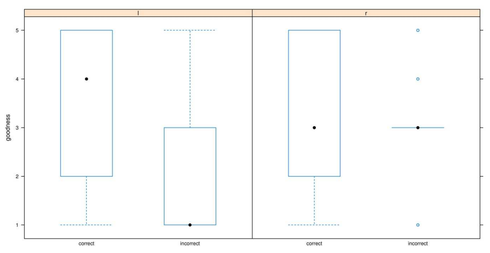
- Goodness ratings
- Three levels of reduction in the rhotic
- Unstressed tokens
- Tokens taken from read speech (excised from real words) instead of tokens read directly from a list → predicted to lead to more errors in listeners' responses
- Speaker with Athenian accent (clear laterals) instead of Thessaloniki accent (darkish laterals)

Results

- Few incorrectly perceived tokens overall (fewer than in Müller 2010)



Mosaic plot depicting the distribution of correct and incorrect responses to stimuli across subjects

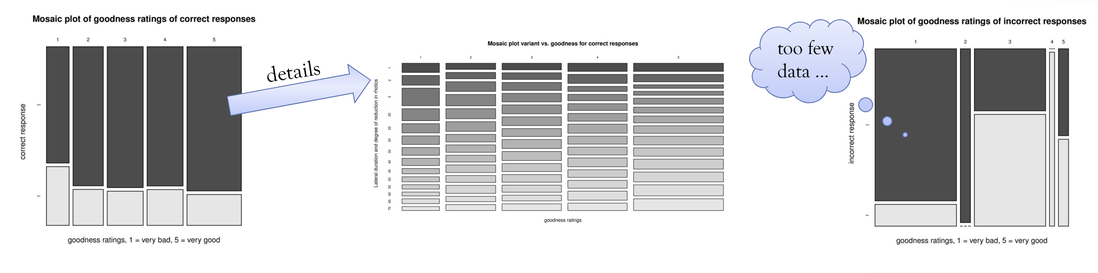


Box plots depicting the goodness ratings of correctly and incorrectly perceived tokens (left: laterals, right: rhotics)

- Perceptually rhoticised laterals judged as rather poor instances of the rhotic

- Correctly perceived laterals were rated significantly better than correctly perceived rhotics (χ^2-test: χ^2=60.2461, df=4, p=0.0000)
- Correctly perceived laterals rated better than incorrectly perceived laterals (t=7.1937, df=21.419, p=0.0000)
- Better ratings of laterals probably due to experimental design: reduced rhotics part of the set of stimuli

Ratings of correctly and incorrectly perceived stimuli

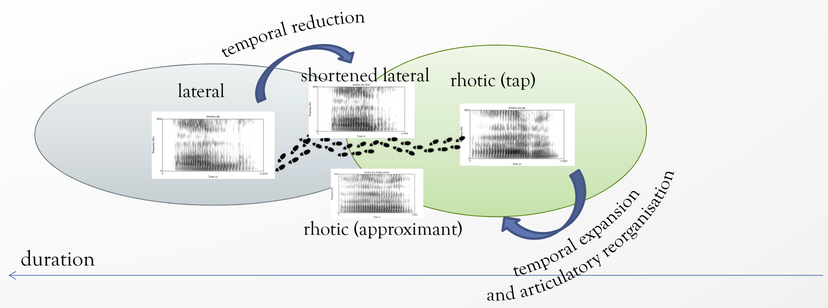


Caveat:

- People tend to have divergent biases towards rating (some rate consistently bad, some consistently good) (F=70.095, p=0.0000).
- Listeners may also judge on the basis of vowel quality (especially stressed vs. unstressed tokens), even when told to focus on the consonant.

Implication for sound change:

Sound change via misperception seems to lead through speakers' placing the perceived sound into the wrong category and correcting it subsequently (instead of aiming at reproducing a 'bad' exemplar, they reproduce a more typical instance of the category they assumed the sound in question to belong to).



References:

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