Rhotics in European Portuguese: The variability in phonetic realisations

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Introduction

The phonetic variability of rhotics across and within languages has been reported by several authors[1,2,3]. From a phonological point of view there are two rhotics in European Portuguese (EP): A tap /ɾ/ and a uvular trill /ʁ/[4]. Current phonetic data on EP is very limited and mainly related with realisations of the uvular trill[5]. The purpose of this study is to describe the phonetic realisations of rhotics in EP.

Methods

Participants

Data were collected from 10 adults speakers (5 female and 5 male), whose ages from 20 to 40 years. They were all monolingual speakers of European Portuguese, south variant, and none had history of speech and/or language disorders. All speakers were informally assessed by a Speech and Language Therapist as having normal speaking and normal orofacial structures and by an Audiologist as having normal hearing. None of the speakers knew the nature of the study, nor had they any phonetic training.

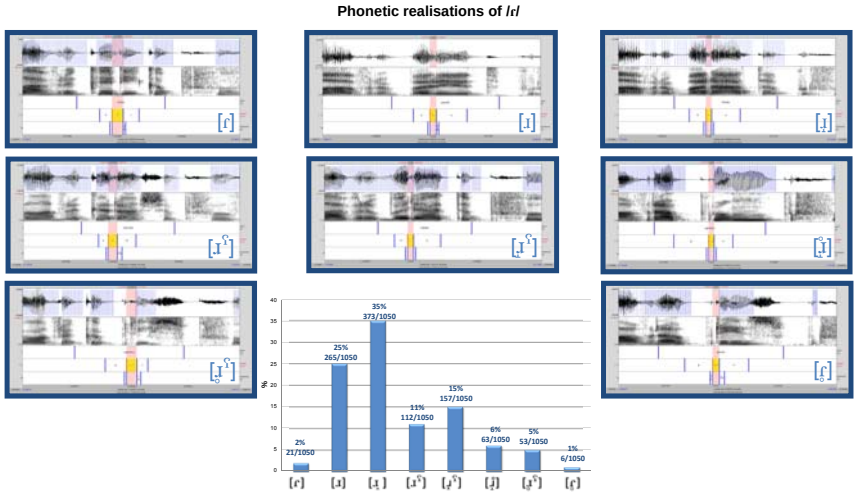
Data collection

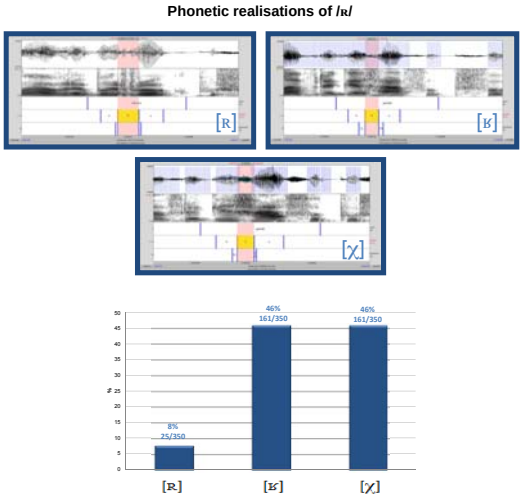
A corpus of real trissyllabic words, with paroxytone stress pattern and rhotics at onset, complex onset and coda positions and seven oral vowel /i, e, ɛ, u, o, ɔ, a/ contexts. The speakers produced 140 utterances (5 random repetitions of 28 different words). Each word was said within the frame sentence "Say the word…please" - "Diga a palavra…por favor" ([ˈdigapɐˈlavɾɐ…purfɐˈvor]). Speakers were instructed to read the utterances with a natural rhythm.

Data were recorded at the University of Algarve, in a sound proof booth, using a DPA 4006-TL microphone at a constant distance and angle from speaker's lips, connected to an audio interface (TASCAM US-800) and a desktop computer located outside the cabin. The acoustic signal was recorded at 16 bits and a sampling frequency of 44100 Hz, using Audacity 2.0.

The annotation of the acoustic signal was performed using *Praat 5.3.30*[6], using methods previously proposed by several authors[1,2,3].

Results





Conclusions

Rhotics show greater phonetic variability, especially the phonological tap. There were very few canonical realisations of rhotics. The most frequent realisations included approximant-like segments, stop-like tap and fricatives. The uvular rhotic is most likely to be produced as a uvular fricative. One could then formulate the following question: If rhotics were mostly produced as fricative sounds, does it make sense to talk about a tap/trill class in European Portuguese?

References

[1] Ladefoged, P., & Maddieson, I. (1996). *The Sounds of the World's Languages*. Oxford: Blackwell.
[2]Bradley, T. G., & Willis, E. W. (2012). Rhotic Variation and Contrast in Veracruz Mexican Spanish. Estudios de Fonética Experimental, XXI, 43–74.
[3]Punnoose, R. (2010). An Auditory and Acoustic Study of Liquids in Malayalam. PhD Thesis. Newcastle University, UK.
[4]Mateus, M. H. M., & Andrade, E. (2000). The Phonology of Portuguese. Oxford: Oxford University Press.
[5]Jesus, L. M. T., & Shadle, C. H. (2005). Acoustic Analysis of European Portuguese Uvular [χ, ʁ] and Voiceless Tapped Alveolar [ɾ̥] Fricatives. Journal of the International Phonetic Association, 35(1),27-44.
[6]Boersma, P. (2001). Praat, a system for doing phonetics by computer. *Glot International,*5, 341-345.