

Syllable affiliation of CVC-sequences in two Portuguese varieties: an articulatory account and some perceptual data



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Introduction

- European Portuguese high vowels [i, u] in unstressed position are mostly deleted in connected speech (Mateus & Martins 1982; Martins et al. 1995).
feliz 'happy' ['fliʃ] in EP & [fe'lis] in BP
- post-lexical clusters and lexical clusters became near homophones:
EP /k(i)rer/, "to want" & /krer/, "to believe"
- consonants in the sequences with the deleted vowels were coordinated further apart than in lexical clusters and showed no c-center effect (Browman & Goldstein 1992; Davidson 2006)

Main aims

- whether there are fine phonetic timing and spatial differences between clusters and CVCs
- whether timing differences can be perceived in perception
- whether there was a greater likelihood of vowel deletion and increasing overlap associated to place order

Hypothesis

COORDINATION	PERCEPTION	SYLLABLES
a.	CVC	2
b.	CC	1

COORDINATION:

- H1:** more overlap in clusters than in CVCs
 - H2:** more overlap in EP than in BP
 - H3:** more overlap in /pt/ than in /kt/
- ### PERCEPTION
- H4:** more C and CC in EP & CVC in BP
 - H5:** no difference between /pt/-/kt/

Method

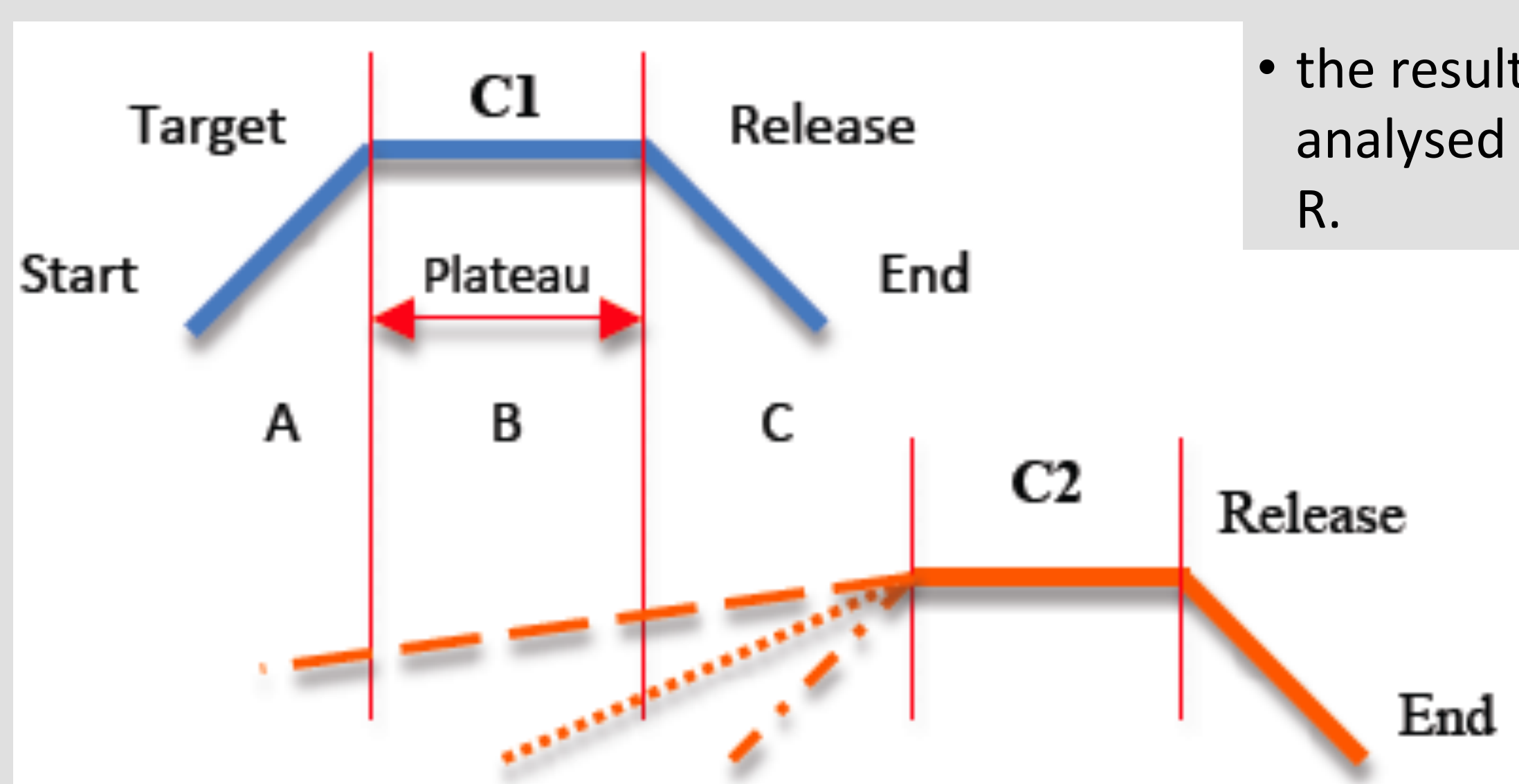
Target Words

C2		velar		bilabial	
Cluster	rhotic	<i>crata</i> <i>cratada</i>	'crater' 'of crater'	<i>prada</i> <i>pradada</i>	'prada' 'of prada'
	lateral	<i>clata</i> <i>clatado</i>	logatome logatome	<i>plada</i> <i>platada</i>	'surname' logatome
CVC	rhotic	<i>queratocone</i> <i>queratoso</i>	'keratoconus' 'with keratoconus'	<i>perada</i> <i>perador</i>	'pear jam' 'pear grater'
		<i>curado</i> <i>curador</i>	'cured' 'curator'	<i>puratos</i> <i>puratão</i>	'flour type' 'smart'
	lateral	<i>que lata</i> <i>que latada</i>	'cheeky' 'cheeky'	<i>pelada</i> <i>pelador</i>	'peeled' 'peeler'
		<i>culatra</i> <i>culatrano</i>	'breech' 'gun barrel'	<i>pulada</i> <i>pulador</i>	'jumped' 'jump'

- embedded in the following sentence:
Ele leu _mal. 'He read_wrong'
- read 8 - 9 times in random order from a computer screen.
- 5 EP speakers from Porto and 4 BP speakers from São Paulo.
- recorded with CARSTENS AG500.

Coordination Measurement

$$\text{OVERLAP} = 1 - (\text{C2-START} - \text{C1-TARGET}) / (\text{C1-PLATEAU})$$



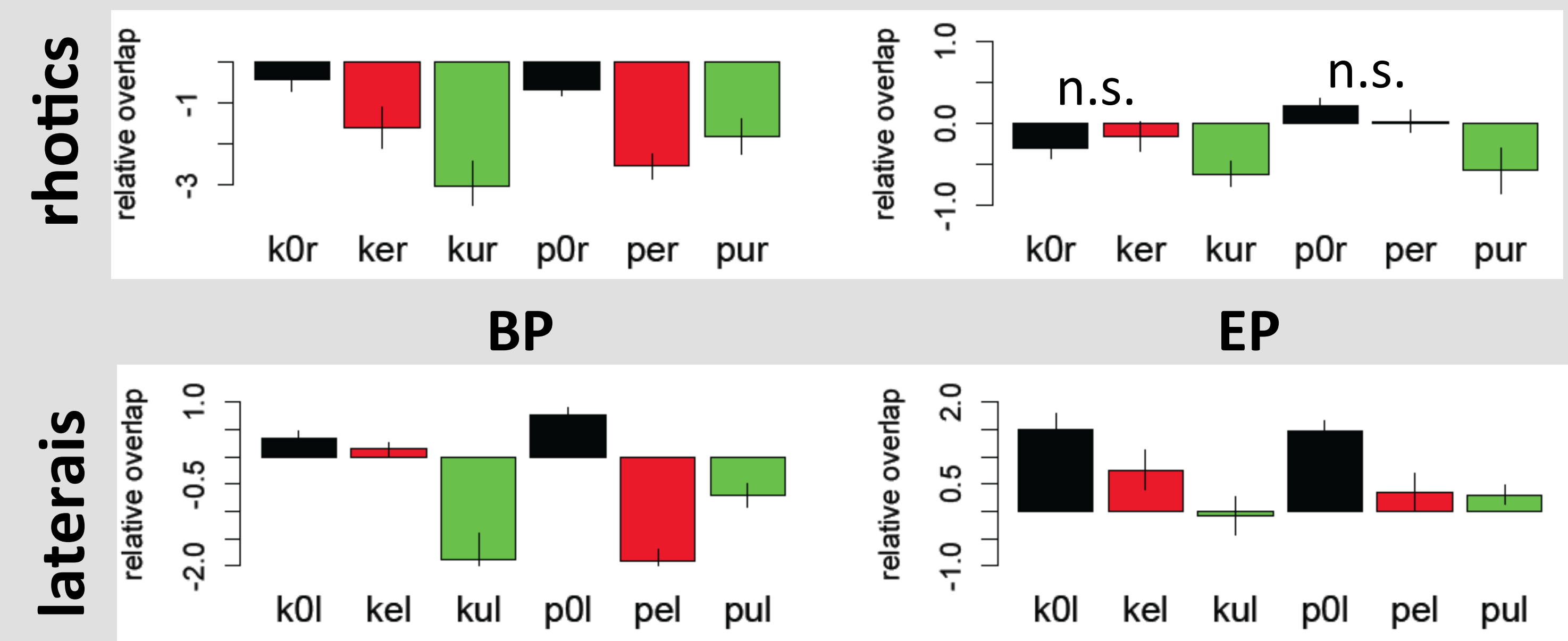
- the results were analysed with a MM in R.

Perception experiment

- target clusters were excised between their acoustic onset and offset.
- presented in randomized order as an identification task.
- 4 alternative forced-choice-tasks:
<t>, <Ct>, <Cet>, <Cut> (C = / k, p /).
- 37 EP & 32 BP native listeners, aged between 22-35 years.
- the responses were analyzed with a GLMM in R

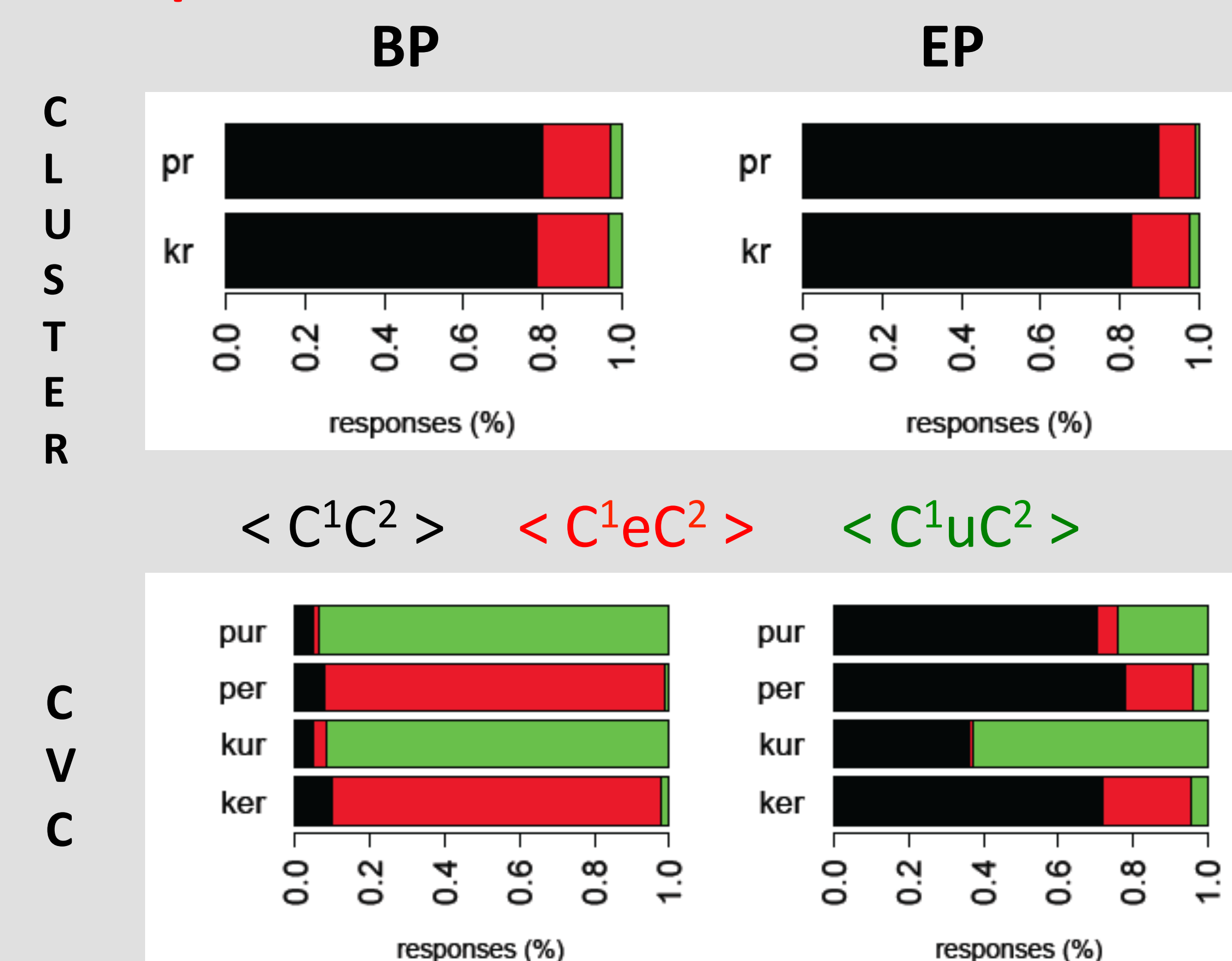
Results

Coordination



- more overlap and narrower timing in EP than in BP
- more overlap in clusters than in CVCs; the exception was /ker,per/ with similar overlap as in /kr,pr/ in EP
- more overlap with liquids than with rhotics
- similar overlap over places of articulation (interaction with vowel in BP)

Perception



- Clusters identified as clusters (C¹C²) in over 80% of the tokens
- CeC perceived as cluster in 70-80% of the CVC tokens
- Intended tokens perceived accurately perceived in BP (80-90%)
- In EP accuracy was under change in all tokens except /kur/ (60%), i.e. All other tokens were perceived mostly as a cluster

General Discussion

- Difference between cluster und CeC.
 - was not significant with vowel /e/ in production for rhotics.
 - also not significant in perception; Listeners perceived clusters.
- In EP more CC were perceived in clusters and CVC-sequences.
 - more overlap lead to the perception of CC.
- more overlap distinction between cluster und CVC in BP.
 - lead to the correct identification of the stimuli in BP.
- No strong place order effect (Chitoran et al. 2002).
 - place order may be less relevant for liquids.

Cluster and CVC (z.B. *crer* vs. *querer*) did not differ in overlap and were given as one syllable.

- are not distinct neither in production nor in perception.
- sound change in EP