Testing the P-Map: Lenition and Position

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Background

***The Claim of the P-Map (Steriade 2001)*:**

- The perceptibility of pairs of sounds depends on the context the sounds are in.
- The knowledge of these relative perceptibilities can explain cross-linguistic patterns of phonological typology.

***The Problem*:**

- Little experimental work testing the relative perceptibility of contrasts.
- Typically no perceptual testing of the same contrast in different contexts (Kaplan 2010; Kawahara & Garvey 2010).

Aim and Hypotheses

***The Aim*:**

- Does *context-sensitive* relative perceptibility of contrasts parallel the cross-linguistic typology?
- Test the perceptual similarity of devoicing and spirantization pairs in intervocalic and word-final positions.

***Typological Facts*:**

- Devoicing preferred word-finally. Spirantization preferred intervocalically (Gurevich 2004; Grizjenhout 2000; Kirchner 2001; Lavoie 2001).

***The Hypotheses*:**

1. Spirantization will be a more perceptible contrast word-finally than intervocalically.
2. Devoicing will be a more perceptible contrast intervocalically than word-finally.

The Experiment

- A perception experiment with a within-subject design run across two conditions:
  - Condition I: Intervocalic position.
  - Condition II: Word-final position.
- **Participants:** 19 native monolingual Michigan English speakers aged between 19-21 from MSU.
  - 7 males and 12 females.

The Experiment (cont.)

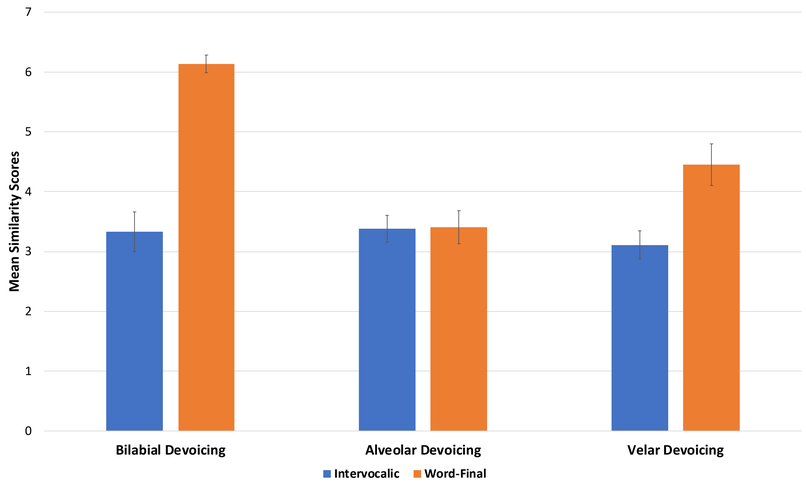
***Stimuli*:**

Type	POA	Intervocalic	Word-final
Devoicing	Bilabial	[zúbə]-[zúpə]	[əzúb]-[əzúp]
	Alveolar	[zúdə]-[zútə]	[əzúd]-[əzút]
	Velar	[zúgə]-[zúkə]	[əzúg]-[əzúk]
Spirantization	Bilabial	[zúbə]-[zúβə]	[əzúb]-[əzúβ]
	Alveolar	[zúdə]-[zúðə]	[əzúd]-[əzúð]
	Velar	[zúgə]-[zúɣə]	[əzúg]-[əzúɣ]

Native Argentine Spanish talker produced token [əzú_ə]. Initial or final vowel deleted to create stimuli.

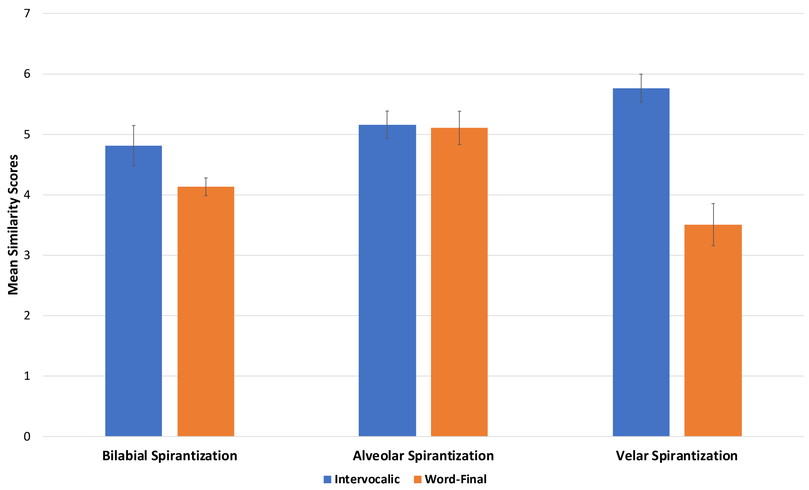
- **Task:** Listeners asked to rank similarity of pairs on a scale of 1-7.
- **Measurements:** Psychopy (Peirce et al. 2019) used to gather responses from participants.
- **Analysis:** Responses collected and concatenated using R. Statistical analyses on SPSS (IBM Corp 2017).

Results - Devoicing



- Bilabial and velar devoicing perceived as significantly more similar word-finally than intervocalically.
- No significant difference in perceived similarity for the alveolar devoicing pairs.

Results - Spirantization



- Bilabial and velar spirantization perceived as significantly more similar intervocalically than word-finally.
- No significant difference in perceived similarity for the alveolar spirantization pairs.

Discussion

- The claim of the P-Map is generally supported by the results.
- Alveolar stimuli may not have been natural sounding since an Argentine Spanish talker who uses dental stops (Hualde 2005) was used to create them.
- Results argue in favor of a phonetics-based approach to phonology.
- **Note:** Stop devoicing and spirantization are not contrasts that happen in Michigan English.
  - Results lend weight to the idea that these results reflect universal perception of these phonological contrasts.

Future Questions:

- Can results be replicated by speakers of another language that does not involve these contrasts?
- Are there **universal** perceptual asymmetries linked to cross-linguistic phonological typologies?