



# Postaspiration in Sevillian Spanish: A perception experiment

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# Introduction

- Many varieties of Spanish aspirate coda /s/ to [h] (e.g. /pasta/ → [pahta])
- Sevillian Spanish (Western Andalusia, Southern Spain): *preaspiration* to *postaspiration* in /s+ptk/ clusters (Ruch & Peters 2016; Torreira 2012)

<b>UR</b>	<b>Pre-</b>	<b>→</b>	<b>Postaspiration</b>	
/tʃispa/	[tʃihpa]	→	[tʃip <sup>h</sup> a]	‘spark’
/pasta/	[pahta]	→	[pat <sup>h</sup> a]	‘pasta’
/kasko/	[kahko]	→	[kak <sup>h</sup> o]	‘helmet’

- Spanish inventory: unaspirated voiceless stops /ptk/ and voiced stops /bdg/
- Some argue that postaspirated stops are phonologizing into a series of aspirated stops /p<sup>h</sup> t<sup>h</sup> k<sup>h</sup>/ in Sevillian Spanish (Gylfadottir 2015; O’Neill 2009)



# Introduction

- Are postaspirated stops phonologizing in Sevillian Spanish? If not, what prevents phonologization?
- **This study:**
  - Part I: Do Sevillian listeners perceive postaspiration?
    - **Preview:** Sevillian listeners perceive postaspiration, and map it back to an underlying cluster
  - Part II: What is the evidence for underlying clusters?
    - **Preview:** Alternations and variation



# Methodology

- Forced-choice fill-in-the-blank task

<b>2SG present tense verbs end in /s/:</b>	/tu tjene-s pali/	‘you have <i>pali</i> ’
<b>3SG present tense verbs do not:</b>	/xuan tjene-∅ pali/	‘he/she has <i>pali</i> ’

- Listeners hear sentences with acoustically manipulated VOT on a nonce word following a verb, and choose the most likely subject

<b>Listeners hear:</b>	[* tjene p <sup>(h)</sup> ali]	‘* have/has <i>pali</i> ’
<b>Subject choices:</b>	tú      Juan	‘you’    ‘Juan’

- 9 nonce words: /ptk/-initial, followed by /aiu/
- Sentences recorded by a male native speaker of Sevillian Spanish



# Methodology

- Stimuli sentence creation

Two original sentences per nonce word	1. <u>Juan tiene pali</u> <sub>1</sub> 2. <b>Tú tienes pali</b> <sub>2</sub>	[xuan tjene pali] [tu tjene p <sup>h</sup> ali]
(1) is base sentence	<u>Juan tiene pali</u> <sub>1</sub>	[xuan tjene pali]
Subject in (1) is replaced with pure tone	* <u>tienne pali</u> <sub>1</sub>	[* tjene pali]
Nonce word in (1) replaced with (2) (natural postaspiration)	* <u>tienne</u> <b>pali</b> <sub>2</sub>	[* tjene p <sup>h</sup> ali]
3 VOT steps created by removing VOT		[* tjene p <sup>h</sup> ali] VOT = 70ms [* tjene p <sup>h</sup> ali] VOT = 39ms [* tjene p <sup>h</sup> ali] VOT = 10ms



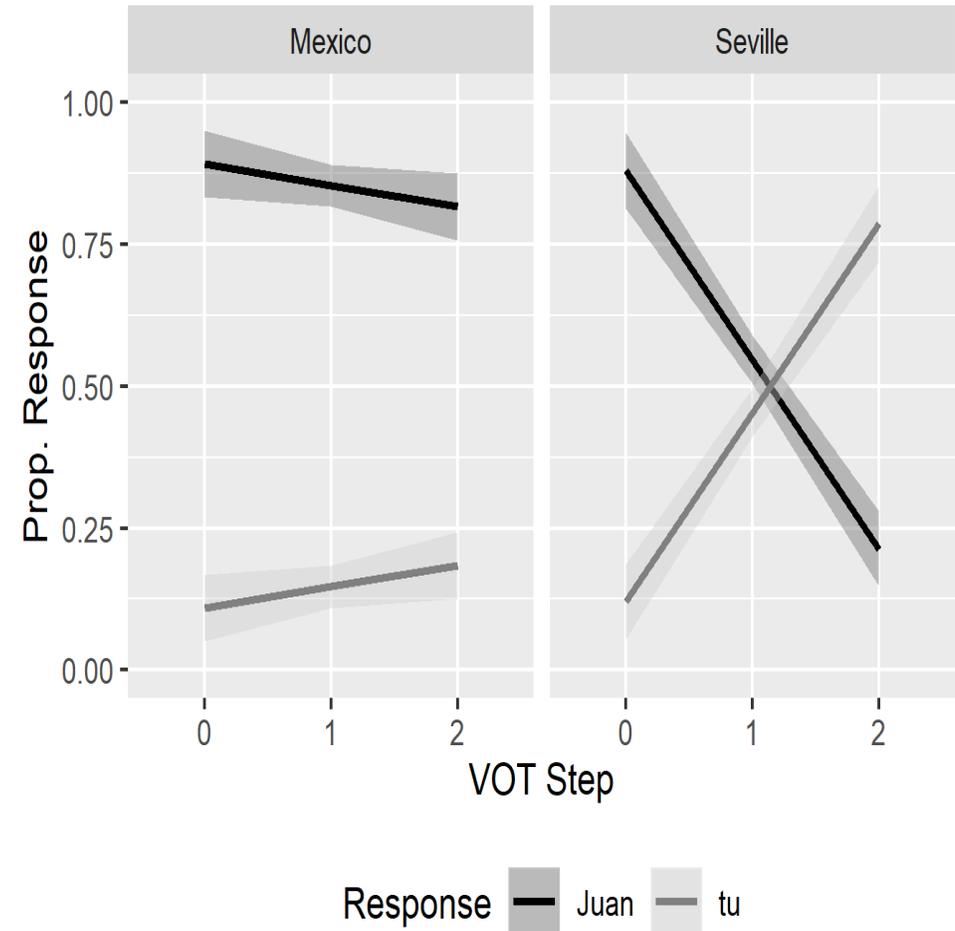
# Methodology

- Fillers/controls are natural sentence with different verb forms; fillers have unambiguous answer choices
- Participants: 28 Mexican listeners (Prolific), 29 Sevillian listeners (recruited through personal contacts)
- **Hypothesis:** if Sevillian listeners parse postaspiration as underlying /s + ptk/, they will give more 3SG responses with short VOT, and more 2SG responses with longer VOT



# Results

- Seville: high rate of 3SG responses with shortest VOT, high rate of 2SG responses at longest VOT
  - Use VOT as cue to underlying preceding /s/
  - Interpret this information as morphologically important
- Mexico: high rate of 3SG responses at all VOT steps
  - Do not interpret VOT as morphologically important
  - May not hear postaspiration, since their variety does not have it
- Significant interaction: VOT step\*Region



# Analysis

- Sevillian listeners perceive postaspiration as underlying /s + ptk/, so postaspiration is metathesis (Ruch 2013)
- Seville and Mexico represent stages in serial account of gradual coda reduction (McCarthy 2008) and metathesis

Step 1: faithful mapping	/pasta/ →	[pasta]	(Mexican Spanish)
Step 2: coda /s/ aspiration		[pahta]	
Step 3: metathesis		[pat <sup>h</sup> a]	(Sevillian Spanish)

- Intuition: in metathesis, segments overlap at some point (Takahashi 2019), but constraint against co-occurring gestures disprefers total overlap (Hall 2003)
  - Pre- and postaspiration can co-occur in the same word: [paht<sup>h</sup>a]
- Mexican listeners do not ‘undo’ the metathesis and aspiration to get back to /s + C/
  - Native dialect does not aspirate; may not hear pre- or postaspiration



# Evidence for underlying clusters

- Sevillians perceive postaspiration, but how do we know it's a cluster and not an aspirated stop?
  - Alternations and variation provide evidence for underlying cluster analysis
- Alternations
  - /s/ surfaces as postaspiration across word/morpheme boundaries before /ptk/, but as [s, h, Ø] elsewhere
    - /s + ptk/: /ma<sub>s</sub> tapas/ → [ma t<sup>h</sup>apa]      /sV/: /ma<sub>s</sub> alas/ → [mah<sub>u</sub> ala]
- Variation
  - Postaspiration is socially and stylistically conditioned in Andalusia (Ruch & Peters 2016), so listeners often hear /s/ in its orthographic position
- Alternations and sociolinguistic variation give listeners evidence that surface postaspiration results from an underlying cluster



# Discussion

- Sevillian listeners perceive VOT, and map it back to what we know to be an underlying cluster /s + ptk/
- What would it mean for Andalusian Spanish to have postaspirated stops?
  - Possible morpheme-internally
    - /kapa/-/kapa/ is restructured to /kapa/-/kap<sup>h</sup>a/
  - Less likely across morpheme and word boundaries
    - Contrasts with morphological /s/ marked on /ptk/ of following word
      - /tjene-s pojo/ → [tjene **p**<sup>h</sup>ojo] 'you have chicken' 2SG
      - /tjene pojo/ → [tjene **p**ojo] 'he/she has chicken' 3SG
    - Floating aspiration feature that docks on following /ptk/ (e.g. Wolf 2007)
    - All words ending in *lexical* /s/ would also need to contain floating aspiration feature



# Discussion

- Further questions:
  - What kind of learning data is needed for phonologization (continuous speech, individual words, morphologically-segmented, variation, phonetic detail, etc.)? (e.g. Gouskova & Stanton 2020)
  - What about aspiration perceptually allows metathesis? (Blevins & Garrett 2004; Mielke 2003)
  - How do processes like metathesis affect higher levels of structure (e.g. stress)?



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