



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)

UR	Pre-	→	Postaspiration	
/tʃispa/	[tʃihpa]	→	[tʃip ^h a]	‘spark’
/pasta/	[pahta]	→	[pat ^h a]	‘pasta’
/kasko/	[kahko]	→	[kak ^h 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^h t^h k^h/ 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

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

Listeners hear:	[* tjene p ^(h) ali]	‘* have/has <i>pali</i> ’
Subject choices:	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> ₁ 2. Tú tienes pali ₂	[xuan tjene pali] [tu tjene p ^h ali]
(1) is base sentence	<u>Juan tiene pali</u> ₁	[xuan tjene pali]
Subject in (1) is replaced with pure tone	* <u>tiene pali</u> ₁	[* tjene pali]
Nonce word in (1) replaced with (2) (natural postaspiration)	* <u>tiene</u> pali ₂	[* tjene p ^h ali]
3 VOT steps created by removing VOT		[* tjene p ^h ali] VOT = 70ms [* tjene p ^h ali] VOT = 39ms [* tjene p ^h ali] VOT = 10ms



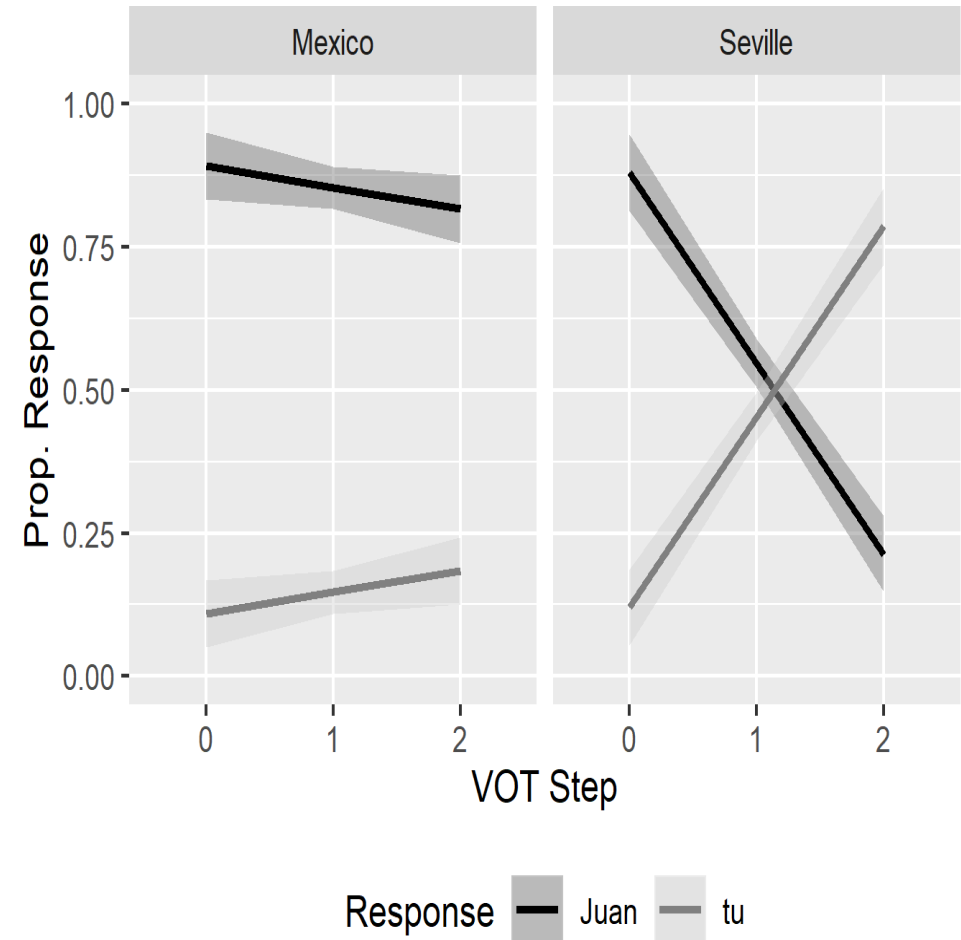
Methodology

- 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 ^h 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^ha]
- 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_s tapas/ → [ma t^hapa] /sV/: /ma_s alas/ → [mah_u 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^ha/
 - Less likely across morpheme and word boundaries
 - Contrasts with morphological /s/ marked on /ptk/ of following word
 - /tjene-s pojo/ → [tjene **p**^hojo] ‘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)?



References

- Blevins, Juliette & Andrew Garrett. 2004. The evolution of metathesis. In Bruce Hayes, Donca Steriade & Robert Kirchner (eds.), *Phonetically based phonology*, 117–156. New York: Cambridge University Press.
- Gouskova, Maria & Juliet Stanton. 2020. Learning complex segments.
- Gylfadottir, Gudrun. 2015. Phonemic reanalysis in variation in Andalusian aspirated stop clusters.
- Hall, Nancy Elizabeth. 2003. *Gestures and Segments: Vowel Intrusion as Overlap*.
- McCarthy, John J. 2008. The gradual path to cluster simplification. *Phonology* 25. 271–319. <https://doi.org/10.1017/S0952675708001486>.
- Mielke, Jeff. 2003. The interplay of speech perception and phonology: Experimental evidence from Turkish. *Phonetica* 60. 208–229. <https://doi.org/DOI:10.1159/000073503>.
- O'Neill, Paul. 2009. S-Aspiration and Occlusives in Andalusian Spanish: Phonetics or Phonology? In *Oxford University Working Papers in Linguistics, Philology & Phonetics*, vol. 12, 73–85.
- Ruch, Hanna. 2013. Investigating a gradual metathesis: Phonetic and lexical factors on /s/ aspiration in Andalusian Spanish. *University of Pennsylvania Working Papers in Linguistics: Selected Papers from NWAV 41* 19(2). 171–180.
- Ruch, Hanna & Sandra Peters. 2016. On the origin of post-aspirated stops: Production and perception of /s/ + voiceless stop sequences in Andalusian Spanish. *Laboratory Phonology* 7(1). 1–36. <http://dx.doi.org/10.5334/labphon.2>.
- Takahashi, Chikako. 2019. No transposition in Harmonic Serialism. *Phonology* 36(4). 695–726. <https://doi.org/10.1017/S0952675719000344>.
- Torreira, Francisco. 2012. Investigating the nature of aspirated stops in Western Andalusian Spanish. *Journal of the International Phonetic Association* 42(1). 49–63. <https://doi.org/doi:10.1017/S0025100311000491>.
- Wolf, Matthew. 2007. For an autosegmental theory of quirky mutation. In *University of Massachusetts occasional papers in linguistics 32: Papers in Optimality Theory III*, 315–404. Amherst, MA: GLSA.

