

5aSCb7. San Juan Quiahije Chatino: A look at tone.

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Background

Chatino is a group of under-documented, indigenous languages spoken in Oaxaca, Mexico¹



- Appr. 17 varieties; part of the Otomanguean and Zapotecan language families.^{1,2}
- The current focus: San Juan Quiahije (SJQ) Chatino^{1,2}

Tone in San Juan Quiahije Chatino

- Extensive tonal inventory²
 - 4 tone levels: Low (L), Mid (M), High (H), Super-High (0)
 - Including contours, 11 tones total (14 including Sandhi effects)
 - Phonemic floating tones
 - Basic vowel inventory: /i e a o u/
 - Contrastive nasality in all vowels except /u/
- Stop voicing contrasts, lost elsewhere in the family, are maintained in SJQ coronals
 - Coronal contrast described as apico-dental vs. lamino-alveolar
 - /p t d t̪ d̪ k kʷ ʔ/
- Depressor Consonants: Consonants which have a pitch lowering effect on the following segment^{3,4}

Current Aims:

1. Provide acoustic description of 11 basic tones in SJQ.
2. Preliminary investigation of depressor consonant effects.

Methods

Preliminary data are from 1 female native speaker of SJQ.

•Material: 231 tokens of 219 words (some repeats)

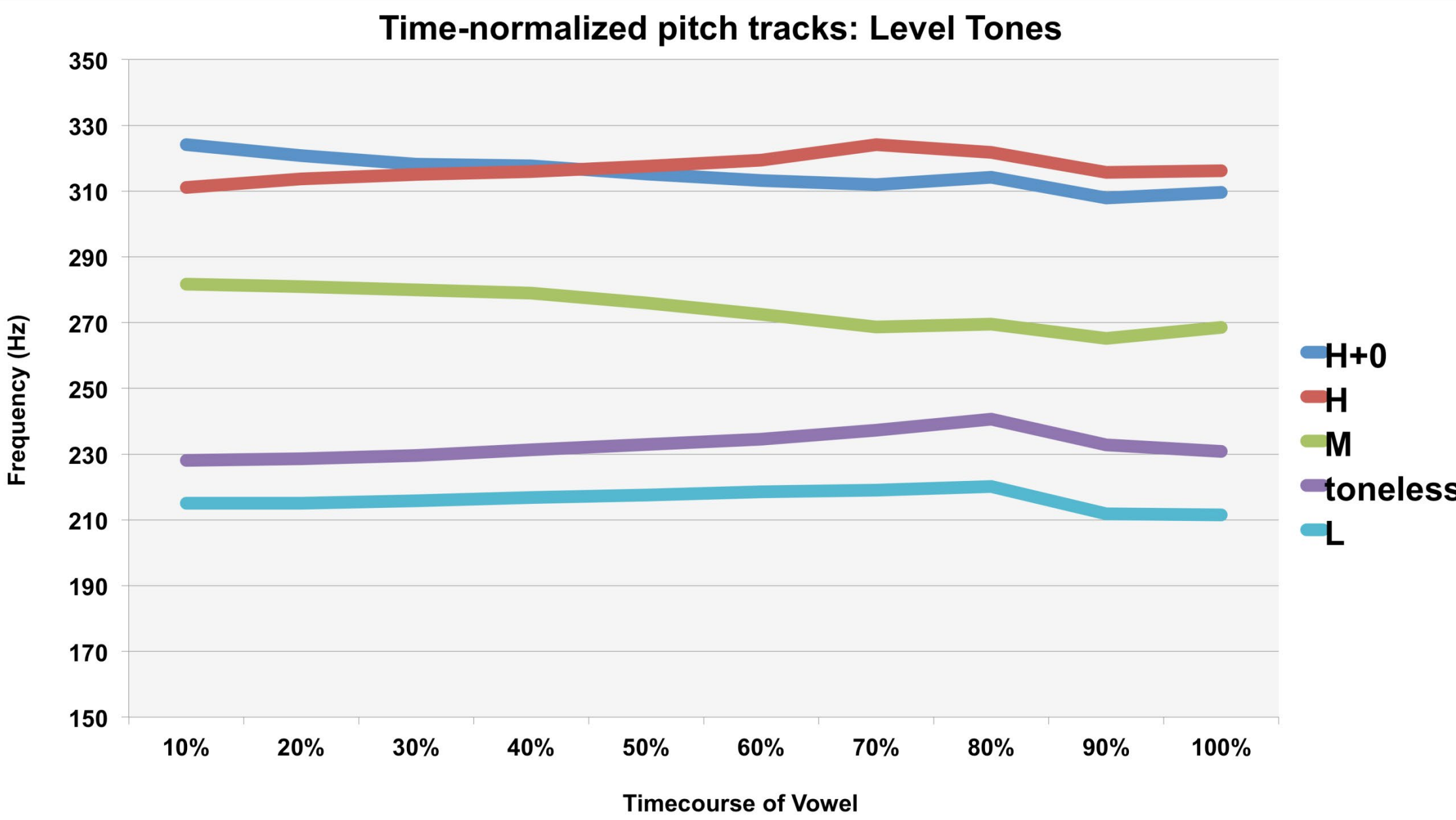
- Analysis of running speech is a crucial future step, but to avoid sandhi effects tokens for this study were produced in isolation.

•Tools: Praat⁵, Prosody Pro⁶

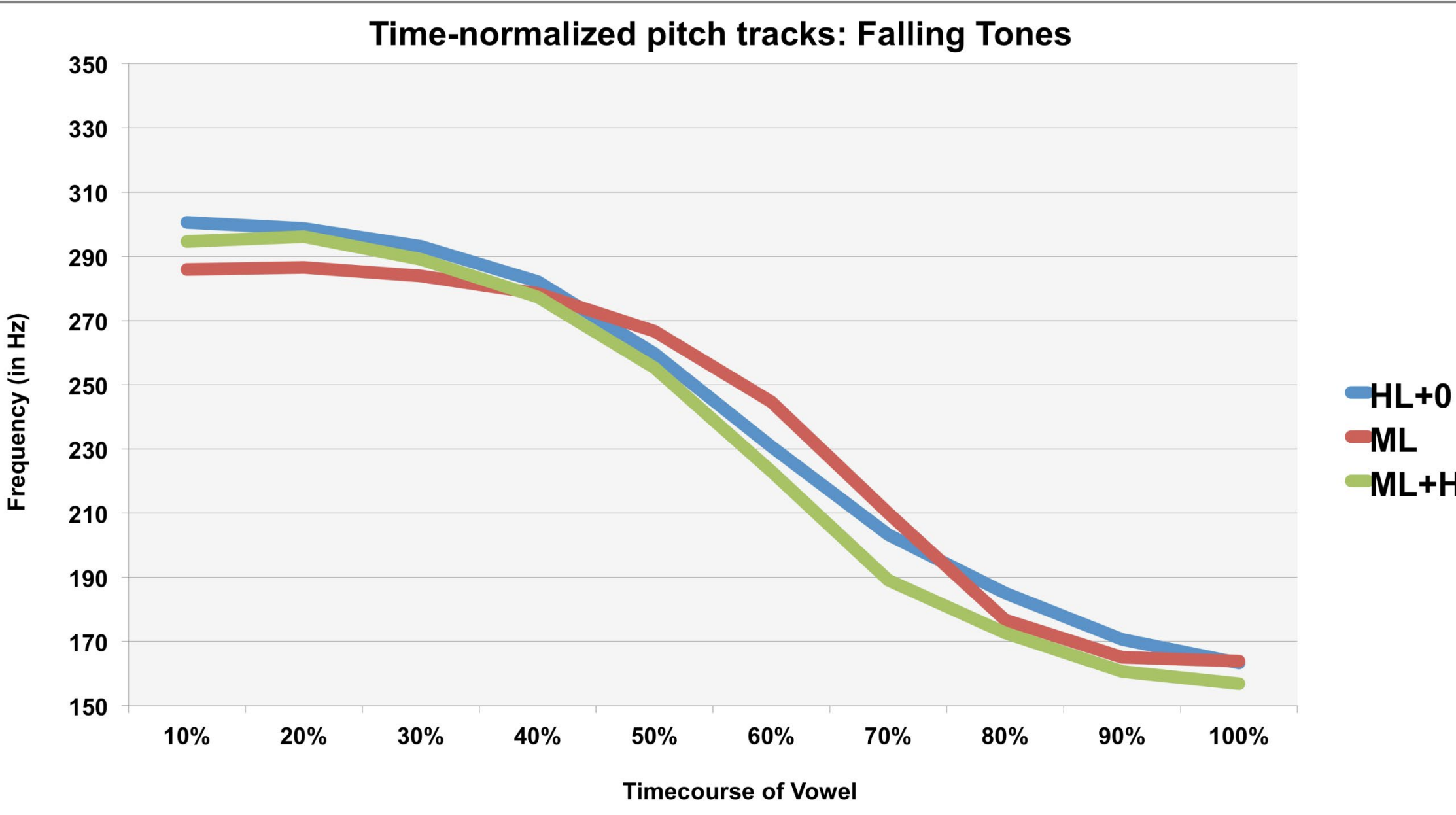
•Analyses presented here include (1) an illustration of the basic tonal patterns, and (2) evidence of possible depressor consonant effects.

Basic Tones:

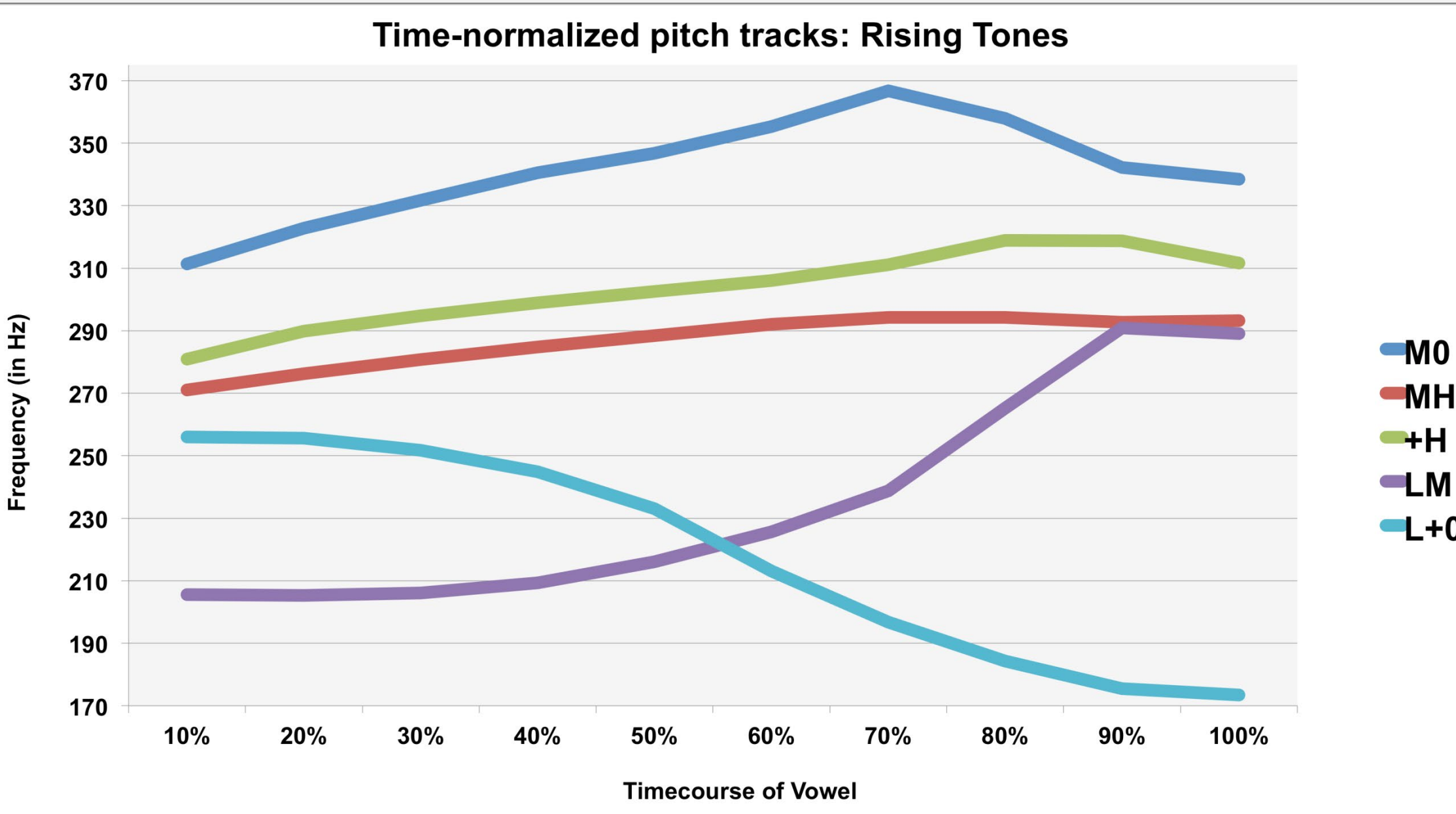
Time-Normalized



- H+0 is a tone similar to H tone, but it has a phonemic floating tone
- H+0 and H are similar in isolation, but not exactly identical – this difference is obvious to native speakers²
- L tone and toneless segments have been described as identical in isolation, though this shows otherwise



- HL+0 and ML are supposed to be identical in isolation
- This speaker merges all three falling tones in isolation
- 0L+0 tone was not present in these data



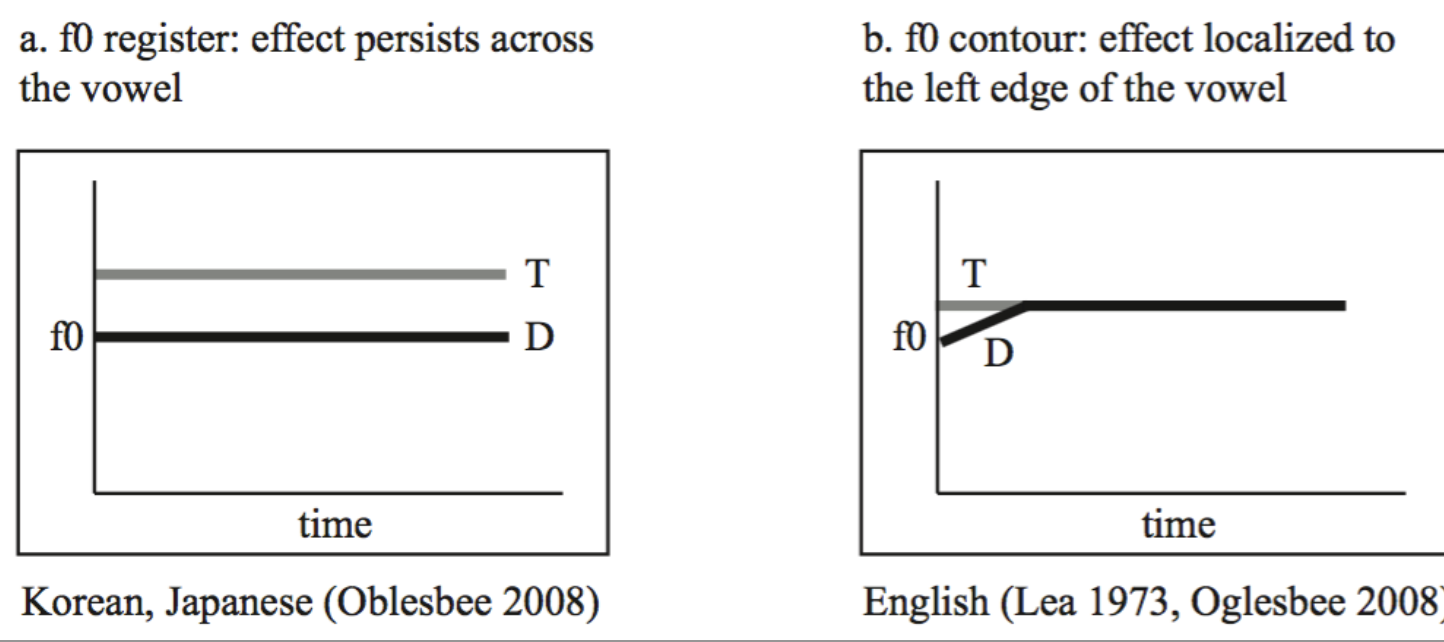
- +H is a pre-linked floating tone
- L+0 has previously been described as a rising tone²

Depressor Effects:

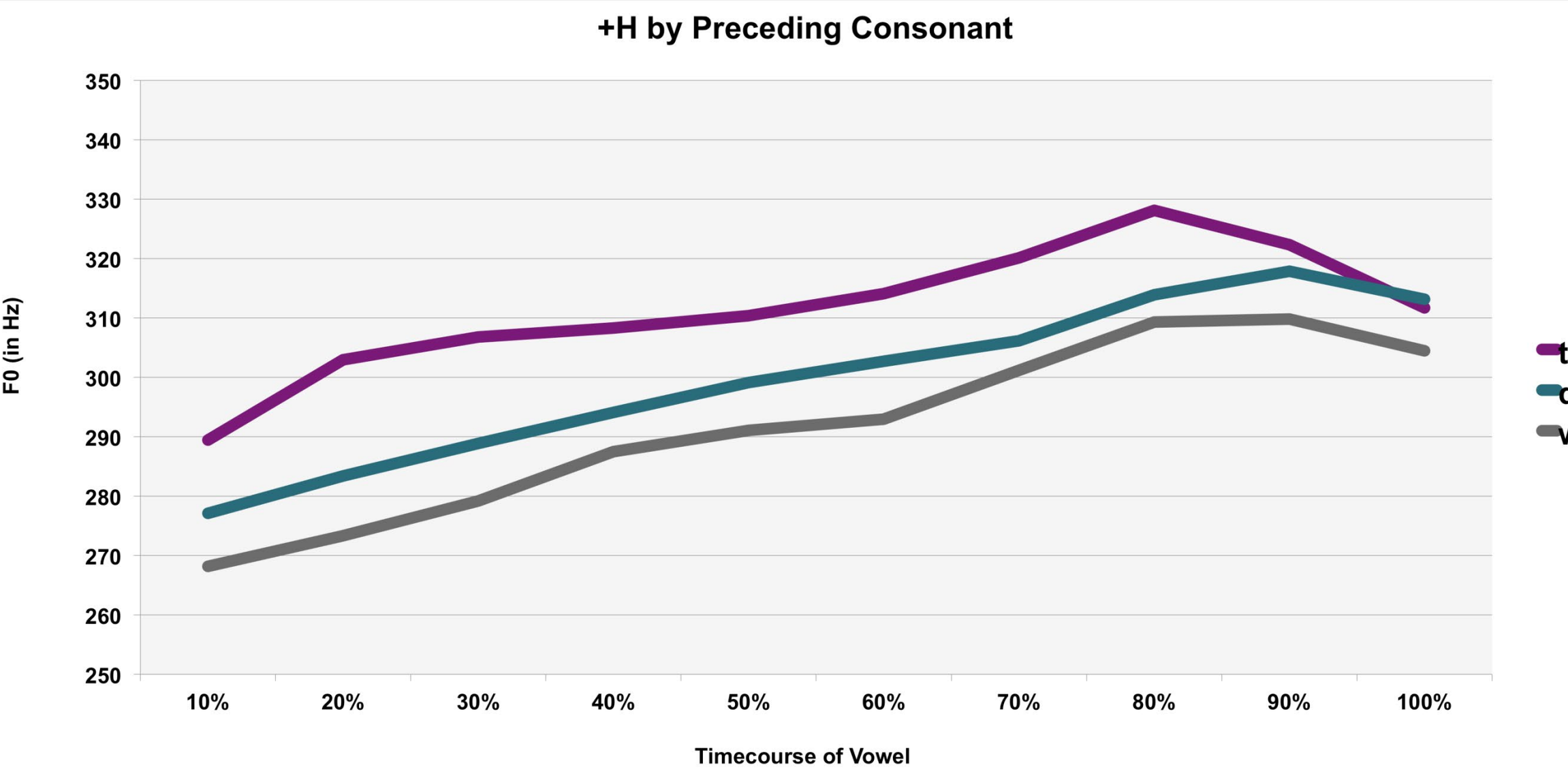
An Overview

Depressor effects: lowering of F0 by some Cs, typically voiced obstruents.

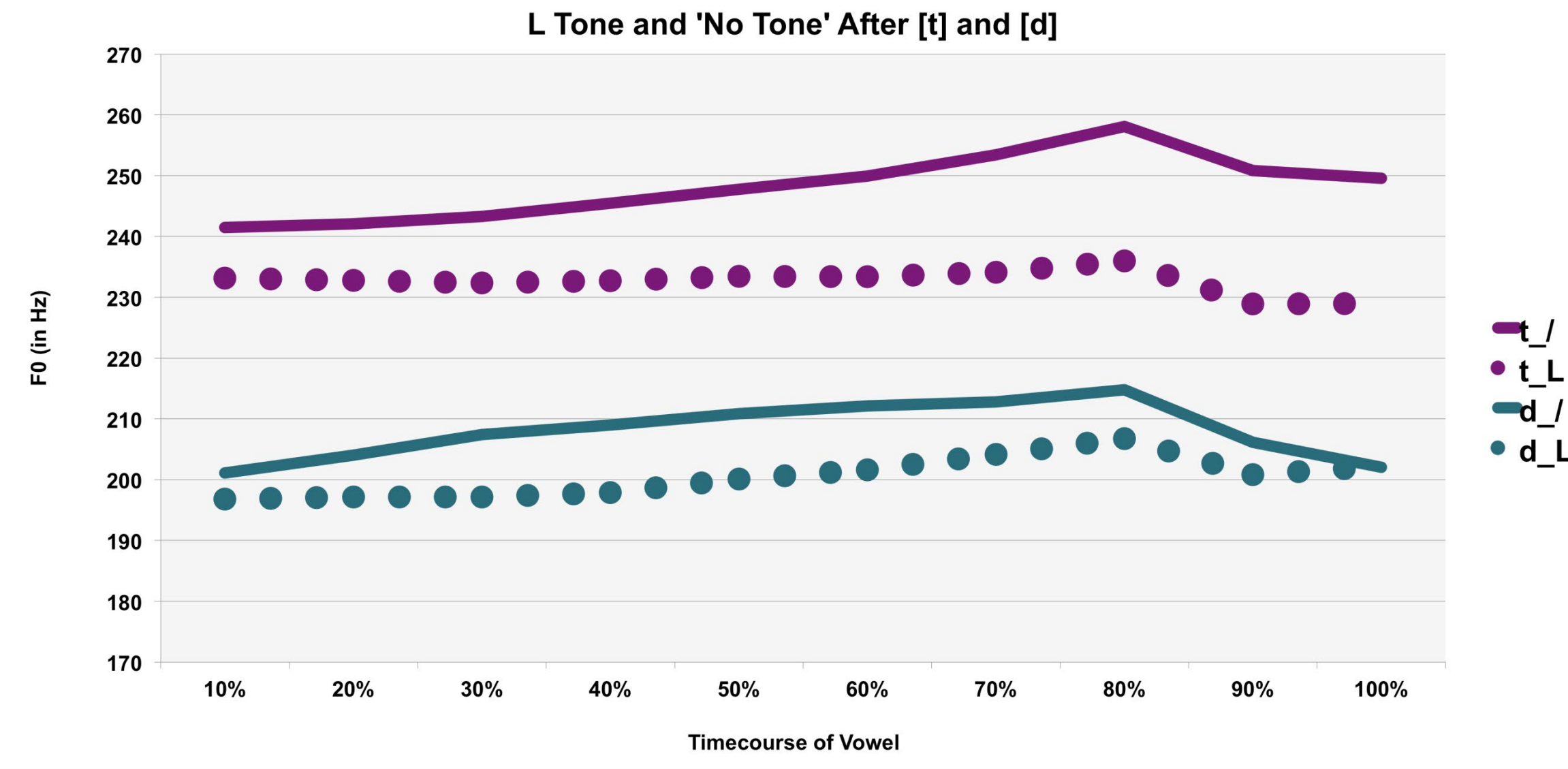
- Can be either a register effect (persistent) or a contour effect (temporary).



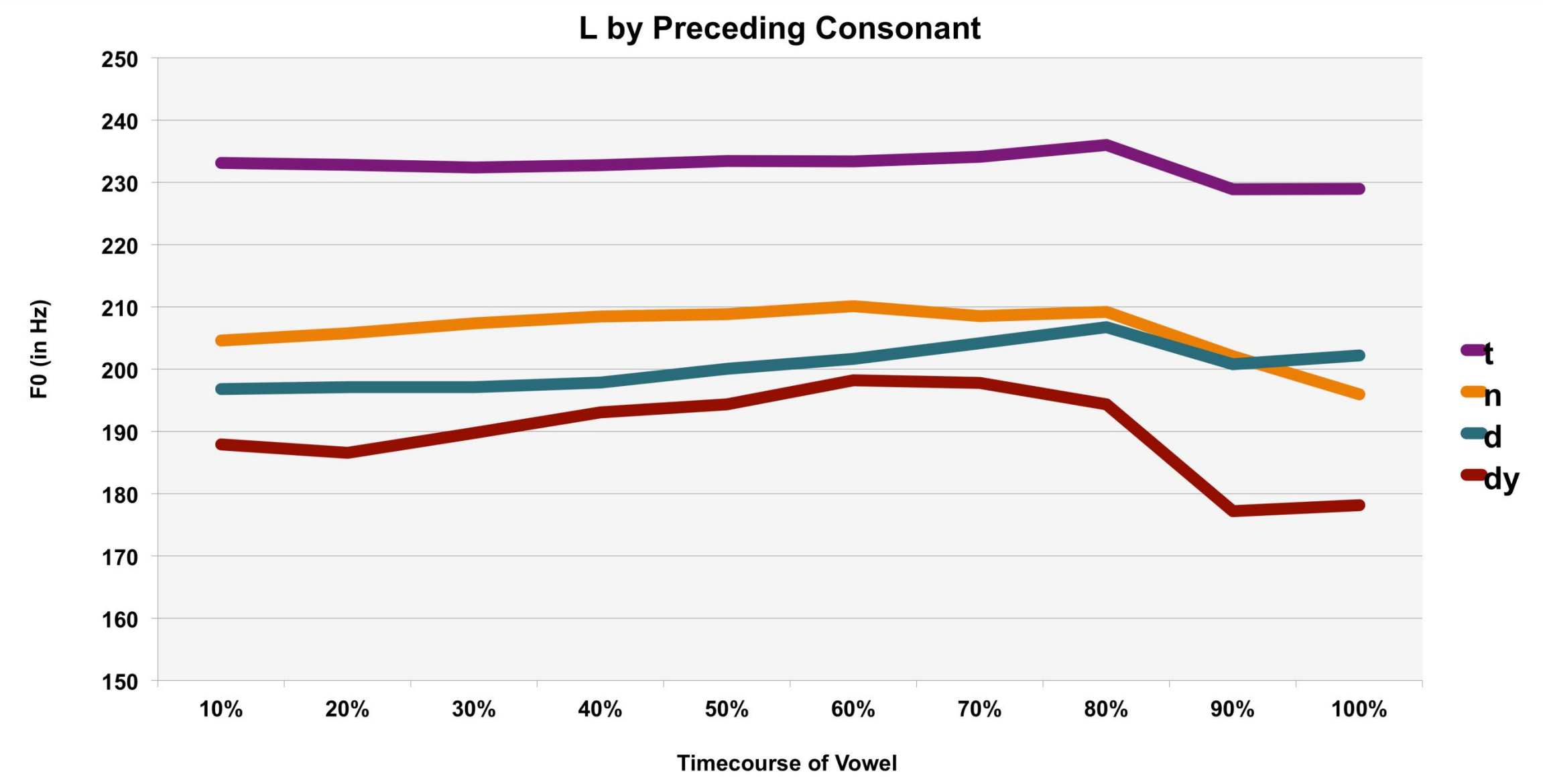
- HIGH CONTEXT
- Depressor effects are most often phonologized in H contexts, where H can be realized as a Rise after voiced obstruents.
- In SJQ: phonetic effect, register-like, triggered by both /d/ and /w/. No phonologization.



- LOW CONTEXT
- True LOW is lower than "Toneless"; register phonetic effect remains.



- Additional phonetic depressor effects: L is higher after voiceless stops, lower after /n/ and both voiced coronal stops (the apico-dental and lamino-alveolar /d/s).



Discussion

- Generally, our results corroborate the descriptions of SJQ tones in Cruz (2011).
- Differences:
 - L+0 is falling, not rising
 - This speaker merges all three falling tones in isolation
- Depressor effects are present, but these effects appear to be phonetic in nature. They have not been phonologized: it is not the case that we see, for instance, different levels of L which co-occur exclusively with voiced or voiceless onsets, or H being realized as a rise after depressors.
- Consonants which seem to have a depressor effect include at least: /d/, /w/, /n/

Future Directions

- This was preliminary work: additional data is needed:
 - more speakers
 - all tones in additional contexts
 - running speech
 - sandhi tones, sandhi effects
- Depressor effects of voiced allophones: /b/ /g/ /gʷ/
- Depressor effects of other sonorants: /l/ /r/ /j/
- 4D Ultrasound on the lamino-alveolars and apico-dentals (underway)

References

[1] Cruz, E., & Woodbury, A. C. (2014). Finding a way into a family of tone languages: The story and methods of the Chatino Language Documentation Project. *Language Documentation & Conservation* 8: pps 490-524; [2] Cruz, E. (2011). Phonology, tone and the functions of tone in San Juan Quiahije Chatino. PhD Diss, UT Austin; [3] Chen, Y., & Downing, L. J. (2011). All depressors are not alike: a comparison of Shanghai Chinese and Zulu. In *Prosodic Categories: Production, Perception and Comprehension* (pp. 243-265). Springer Netherlands; [4] Downing, L. J. (2009).). On pitch lowering not linked to voicing: Nguni and Shona group depressors. *Language Sciences*, 31(2), 179-198; [5] Boersma, Paul & Weenink, David (2013). Praat: doing phonetics by computer. Version 5.3.59, retrieved 2013 from <http://www.praat.org/>; [6] Xu, Y. (2013) ProsodyPro – A Tool for Large-scale Systematic Prosody Analysis. In *Proceedings of Tools and Resources for the Analysis of Speech Prosody (TRASP 2013)*, Aix-en-Provence, France. 7-10; [7] Map from: Neighbors Abroad of Palo Alto. Checked May 2016. URL http://neighborsabroad.org/wphome/?page_id=76

Acknowledgments: