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Sonority restricts laryngealized plosives in Southern Aymara

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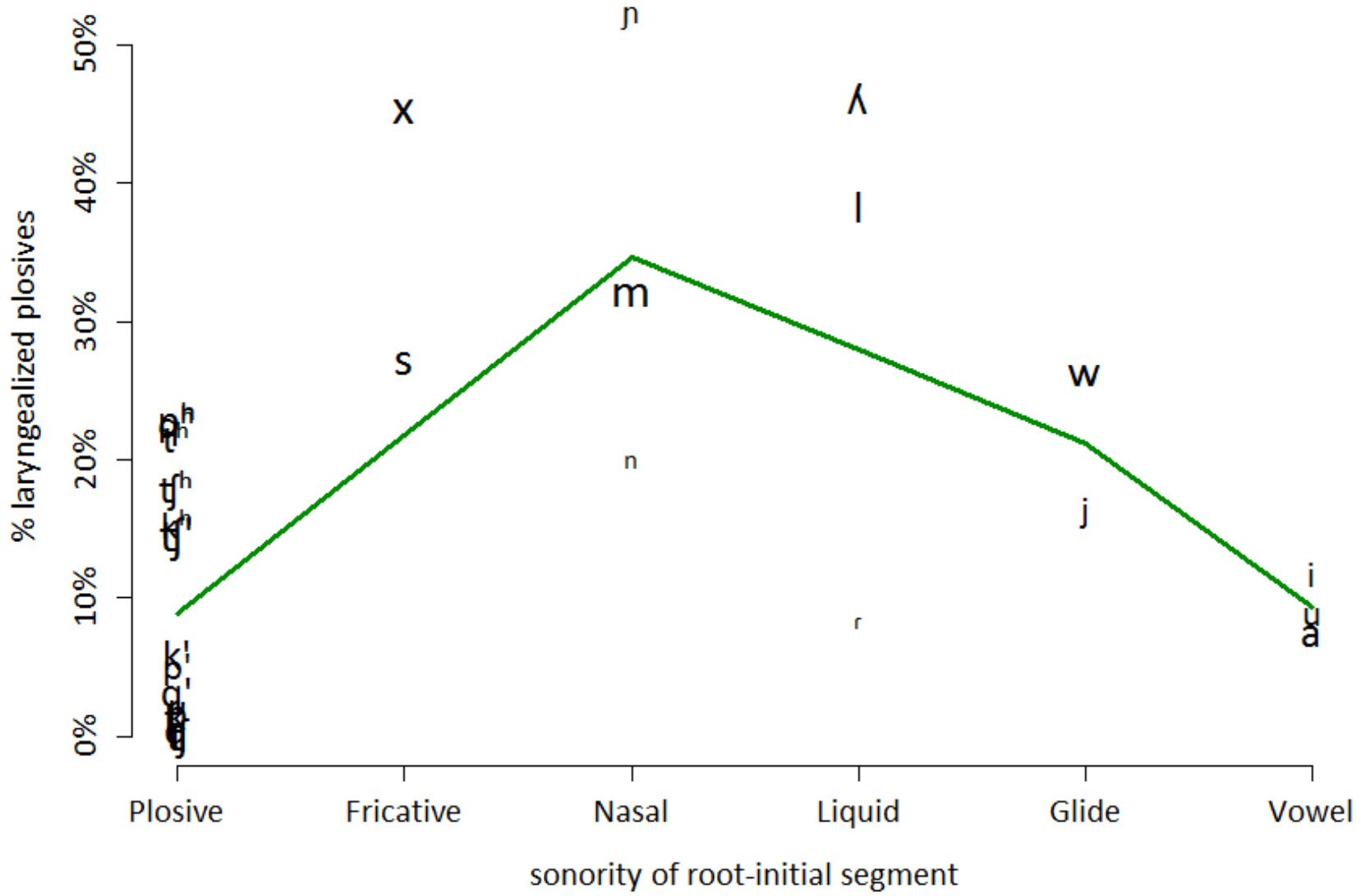
The sonority curve in Southern Aymara

Distribution of non-initial laryngealized plosives



Roadmap

- Description of the distribution of non-initial laryngealized plosives in Büttner & Condori's (1984) dictionary.
- Analysis: a stringent constraint family for the sonority hierarchy in root-initial segments + a positional constraint demanding leftward orientation for laryngeal features
- A MaxEnt model using the conjunction of these constraints generates half of the sonority curve.
- The unconjoined positional constraint completes the model
- Comparison with a UCLAPL model (Hayes & Wilson 2008), whose constraints do not necessarily target the sonority hierarchy.
- Conclusions

Southern Aymara

- Aymara (or Jaqi) is an Andean family of languages which includes Southern Aymara, Jaqaru, and Kawki.
- Currently, Southern Aymara is spoken in Southern Peru, Northern Chile and Western Bolivia.

Inventory

	Front	Back
High	i	u
Low	a	

Laryngealized plosives

	Labial	Alveolar	Palatal	Velar	Uvular
Plain plosives	p	t	ʧ	k	q
Aspirated plosives	pʰ	tʰ	ʧʰ	kʰ	qʰ
Ejective plosives	p'	t'	ʧ'	k'	q'
Fricatives		s		x	χ
Nasals	m	n	ɲ		
Laterals		l	ʎ		
		ɾ			
Glides	w		j	w	

Lowest sonority: Initial plosives

LEFT ORIENTATION OF LARYNGEALIZED PLOSIVES (Landerman 1994) (99%)		
a. **[ʧʰaqa]** ‘to get lost’ but *[ʧaqʰa]	b. **[k'uti]** ‘flea’ but *[kut'i]	c. **[lap'a]** ‘lice’ d. **[nakʰa]** ‘to burn’

LARYNGEAL ASSIMILATION WITH HOMORGANIC PLOSIVES (Landerman 1994; Cerrón-Palomino 2000) (99%)		
a. **[ʧaʧa]** ‘husband’ but *[ʧ'aʧa] *[ʧʰaʧa]	b. **[kʰakʰa]** ‘mute’ but *[kʰaka]	c. **[t'ant'a]** ‘bread’ but *[t'anta]

<u>Synchronic result:</u>

Very few internal laryngealized plosives in plosive-initial roots

Highest sonority: Initial vowels

HISTORICAL EPENTHESIS: Ø → [h]→[x] (Landerman 1994; Cerrón-Palomino 2000) (98%)		
a. ***[apa]** → **[apa]** 'take'	b. ***[aʧ'a]** → ***[haʧ'a]** → **[xaʧ'a]** 'big'	c. ***[at^{h}a]** → ***[hat^{h}a]** → **[xat^{h}a]** 'seed'

ETYMOLOGICAL [h]→[x] (Cerrón-Palomino 2000)		
a. ***[haqe]** → **[xaqe]** 'person'	b. ***[haru]** → **[xaru]** 'bitter'	c. ***[hawi]** → **[xawi]** 'flow'

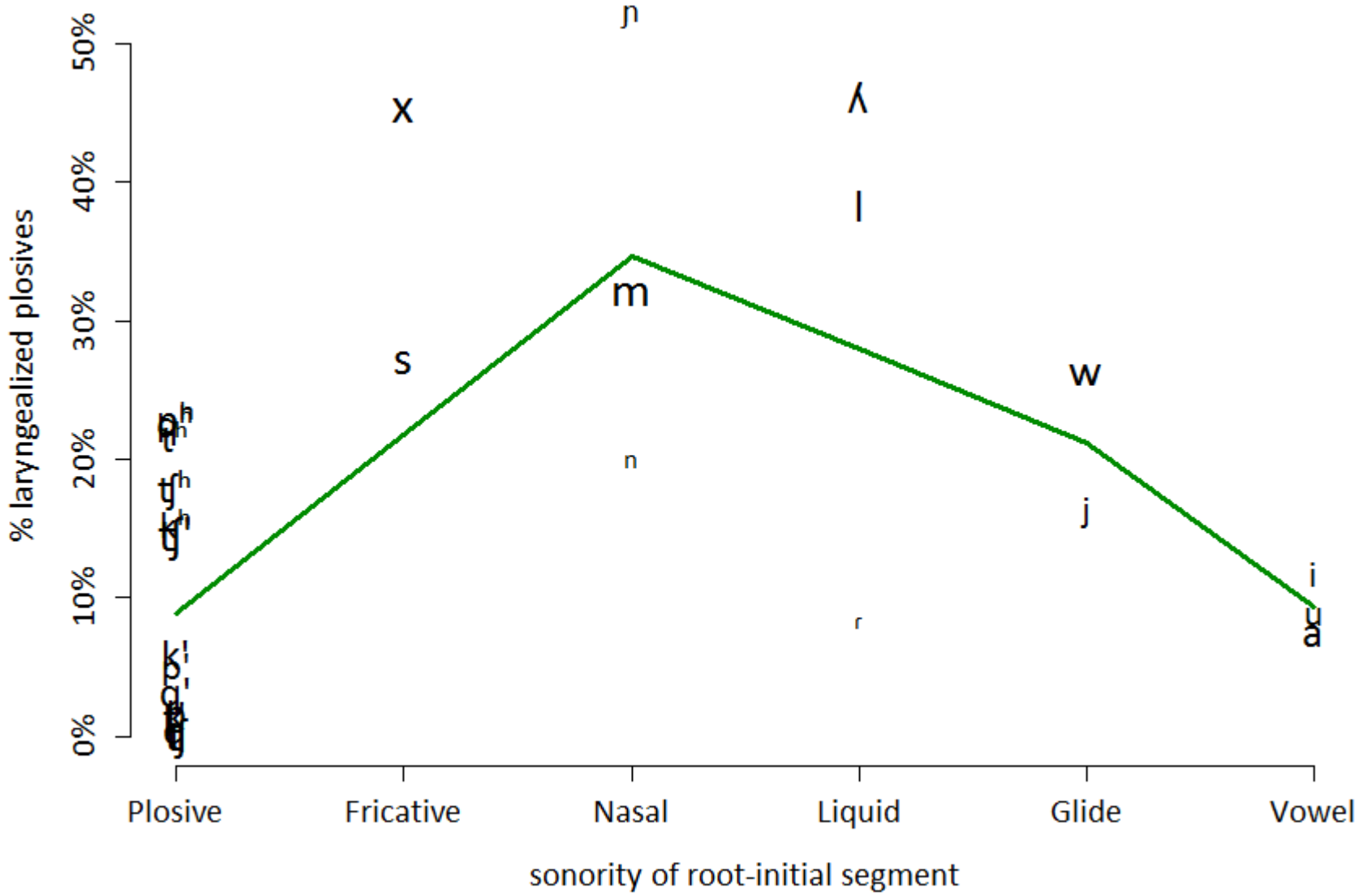
<u>Synchronic result:</u>

Very few internal laryngealized plosives in vowel-initial roots

Lexicon study

- 1,968 disyllabic roots from Büttner & Condori's (1984) dictionary of Puno Southern Aymara (Peru)

- The **sonority curve**:
  Plosive-initial roots **(8%)**
  Fricative-initial roots **(37%)**
  Nasal-initial roots **(34%)**
  Glide-initial roots **(24%)**
  Vowel-initial roots **(9%)**



Root-initial sonority hierarchy

ONSET HIERARCHY (Dell & Elmedlaoui 1985)
Onset/Plo ≻ Onset/Fri ≻ Onset/Nas ≻ Onset/Liq ≻ Onset/Gli ≻ No Onset

STRINGENT HIERARCHY (following De Lacy 2003)
***ONSET/{VOW}**
***ONSET/{VOW, GLI}**
***ONSET/{VOW, GLI, LIQ}**
***ONSET/{VOW, GLI, LIQ, NAS}**
***ONSET/{VOW, GLI, LIQ, NAS, FRI}**
***ONSET/{VOW, GLI, LIQ, NAS, FRI, PLO}**

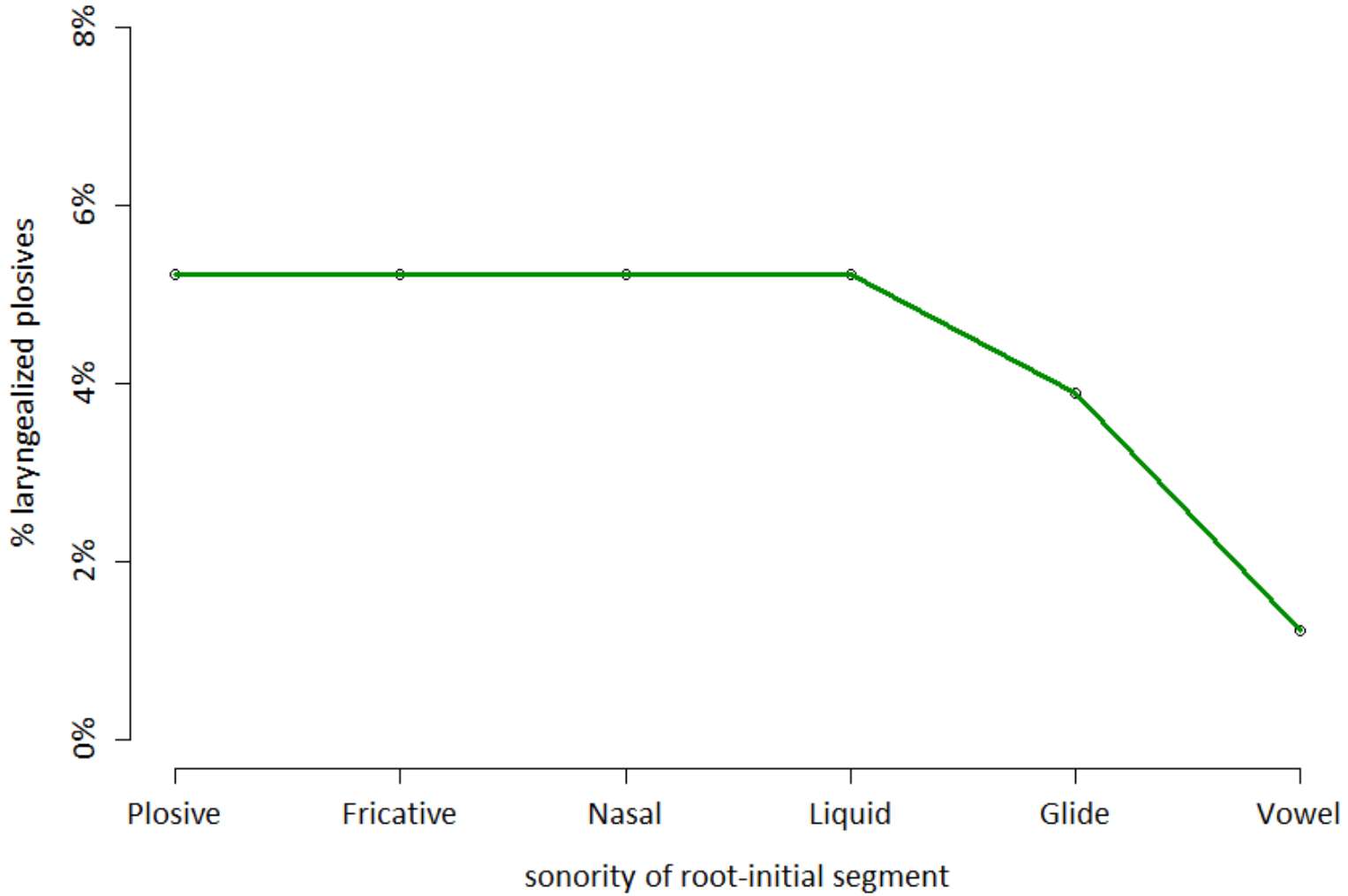
Sonority + laryngealized plosive

COINCIDE (McCarthy 2003)
Assign one violation mark to every laryngeal feature occurring in non-initial position.

LOCAL CONSTRAINT CONJUNCTION (following Smolensky 1995)
***ONSET/{VOW} & COINCIDE**
***ONSET/{VOW, GLI} & COINCIDE**
***ONSET/{VOW, GLI, LIQ} & COINCIDE**
***ONSET/{VOW, GLI, LIQ, NAS} & COINCIDE**
***ONSET/{VOW, GLI, LIQ, NAS, FRI} & COINCIDE**
***ONSET/{VOW, GLI, LIQ, NAS, FRI, PLO} & COINCIDE**

Model # 1 in MaxEnt Grammar

- Using the MaxEnt Grammar Tool (Wilson 2006), we trained a model on the Southern Aymara lexicon using the constraint conjunction family.
- The model was unable to replicate the sonority curve.

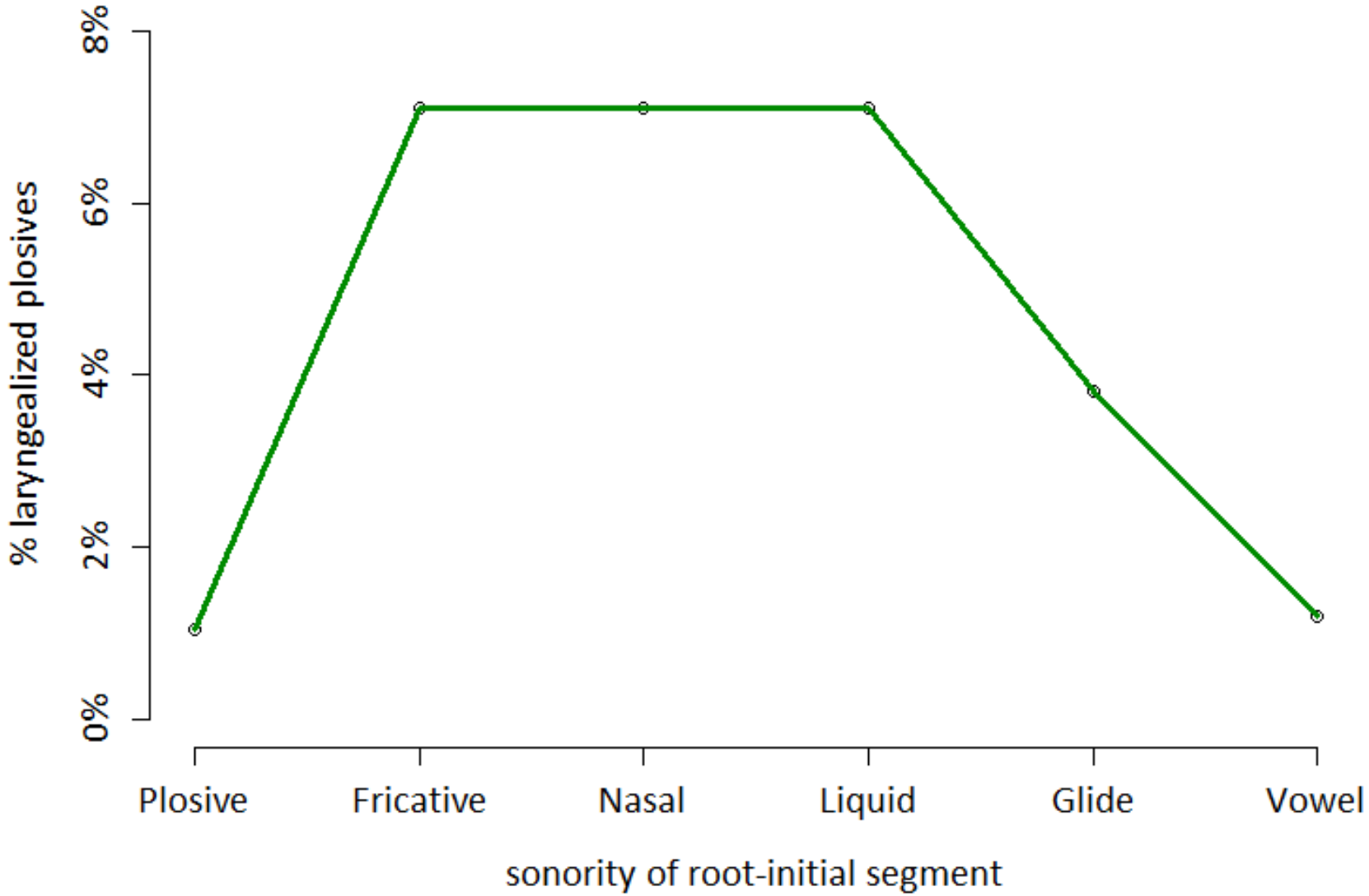


Positional constraint

COINCIDE (McCarthy 2003)
Assign one violation mark to every laryngeal feature occurring in non-initial position.

Model # 2 in MaxEnt Grammar

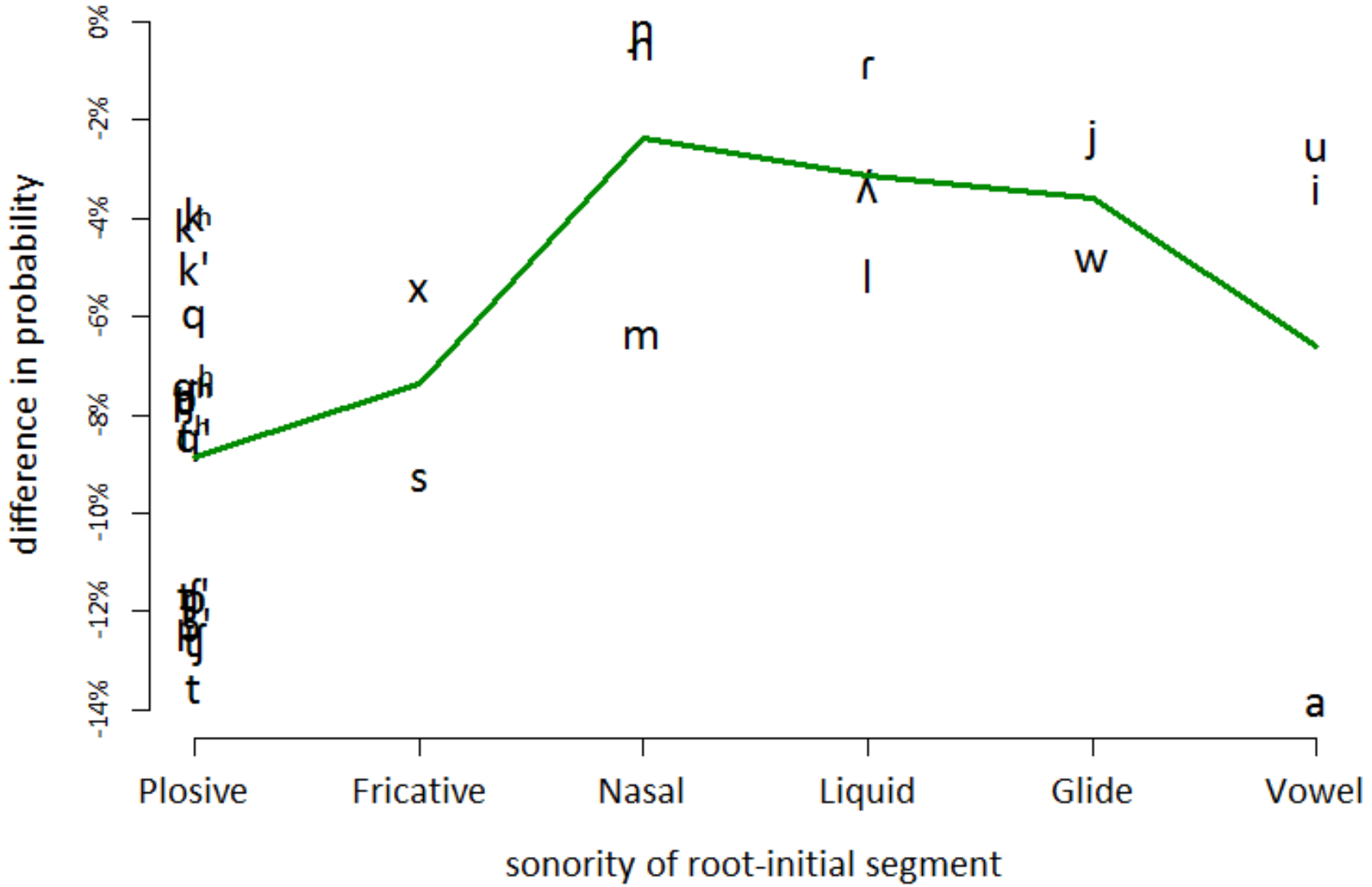
- We trained a new MaxEnt model on the lexicon using the using the constraint conjunction family and COINCIDE.
- The model matches the lexical statistics very closely and generates the expected sonority curve.



Model # 3 in UCLAPL

- Using the UCLA Phonotactic Learner (Hayes & Wilson 2008), we trained a model on the lexicon and a testing list of 16,866 real and nonce disyllabic roots.

- Reporting on the difference in probability, non-initial laryngealized plosives are predicted to be less probable in:
  Plosive-initial roots **(-9%)**
  Fricative-initial roots **(-7%)**
  Vowel-initial roots **(-7%)**



Conclusions

- We have identified a previously unknown generalization on the distribution of non-initial laryngealized plosives in Southern Aymara roots.

- By using stringent constraints for the sonority hierarchy and a restriction on the position of the laryngeal features in a root, we have offered an analysis that predicts the acceptability of non-initial laryngealized plosives in novel roots.

- We are currently preparing to test these predictions with a nonce word rating task (wug test; Berko 1958) with native Southern Aymara speakers in Puno (Peru).

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¡Yusulupay!
Thank you!

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