

SPONTANEOUS NASALIZATION IN CHINESE MIN DIALECT

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2015-10-26

What is spontaneous nasalization?

- Regular nasalization:

$V > \tilde{V} / \text{ ____ } N, \text{ or } N \text{ ____ }$

- Spontaneous Nasalization(Grierson 1922):

$V > \tilde{V} / \text{ without neighbouring nasals}$

- British English (upper class, Matisoff 1975)

‘half’ [hããf] ‘hour’ [ããə]

‘heart’ [hããt] ‘art’ [ããt]

Examples of SN (synchronical)

	Phonemic	Phonetic	Gloss
Thai (Matisoff, 1975)	/h'ɛɛ/ /ʔ'ɔk/	[hǎěǎ] [ʔõõk]	'parade' 'leave, depart'
Wichi' (Rogers, 2011)	/halaʔ/ /o-hux/	[hǎlaʔ] [o-hũx]	'tree' 'my finger'

Examples of SN (diachronical)

□ Hindi (M.Ohala, 1972):

SANSKRIT	HINDI	Gloss
sarpa	sāp	snake
svasa	sās	breath
hasya	hāsi	laughter

□ Lhasa Tibetan (Hogan, 1994):

Transcription	SR	Gloss
kho-tsho	[qhõ-tso]	they
ŋo-shes	[ŋo-shě]	to know a person
shes	[shě]	to know

Spontaneous nasalization in Min

Concept	English Gloss	Middle Chinese	Modern Min	Location	Source
他	'he'	*tho	thã		
可	'fine'	*kho	khõ	Bushang (Fujian)	Chen 1991
恶	'evil'	*ʔu	õ		
合	'close'	*kɔp	hãʔ		
火	'fire'	*hwo	hõ	Quanzhou (Fujian)	Lin 1993
好	'good'	*hou	hõ		
怕	'scare'	*phæk	phã		
耻	'shame'	*tʃjɨ	tʃhĩ	Shantou (Guangdong)	Lin 1996
鼻	'nose'	*bi	phĩ		
耗	'exhaust'	*hou	hõ		
快	'fast'	*khwai	khũã	Yunao (Guangdong)	Zhang 2012
休	'stop'	*hjəu	hĩũ		

What triggers SN?



- Rhinoglottophilia
- High airflow segments
- Low vowels

Rhinoglottophilia

- “Rhinoglottophilia”: the mysterious connection between nasality and glottality (Matisoff 1975)

$v > \tilde{v} / h_$

- Articulatory explanations:
 - There is no aerodynamic requirement for the velar closure
 - A lowered velum has little effect on glottal fricative
 - [h] exerts an acoustic effect on the vowel similar to that exerted by a nasal

High-airflow segments

Ohala (1975); Busa and Ohala(1995):

- Not just [h], but all high-airflow segments (voiceless fricatives and aspirated stops) has that effect

Articulatory explanations:

- HAS requires a greater glottal opening than other segments (e.g. voiceless unaspirated stops)
- The slightly open glottis creates a coupling between oral cavity and subglottal cavity that similar to nasal coupling
- Vowels that sounds nasal to listeners, are reinterpreted as nasal vowels

Low vowels



- If a language has vowel nasalization, it is low vowels that are affected first (Ferguson 1975)
- Low vowels are more likely to be articulated with a somewhat lowered velum than high vowels (Ohala 1972)
- The lowered velum has less effect on the acoustic quality of low vowels (Ohala 1974b)

Discussion



- Does the HAS effect exist in a language that has no SN? (e.g. Mandarin)
- What are the acoustic cues of HAS effect?
- How to explain the exceptions in Min?

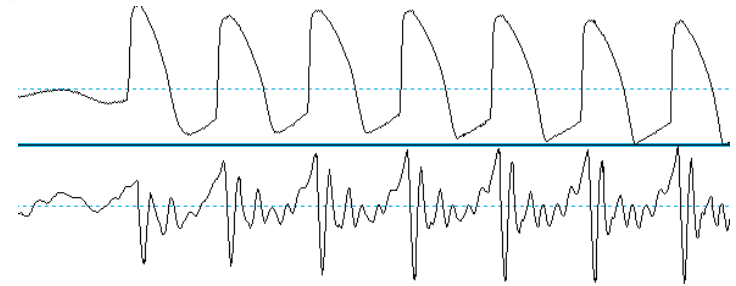
The effect of HAS on vowels in Mandarin

- Speakers : 4 males 2 females
- wordlist :
45 words * repeat 3 times*6 speakers = 810 samples

C	CH	S
巴[pa ⁵⁵]	趴[pha ⁵⁵]	发[fa ⁵⁵]
搭[ta ⁵⁵]	他[tha ⁵⁵]	撒[sa ⁵⁵]
嘎[ka ⁵⁵]	咔[kha ⁵⁵]	哈[ha ⁵⁵]
补[pu ²¹⁴]	普[phu ²¹⁴]	斧[fu ²¹⁴]
督[tu ⁵⁵]	突[thu ⁵⁵]	苏[su ⁵⁵]
姑[ku ⁵⁵]	哭[khu ⁵⁵]	呼[hu ⁵⁵]
...

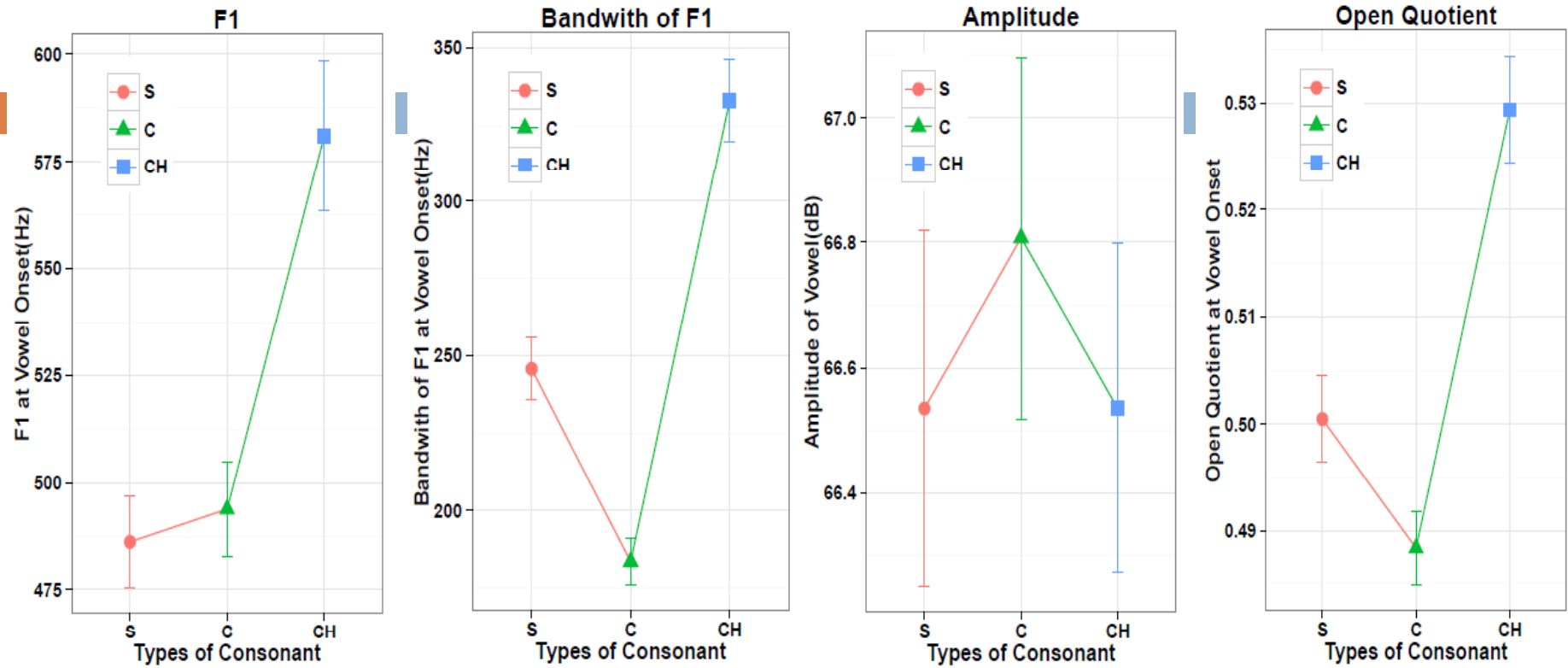
Recordings

- Recordings: WAV & EGG
- Instruments:
Complete audio 6 interface
AKG C544L microphone
Kaypentax model 6103



- Softwares: Fieldphone, Praat, R
- Parameters:
F1, Bandwidth of F1, Vowel amplitude, Open Quotient

Results:



One-way ANOVA & TukeyHSD Post hoc

	F1	BD	AMP	OQ
Main Effect	yes	yes	no	yes
C-S	Non-sig.	**	—	**
C-CH	***	***	—	***

Some exceptions to the HAS effect

□ No HAS, no low vowels

指	'finger'	*tɕi	tsãĩ	Xiamen (Fujian)	Huang 1998
椅	'chair'	*ʔie	ĩ		
柜	'closet'	*kjo	kũĩ	Yunao (Guangdon g)	Zhang 2012
把	CLASSIFIER	*pa	pě		

The diminutive “子”

- Grammaticalization of “子”:

kĩã⁵³ ‘son’ > ã⁵³ DIM “small things, cute name”

指子 ‘little finger’ [tsãĩ²²ã⁵³]

椅子 ‘chair’ [ĩ²²ã⁵³]

- Hypothesis: vowel nasalization through analogy

Single form: tsai⁵³ > tsãĩ⁵³



DIM form: tsãĩ²²ã⁵³

Conclusions



- There are two possible ways to explain the spontaneous nasalization in Min:
 1. articulatory: the HAS effect
 2. analogy

- The HAS effect exists in a language that has no SN
- The most significant acoustic results of HAS effect are the increasing of bandwidth of F1 and open quotient

References :

- [1] 戴黎刚(2008). "闽南话鼻化韵的历史演变." 语言研究集刊: 006.
- [2] 黄典诚、李如龙(1998). 福建省志·方言志, 北京: 方志出版社.
- [3] 陈章太. 李如龙(1991). 闽语研究,北京: 语文出版社.
- [4] 林伦伦等(1996). 《广东闽方言语音研究》, 汕头大学出版社, 汕头
- [5] 林伦伦、林春雨(2007). 《广东南澳岛方言语音词汇研究》, 中华书局, 北京
- [6] Grierson G A. Spontaneous nasalization in the Indo-Aryan languages[J]. Journal of the Royal Asiatic Society of Great Britain & Ireland (New Series), 1922, 54(03): 381-388.
- [7] Busa, M. G. and J. Ohala (1995). "Nasal loss before voiceless fricatives: a perceptually-based sound change." *Rivista di Linguistica* 7: 125-144.
- [8] Ferguson, C. (1975). Universal tendencies and 'normal' nasality. *Nasálfest: Papers from a Symposium on Nasals and Nasalization*.
- [9] Matisoff, J. A. (1975). Rhinoglottophilia: the mysterious connection between nasality and glottality. *Nasálfest: Papers from a symposium on nasals and nasalization*, Stanford University Language Universals Project, Stanford, Calif.
- [10] Ohala, J. J. (1975). Phonetic explanations for nasal sound patterns. *Nasálfest: Papers from a symposium on nasals and nasalization*.
- [11] Ohala, J. J. and M. Amador (1981a). "Spontaneous nasalization." *The Journal of the Acoustical Society of America* 69(S1): S54-S54.
- [12] Ohala M. Nasals and nasalization in Hindi[J]. *Language Universals Project*, Stanford: Stanford University, 1975: 317-332.
- [13] Ohala J J. Phonetic explanation in phonology[J]. *parasession on natural phonology*, 1974: 251-74.
- [14] Hogan, L. C. (1994). "Nasalization in Lhasa Tibetan." *Linguistics of the Tibeto-Burman Area* 17(2): 83-102.



Thank you !