

# Dialectal variation in affricate place of articulation in Korean

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## Place of Articulation of Korean Affricates

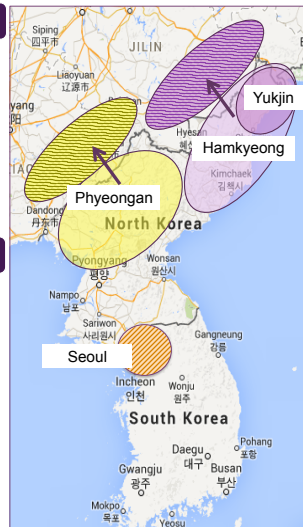
- The affricate place of articulation is a marker of major dialect division.
  - Northern (Pyeongang, Hamkyeong): “dental”
  - Central and Southern (including Seoul): “palatal”
- (K. M. Lee 1972, H. M. Sohn 1999, C. G. Kwak 2005, E. H. Chung 2012)
- But, some recent studies find:
  - Northern dialects show frequent posterior affricate productions.
  - Seoul affricates are (denti-)alveolar, show gender-based variation suggestive of affricate fronting sound change.
- (Shin 1997; H. Kim 1999, 2004; Anderson et al. 2003; S. Han 2006; Kang & Kochetov 2010; Kong et al. 2014)

## Goals of the study

- First instrumental study to compare the affricate place of articulation between Northern dialects of Korean and Seoul Korean
- Age and gender-based variation in affricate place of articulation in Seoul Korean

## Participants

- Northern dialects as spoken by Ethnic Koreans in China
  - Hamkyeong: M11, F10 (Year of birth: 1936~1966)
  - Pyeongang: M13, F10 (Year of birth: 1937~1969)
- Seoul Korean
  - Older: M17, F14 (Year of birth: 1943~1966)
  - Younger: M13, F10 (Year of birth: 1981~1992)



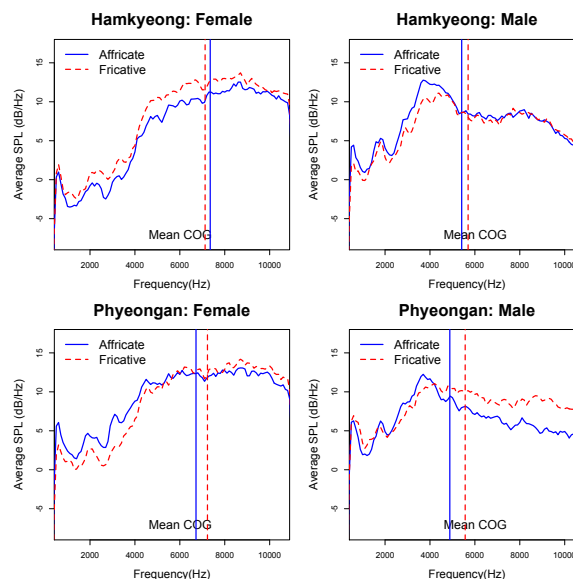
## Speech Materials

- Words with initial ‘ㅈ’ /c/ (lenis affricate) & ‘ㅅ’ /s/ (lenis anterior fricative)
- Before eight vowels /e ε i ʌ u o/ (non-palatalizing vowels)
- Words in isolation
- 3 repetitions

## Acoustic analysis

- Frication COG (Centre of Gravity)
  - 11.6ms Hamming window centred around the maximum intensity point
  - frequency: 500~11025Hz

## Frication Average Spectra: Northern dialects



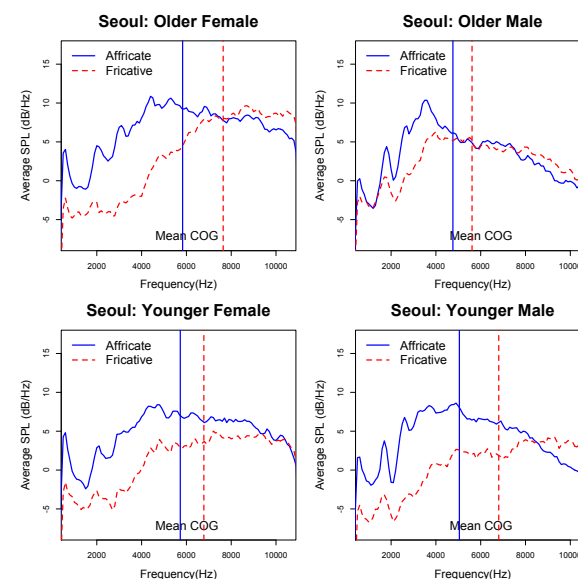
- In Northern dialects, the affricate /c/ has an anterior place of articulation, comparable to that of fricative /s/.

## /c/ vs. /s/ COG comparison by vowel

	e	ε	ø	i	ʌ	ɑ	u	o
Hamkyeong (F)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Hamkyeong (M)	n.s.	*	n.s.	*	*	n.s.	n.s.	n.s.
Pyeongang (F)	*	n.s.	n.s.	*	n.s.	n.s.	n.s.	n.s.
Pyeongang (M)	*	*	n.s.	*	*	n.s.	*	*
Older Seoul (F)	*	*	*	*	*	*	*	*
Older Seoul (M)	*	*	*	*	*	*	*	*
Younger Seoul (F)	n.s.	n.s.	*	*	*	*	*	*
Younger Seoul (M)	*	*	*	*	*	*	*	*

- The dialect difference is confirmed.
- Between the two Northern dialects, Hamkyeong dialect has a more front affricate place of articulation and less place contrast between /c/ and /s/ than Pyeongan dialect.
- In Northern dialects, males tend to have more place contrast between affricate and fricative than females.

## Frication Average Spectra: Seoul



- In Seoul Korean, the affricate /c/ has a more posterior place of articulation than that of fricative /s/.

## Age and Gender effect in Seoul

- In Seoul Korean, the gender effect is not uniform across age groups.
  - In Older Seoul Korean speakers, **female** speakers make a more distinct place contrast between affricate and fricative than **male** speakers.
  - In Younger Seoul Korean speakers, **male** speakers make a more distinct place contrast between affricate and fricative than **female** speakers.
- Affricate remains stable across generations but fricative varies.
  - Many younger male speakers produce the fricative as ‘dental’.
  - Younger female speakers, on the other hand, have a more retracted fricative compared to the younger male speakers and also the older female speakers.
- Gendered variation. No clear trend of sound change.

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