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 (Phyeongan, Hamkyeong): “dental”
  - Central and Southern (including Seoul): “palatal”
- But, some recent studies find:
  - Northern dialects show frequent posterior affricate productions.
  - Seoul affricates are (dent-)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
- Seoul Korean

Speech Materials

- Words with initial ‘-/c/’ fricative & ‘-/s/’ fricative
- Before eight vowels /e e a i a o 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

<table>
<thead>
<tr>
<th>Vowel</th>
<th>Hamkyeong (F)</th>
<th>Hamkyeong (M)</th>
<th>Phyeongan (F)</th>
<th>Phyeongan (M)</th>
<th>Older Seoul (F)</th>
<th>Older Seoul (M)</th>
<th>Younger Seoul (F)</th>
<th>Younger Seoul (M)</th>
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<tbody>
<tr>
<td>e</td>
<td>n.s.</td>
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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 Phyeongan 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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