



The adaptation of Mandarin falling diphthongs in Heritage Korean in China: The interaction of linguistic and sociolinguistic factors



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Introduction

- Most dialects of Korean have no falling diphthong, except for some remnants of Late Middle Korean diphthongs which have a marginal status at best ([ij] or [uj]).
- The current study investigates the adaptation of Mandarin falling diphthongs /ei, ai, au, ou/ into heritage Korean spoken in China (=Chinese Korean).
- Goals
 - ✧ **Homeland vs. Heritage:** To examine how the conflicting demands of the faithfulness to input structure and the constraints of native phonology are resolved differently depending on the sociolinguistic context of borrowing.
 - ✧ **Phonetic effects in established vs. on-line adaptation:** To examine to what extent phonetic conditioning attested in extant loanwords is accurately internalized by the speakers and productively extended in an on-line adaptation task.

Hypotheses

- Homeland vs. Heritage**
 - ✧ Faithfulness to the input prosodic structure (preserving the syllable count) will be more important in the context of high than low bilingualism (Kang 2010a)
 - ✧ Importation of novel foreign structure will be more common in Heritage Korean than in Homeland Korean (Haugen 1950, Paradis & LaCharité 2008).
- Phonetic effects in established vs. on-line adaptation:**
 - ✧ In the bilingual population, generalizations speakers draw about adaptation patterns are mediated by their knowledge of input language phonological categories.
 - ✧ As a result, speakers may “overlearn” or “underlearn” subtle phonetic effects.

Experiments

- Participants:**
 - ✧ Seven Mandarin-Korean bilinguals (age: 26-69) in Dandong, China, who consider Korean as their native language
- Stimuli:**
 - ✧ Mandarin disyllabic words that contain a falling diphthong
 - ✧ Balanced for phonological factors:
 - diphthong type (ei, ai, au, ou)
 - Mandarin tone (T1, T2, T3, T4)
 - syllable position in word (Initial, Final)
 - ✧ **Established loans (loan):** Mandarin words with corresponding established loanforms in Chinese Korean (n=128)
 - ✧ **On-line adaptation (wug):** Mandarin words without an established loanform in Chinese Korean (n=92)
- Procedure:**
 - ✧ Mandarin words were presented aurally along with the Chinese orthography. Participants then read corresponding Korean loanwords embedded in a contextually appropriate carrier sentence.
- Analyses:**
 - ✧ The speakers’ production was recorded and transcribed by the first author and verified by another native Korean speaker (agreement rate = around 90%).
 - ✧ A total of 1,207 instances of diphthong adaptation are analyzed for the study.
- Statistics:** a logistic mixed-effects regression analysis
 - ✧ Dependent variable: monophthong vs. diphthong
 - ✧ Predictor variables: diphthong type, tone, position, age (younger, middle, older), experiment block (loan vs. wug)



Results: overview

- Responses are categorized into two types:

Substitution (75.8%)	Importation (24.2%)
Coalescence into monophthong	Retention of diphthong
雪糕[xue3 gao1] > /swe.k'o/	彩票[cai3 piao4] > /tsai.phjo/

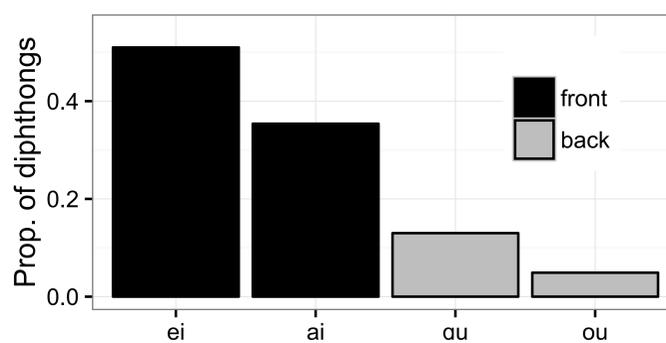
cf. Homeland Korean: **syllable split**
毛泽东[mao2 ze2 dong1] > /ma.o.z'ʌ.tuŋ/

M. Input: /ao/	*FALLDIPH	*COALESCENCE	DEP-SYL
Homeland: /a.o/	✓	✓	*
Heritage: /o/	✓	*	✓
Heritage: /ao/	*	✓	✓

- In Heritage Korean, prosodic faithfulness (**DEP-SYL**: do not add a syllable) is obeyed at the cost of violating a native phonological restriction (***FALLDIPH**: no falling diphthong) or a segmental faithfulness constraint (***COALESCENCE**: no coalescence).

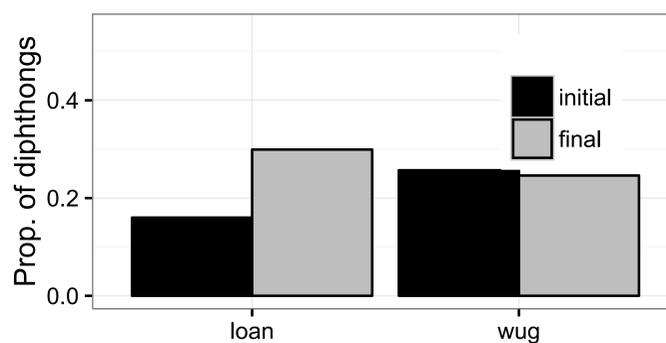
Results: diphthong type

- Diphthongal realization** is more likely for the **front** unrounded diphthongs /ai, ei/ than for the **back** rounded diphthongs /au, ou/.
- This holds consistently regardless of position, tone, experiment block, or age.
- A similar asymmetry—preferential retention of j-final diphthongs over w-final diphthongs—is reported for English loanwords in Korean (Kenstowicz & Sohn 2001).
- We conjecture that this asymmetry is related to the fact that Late Middle Korean had a robust system of j-final diphthongs but no w-final diphthongs (Lee & Ramsey 2011).



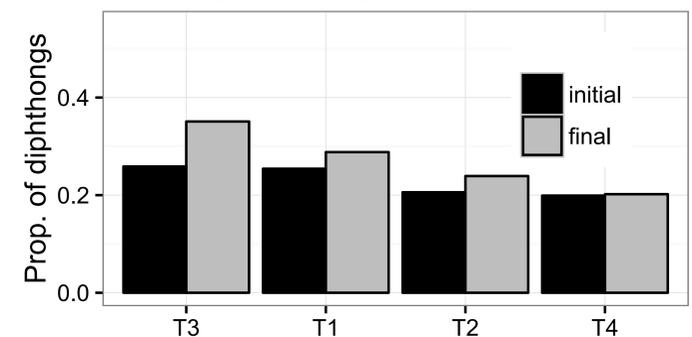
Results: syllable position

- Diphthongal adaptation** is more likely when the vowel occurs in **word-final syllables** than in non-final syllables.
- The strong effect of word position found in the established loans went away in the on-line adaptation block.
- Underlearning of phonetic effects:** the position effect, i.e., the phonetic duration effect stemming from the word position, is not productively projected to new adaptation. Rather, speakers seem to internalize the adaptation pattern abstracting away from this context-dependent phonetic variation.



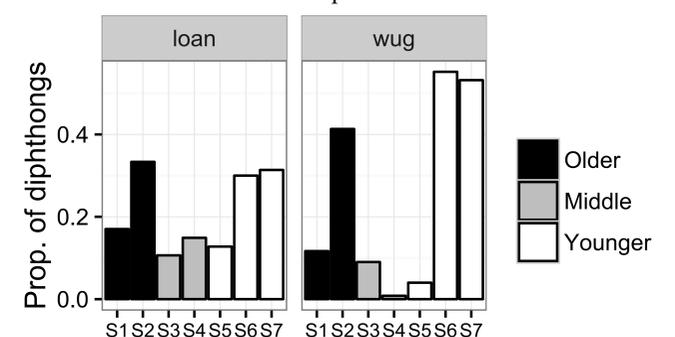
Results: tone

- The duration difference of Mandarin tones (Xu 1997, Wu & Kenstowicz 2015) affects the adaptation, **with a longer tone inducing more diphthongal adaptation.**
- T3, normally the longest tone, shortens to the same duration as other tones in non-final position (Yang 2015) but adapters showed a similar tone effect in all positions.
- Overlearning of phonetic effects:** the tone effect may have originated from the phonetic durational asymmetry, but the speakers seem to have internalized the diphthongal preference of longer tones (T3 in particular) as a phonological generalization which persists even in contexts where the phonetic duration is no longer there to condition the different adaptation strategy.



Results: speaker age

- No clear effect of age is found, although the two speakers that show the highest rates of diphthongal adaptation (importation) were also the two youngest speakers.
- The tendency in the established loans is exaggerated in the on-line adaptation block.
 - ✧ Speakers who prefer monophthongal substitution in established loans (S1, S3, S4, S5) tend to do so more in on-line adaptation.
 - ✧ Speakers who produce diphthongal importation frequently in established loans (S2, S6, S7) tend to do so even more in on-line adaptation.



Conclusion

- Mandarin falling diphthongs are adapted differently under two different sociolinguistic contexts, with prosodic preservation and importation favored in the bilingual context of Heritage Korean compared to Homeland Korean.
- The phonetic duration of the input vowel affects adaption (i.e., longer vowels induce more diphthongs) but these phonetic effects make their way into the lexicon (established loans) and the grammar (on-line adaptation) through the sieves of Mandarin phonological categories, leading to elimination of contextual phonetic effects (such as position conditioned duration variation) but to entrenchment of tone effects.

Thank you: Professor Sun Ying at Liaoning University, Yunyan Luo, and Yuanyang Song for assistance in data collection; Sung-Geol Kim and Luke West for help with stimulus preparation; Hyoung Seok Kwon for help with data analysis; Keren Rice and Jessamyn Schertz for feedback on the study; SSHRC grant #435-2013-2092 for funding.