The alternation of consonant-final nouns in heritage Korean in GTA*

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Heritage Language Workshop

May 7, 2009

* This project is funded by the UTSC Undergraduate Research Opportunities Fund.

1. Introduction

- **Heritage speakers**
  - limited access to learning data
  - "wide variability in the range of language abilities"
  - "the range of educational and literacy possibilities"
  - regularization or "overgeneralization"
    - Phonologically conditioned grammatical gender in American Russian (Polinsky 2008)
    - Paradigm leveling in verbs in American Korean (Choi 2003)
      - Innovations in homeland Korean tend to be ***extensions*** of frequent alternations while Child Korean and American Korean seem to show ***leveling*** of alternations. (Kang 2007)

- **Korean nouns**
  - Innovations in Homeland Korean: extension of ***frequent*** patterns (alternation or leveling)
    - leveling

      [mulɨp] ~ [mulɨp^{h}-i] ‘knee’ ⇨ [mulɨp] ~ [mulɨ**p**-i]
    - extension of “t~s” alternation

      [k*ot] ~ [k*oc^{h}-i] ‘flower’ ⇨ [k*ot] ~ [k*o**s**-i]
  - Heritage Korean?
    - Anecdotal observation of leveling, not found in homeland Korean: [ot] ~ [os-ɨn] ⇨[ot] ~ [ot-ɨn]
    - No systematic study

- **Theoretical relevance**
  - Paradigm leveling (non-alternation) as default preference
    - High ranking OO-faithfulness constraints in the initial state of UG (McCarthy 1998, Hayes 2004, Tessier 2006)
  - With exposure to learning data, the default preference gives way to alternations based on the learning data.
    - Anti-faithfulness constraints (cf. Hayes 1997, Alderete 200x)
  - Predictions re. heritage speakers:
    - Heritage speakers with less exposure to the learning data may show the “leveling” innovation, presumably retaining the default preference of the initial state of UG.

2. Korean morpho-phonology

➢ Consonant inventory

p p^h p*	t t^h t* c c^h c* s s*	k k^h k*	h
m	n	ŋ	
	L ([l/r])		
w	j		

- **Coda neutralization in obstruents**

  /p p^h p*/ → [p]

  /k k^h k*/ → [k]

  /t t^h t* s s* c c^h c* h/ → [t]

- **Coda cluster simplification**
  - Korean syllable template: CGVC
  - CC → C in coda

- **Alternation**

	____ɨn (topic)	____#	____to
/mulɨp^h/ ‘knee’	mu.lɨ.**p^h**-ɨn	mulɨ**p**	mulɨ**p**-t*o
/kaps/ ‘price’	ka**p.s***-ɨn	ka**p**	ka**p**-t*o

- **Neutralization of underlying contrast**

		____ɨn (topic)	____#	____to
/hɨlk/	‘soil’	hɨlk-ɨn	hɨk	hɨk-t*o
/hɨk/	‘black’	hɨk-ɨn	hɨk	hɨk-t*o

- **Coronal conundrum**: the problem is particularly “serious” for coronals.

		____ɨn (topic)	____#	____to
/nat^{h}/	‘individual’	nat^{h}-ɨn	nat	nat-t*o
/nac^{h}/	‘face’	nac^{h}-ɨn	nat	nat-t*o
/nac/	‘day’	nac-ɨn	nat	nat-t*o
/nas/	‘sickle’	nas-ɨn	nat	nat-t*o

- **Learning the paradigm**
  - Relative frequency of Korean noun forms in child-directed speech (I. Lee 1999)

Unsuffixed	**75%**
Nominative (-i)	20%
Accusative (ɨl)	5%

  - A Korean-learning child is in general more likely to hear the neutralized form (e.g., [nat]) than the more "informative" V-initial suffix forms (e.g. [nat^{h}ɨn]).
  - A Korean-learning child may run into a situation where upon hearing [nat] 'X', he wants to say 'X-ɨn' but does not know which coronal obstruent the word ends in.

- **What actually happens in Homeland Korean?**
  - No study on Child Korean that we are aware of…
  - Adult Korean: Historical change, synchronic variation, loanword adaptation
    - For cluster simplification and labial and dorsal obstruents, “leveling” is the most common pattern.

		____ɨn (topic)	____#	____to
/hɨlk/	‘soil’	hɨlk-ɨn~**hɨk**-ɨn	hɨk	hɨk-t*o
/mulɨp^{h}/	‘knee’	mulɨp^{h}-ɨn~**mulɨp-**ɨn	mulɨp	mulɨp-t*o

- For coronal obstruent-final nouns, /s/ is the innovative choice!

		____ɨn (topic)	____#	____to
/pic/	‘debt’	pic-ɨn~**pis-**ɨn	pit	pit-t*o
		(*pi**t-**ɨn)		
?	‘David’	**teipis-**ɨn	teipit	teipit-t*o
		(*teipi**t-**ɨn)		

(The whole story is obviously somewhat complicated… but for the current purpose we can assume this.)

Kwak 1984, J. Choi 1986, Ko 1989, AKS 1990-1995, H. Kang 1992, Hayes 1998, H. Sohn 2001, Albright 2002, 2005, Y. Kang 2002, 2003, 2005, 2007, K-J. Lee 2002, NIKL 2004, E. Kang et al. 2004, S., Idsardi 2005, Park 2006, Davis and Kang 2006, Jun 2007, Jun and Lee 2007, Ito 2007, etc.

- The choices seem based on the statistical knowledge of existing words in the lexicon.

  cf. Learners as skillful statisticians

  Coleman and Pierrehumbert (1997), Frisch et al. (2000), Bybee (2001), Albright and Hayes (2002), Ernestus and Baayen (2003), Edwards et al. (2004), etc.

  - Korean: /s/ is the most common of all nouns that end in a coronal obstruent in Korean.
  - Distribution of noun-final obstruents (Albright 2008, based on Sejong corpus)

t	t^h	t*	c	c^h	c*	s	s*
1	113	0	17	160	0	375	0

- **Orthography**
  - Orthography still reflects the “original” underlying consonant.
  - higher education → more likely to accept “original” consonant pronunciation
    - NIKL (2004) survey of over 1000 speakers from Seoul-Kyenggi region.
    - Speakers with middle school or higher education are more likely to use the “correct” form reflected in orthography than speakers with no education or elementary school education.
  - No striking age effect

- **Interim summary**
  - Neutralization of underlying contrast in unsuffixed form led to reanalysis and variation/change in homeland Korean
  - In case of coronal obstruent-final nouns, the change is in the direction of extension of frequent alternation, not leveling.
  - If there is indeed a default preference for leveling, we may be able to observe ***leveling*** in some heritage speakers.

3. Methodology

➢ Participants

- Heritage Koreans (cf. Choi 2003, Polinsky 2008)
  - either born in Canada/US or came here approx. 5yrs of age or younger
  - full fluency is not required
  - primary caregivers must be Native Koreans
  - at least 17 (actual range: 17-23)
- Native Koreans
  - Korean as first language
  - have resided in Korea until 16yrs or older
  - from Seoul and surrounding area
  - between 18~30yrs

➔ 11 Heritage Koreans (4f, 7m)

1 participant could not perform the sentence completion task and her result is not included ➔ 10

➔ 7 Native Koreans (3f, 4m)

➢ Tasks

- Task 1: Sentence completion task
  - Given a noun, the participants were asked to use the noun in a frame sentence, once with a subject marker and once with a topic marker.

e.g. Noun: /pam/ ‘chestnut’

‘___+subj. is big’ /____i k^hɨta/ ➔ [pam-i k^hɨta]

‘___+top. is big’ /____ɨn k^hɨta/ ➔ [pam-ɨn k^hɨta]

- 7 different sentences are used to make the sentence semantically natural when combined with the target word.
- For each sentence type, between 1 and 6 practice items were presented before the test items were given.

- Task 1: Sentence completion task (continued)
  - Test items
    - 33 controls: nouns ending in a sonorant consonant (no alternation expected)

      /mul/ ‘water’ [mul] ⇨ [mul-i] [mul-ɨn]

    - 52 targets: nouns ending in a single obstruent or a consonant cluster (there may be alternation)

      /pap/ ‘meal’ [pap] ⇨ [pap-i] [pap-ɨn]

      /pak*/ ‘outside’ [pak] ⇨ [pak*-i] [pak*-ɨn]

      /kaps/ ‘price’ [kap] ⇨ [kaps*-i] [kaps*ɨn]

    ➔ Total: 85 words x 2 suffixes = 170 sentences

    - Today, we will focus on the coronal obstruents only.

- Task 2: Word Translation
  - 76 Korean nouns (Frequency count based on NIKL2002)
    - 19 words from the *high* frequency range (500+ count)
    - 38 words from the *mid* frequency range (100~499 count)
    - 19 words from the *low* frequency range (10~99 count)
  - A wide range of responses were accepted as “correct”
    - Direct English translation
    - Conceptual understanding
    - Semantically related in the general sense

- Task 3: Language background questionnaire
  - a questionnaire minimally revised from Kim Hi-Sun (2005)
  - 14 Questions including: language background, language usage, and self assessment of Korean language abilities

4. Results: Coronal obstruent-final nouns

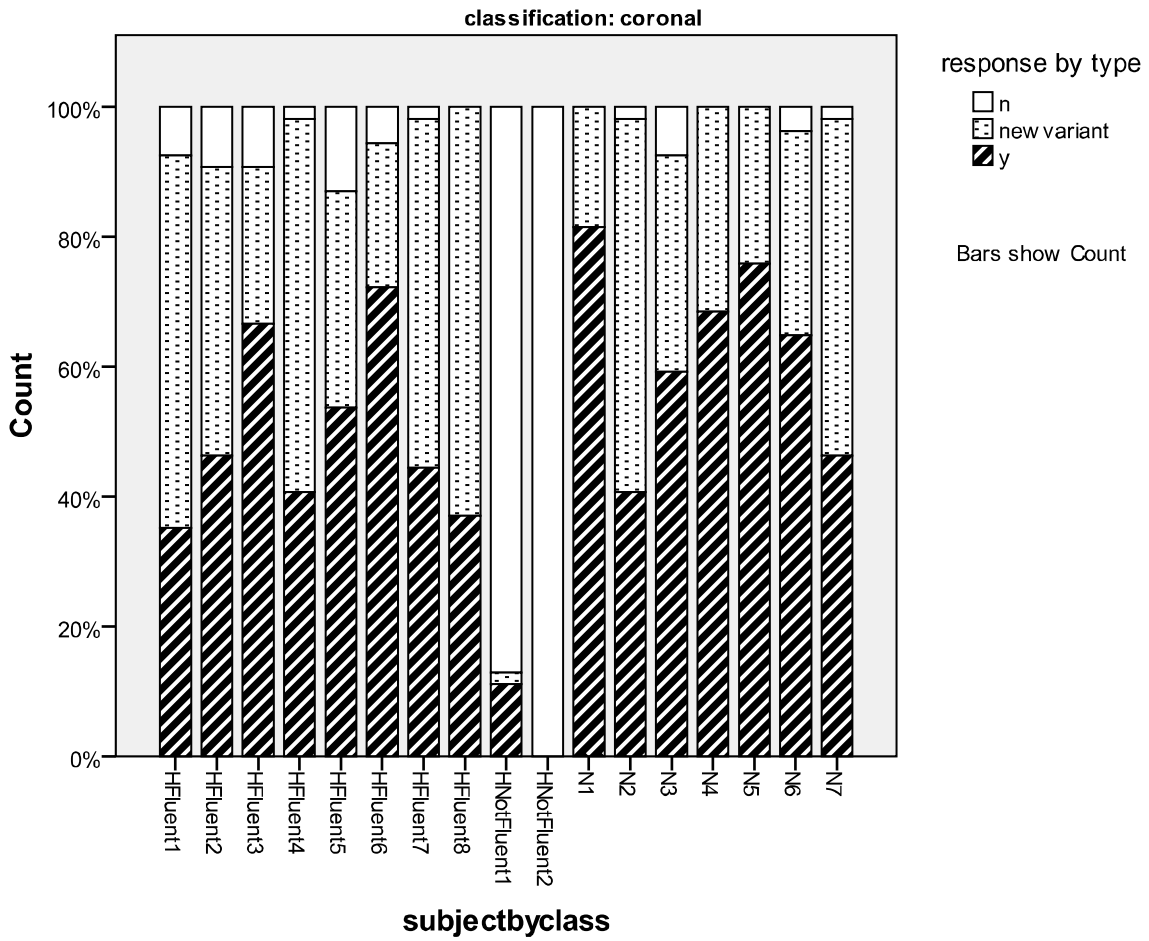
- **Categorization of Responses**
  - a correct original underlying consonant (‘y’):

    e.g., /pic/ ‘debt’ [pit] ⇨[pic-i]
  - a variant that is frequently used in homeland Korean (‘new variant’)

    e.g., /pic/ ‘debt’ [pit] ⇨ [pis-i]
  - an incorrect response (‘n’)

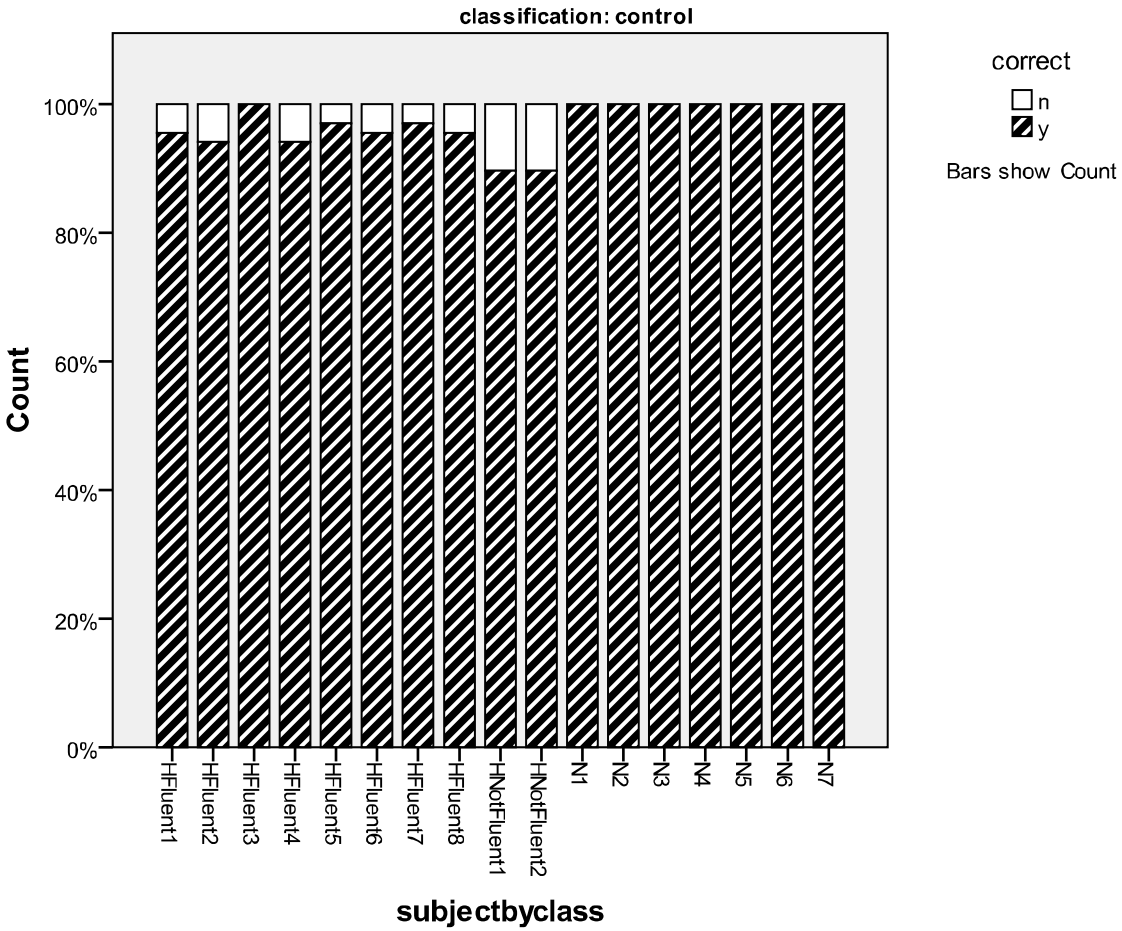
    e.g., /pic/ ‘debt’ *[pit-i], *[pit^{h}-i], *[pic^{h}-i]

➢ **Responses for coronal obstruents** (N=54)



- 8 heritage speakers (left: HFluent) show a pattern similar to native speakers (right: N).
- 2 heritage speakers (middle: HNotFluent) show a very low rate of acceptable responses.

➢ Responses for sonorant consonants (controls) (N=68)



- Native:

100% correct

- HFluent:

96.1% correct

- HNotFluent:

89.7% correct

- **Errors by the non-fluent heritage speakers**
  - HNotFluent2: almost always [t]

    e.g., /pic/ ⇨ [pi**t-**i] ‘debt-subj.’
  - HNotFluent1: still [t] is the majority but more random

Responses	N
[t]	12
[t^h]	7
[s]	4
[c^h]	2
[c]	1
Others	28
Total	54

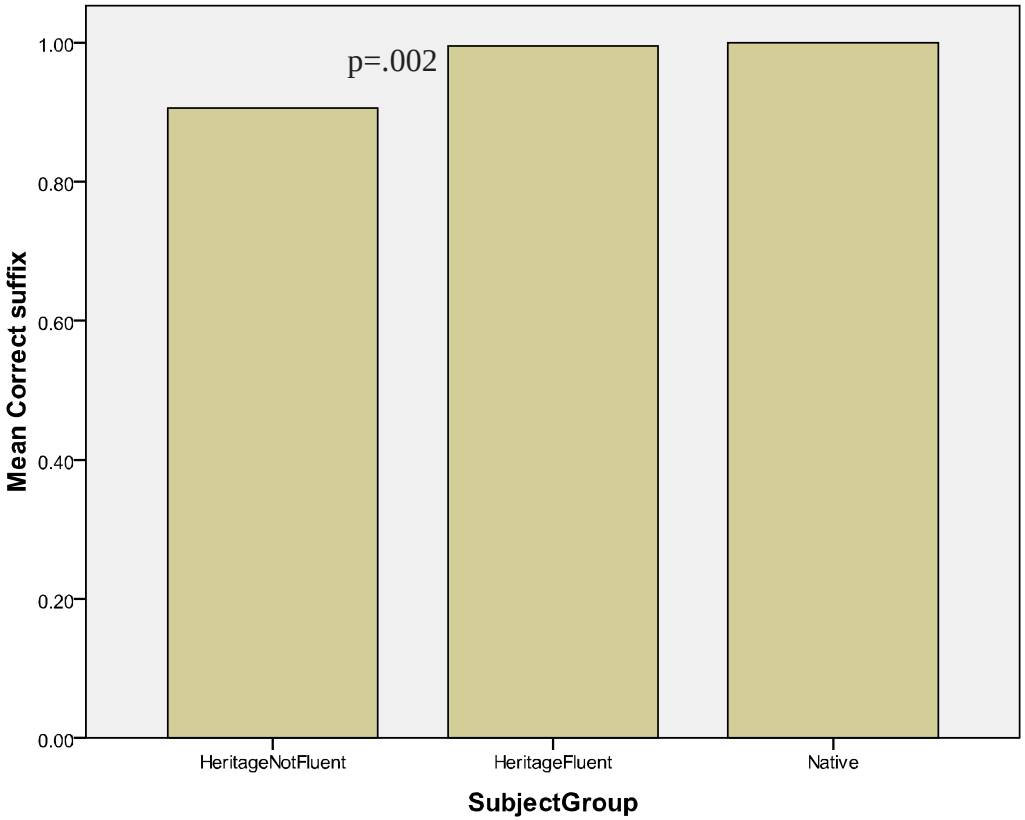
no resyllabification e.g., /s*ias/ + sub. → [s*iat.i]

wrong allomorph e.g., /kʌt^h/ + sub. → [kʌt.**ka**]

5. Accounting for the difference between the two groups of heritage speakers

- **The two groups of heritage speakers**
  - Two of the heritage speakers show the default "leveling" strategy not attested in Native Korean while the other eight speakers show a pattern similar to native speakers.
  - What differentiates the two groups of heritage speakers?

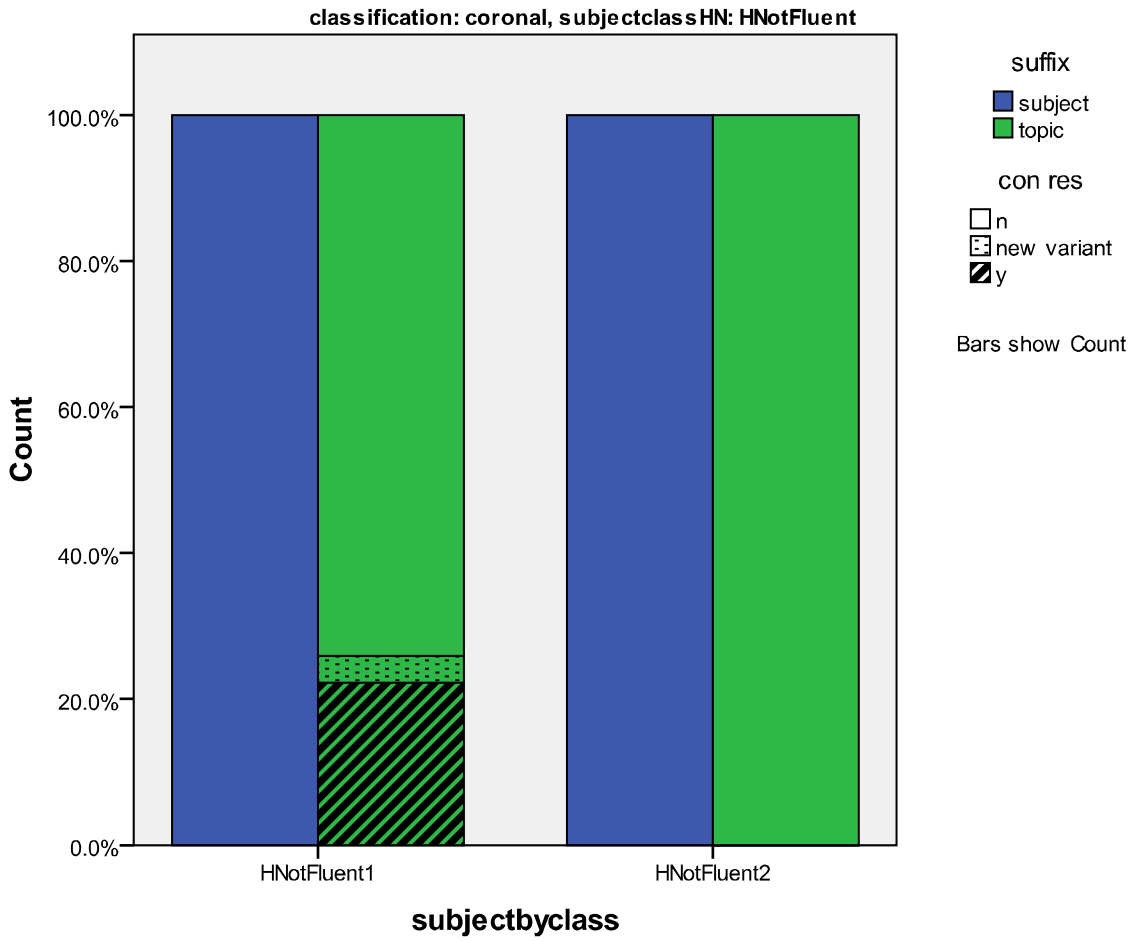
➢ Suffix errors



- Non-fluent heritage speakers made a number of suffix errors in the sentence completion task.
  - Wrong suffix
  - Wrong allomorph
- Fluent heritage speakers and native speakers almost never made such mistakes.

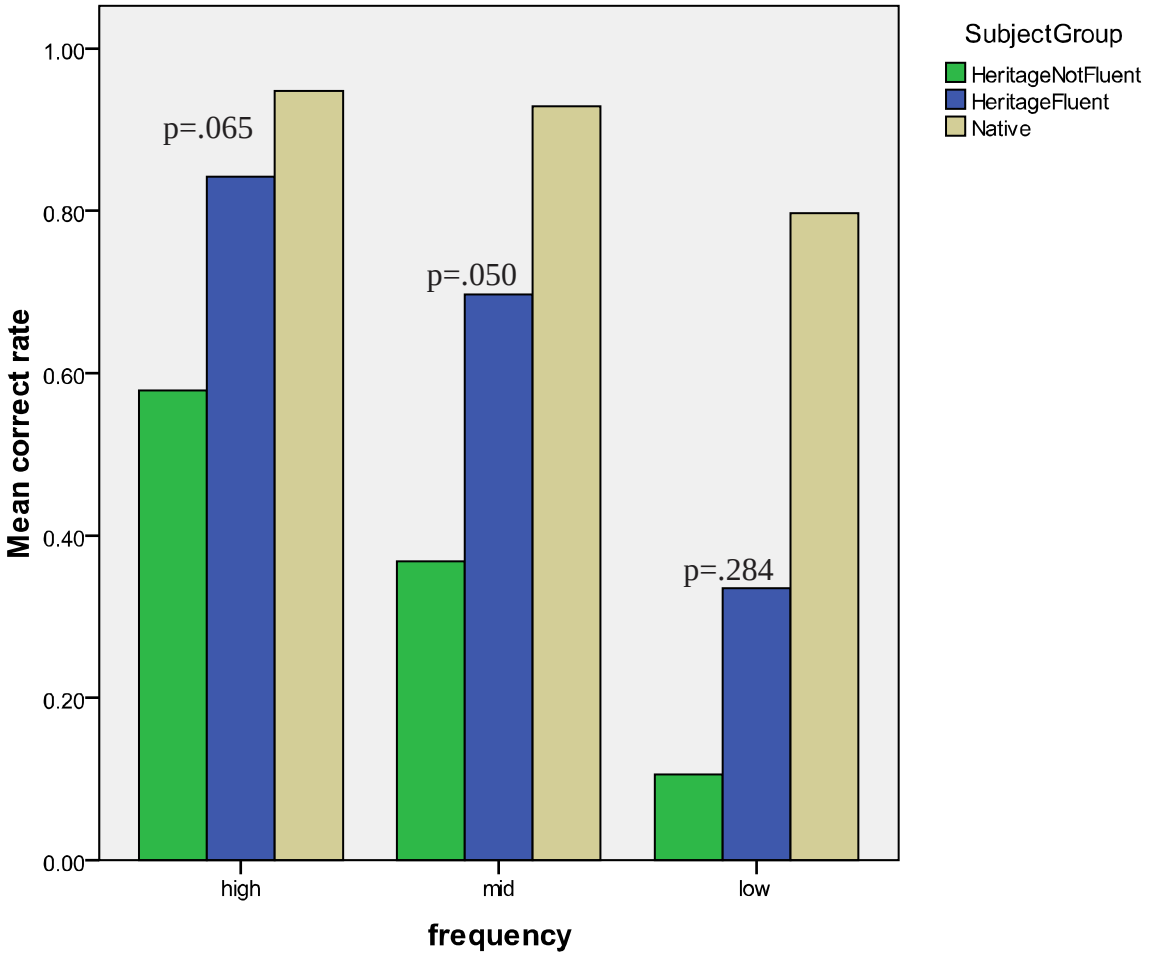
- The difference between the two heritage groups is significant (p=.002)

➢ Topic vs. Subject markers



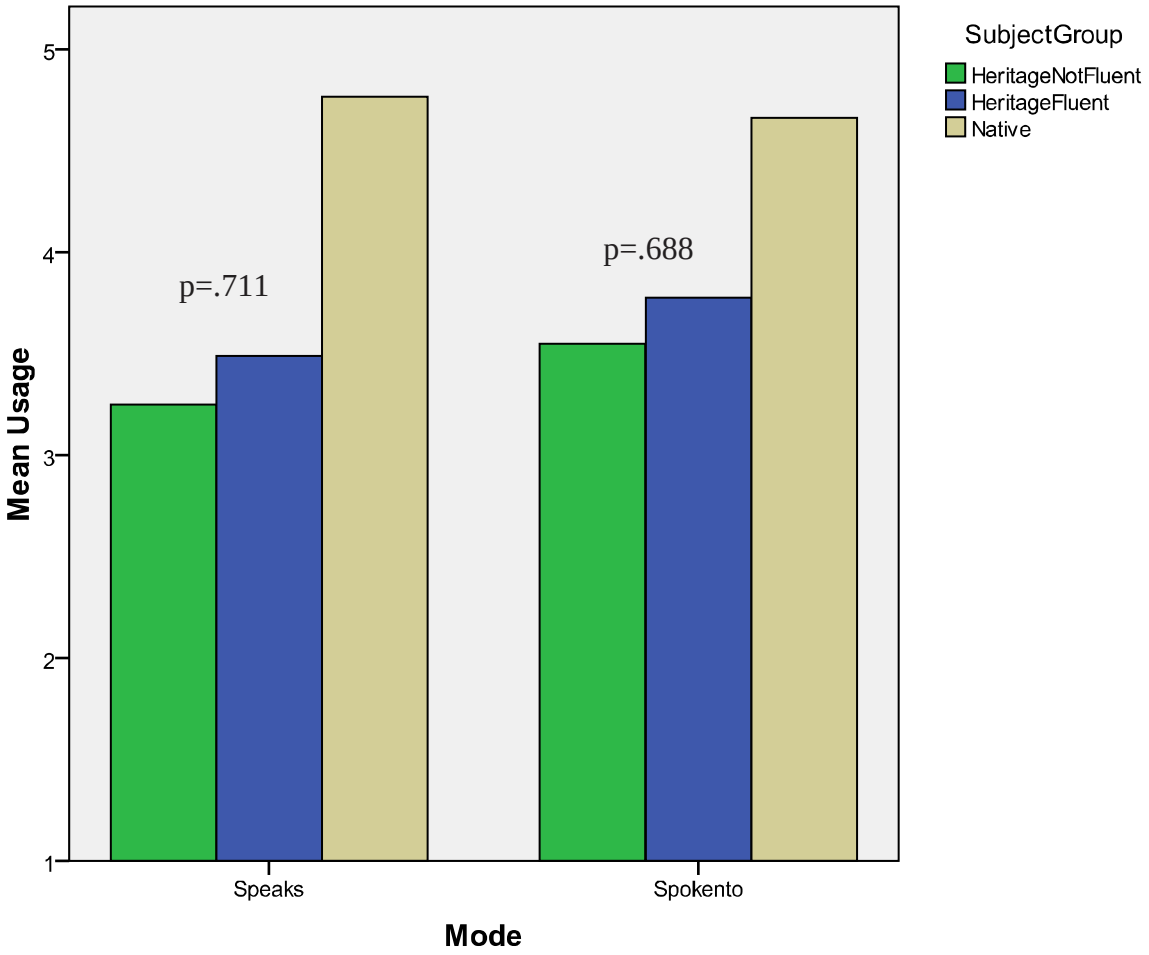
- HNonFluent1 speaker's acceptable responses all come from sentences with a topic marker, none with a subject marker.
- Topic marker emerges before subject (Nom.) marker in Child Korean (references...).
- Case-marking is one of the most common errors in heritage Korean writing (Kim and Lim 2007)

➢ Vocabulary test scores



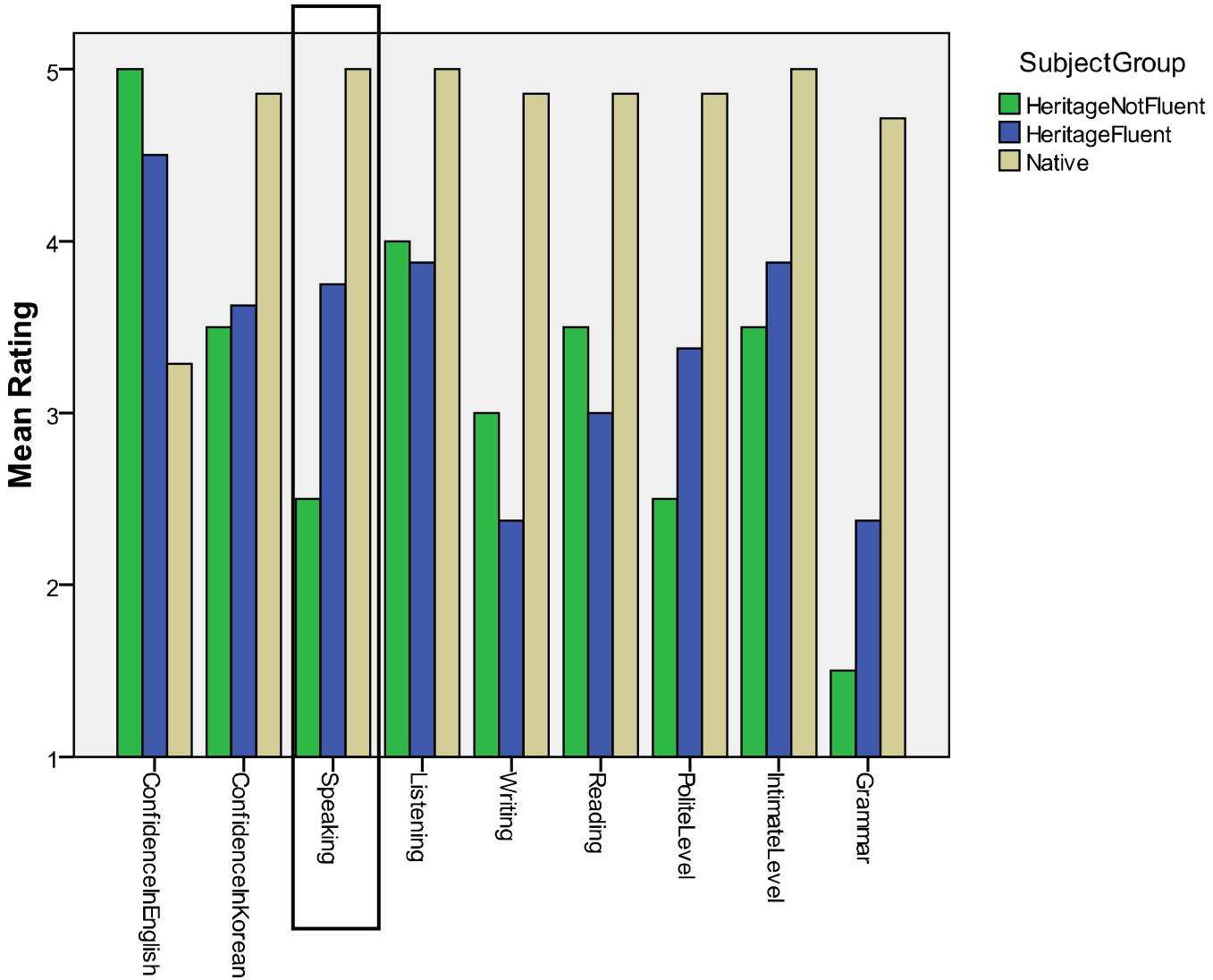
- High and Mid frequency words show marginally significant difference between the two heritage groups.
- Low frequency words do not show a significant difference.

➢ Self-report of Korean language usage



- “how often to you speak Korean with the following people”
- “how often do the following people speak Korean to you?”
- No significant difference between the two heritage groups

➢ Self assessment of (Korean) language abilities



- "Speaking" was the only category where the two heritage groups' responses differed significantly. (p=.013)

- **Variations among the fluent heritage speakers**
  - Native-like responses
    - slightly lower acceptable responses than native speakers but the difference is not significant.
    - slightly higher “new variant” responses (extension of frequent “t~s” alternation) than native speakers but the difference is not significant.
    - These speakers’ fluency measures were significantly different from those of native speakers for all measures except for
      - high-freq. vocabulary test (p=.134)
      - suffix error (p=.062)
    - In other words, acquiring the native-like alternation for these nouns does not require very advanced abilities in Korean.

- The rate of “original” underlying consonant responses
  - slightly lower than native speakers but not significantly different
  - significant positive correlation with
    - self-assessment of Korean “Writing” skills (p=.033)
    - mid-freq. vocabulary test scores (p=.046)
    - low-frequency vocabulary test scores, (p=.009).
  - “original” consonant can be acquired only by encountering the word itself (many of them low freq.) with a vowel-initial suffix.
  - Familiarity with the written forms of the language likely helps as well.

6. Conclusion

- **Evidence for default "leveling"**
  - Two heritage speakers showed "leveling" pattern.
  - These speakers differ from the fluent heritage speakers
    - significantly lower vocab. test scores even for very common (i.e., high- and mid-frequency) words
    - significantly lower self rating for speaking ability in Korean
    - suffix errors in sentence completion tasks
- **Alternation of coronal obstruent-final nouns**
  - A native like alternation is acquired by speakers who
    - achieved near-native scores on high-frequency vocab. test
    - made few suffix errors
    - default "leveling" preference likely goes away fairly early in the course of acquisition

- **Acquiring the “original” underlying consonant**
  - correlation with mid- and low-frequency vocab. test scores
  - familiarity with the written form of the language is also a factor.