Limits to the role of perception in Korean loanwords: English anterior obstruents in various prosodic locations

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This work was supported by the NSF grant # BCS-04406540

Why debate?

- Cross-language perception
  - Zulu clicks by American listeners (Best, McRoberts, & Goodell, 2001)
  - /r/-/l/ by Japanese listeners (Logan, Lively, & Pisoni, 1991)

- Similarity between interlanguage phonology and loanword phonology
  - *Thank you* [t'eŋ.kʰyu] / [s'eŋ. kʰyu]

Perception (sub-phonemic information) is relevant.

- Steriade (2001): P-map (i.e. Perceptual-map)
  - Maximum perceptual similarity of two sounds without violating the phonotactics of the recipient language
  - Even subphonemic properties may play a crucial role if they enhance the similarity of the sounds.

e.g. English /s/ (Kim & Curtis, 2002)

English /s/ in a cluster: Korean [s]

English /s/ in a singleton: Korean [s']

Consonant duration (i.e. sub-phonemic properties in both English and Korean) may play a role.

Perception (sub-phonemic information) is not relevant (LaCharité & Paradis, 2002).

- The role of bilinguals: bilinguals knows both the source and the recipient phonologies.
- Not sub-phonemic but **phonemic** or **featural level** matching between sounds is important.

e.g., Mexican Spanish:

English /ɪ/ and /ʊ/ are borrowed with /i/ and /u/ although /e/ and /o/ are closer to the English vowels: featural matching of [+high]

Perception is relevant under the certain condition (Iverson & Lee, 2004).

- A principle of phonological perception:

  Sub-phonemic information in the source language is relevant in loanword adaptation only when it is salient in the recipient language.

e.g., English /s/

- Consonant duration is a salient or primary cue in Korean.

Testing the claims

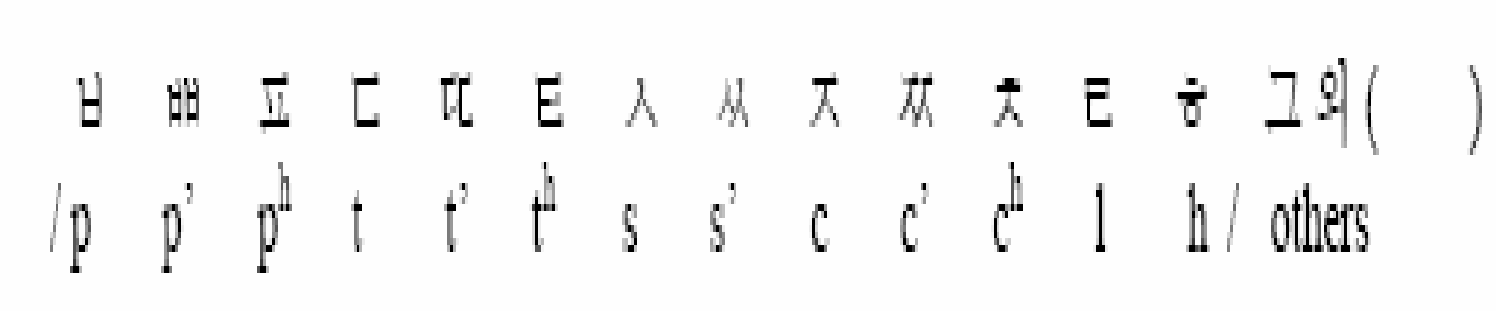
1. Find the most similar sounds in the source and recipient languages.

2. Compare the perceptual patterns with actual adaptation patterns.

- To what extent does adaptation reflect borrowers' perception?

Experiment (procedure)

- The orthographic classification technique (Schmidt, 1996)
- Choose the most similar native sound by using L1 orthography after listening to the sounds in the source language.



Experiment (*stimuli* & *talker*)

- 10 English labial and coronal consonants /p b v f t d s z θ ð/ combined with /a/ in four prosodic locations (i.e. onset, post- & pre-stressed intervocalic, coda positions); nonsense words
  - e.g., /pa/, /ápa/, /apá/, /ap/

- Four native speakers of American English (2 male + 2 female)

Experiment (*Listeners*)

- 40 NKs (12 male + 28 female) in Korea
- Age : 22 – 45 yrs. (M = 24.97 yrs.)
- Some experience with English (more than 7 yrs.) from school
- The listeners knew that the stimuli had been produced by a native speaker of English and they were also told that the stimuli were not real English words.

Results in CV (*chance* = 7.69%)

English	Korean
/p/	/pʰ/ (95%)
/t/	/tʰ/ (98%)
/s/	/s'/ (89%)
/z/	/c/ (95%)
/b/	/p'/ (46%)
	/p/ (41%)
/d/	/t/ (85%)
	/t'/ (14%)
/ð/	/t/ (79%)
	/p/ (15%)
/v/	/p/ (68%)
	/t/ (19%)

- One to one matching
  - place of articulation matching ("except /z/")
- One to two matching
  - Perception patterns mismatching the place of articulation

Results in CV – continued

English	Korean
/θ/	/s'/ (40%)
	/t'/ (24%)
	/p^h/ (16%)
/f/	/p^h/ (56%)
	/p'/ (24%)
	/p/ (8%)

- One to many matching
  - Perception patterns mismatching the place of articulation

Uniform adaptation in CV

English	Korean
/p/	/pʰ/ (95%)
/t/	/tʰ/ (98%)
/s/	/s'/ (89%)
/z/	/c/ (95%)
/v/	/p/ (68%)
	/t/ (19%)
/ð/	/t/ (79%)
	/p/ (15%)

- /p/ → /pʰ /: *popular* [pʰa. pʰyu.lə]
- /t/ → /tʰ/: *Tom* [tʰom] or [tʰam]
- /s/ → /s'/: *sample* [s'em.pʰɨl]
- /z/ → /c/: *zero* [ce.ro]
- /v/ → /p/: *van* [pen]
- /ð/ → /t/: *this* [ti.s'ɨ]

Varied adaptations in CV

English	Korean
/b/	/p'/ (46%)
	/p/ (41%)
/d/	/t/ (85%)
	/t'/ (14%)
/θ/	/s'/ (40%)
	/t'/ (24%)
	/p^h/ (16%)

- /b/ → /p/: *banana* [pa.na.na]
- /b/ → /p'/: *box* [p'ak.s'ɨ]
- /d/ → /t/: *diving* [ta.i.biŋ]
- /d/ → /t'/:*dollar* [t'al.lə]
- /θ/ → /t'/ or /s'/:

  Thank you

  [t'eŋ.k^hyu] / [s'eŋ. k^hyu]

Comparison Results in CV

- Most perceptual patterns in CV agree with the actual adaptation patterns.
  - If we ignore any perceptual patterns mismatching in place of articulation.

- There is no adaptation of English sounds with Korean sounds mismatching the place of articulation

/f/ in CV

English	Korean
/f/	/p^h/ (56%)
	/p'/ (24%)
	/p/ (8%)

- /f/ → /p^h/: *Form* [p^hom]
- Perceptual patterns do not agree with the actual adaptation pattern.

Results in VCVV

	CV	VCVV
/b/	/p'/ (46%)	/p/ (91%)
	/p/ (41%)	
/d/	/t/ (85%)	/t/ (95%)
	/t'/ (14%)	

- No variations for English /b/ & /d/ in intervocalic position.
- Only lax stops are used.
  - *e-bay* [i.be.i] /ipei/
  - *Adidas* [a.di.da.s'ɨ] /atitas'ɨ/
- Perception patterns = adaptation patterns

Perception patterns = adaptation patterns?

	CV	VCVV	VVCV
/p/	/pʰ/ (95%)	/pʰ/(89%)	/pʰ/ (51%)
			/p/ (17%)
			/p'/ (12%)

- No variations of English /p/ adaptation in Korean.
  - *popular* [pʰa. pʰyu.lə]
- Perceptual patterns according to prosodic locations are not reflected in loanwords.

[t]-[s] alternations for English coronal coda stops

✓ *Internet* [in.tʰə.net]+ /i/ (Nominative)

→ [in.tʰə.ne.ʃi] (/intʰənesi/ ?)

✓ *David* [te.i.bit] + /i/ (Nominative)

→ [te.i.bi.ʃi] (/teipisi/ ?)

- Korean nouns ending with lexical /t/ are rare whereas /s/-ending nouns are dominant (Kang, 1999; Sohn, 2001).

Morphophonemic influence in perception

	CV	VCVV	VVCV	VC
/d/	/t/ (85%)	/t/ (95%)	/t/ (83%)	/t/ (46%)
	/t'/ (14%)		/p/ (10%)	/s/ (18%)
				/p/ (12%)
				/t^h/ (10%)
/t/	/t^h/ (98%)	/t^h/ (97%)	/t^h/ (84%)	/t^h/ (74%)
				/s/ (11%)

Conclusions

- Perception is not relevant in the borrowing process?

✓ No.

- varied adaptation patterns are well reflected in the perception patterns)

- Perception is relevant in the borrowing process?

✓ Yes.

- However, the borrowing process is more than perception.
  - Perception is fuzzy while adaptation is more systematic.
  - Perception is influenced by morphophonemic restriction of a native language, suggesting that non-perceptual factors other than sub-phonemic perception should be considered in the borrowing process.

Acknowledgements

- I would like to acknowledge the valuable comments from Kenneth de Jong and Stuart Davis. I would also like to express to Mi-Hui Cho for help in collecting the data reported here and to Kyoko Nagao and Noah Silbert for their work on the design and processing of the data.

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