English Adaptation in Mandarin A-not-A Constructions

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I. Introduction

- A-not-A construction: a reduplication structure in Mandarin that reduplicates the first syllable in the base:
  (1) **ɕin^{55}** - pu^{51} - **ɕin^{55}**ɕien^{55}
  σ_{RED} - not - fresh$_{BASE}$
  'fresh or not'
- When Mandarin-speakers use English words as the base (a code-switching phenomenon):
  - Base: Faithful to its English input.
  - Reduplicant: Adapt to Mandarin phonotactics to some degree.
  (2) **frɛ** - pu^{35} - **frɛʃ**
  σ_{RED} - not - fresh
  'fresh or not'
- Native Mandarin phonotactics:
  - no codas except /n/ and /ŋ/
    → deletion of /ʃ/ in the σ_{RED} of (2)
  - no complex onsets
    → violated by /fr/ in the σ_{RED} of (2)
  - each syllable has a tone (see section V)

Research questions:

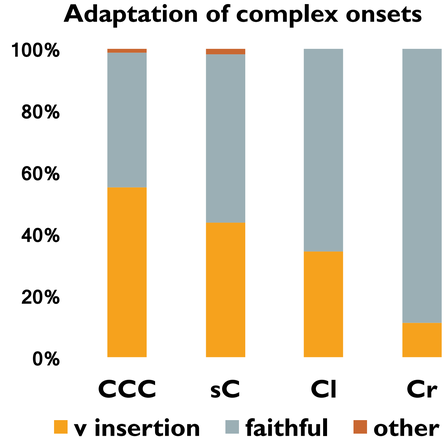
How will English syllables adapt to Mandarin constraints when reduplicated in Mandarin A-not-A constructions and what does it tell us about Mandarin?

II. Production Experiment

- 20 native Mandarin-speakers.
- Procedure: Click on a button to hear a pre-recorded word and produce its A-not-A form.
- Materials: 3 Mandarin bisyllabic words as training items. 55 English verbs and adjectives:
  - 43 monosyllabic words: Onset-simple onset (17); complex onset (26); Coda-no coda (10); legal coda (5); illegal coda (28).
  - 12 multi-syllabic words: Half with stress on the first syllable, half on other syllables.
- 26 misheard items were excluded.

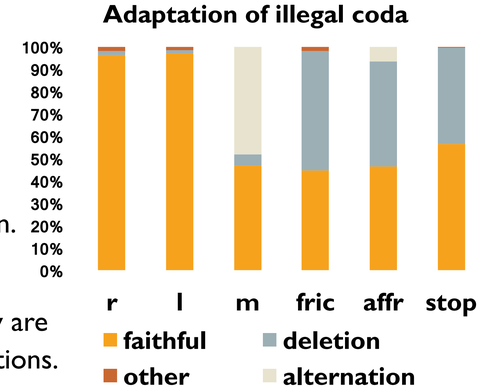
III. Results – Onset Adaptation

- English simple onsets: Faithful production even when the onset is not in Mandarin inventory:
  (3) show: ʃoʊ - pu^{51} - ʃoʊ
- English complex onsets:
  - Faithful production or vowel Insertion:
    (4) a. splash: **splæ**-pu^{51}-**splæ**ʃ / **sɻ** -pu^{51}- **s**plæʃ
    b. spit: **spɪ** - pu^{35} - **spɪ**t / **sɻ** - pu^{51} - **s**pɪt
    c. clean: **klin**- pu^{35} - **klin / kə** - pu^{51} - **k**lin
    d. fresh: **frɛ** - pu^{35} - **frɛ**ʃ **/ fu** - pu^{51} - **fr**ɛʃ
- Sonority effects: clusters with falling sonority are more likely to split and undergo vowel insertion.



IV. Results – Coda Adaptation

- Illegal codas /r/ and /l/: Faithful production.
  (5) a. poor: **pur** - pu^{35} - **pur**
  b. fall: **fɔl** - pu^{35} - **fɔl**
- Illegal coda /m/: Faithful, deletion or alternation.
  (6) seem: **sim / sin / si** - pu^{35} - **sim**
- Illegal [-son] codas: Faithful production or deletion.
  (7) sick: **sɪk / sɪ** - pu^{35} - **sɪk**
- Sonority effects: Consonants with higher sonority are more likely to be faithfully produced in coda positions.



V. Results – Tone Adaptation

- If the first syllable of the base is unstressed, σ_{RED} has a low tone:
  (8a) L L HL
  bə pu^{51} bə'liv
  be-not-believe
- If the first syllable of the base is stressed, when it is also the last syllable of the base, σ_{RED} has a falling tone:
  (8b) HL HL
  wɑ pu^{35} wɑʃ
  wa-not-wash
- If there are more than one syllable in the base and the first one is stressed, σ_{RED} has a high tone :
  (8c) H H H L
  wɑ pu^{51} 'wɑʃəbəl
  wa-not-washable

VI. MaxEnt Model (R^2=0.769)

RED=σ	-3.79	*CCC$_{onset}$	-1.558	DEP-BR	-0.986
ID-V	-3.691	*MAX[son]$_{coda}$	-1.523	MAX-BR	-0.755
*sC$_{onset}$	-3.540	*Coda$_{/m/}$	-1.493	*Coda$_{[-son]}$	-0.669
ID-BR	-1.686	*Cl$_{onset}$	-1.312	*Cr$_{onset}$ 0	*Coda$_{Appr}$ 0

VII. Summary

- English adaptations in Mandarin reduplication:
  - Observed effects of sonority in onset and coda positions.
  - The intonation of the first syllable in the base is also copied in the reduplicant.
- The weights of the faithfulness and markedness constraints in the MaxEnt model reveal the effects of sonority.
- Future work: (i) Is there any interaction between coda and onset conditions? (ii) Is there any effects of word frequency or speakers' English fluency?

Fun Facts

- The allomorph alternation of /pu/ triggered by the intonation of the English base:
  (9) /pu/→ [pu^{35}]/__T4 (9b) pu^{35} wɑʃ
  → [pu^{51}]/__T1,T2,T3 (9c) pu^{51} wɑʃəbəl
- Repaired bases observed in production:
  - Vowel insertion in complex onsets.
  (10) flip: **fu** - pu^{51} - **fu**lɪp
  - Deletion of the leftmost consonant in complex onsets.
  (11) a. splash: splæ - pu^{51} - læʃ
  b. skate: skeɪt - pu^{51} - keɪt
- Unexpected strategy in production: Aligning the right boundary of the reduplicant with the right boundary of a stressed syllable.
  (11) a. abandon: **ə'bæn** - pu^{51} - **ə'bæn**dən
  b. accept: **ək'sɛ** - pu^{51} - **ək'sɛ**pt

Acknowledgements

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Reference

[1] Smolensky, Paul (1986) Information processing in dynamical systems: Foundations of Harmony Theory. In Parallel Distributed Processing: Explorations in the Microstructure of Cognition, Vol. 2: Psychological and Biological Models, ed. by James L. McClelland, David E. Rumelhart and the PDP Research Group, 390-431. Cambridge, MA: MIT Press.