A cross-linguistic comparison of the L2 acquisition of VOT contrasts

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Acquiring foreign phonetics is hard!
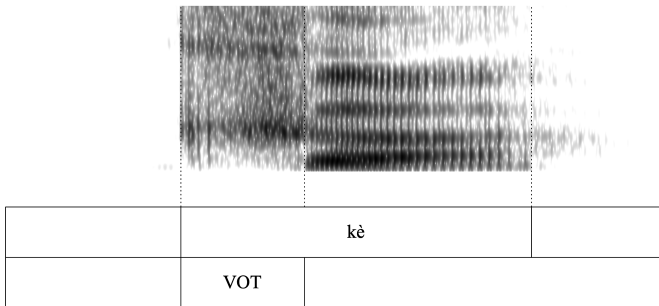
Two types of "new" categories to learn:

1. Entirely new category
   - No counterpart in L1
   - e.g., French /y/ for English speakers
2. Shifted category
   - Easily identifiable counterpart in L1
   - But systematic phonetic differences
   - e.g., French stop consonants, different VOT

Past Studies

- New categories are easier to approximate than shifted categories (Flege 1987)

- Approximation of VOT varies with L2 experience in adult learners (Flege 1987)

- Heritage speakers and early learners fully differentiate VOT values in L1 and L2 (Flege 1991; Chang et al. 2011)

What is VOT?

Voice-onset time (VOT) is the time between the release of a stop consonant and the onset of voicing.

Comparison of VOT in word-initial stops

French (Flege 1987):

- Voiced vs. voiceless
- /b d g/ negative VOT
- /p t k/ short positive VOT

Mandarin (Chang et al. 2011):

- Unaspirated vs. aspirated
- /b d g/ short positive VOT
- /p t k/ long positive VOT

English (Flege 1987; Chang et al. 2011):

- /b d g/ short positive VOT
- /p t k/ VOT in between French and Mandarin

Present Study

Which stop contrast is easier for native English speakers to acquire?

- Adult learners of French or Mandarin
  - 15 participants initially
  - 9 participants now
  - All my French learners dropped out :(
- Three recording sessions over course of semester

Present Study

Stimuli:

- Words taken from French and Chinese textbooks

- No high front or front rounded vowels after target consonants

- Mandarin romanized in Pinyin

- Monolingual native speakers recorded for shadowing stimuli

Tasks for participants:

1. Shadowing
2. Reading

Hypotheses

1. Acquire French contrast faster
   - Entire contrast shifted
   - More like learning new categories?
2. Acquire Mandarin contrast faster
   - Only /p t k/ category shifted
   - More similar to English?

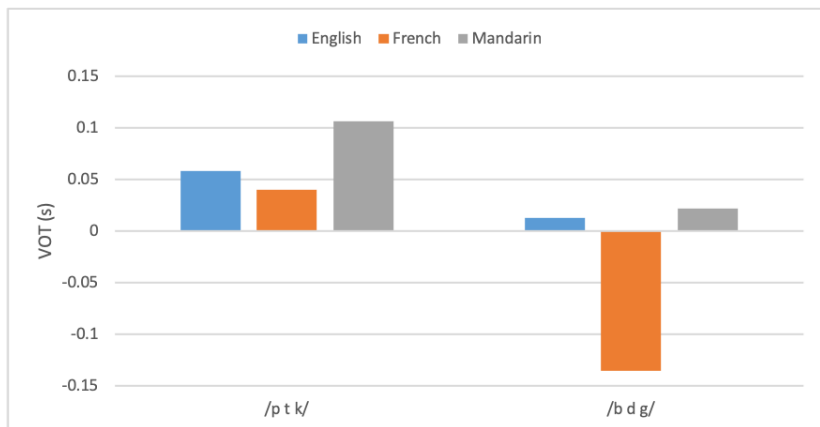- Acquire contrast in shadowing faster than in reading

Recording Details

- Sound-proof booth
- 44100 Hz sampling frequency
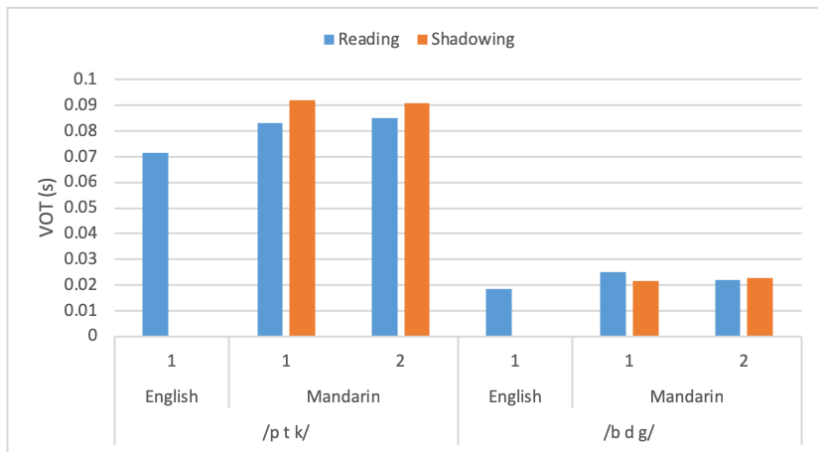- VOT measured in Praat

Today's presentation

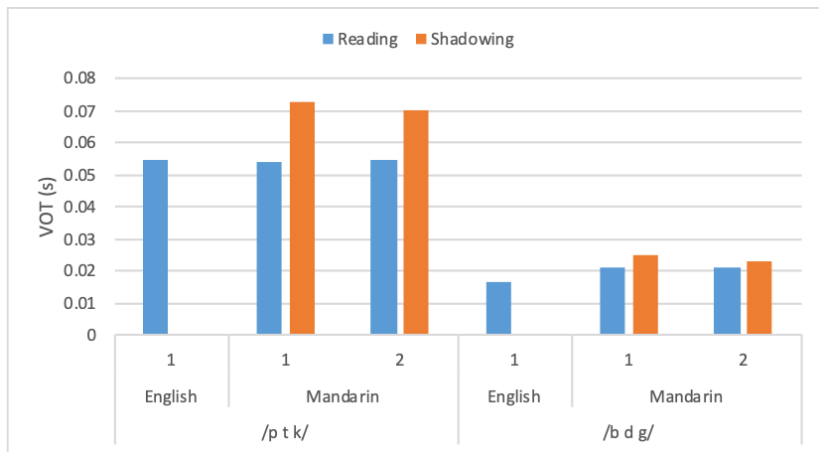Focus on results from Mandarin sessions 1 and 2, comparing reading and shadowing
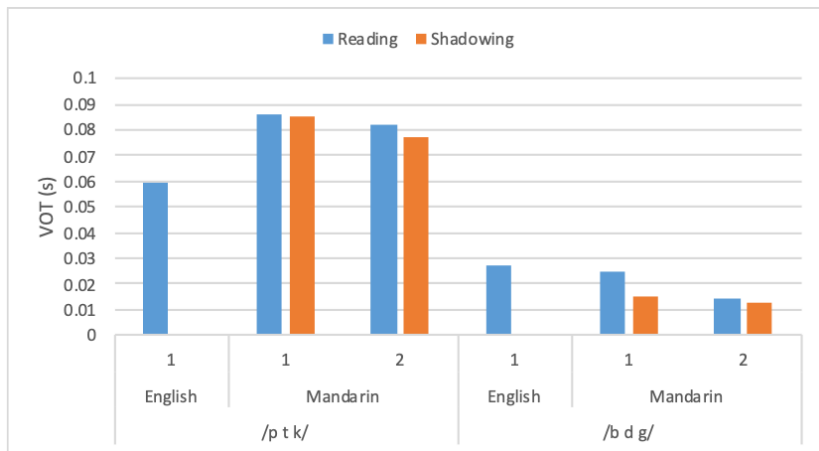
Average VOT of native speakers

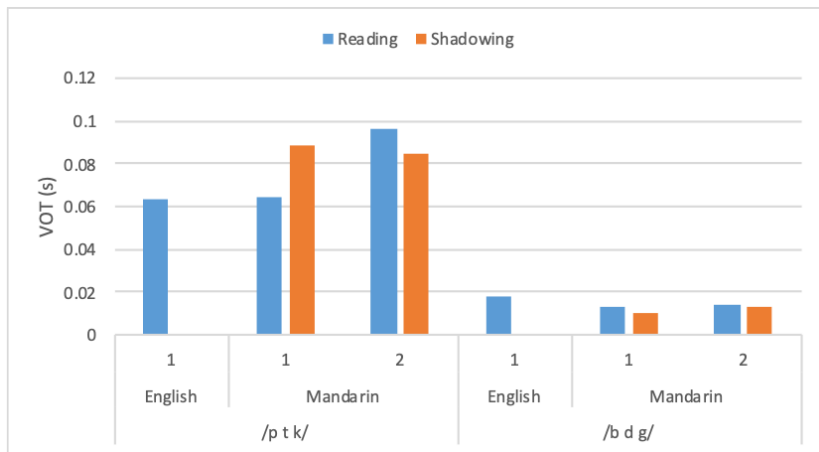# Average VOT, all participants

Average VOT, individual participant

Average VOT, individual participant

Average VOT, individual participant

Discussion

- Difference between shadowing and reading for most participants
  - Difficulty with tones?
  - Maybe less difference with French
- No difference between session 1 and 2 in most cases

Future

- This semester: Mandarin data for session 3
- Next semester: French, Spanish (negative VOT languages)

Thank you!

References

📄 Chang, Charles B et al. (2011). "Production of phonetic and
    phonological contrast by heritage speakers of Mandarin". In:
    The Journal of the Acoustical Society of America 129.6.

📄 Flege, James Emil (1987). "The production of "new" and "similar"
    phones in a foreign language: Evidence for the effect of
    equivalence classification". In: *Journal of phonetics* 15.1.

📄 – (1991). "Age of learning affects the authenticity of voice-onset
    time (VOT) in stop consonants produced in a second language".
    In: *The Journal of the Acoustical Society of America* 89.1.