Phonological Advantages of Heritage Learners of Japanese
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Abstract
This ongoing experimental study examined whether or not heritage language (HL) learners of Japanese have significant advantages over second language (L2) learners of Japanese on phonological tasks as well as syntactic (grammar) tasks. Previous studies have found that HL learners benefit from a significant advantage in phonological knowledge over L2 learners but are on par with L2 learners in syntactic (grammar) knowledge. In our experiment, a total of 24 native speakers of Japanese, HL speakers of Japanese, and Japanese L2 learners were recruited and tested with two phonological tasks and two syntactic tasks.

Experiment Design (cont.)
• All research participants received $25 honorarium for their participation.
• The participant recruitment is still continuing. As of today, we have tested:
  - 11 native Japanese speakers
  - 7 L2 Japanese speakers
  - 6 HL Japanese speakers

Tasks
Vowel length and the length of moraic nasal
• Participants were asked to produce the target word in a career sentence: さっきX言った。
  - The target words (X) are minimal pairs of:
    - Vowel length (e.g., おじいさん/おじさん vs. おじいさん/おじさん)
    - Moraic nasal (e.g., あんまり/あなまり vs. あまり/あまり)
  - Praat was used to measure the durations of the following segments:
    - Vowel length, length of moraic nasal, and the whole word

Heritage Language Speakers (Polinsky & Kagan, 2007)
(1) HL speakers/learners are bilingual speakers who have acquired their minority (non-English) languages at home
(2) HL speakers/learners have undergone the shift of their primary language from

Previous Studies
• Au et al. (2002), Knightly et al. (2003), and Oh et al. (2003)
  – Korean and Spanish low-proficiency HL speakers had better phonological perception and production (in terms of VOT) than L2 speakers at the same proficiency
  – Other studies also found phonological advantages among HL speakers
• Au et al. (2002) and Knightly et al. (2003)
  – Korean and Spanish low-proficiency HL speakers did not perform better than L2 speakers in the morphosyntax task (e.g., gender agreement among determiners, adjectives, and nouns in Spanish)
  – Other studies also found no syntactic advantage among HL speakers, but the results are quite mixed.

Research Questions
(1) Do Japanese heritage language learners have a learning advantage in phonological knowledge but not syntactic knowledge?

Experiment Design
• The experiment was designed with PsychoPy (Peirce, 2012), a Python-based psychology experiment program. Audio recordings were analyzed with Praat (Boersma & Weenink, 2001).
• The experiment consists of:
  – Language background questionnaire (5 min)
  – Japanese vocabulary test (70 JLPT vocabulary items / 10-15 min)
  – Pronunciation elicitation task (30-45 min)
  – Grammatical judgment task (30-45 min)

Results
• JLPT Vocabulary Items (max 80 points) / Proficiency level
  – Most heritage participants were intermediate-advanced proficiency whereas L2 participants were low-intermediate proficiency.
  – Proficiency is not matched; More high-intermediate L2 participants needed.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Min</th>
<th>Median</th>
<th>Mean</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native</td>
<td>11</td>
<td>70</td>
<td>78.0</td>
<td>79.0</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>7</td>
<td>13.0</td>
<td>23.0</td>
<td>24.1</td>
<td>38.0</td>
</tr>
<tr>
<td>Heritage</td>
<td>6</td>
<td>22.0</td>
<td>65.5</td>
<td>73.0</td>
<td></td>
</tr>
</tbody>
</table>

• Vowel length contrast (V vs. VV)
  – The duration ratios of long to short vowels are similar between native and heritage speakers.
  – L2 speakers’ duration ratios of long to short vowels are significantly smaller than those of Japanese and heritage speakers.

• Nasal Contrast
  – The duration ratios of words with /N/ to those without /N/ are similar between native and L2 speakers.
  – However, L2 speakers made numerous pronunciation errors compared to heritage speakers (18% errors vs. 4% errors).

• Results of the long-distance /jiban/

<table>
<thead>
<tr>
<th>Condition</th>
<th>Native</th>
<th>L2</th>
<th>Heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dative</td>
<td>44.6%</td>
<td>38.6%</td>
<td>37.5%</td>
</tr>
<tr>
<td>L1 Matrix</td>
<td>13.6%</td>
<td>13.4%</td>
<td>66.0%</td>
</tr>
</tbody>
</table>

• Results of the Motion Verbs + PP (on the scale of 1-7; SD in parentheses)

<table>
<thead>
<tr>
<th></th>
<th>Native</th>
<th>L2</th>
<th>Heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>LocPP (°) + MannerV</td>
<td>6.5 (1.3)</td>
<td>5.0 (1.9)</td>
<td>5.7 (1.8)</td>
</tr>
<tr>
<td>DirPP (°) + MannerV</td>
<td>4.7 (2.1)</td>
<td>4.1 (2.0)</td>
<td>5.3 (2.0)</td>
</tr>
<tr>
<td>DirPP (°) + LocPP</td>
<td>4.8 (3.7)</td>
<td>4.5 (2.0)</td>
<td>5.6 (2.0)</td>
</tr>
</tbody>
</table>

Conclusion
• The data at hand show somewhat more complex pattern than the phonology-vs-(morpho)syntax dichotomy.
  – Heritage advantage in:
    * Phonological: Vowel contrast (V vs. VV)
    * Syntactic: Long-distance reflexive pronoun
  – No heritage advantage in
    * Phonological: Nasal /n/ contrast
    * Syntactic: Pronouns vs. Motion verbs
  – Statistical analysis with a larger sample (esp. advanced L2) is necessary.