1. Background and Research Question

Ylinen et al. (2010) found that training (with altered duration contrasts) improved learners’ L2 [i]/[ɪ] perception. The high variability phonetic training (HVPT) method using modified acoustic stimuli has been shown to help L2 learners to acquire nonnative vowel contrasts (e.g., Rato, 2014; Giannakopoulou & Ylinen, 2013).

However, scant research has explored whether a modified input (HVPT) paradigm could improve Chinese EFL learners’ vowel perception of an English tense/lax contrast ([i]/[ɪ]). The variability vowel duration affected identification accuracy.

Table 1. Duration Values for Naturally-Produced and Synthesized Vowel Sounds for Sheep and Ship

<table>
<thead>
<tr>
<th>Sound</th>
<th>Duration (factor / in ms.)</th>
<th>Sound version</th>
</tr>
</thead>
<tbody>
<tr>
<td>sheep</td>
<td>1.0 / 644</td>
<td>Natural production</td>
</tr>
<tr>
<td></td>
<td>0.5 / 322</td>
<td>Modified short vowel duration</td>
</tr>
<tr>
<td></td>
<td>2.0 / 1288</td>
<td>Modified long vowel duration</td>
</tr>
<tr>
<td>ship</td>
<td>1.0 / 584</td>
<td>Natural production</td>
</tr>
<tr>
<td></td>
<td>0.5 / 292</td>
<td>Modified short vowel duration</td>
</tr>
<tr>
<td></td>
<td>2.0 / 1168</td>
<td>Modified long vowel duration</td>
</tr>
</tbody>
</table>

2. Methodology

- **Participants**: 56 native Chinese-speaking adults: Experimental group (EG) (n=28); control group (CG) (n=28).
- **Tasks**: This study employed two tasks:
  1. **Testing**
     - The forced-choice identification test comprised naturally spoken words with two target vowels ([i]/[ɪ]), and distractors (/æ/). The inter-stimulus interval (ISI) was set to be a 1000 ms. The stimuli consisted of 30 monosyllabic minimal pairs (21 minimal pairs with [i]/[ɪ] and 9 distractors with /æ/). Words were presented in a randomized order;
  2. **Training**
     - The participants were taught the [i]/[ɪ] contrast in six 15-minute classroom training sessions (over three weeks) including an ABX discrimination task. In this task, the EG and the CG were exposed to the same number of lexical [i]/[ɪ] pairs.

3. Results

Table 2 presents the information of Number (N), Maximum (Max) score (out of 30), Mean (M), and Standard Deviation (SD) on participant’s identification scores by the two groups in the pre- and post-tests.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>N</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG</td>
<td>28</td>
<td>19</td>
<td>11.61</td>
<td>4.272</td>
<td>28</td>
<td>21</td>
<td>15.39</td>
<td>4.701</td>
</tr>
<tr>
<td>CG</td>
<td>28</td>
<td>20</td>
<td>13.04</td>
<td>3.214</td>
<td>28</td>
<td>21</td>
<td>13.46</td>
<td>3.834</td>
</tr>
</tbody>
</table>

With the covariate of the pre-test scores taken into account, there was a significant difference ($p = .003$; $η^2 = .159$) indicating that the EG improved significantly (large effect size) more than the CG.

4. Discussion and Conclusion

- Modified durational input enhances Chinese EFL learners’ perception of the English /i/ and /ɪ/ vowels. This could be because (a) the added duration allows time for the listener to hear the spectral difference, or (b) the modified duration removes the reliability of the durational cue, so the listener must attend to the spectral properties.

- This has possibilities as a pedagogic technique.

References: