Perception of Lexical Tones by Swedish Learners of Mandarin

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Introduction

• One major challenge for Swedish learners of Mandarin of Chinese: four lexical tones
• Factors identified in cross-language speech perception
• Relevant theoretical models
  ◦ Perceptual Assimilation Model (PAM) (Best, 1995)
  ◦ Speech Learning Model (SLM) (Flege, 1995)
• Aim of this study: Possible influence of Swedish pitch accent on perceiving Mandarin tones
Mandarin tones vs. Swedish pitch accents

**Figure 1:** Pitch contours of four Mandarin tones (Burnham et al., 2015:1461).

**Figure 3:** Pitch contours of two Swedish pitch accents (Burnham et al., 2015:1462).
Method

• **Participants**
  - 16 high school students (10 M, 6 F)
    - Native speakers of Swedish
    - Studied Chinese for 3-4 school terms
    - Two different schools

• **Material**
  - 10 different monosyllables with four lexical tones
    - Produced by a native Mandarin speaker
    - Presented in random order

• **Task**
  - Four-alternative identification task
## Results

<table>
<thead>
<tr>
<th>Response Target</th>
<th>Tone 1</th>
<th>Tone 2</th>
<th>Tone 3</th>
<th>Tone 4</th>
<th>Unidentifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone 1</td>
<td>63.1%</td>
<td>27.5%</td>
<td>0.6%</td>
<td>8.1%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Tone 2</td>
<td>23.8%</td>
<td>44.4%</td>
<td>13.1%</td>
<td>16.3%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Tone 3</td>
<td>3.8%</td>
<td>4.4%</td>
<td>83.8%</td>
<td>7.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Tone 4</td>
<td>3.8%</td>
<td>19.4%</td>
<td>0.6%</td>
<td>76.3%</td>
<td>0</td>
</tr>
</tbody>
</table>

### Accuracy percentage%

- **Tone 1**: 63.1%
- **Tone 2**: 44.4%
- **Tone 3**: 83.8%
- **Tone 4**: 76.3%
Discussion & Conclusion

- Swedish students assimilate Tone 3 and Tone 4 in Mandarin to Swedish Accent 1 and 2
  - Mandarin Tone 3 and 4, and Swedish Accent 1 and 2 all display falling pitch contour
  - High accuracy percentage of Mandarin Tone 3 and 4 by Swedish learners
  - Tone 1 and Tone 2 are most problematic: most confusing tone pair to Swedes
  - Such pattern is not observed among English-speaking learners

- Students performed differently in each school, may be affected by length of study time and teacher’s teaching style.
Thank you!