Perceptual learning of accented speech by first and second language listeners

Angela Cooper & Ann R. Bradlow
Department of Linguistics, Northwestern University

angela.cooper@utoronto.ca
http://akcooper.wordpress.com

Introduction

Methods

Participants

- 115 American English monolinguals: English as primary language prior to school (before age of 6) and language of instruction during school
- 94 Dutch-English bilinguals: Dutch as primary language from birth and language of instruction during primary and secondary education; learned English after age of 7

Stimuli

- Non-Standard American English (NSAE) accent, produced by 5 male talkers

<table>
<thead>
<tr>
<th>English-and-Dutch contrasts</th>
<th>English-only contrasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>/k/ vs. /g/</td>
<td>/k/ vs. /g/</td>
</tr>
<tr>
<td>/æ/ vs. /ɛ/</td>
<td>/æ/ vs. /ɛ/</td>
</tr>
<tr>
<td>/θ/ vs. /θ/</td>
<td>/θ/ vs. /θ/</td>
</tr>
</tbody>
</table>

2 types of critical items:
1. Lexicality change: ‘cream’  ‘crim’ [kris]
2. Minimal pair change: ‘cheap’  ‘chip’ [tʃapist]

Procedure

- Responded “word” or “nonword” to each individually presented item
- Productions from talker who produced items in training phase (“trained” talker)
- Lexicality change items, nonword and word fillers

Discussion

L2 listeners found, even without training, to have more relaxed criteria for mapping between speech input and lexical representations

Both language groups exhibited training-induced, pattern-specific criterion loosening

Evidence to support secondary prediction:
- L2 listeners’ familiarity with English pronunciation variants enabled them to endorse and identify English-only items more accurately than items with contrasts that exist in their native language (English-and-Dutch contrasts)
- Adaptation only found for English-and-Dutch contrast items, perhaps because L2 listeners’ cue distributions [4] for English-only items were already shifted or broadened, as much as they could be

Future work could expose L2 listeners to accent patterns involving contrasts that are neutralized in their L1 but involve deviations not familiar to the listener (e.g., /s/  /z/ pronounced as /s/ or word-final /d/ pronounced as /θ/)

Results

<table>
<thead>
<tr>
<th>CONTRAST TYPE</th>
<th>LISTENER</th>
<th>MINIMAL PAIR CHANGE</th>
<th>WORD IDENTIFICATION TASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>English monolinguals</td>
<td>Control</td>
<td>Trained</td>
<td></td>
</tr>
<tr>
<td>Dutch-English bilinguals</td>
<td>Control</td>
<td>Trained</td>
<td></td>
</tr>
</tbody>
</table>

NNS accuracy proportion of items correctly identified based on NSAE accent patterns

Stimuli:

- Compared English monolinguals and Dutch-English bilinguals after exposure to an artificial accent with accent deviation patterns involving 1) contrasts that exist in both English and Dutch (English-and-Dutch contrasts) and 2) contrasts that exist only in English (English-only contrasts)

Predictions:
- If items containing contrasts that are neutralized in the L1 provoke higher uncertainty for L2 listeners, then Dutch-English bilinguals would be slower to adapt to items containing contrasts that exist only in English (English-only contrasts) than items containing contrasts that exist in both English and Dutch (English-and-Dutch contrasts)
- Alternatively, familiarity with hearing variable pronunciations of contrasts that exist in English but not in Dutch (English-only contrasts), as a product of experience hearing Dutch-accented English, might result in comparable or even greater adaptation to English-only items relative to items containing contrasts that exist in English and Dutch (English-and-Dutch contrasts)

Citation: