Interlanguage Speech Intelligibility Benefit and the Mental Representation of Second Language Speech Sounds

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Introduction

Interlanguage Speech Intelligibility Benefit (ISIB) is where non-native speakers have an advantage over native speakers in understanding accented speech (Bent & Bradlow, 2000).

Studies investigating ISIB

Experiment 1

Aim:
1. Test whether ISIB-Talker and ISIB-Listener can be found in Cantonese speakers and listeners.
2. Examine whether ISIB Listener effect is governed by relative word frequency.

Task:
Monosyllabic word transcription

Native languages of the speakers:
Cantonese and English (1 of each)
Native languages of the listeners:
Cantonese and English (20 of each)

Experimental Design

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Cantonese speaker</th>
<th>English speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unambiguous items</td>
<td>low /f/</td>
<td>low /f/</td>
</tr>
<tr>
<td>High frequency (HF) (baseword)</td>
<td>buzz /f/ (cf. /f/ ter)</td>
<td>buzz /f/</td>
</tr>
</tbody>
</table>

Results

Accuracy rate: Unambiguous items

English speaker Cantonese speaker

Accuracy rate: Low frequency baseword

Cantonese listener

Accuracy rate: High frequency baseword

Cantonese listener

Experiment 2

Aim:
Whether native and Cantonese listeners can perceive phonemic contrasts made by native and Cantonese speakers.

Task:
Monosyllabic word transcription

Participants:
Native Cantonese and English listeners (20 each)

Hypothesis:
If Cantonese listeners cannot tell the difference between two L2 sounds, then there should be no difference in their baseline word recognition when they hear either /θ/ or /f/ spoken by Cantonese or English speakers.

Results

Accuracy rate:

Baseline responses:
Cantonese listeners

Conclusions

• In Experiment 1, word frequency effect is observed when Cantonese listeners perceive native and Cantonese-accented speech. This suggests there is a single phonological system for the two languages.
• In Experiment 2, Cantonese speakers can perceive second language speech contrasts and produce second language speech contrasts in a non-native manner. This suggests there are two phonological systems for each language.
• One plausible explanation for the contradictory conclusions drawn from the two experiments is that non-native listeners are gradually developing two phonological systems from one single phonological system. This is in agreement with Fliegel’s (1999) Speech Learning Model, which indicates that learners are developing two separate categories for the “new” sounds while “similar” sounds in the L2 are still treated as a single category.
• If we divide the non-native listeners into high and low phonological proficiency, we expect the latter to show a greater word frequency effect, and the former to show a greater difference between Experiment 1 and Experiment 2 in baseline responses for native proficiency.

Selected References

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