Background
L2 speech ≠ L1 speech (adult learners)
- Linguistic factors: L1 interference
- Effect of phonetic distance between L1 and L2

-Speech Learning Model: the greater the phonetic distance between L1 and L2 sounds, the more likely it is that learners will categorize L2 sounds in a native-like fashion.

-Perceptual Assimilation Model: ability to perceive L2 contrasts will depend on the degree to which L2 sounds can be heard and categorized as an exemplar of an L1 category.

Problem: finding an accurate method of assessing cross-language phonetic distance.

Methods of assessing cross-language phonetic distance
- Acoustic measurements (e.g., F1 and F2 values).
- Cross-language mapping tasks (perceived similarity tests by monolingual speakers).

Goals of the study
- To propose and evaluate a bidirectional method of assessing cross-language similarity by:
  - Including both L1 and L2 sounds in the CLMT
  - Testing native speakers of each language
  - Obtaining control scores for each language
  - To determine what L1 sounds and L2 sounds are (near)identical (i.e., L1 sounds that go unnoticed in L2)

The Study
Population
Cross-language mapping task:
- L1 English speakers
- L1 Catalan speakers
L2 production
- L2 Catalan speakers

The Target
English and Catalan high and mid front vowels
- /i/, /ι/, /ei/, /e/, /æ/, /ɛ/, /e/, /æ/, /ɛ/ (e.g., beat, bit, bat, be!
- /ι/, /ι/, /ei/ (e.g., net, net, net)

Acoustic comparison in an F1-F2 vowel space

Experiment: Perceptual Assimilation Task
- Catalan speakers identify English and Catalan Vowel in terms of Catalan Vs.
- English speakers identify English and Catalan Vowel in terms of English Vs.

Procedure: Example of trial
1. Oral stimulus: /i/
2. Response: clicking on choice of Catalan vowel
3. Oral stimulus (same as in step 1): /ι/
4. Response: clicking on goodness rating

Participants
- a) Central Catalan speakers N = 20
- b) Canadian English speakers N = 20

Stimuli
Catalan /ι/ /ι/ /ei/ /e/ elicited from two male speakers of Central Catalan in isolation and English /i/ /ι/ /ei/ /e/ elicited from two male Canadian English speakers in h, and h, frames, digitized and edited out.

L2 production data
Participants: 30 Catalan advanced learners of English (3rd & 4th year undergraduates)

Procedure: Repetition-insertion task
V inserted in /h, b/ word frame; assessed by intelligibility and goodness ratings by 8 English-speaking listeners.

Conclusions
- Bidirectional cross-language mapping tasks allow more accurate measure of phonetic similarity and help predict production accuracy.
- Results show how L2 sounds will trigger no new category formation and what L1 for L2 sound substitutions may go unnoticed (i.e., identical sounds).
- Nevertheless, the L2 production results also show that phonetic similarity alone cannot account for all the production data (e.g., the case of near-identical /i/).
- Other factors are at play in L2 vowel category formation such as the need to establish a system of contrasts (which may be based on features other than quality, such as duration).

Results

Comparing results for L1V as L1V and L2V as L1V identification:
- Catalan et al.'s Fit Index score measure:
  - Eng. /i/ heard as Cat. /i/ 99% identification x 6.2 GR = 61
  - Catalan /ι/ /ι/ /ei/ /e/ will pass as good exemplars of Catalan /ei/.
  - English /i/ is not heard as a good exemplar of Catalan /ei/.
  - However, Catalan /ei/ is heard as identical to English /ei/.

-> Predictions for L2 production:
- Catalan /ι/ /ι/ /ei/ /e/ and English /ι/ /ι/ /ei/ /e/ are near-identical vowels: Catalan /ι/ /ι/ /ei/ /e/ will pass as good instances of Catalan /ι/ /ι/ /ei/ /e/.
- Catalan /ei/ /ei/ /ei/ /ei/ will not. Accurate production of L2 Eng /i/ involves the creation of a new vowel category.

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References