Role of Linguistic Experience on Audio-visual Perception of English Fricatives in Quiet and Noise Backgrounds

INTRODUCTION

Background
- Native (L1) speech perception is enhanced by visual information, especially in a poor listening environment [1,2,3].
- Nonnative (L2) perceivers may be impeded in correct use of L2 visual cues non-existent in their L1 [4,5].

Current study
- Examined audio-visual (AV) perception of English inter-dental fricatives in quiet and café-noise backgrounds.
- Tested both L1 & L2 perceivers: English, & Chinese natives (no inter-dental in L1), with different L2 experience (early vs. late arrivals).

METHOD

Participants
- Native English: 15 Canadian English adults
- Early arrivals: 15 Mandarin Chinese adults; Arrival in Canada: 7-13 yrs old
- Late arrivals: 20 Mandarin Chinese adults; Arrival in Canada: > 16, Residence: < 5 yrs

Stimuli & Procedure
- CV in quiet background, & café-noise (S/N=0dB).
- Identification task

RESULTS

FINDINGS

Summary
- All groups:
  - & AV better than V:
    - quiet better than noise.
- Compare the 3 groups:
  - early arrivals’ scores: intermediate to English Ss & late arrivals’
  - Compared to English Ss, Chinese showed
    - lower % correct with L2 inter-dental AV congruent.
    - greater degree of reliance on V.

Conclusions
- Similarities among the 3 groups suggest perceptual universals (e.g., A better than V).
- Differences between Chinese early & late arrivals suggest effect of linguistic experience.
- Nonnatives: attended to V info to perceive L2 sounds, but failed to adopt the correct V cues containing linguistically contrastive info, suggesting language specific processing.

Together, results point to an integrated cross-modal network in speech processing.

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