Learning a Talker or Learning an Accent?

Cross-talker Generalization of Phonetic Adjustment to Foreign-accented Speech

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INTRODUCTION

Adaptation to a talker?

- Native listeners robustly adapt to *talker-specific* speech variation in foreign-accented speech (intelligibility studies [1, 2], and studies of phonetic adjustment [3-5]).

Adaptation to an accent?

- Mixed findings about *cross-talker* generalization to similar-accented speakers.

Single-talker training

- Positive evidence: generalization of phoneme-level adjustment to speakers with similar productions [4, 6].
- Negative evidence: no improvement in recognizing speech from other speakers with same accent [1, 2].

Multiple-talker training

- Improvement for novel speakers of same accent [1, 7], hypothetically because listeners extract information across multiple talkers to overcome talker-specific variation.
- Examination of specific phonemes will allow a more rigorous test of this hypothesis.

Question: When do native listeners to generalize foreign accent adaptation to novel talkers?

❑ **single talker exposure vs. multiple talker exposure**

METHOD

Mandarin-accented word-final /d/s are acoustically similar to English /t/s and often cause perceptual confusion.

Adaptation is measured by successful spoken word recognition.

EXPOSURE PHASE: ***Auditory lexical decision task***
Participants were assigned into one of the two conditions.

- Experimental condition: 30 /d/-final words (e.g., overload)
- Control condition: 30 replacement words (e.g., animal)

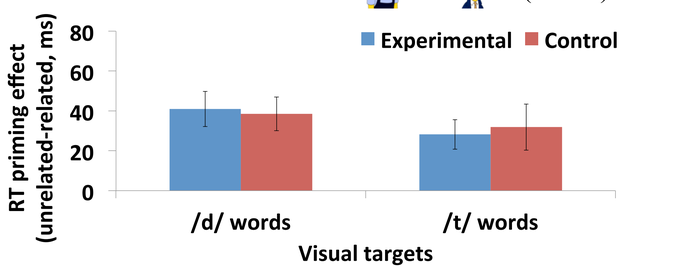
TEST PHASE: ***Cross-modal priming task***

	Visual target type	
Prime Type	**/d/-final**	**/t/-final**
Related priming	seed → SEED	seed → SEAT
Unrelated priming	milk → SEED	milk → SEAT

***Voice and accent similarity judgment* followed by test phase.**

RESULTS: EXP 1

Single Talker Exposure

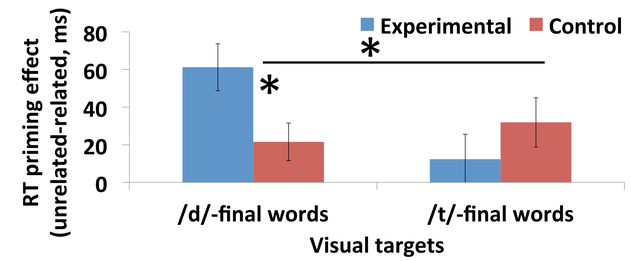


No difference between experimental and control group.
→ No generalization from single talker exposure.

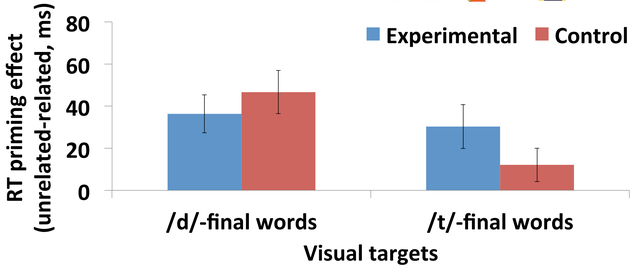
RESULTS: EXP 2

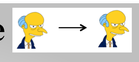
Multiple Talker Exposure

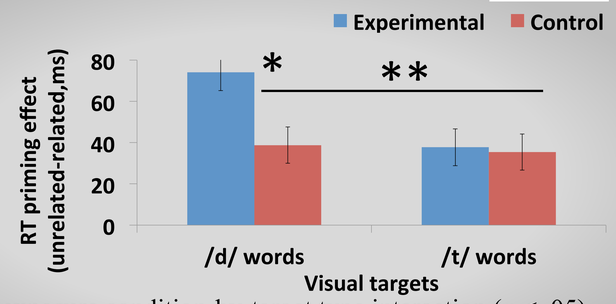
Multi 1 (5 speakers) → Speaker 1)  (n = 24)



Multi 2 (5 speakers) → Speaker 2)  (n = 24)

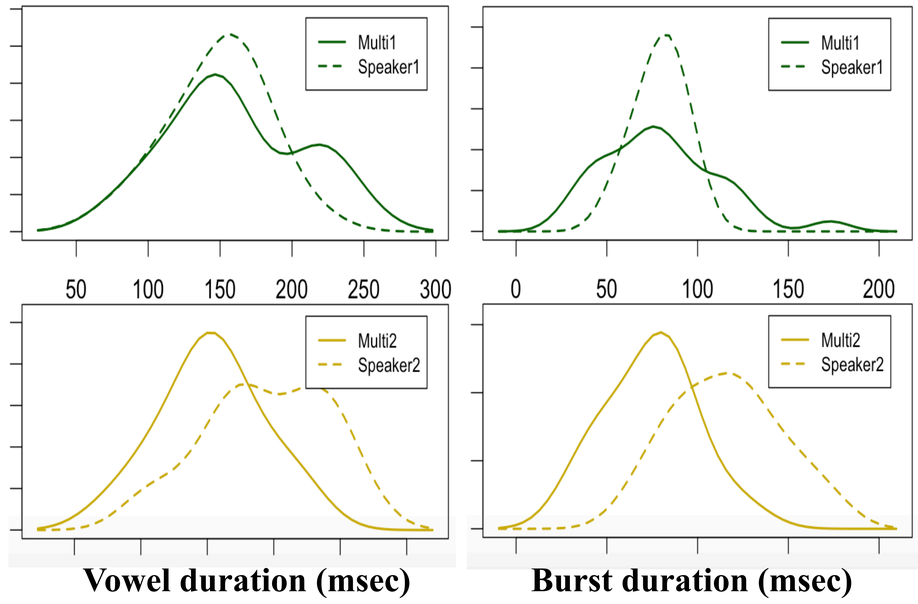


Previous study: Talker-specific Exposure 



Significant exposure condition-by-target type interaction ($p < .05$).
Larger priming for /d/-final words in the experimental group than controls.
Larger priming for /d/-final than /t/-final words in the experimental group.

PRODUCTION DATA



DISCUSSION

Talker generalization of phonetic retuning:

- Following **multiple talker exposure,** but only **when talkers were aligned in the acoustic-phonetic space.**
- These results extend previous findings of talker-specific phonetic retuning [3-6] and they refine previous findings [1, 7] by specifically pinpointing **adjustment at acoustic-phonetic level**.

OPEN QUESTION: Does multiple-talker exposure allow the extraction of systematic information across talkers?
Or, does it provide a larger exemplar pool to which novel talkers can be compared?

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