Return of the weckud wetch: Rapid adaptation to a new accent

4pSC16

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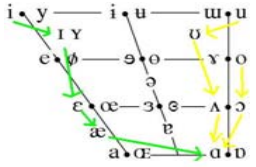
Introduction

Listeners have been shown to adapt rapidly to new accents in their native language (Maye, 2003; Clarke & Garrett, 2004). These previous studies used accented running speech or single sentences. In the present study, English-speaking listeners were exposed to a list of lexical items in which front vowels were lowered (e.g., ``witch" became ``wetch") but back vowels were not (e.g., moon). These items were heard in isolated form with visual referents. This builds on previous work, lending itself well to eye-tracking. Also, the accent presented in this study affects only a portion of vowel space, similar to a regional dialect. Generalizations to novel items and across the vowel space were tested.

Materials

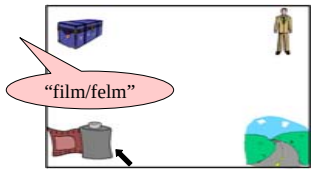
- 64 monosyllabic pictureable nouns.
- Each noun was recorded twice by a male native speaker of Standard American English: Once as SAE, once with a shifted vowel as depicted below (Accented English, AE).
- Sounds were normalized for amplitude.
- Pictures were selected from publicly available clipart collection.



Method

Training

Subjects were presented with four pictures and told to select the item named. Two names contained front vowels; the others, back vowels. One name from each vowel group was a training item. A given set of four pictures always appeared together, randomized for location and item named. 32 of the 64 possible items were named in training, 8 times each. On Day 1, subjects heard objects named in SAE. On Day 2, subjects heard objects with front vowels named in AE and back vowels in SAE.



Test:

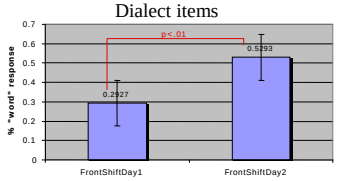
- Both days, lexical decision on all 128 items (4 repetitions each) in the absence of pictures

Predictions

- Visual referents will aid dialect learning
- "Word" responses will increase across sessions
- A familiarity effect will yield a greater increase in "word" responses for trained vs. untrained items
- Learned shift in vowels will not transfer across vowel space (front to back)

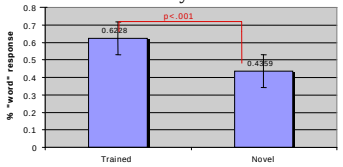
Results

Dialect items



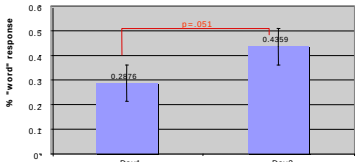
Shifted, front-vowel items were reported as "words" more often on Day 2 than Day 1.

Familiarity effect



On Day 2, familiar shifted, front-vowel items were reported as "words" more often than novel (untrained) shifted items.

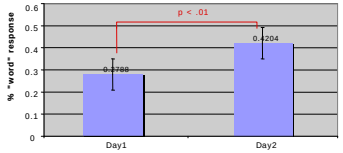
Untrained items



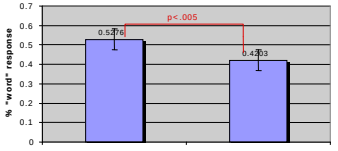
On Day 2, dialect items not heard in training were slightly more likely to be reported as "words" than on Day 1.

Results

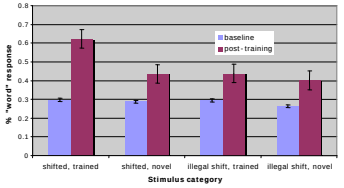
Generalization



On Day 2, shifted back-vowel items were reported as "words" more often than on Day 1.



On Day 2, shifted front-vowel items were reported as "words" more often than shifted back-vowel items.



"Word" responses increased on Day 2 in all categories, with the largest change in shifted, trained words

Discussion

- A training phase in which pictures are paired with isolated sound forms alters what subjects consider to be acceptable forms of English words.
- Familiar (trained) items in a new dialect are better learned as words than unfamiliar (untrained) items.
- Learning a new dialect does generalize to untrained items.
- Unlike Maye, et al.(2003), we found that words with lowered back-vowels (unattested in the training phase) were also more likely to be accepted as words.
- However, there was specificity of dialect training because the likelihood of accepting a shifted vowel as a word was greater for front vowels (trained) than for back-vowels (untrained).

Future directions

- Resynthesized speech items
- Natural vowel (e.g. chain) shifts
- Speaker specificity
- Phonologically conditioned shifts
- Eye-tracking
- Neuroimaging

References

Maye, Aslin, and Tanenhaus, ``In search of the weckud wetch: Online adaptation to speaker accent," CUNY Conference on Sentence Processing, Cambridge, MA (2003)

Clarke and Garrett, ``Rapid adaptation to foreign-accented English," JASA 116, 3647-3658 (2004)

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