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Implications of Language Experience on Accuracy of Speaker Identification

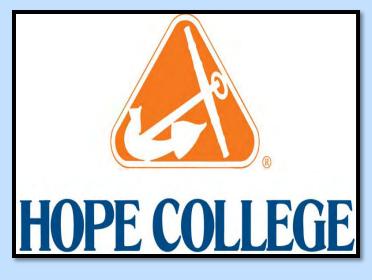
Raquel Mendizabal

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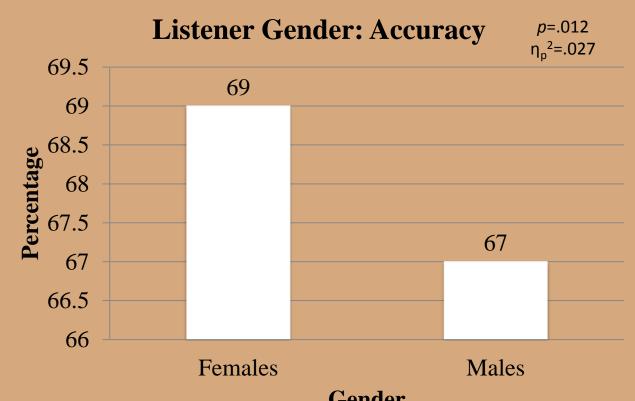


Implications of Language Experience for Accuracy of Speaker Identification

BACKGROUND

•Previous studies suggest that listeners can identify speaker gender and ethnicity from auditory information (Lass et. al., 1979; Thomas & Reaser, 2004; Perrachione et. al., 2008).

•A previous study analyzing for the conditions of temporal, phonetic complexity, speaker gender, and speaker ethnicity found that, overall, listeners were significantly more accurate in identifying forward, sentences, males, and European Americans (Trent-Brown et. al., 2011). •A previous study found that female listeners (69%) were significantly more accurate than male listeners (67%) in identifying speaker F(1,233)=6.439 (Trent-Brown et. al., 2011)



•This study examines the extent to which some listener characteristics influence listener's accuracy in identifying speakers.

•Given that the language experience listeners have been exposed to influences individual language formation, this study examines how language experience influences listeners' ability to correctly identify speakers.

HYPOTHESES

•Participants who have lived in more places and more regions will have better accuracy in speaker identification.

•Participants who have lived in places with more demographic diversity will have better accuracy in speaker identification.

•Participants who have lived in places with a higher European American population will have higher accuracy identifying European American speakers compared to participants who have lived in places with a lower European American population.

•Participants who have lived in places with higher African American populations will have higher accuracy identifying African American speakers compared to participants who have lived in places with lower African American populations.

•Multilingual participants will have higher accuracy identifying speakers.

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Raquel Mendizabal Faculty Mentor: Dr. Sonja Trent-Brown, Hope College, Holland, MI

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Xue, S. A., & Fucci, D. (2000). Effects of race and sex on acoustic features of voice analysis. Perceptual and Motor Skills, 91, 951-958.

Participants

•Data from 466 listeners (295 females, 171 males) was used in the study. •Most participants were undergraduate college students (mostly from Hope College) and the majority of them were 18-22 years old. •All participants were English speakers and all had lived in the United States for at least 3 months.

•Mostly European Americans.

Procedure

- •Before completing the study, participants completed a Language Background Questionnaire with questions such as: •List the places in the United States (City/State) you have lived in for 3 months or more
- •List the places outside the United States you have lived in for 3 months or more
- •Was English your first language?
- •Are you fluent in another language(s) other than English? Which

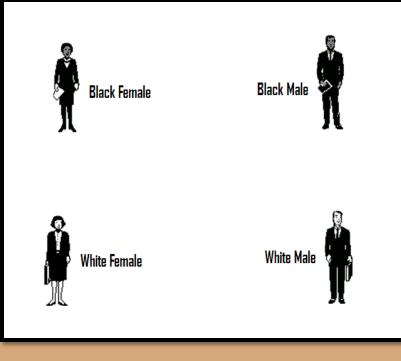
one(s)? •Participants listened to four blocks, two with sentences and two with words and two reversed and two normal. Each block was made up of 220 items with an equal number of items spoken by either an African American and European American, and female and male.

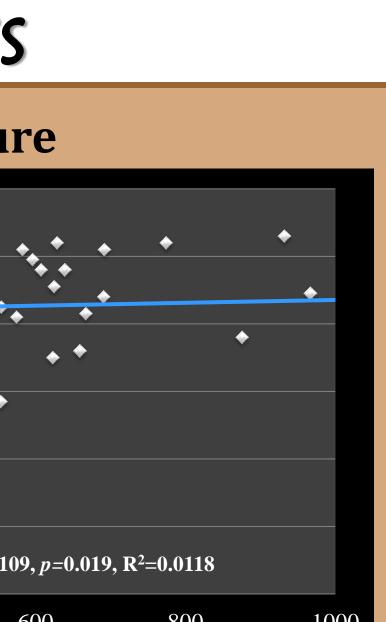
•Listeners had to click on the image in the screen of the speaker they thought the audio belonged to.

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METHOD





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	ne analysis, we nur nited States.
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back central-back	has spread far beyond the South Long 5 fronting. ² Indicates how the vowels of "boat", "road", "go", e
central-front front	gradation is mainly from north to south. R-dropping.2
	Approximate boundary of areas in which white peo syllable-final r's. Cities in which only much older sp this are marked like this: (This map generally does not include information ab
	African American Vernacular English (AAVE), whi be independent of other dialects, except occasional Lowland South, its true native area.) Canadian and Tidewater raising: ⁴
E i i E	Area in which the vowels of "out" and "house" are a before any voiceless consonant), but not the vowels and "now" (Only in Canada and the Tidewater Sou
	Bite-bout line: Area in which the vowels of "bite" and "high" are m fronted than the vowels of "bout" and "how", and th of "toe" and "too" tend to be monophthongs rather
	diphthongs. "On" line: North of this "on" rhymes with "Don", : wn" (or, in parts of the South from TX to NC, not ye "). In San Francisco and South Florida this north-so
"Dawn" (but on the ed this line would have no	the blue-hatched areas "on" rhymes with both "Dor lges of the South "on" may rhyme with "bone" instea meaning in these areas Even so, in a few places a two sections of the "on" line across a blue-hatched.
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MEASURES

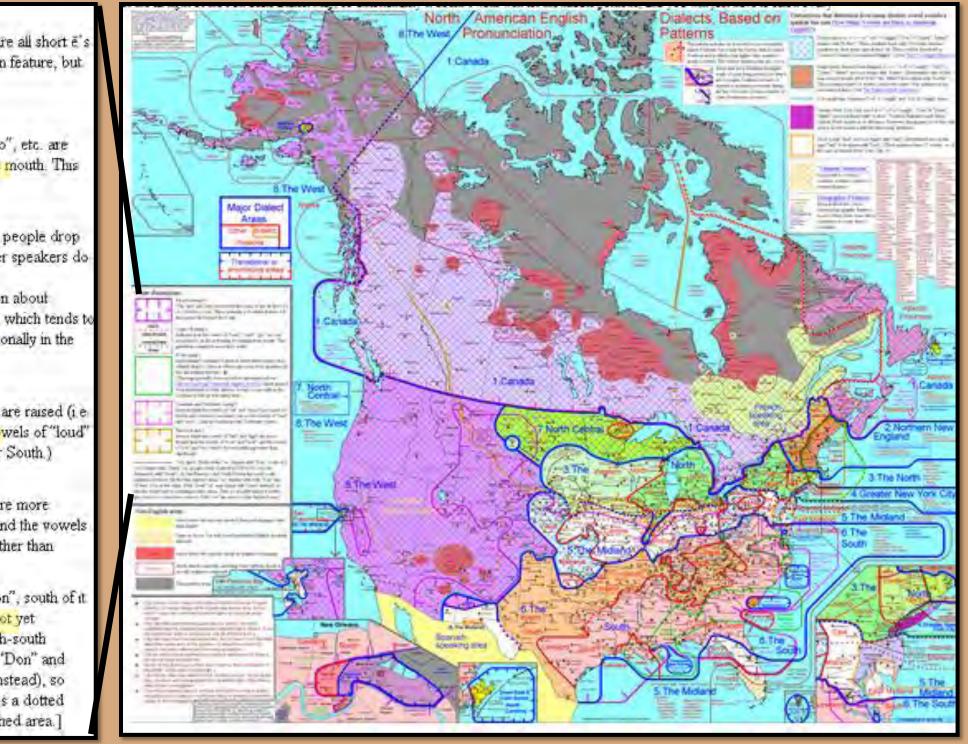
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each place (U.S. Census Bureau 2010 and

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rides the United States into 8 dialectic regions. mbered continents to represent regions outside



DISCUSSION

ants who have lived in more regions did not have a tifying speakers than participants who lived in less

its were not more accurate than participants who uage in identifying speakers.

higher European American language exposure in identifying European American speakers than er European American language exposure.

ants who had higher African American language curate in identifying African American speakers in identifying European American speakers in

suggest that it is not overall language experience speaker identification, but rather it is the specific osure to a specific group.

KNOWLEDGMENTS

hology Department Student/Faculty Cooperative Research Grant aculty Development Fund