



The Influence of Perceived Race on Ratings of Children's Speech I: Accuracy Ratings

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Introduction

- ASHA emphasizes knowledge of the “influences of one’s own beliefs and biases in providing effective services” as essential for Speech-Language Pathologists (SLPs) serving culturally and linguistically diverse populations (ASHA, 2004). SLPs use real-time binary accuracy judgments to score standardized articulation assessments, from which they make eligibility and treatment decisions. Research is only beginning to unpack the effects of listener bias on speech perception.
- African-American English (AAE) is a distinct English dialect characterized by phonological and morpho-syntactic features including glottalization of final /t/, the reduction of final consonant clusters (including ones that mark morphology), and the vocalization or deletion of final /l/ (Thomas, 2007). African-American children, who may or may not be speakers of AAE, are consistently over-represented in Special Education (US Department of Education, 2001).
- Perceptual judgments are known to be affected by assumed age, gender, race, and region of origin of the talker, among other factors.
- Staum Casasanto (2008) previously found that listeners were quicker to process AAE-like cluster reductions when shown a picture of an African-American speaker versus a European-American speaker.

Research Questions

- Does imputed race of child speakers affect listeners’ judgments of speech accuracy? That is, can we replicate imputed speaker-race effects found elsewhere with adult talkers?
- Do speaker-race effects differ for speech patterns that comply with AAE phonological patterns?
- Do clinical experience, knowledge of AAE features, and implicitly or explicitly held attitudes towards AAE affect these accuracy judgments?

Methods

Participants

Inexperienced Listeners: 40 adults (20 for baseline rating task and 20 for audio-visual rating task) without training in Speech-Language Pathology

Experienced Listeners for Audio-Visual Task: 12 pediatric Speech-Language Pathologists and 8 advanced graduate students in Speech-Language Pathology

Stimuli

- Elicited as part of a larger study on dialect variation (see Edwards, Gross, MacDonald, Brown, & Seidenberg; 2010). Talkers were African-American children between 4 and 9 years old from the Madison, WI area.
- We selected 160 speech samples, 10 each of 16 different words from 4 coda groups (final /l/, final /t/, final stop + plural –s and final /ld/).
- Reductions or omissions are allowed in AAE for all of these types of codas. Final consonants in tokens for each word ranged from completely present to completely reduced. Tokens were classified as “accurate” (i.e. fully produced codas) or “inaccurate” (i.e. reduced or omitted codas) by both (1) skilled transcription and (2) the results of the baseline rating task, below.

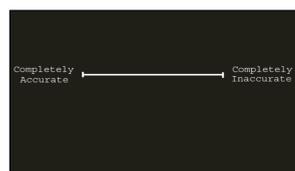
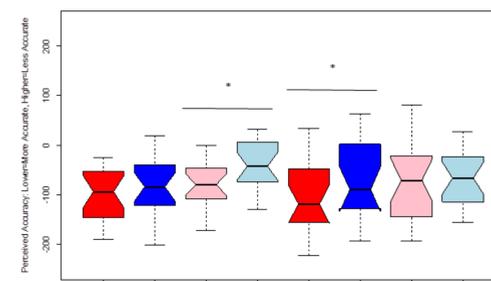
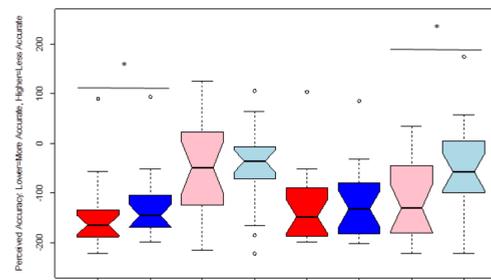
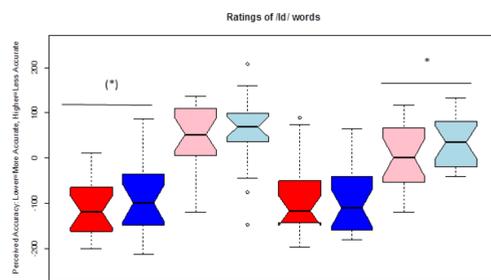


Figure 1 (left). The Visual Analog Scale used in the speech-rating task.

Figure 2 (right). Probability-density distributions of the observed VAS click locations for the /l/, /ld/, stop, and stop+plural /s/ stimuli for the baseline task (labeled *No Face*), and the two conditions of the audio-visual rating task (labeled *African American* and *European American*).



Figures 3, 4, and 5 (left). Boxplots showing the interaction race, transcribed accuracy, and group in judgments of the accuracy of /ld/ words (Figure 4, top), stop+plural /s/ words (Figure 5, middle), and /l/ words (Figure 6, bottom), showing which conditions had a significant effect of the talker's imputed race.

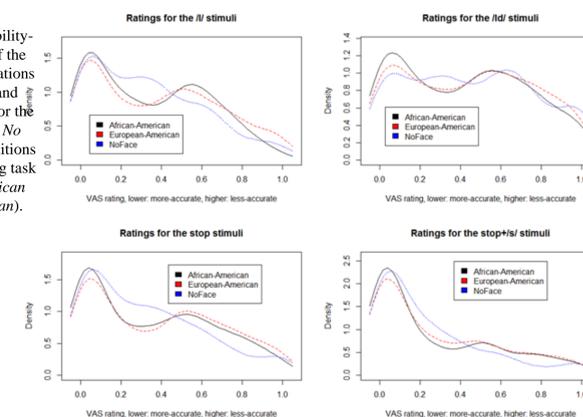


Figure 6. Scatterplots showing the relationship between the accuracy ratings for words with perceptually accurate final /l/ (averaged within listeners) and individuals' scores on the explicit attitudes test (top) and the implicit association test (bottom), separated by the imputed race of the speaker.

Methods (Continued)

Tasks

Baseline Rating Task: Participants listened to each token and rated the token’s accuracy by clicking along a visual analog scale (Figure 1).

Audio-Visual Rating Task: Similar to baseline task, but speech samples were paired with photos of African-American (AA) or European-American (EA) children. Listeners were told that these were the children who produced the stimuli. Participants also completed the following attitude and knowledge measures:

Implicit Attitudes Measure: Implicit Association Tests (Greenwald, McGhee, & Schwartz, 1998) use differential reaction time to measure implicitly held biases. We implemented a version previously used by Babel (2012) to measure racial bias.

Explicit Attitudes Test: 25 items scored on 7 point Likert-type scale. Higher scores indicated more anti-AAE attitudes while lower scores indicated pro-AAE attitudes.

Dialect Knowledge Survey: 22 multiple-choice items assessing knowledge of AAE dialect features.

Results

- Both groups of listeners rated speech as less accurate overall when paired with African-American children’s faces (Figure 2). Interestingly, the ratings were more categorical in the audio-visual rating task than in the baseline rating task.
- By and large, the effects of race were qualitatively similar for the listeners with and without clinical training.
- Imputed race affected the accuracy ratings for final /ld/ final stop+plural /s/ words, and final /l/ words most strongly (Figures 3, 4, and 5).
- Knowledge of AAE did not mediate the effect of imputed race on accuracy ratings. Implicit and explicit attitudes toward African Americans affected the ratings of /l/-final words (Figure 6). Individuals with negative explicit attitudes toward African American English rated words to be more accurate when paired with African American children’s faces, perhaps reflecting stereotype suppression. Individuals with positive implicit attitudes toward African Americans rated words as more accurate when paired with African American children’s faces.

Implications

- Equivalent forms may be rated differently in clinical settings when produced by African American versus European American children.
- Clinicians need to be mindful of the ways that their perceptual abilities may be affected by characteristics of the populations they serve.
- Additional research should continue to tease apart the listener- and speaker-related factors that may bias speech perception, in order to ultimately prepare clinicians to provide more effective services.

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Acknowledgments

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