

COMPARING PHONETIC CHARACTERISTICS OF AFRICAN AMERICAN AND EUROPEAN AMERICAN SPEECH

Erik R. Thomas, North Carolina State University, USA

Elizabeth L. Coggshall, New York University, USA

African American English (AAE) has been studied more heavily, by far, than any other forms of American English. Nevertheless, much of the emphasis has been placed on morphosyntactic variants and its phonetic characteristics are poorly known. We examined several variables to see how AAE differs phonetically from European American English (EAE) varieties in North Carolina.

Forty interviews were drawn from the North Carolina Language and Life Project corpus at North Carolina State University from three North Carolina counties: Hyde, Robeson, and Warren. Speakers included ten older and ten younger African Americans and ten older and ten younger European Americans, balanced among the three counties and by sex. The interviews were all conversational. Tokens were measured with the Praat software using methods appropriate to the particular variable.

AAE is known to differ from EAE for several vowel quality variables (Thomas 2001). We examined one front vowel, /æ/, and one back vowel, /o/. Results are shown in Figure 1. Each symbol represents the mean value of tokens measured for a single individual. Z represents a formant value converted from Hertz to Bark. The Z_2-Z_1 and Z_3-Z_2 metrics normalize interspeaker differences that are due to variation in mouth size. In general, African Americans show a higher /æ/ and more backed /o/ than European Americans. For /æ/, two-tailed t-tests showed that older EAE and AAE speakers do not differ significantly from each other ($p = .196$), but younger speakers do ($p = .00364$). Likewise, for the /o/ nucleus, older AAE and EAE speakers do not differ significantly ($p = .114$), but younger AAE and EAE speakers do ($p = .000745$). For the /o/ glide, the difference is significant for both older ($p = .0231$), and younger ($p = .000669$) speakers.

Several studies (for example, Walton and Orlikoff 1994) have reported that AAE shows a lower overall F_0 than EAE. We obtained a mean F_0 for 50 two-second samples of speech uttered by each speaker and then took the mean of those samples. Results, plotted in Figure 2, show no ethnic differences significant at $p < .05$. However, much larger samples and tighter age controls might reveal some ethnic differentiation.

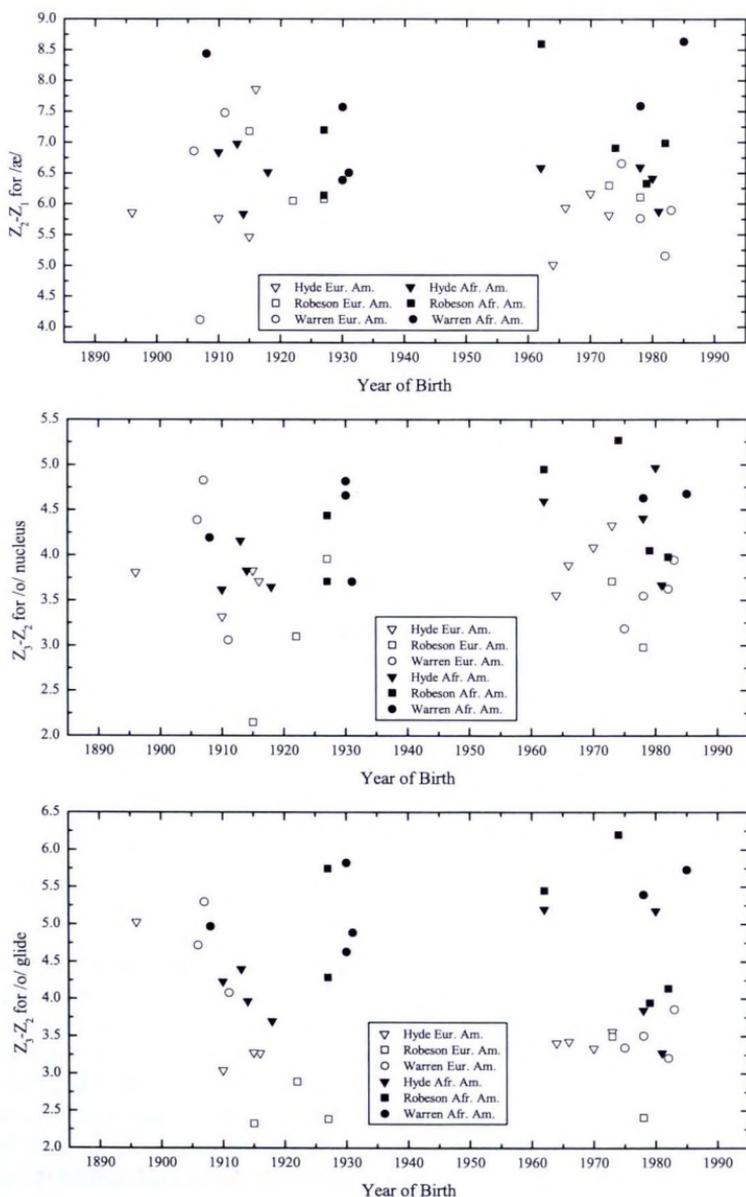


FIGURE 1

Comparison of /æ/ nuclei, /o/ nuclei, and /o/ glides, respectively, for the 40 North Carolina speakers. For /æ/, higher scores indicate more raising; for /o/, higher scores indicate a more backed quality.

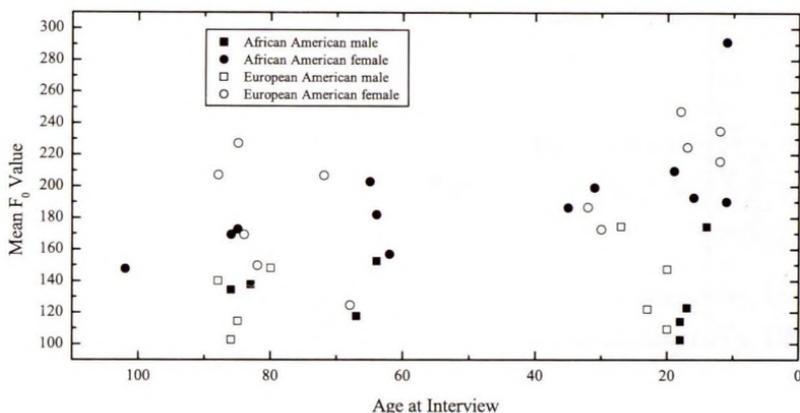


FIGURE 2

Mean F_0 values for the set of 40 speakers

Intonation differences between AAE and EAE have been reported (for example, Tarone 1973) but are not well understood. We examined one intonational difference. Some Southern European American females show an especially high peak near the beginning of an intonational phrase, followed by a rapid fall in F_0 . This pattern appears to be absent in mainstream AAE, which shows relatively flat intonational contours or, if it shows unusually high peaks, does not restrict them to the beginning of intonational phrases.

Figure 3 shows an analysis of declination within intonational contours for five young EAE and five young AAE speakers. Intonational phrases are divided by their length in milliseconds: 1.01–1.5 on the x-axis refers to intonational phrases whose total length is from 1.01 to 1.5 ms long. An ethnic difference is visible for utterances ranging from 0.51 to 1.5 ms, for which three of the five European Americans show strongly negative slopes, indicating a greater fall in pitch, while all the African Americans show relatively flat slopes.

Finally, Figure 4, taken from Thomas and Carter (2006), shows an analysis of one aspect of rhythm, the degree of stress-timing versus syllable-timing. The Pairwise Variability Index (PVI) method described in Low, Grabe, and Nolan (2000) was used. Higher scores indicate a greater degree of stress-timing. Overlapping confidence intervals show that contemporary EAE, contemporary AAE, and older EAE are all equally stress-timed, and Spanish is strongly syllable-timed. However, older AAE (the speech of ex-slaves) falls in an intermediate group with Hispanic L_2 English and Jamaican English, suggesting that AAE and EAE formerly differed in this aspect of rhythm.

Mainstream AAE and EAE differ phonetically in a variety of ways, even in a Southern state such as North Carolina. Although individual speakers may deviate for particular variables, the overall pattern is for the two groups to remain phonet-

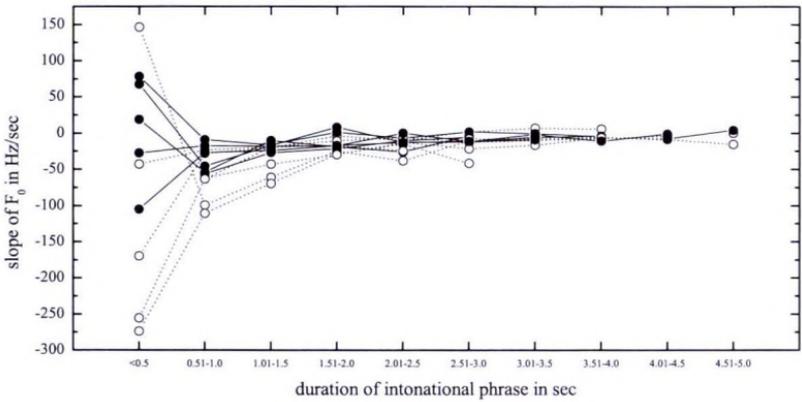


FIGURE 3

Effect of duration of intonational phrase on declination. Dark circles and solid lines show African Americans, open circles and dotted lines European Americans.

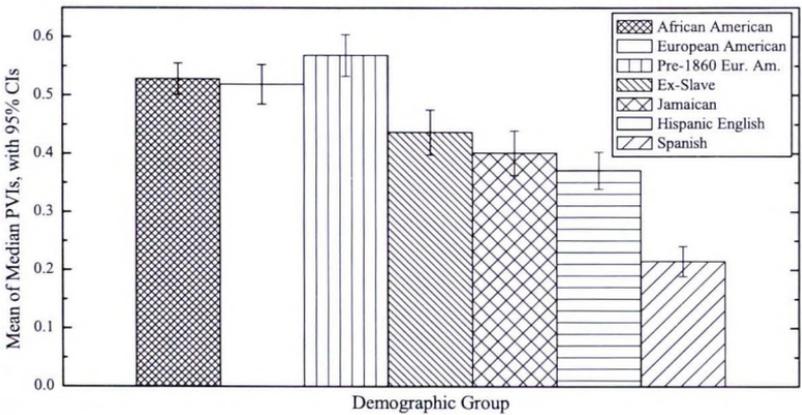


FIGURE 4

Bar graph showing PVI scores for each demographic group. The error bars indicate 95% confidence intervals.

ically separate. However, the variables that separate them have changed over time, as the vowel quality and rhythm analyses show. The eventual goal is to produce a method of comparing numerous phonetic variables to yield a distance metric between groups.

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