

# **The vowel space as a sociolinguistic variable for comparing an ethnolect across dialect regions**

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The analysis of vowel space area (VSA) calculated using corner vowels is a useful sociolinguistic variable for studying vocalic variation and sound change in American English. Prior research has shown that VSA has a relation with social factors including place-related identity (Labov, 1963), regional dialect (Fox & Jacewicz, 2017), and gender and sexuality (Heffernan, 2010; Pierrehumbert et al., 2004). The present study explores the utility of examining VSA for a comparative analysis of Korean Americans in three different regions. While recent work in sociophonetics highlights the effect of race and ethnicity on vocalic variation, there is no research that directly compares an ethnolect of American English across dialect regions.

We address this gap by investigating the vowel spaces of 51 Korean Americans based in three urban U.S. cities: Los Angeles (n=27), Houston (n=12), and Atlanta (n=12). The phonetic data come from conversational speech gathered in interviews with 1.5 and 2nd generation Korean Americans, aged 18-55. We extract vowel formant measurements using forced alignment and automated formant tracking (McAuliffe et al., 2017; Shue et al., 2011; Reddy & Stanford, 2015). We use Lobanov normalization (Lobanov, 1971) and calculate the median F1/F2 measurement for each of five corner vowels (FLEECE, TRAP, LOT, GOAT, and GOOSE). Following D'Onofrio et al. (2019), we calculate each speaker's complete vowel space area using Heron's method and the Euclidean distance between corner vowels. The VSA values are then compared across region, gender, and vowel to shed light on the ways in which an ethnic group might demonstrate internal variation based on geography.

Linear models fit to the data show that Korean Americans from each region pattern differently in terms of both vowel space size and spread, with between-group variation influenced by both region and gender. Mean vowel duration as a measure of speech rate also appears to be an influencing factor. Holistic vowel space compression occurs for Korean Americans in California and in Texas, but not for those in Georgia. We connect these broader VSA patterns with speakers' differing orientations to metropolitan, Southern, and supra-regional Korean American identity. Variability in Korean Americans' vowel spaces may index region, but what it means to be and sound Korean American clearly differs among groups.

Our study underscores the value of analyzing vocalic variation in terms of overall vowel space, particularly for comparative studies looking at ethnolectal variation across different regions. We argue that using methods that treat the size and dispersion of VSA itself as a sociolinguistic variable can identify aspects of vocalic variation and sound changes in progress that may not be generalizable through the analysis of individual vowels (D'Onofrio, Pratt, & Van Hofwegen, 2019).

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