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Ethnic Differences in LBMS Structure

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Recent research on English vowels in the American West has focused on the Low-Back-Merger Shift (LBMS), a collection of features that combines the (near-) merger of low back vowels with the lowering and/or retraction of front short vowels (e.g., Becker, 2019). Though these features are well attested among majority white speakers in the Western U.S. and Canada, the structural relationships among LBMS elements have not been firmly established. To address this issue and the limited data from people of color, Becker (2019) recommends that researchers investigate the structural relationships between Low Back Merger and LBMS and that they include data from speakers of diverse ethnic backgrounds. This paper responds to that call.

I analyze word list data from 77 Utah teens from two ethnic groups: Pacific Islanders (PIs) and Euro Americans (EAs). Words were recorded in conjunction with ethnolinguistic interviews, transcribed, and force-aligned. First and second formant estimates were extracted and then normalized using the Lobanov method (Kendall & Thomas, 2010). Low back vowel overlap is analyzed using Bhattacharyya's affinity (Johnson, 2015), and an LBMS index is calculated based on Becker (2019). Correlations are determined using regression analysis and Pearson's r correlation tests.

Results show no significant correlation between LBMS Index and BOT-BOUGHT overlap for either ethnic group. However, correlations between BOT position and other LBMS elements are identified. For both ethnic groups, BOT and BAT height are negatively correlated. Additional analysis suggests that the movement and/or position of BOT affects the front vowels in the two ethnic groups differently. For EAs, BET and BIT height are negatively correlated with BOT height. However, PI front vowels generally appear to be more sensitive to BOT retraction, with front vowel height and backness correlated with BOT F2.

Previous authors have asserted that BOT's movement is more relevant to LBMS than complete Low Back Merger (e.g., Grama & Kennedy, 2019; Swan, 2019). This research supports that claim and suggests some flexibility in the way front vowels respond, even within the same geographic area. It also emphasizes the importance of increasing ethnic diversity in data collection. Finally, while the LBMS index is useful for capturing F1 and F2 movement, in this case it obscures the real differences between groups of speakers.

Becker, K. (Ed.). (2019). *The Low-Back Merger Shift: Uniting the Canadian Vowel Shift, the California Vowel Shift, and short front vowel rotations across North America. Publication of the American Dialect Society 104*. Duke University Press.

Grama, J., & Kennedy, R. (2019). Dimensions of variance and contrast in the low back merger and the low-back-merger shift. *Publication of the American Dialect Society, 104*(1), 31-55.

Johnson, D. E. (2015). Quantifying overlap with Bhattacharyya's affinity. 44th annual meeting on New Ways of Analyzing Variation (NWAV 44), Toronto.

Kendall, T., & Thomas, E. R. (2010). *Vowels: Vowel manipulation, normalization, and plotting in R. R package.* In cran.r-project.org/web/packages/vowels/index.html

Swan, J. T. (2019). The Low-Back-Merger Shift in Seattle, Washington, and Vancouver, British Columbia. *Publication of the American Dialect Society, 104*(1), 74-99.