



Prosody and Political Style: The Case of Barack Obama and the L+H* Pitch Accent

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Abstract

Systematic intonational differences between Mainstream U.S. English (MUSE) and African American Language (AAL) have been documented since at least the 1970s, but within sociolinguistics and laboratory phonology, there has recently been increased interest in describing variation in intonation, and especially for speakers of AAL ([1]; [2] *inter alia*).

In the present study, we explore Barack Obama's speech behavior in this context, using the tools of the AM framework ([3];[4];[5]) as well as phonetic implementation measure, to focus on lesser-studied prosodic characteristics. We analyzed a corpus of President Obama's speech, consisting of 169 Intonational Phrases that were collected in the context of a study by [6], and prosodically annotated using the Tones and Break Indices conventions for Mainstream American English ([7];[8]) as well as a number of phonetic measures. This corpus was then subsequently annotated for affect, here defined as the "kind of emotion about some referent or proposition", following [9] (see also [10] and [11]). Results of regression analyses indicated the following. First, affect had no significant association with boundary tones; affective meaning contrasts were predictive of neither Obama's boundary tone types, nor their phonetic realization. However, affect was significantly associated with Obama's pitch accent patterns; in particular, negative affect was found to be a predictor of Obama's use of the L+H* accent, and also of its phonetic characteristics (steeper rises and higher peaks with negative affect). Notably, these findings differ somewhat from those reported in previous studies of both black and white speakers in similarly-formal contexts ([12];[13]). We discuss our results in this context of this work and consider the implications for our understanding of how intonational features may be involved in the construction of sociopolitical meaning.

Index Terms: sociophonetics, intonational variation, prosody, African American Language, political speech

1. Introduction

Research within each of the domains of intonational phonology and variationist sociolinguistics has advanced dramatically in the past 50 years, though few studies have examined phenomena that exist at the intersection of these two areas. Work that focuses on sociolinguistic variation with respect to intonational variables is especially of interest, given that much of the description of the intonation of English in the U.S. has

focused on an undifferentiated variety of Mainstream U.S. English (MUSE), to the exclusion of speakers of regional and ethnolinguistic varieties ([14];[15]). At the same time, interest in the nature of political speech has also increased within sociolinguistics, particularly as it involves how speakers exploit the indexicality of phonetic and phonological features to construct and perform specific aspects of their identity ([16];[17]). In their recent book, *Articulate While Black*, [18] inspired a line of research into how former President Barack Obama in particular appeals to different audiences, utilizing "linguistic performance" and indexical links to white and black identity. Since then, a number of studies have also examined Obama's linguistic performance as a way to shed light on broader sociophonetic trends, since Obama is a uniquely-positioned speaker who occupies a space between ideologically white-linked MUSE and black-linked AAL that he may exploit for political alignment ([18]; [19]).

One challenge, however, is that differences between ethnolinguistic varieties at the level of suprasegmental features remain relatively underdescribed, due to practical limitations as well as sub-disciplinary boundaries. Despite this, researchers have observed a number of notable differences between AAL and MUSE, including

- AAL may have a high density of pitch accents in general ([20])
- L+H* pitch accents may occur more frequently in AAL ([21]; [20])
- Differences in boundary tone usage between AAL and MUSE ([22]; [20]; [23])
- Possibly an entirely different tonal inventory and/or allowance of tonal patterns ([24]; [2])

In particular, [21] found that speakers who self-identify as more black have a greater rate of use of L+H* as opposed to H*, independent of interlocutor. [13] found L+H* to be more likely in Jewish English and Appalachian English than in AAL, though other studies have found more L+H* in AAL than in MUSE. For instance, [20] observed that AAL speakers use more L+H* than H* than comparable white speakers in North Carolina. However, in English, very little research has been done on such variation in the AM framework, but theoretically it is crucial, since variation may underlie how people make judgments about a speaker's social and emotional state (paralinguistic meaning) as well as how they interpret the message's linguistic meaning (i.e. focus, information structure, modality, etc.)

Simultaneously, there has also emerged a larger trend within the sociophonetic literature of using political speech to examine larger phenomena related to variation and aspects of identity. For example, [16] found that vowel choice and quality in loanwords can be used to align oneself with a particular political party. [17] observed that naïve listeners were adept at rating the ethnicity of some politicians based on one-word samples, and a number of voice quality features appear to influence these judgments. [25] found that in a political context, speaker gesture and intonational contour can indicate stance and affect, specifically for calling on another person or expressing incredulity. These studies show the particular role of intonation and other suprasegmental features in how speakers from a variety of backgrounds employ variation in real-world contexts that may carry high political stakes for speakers.

At the same time that they've been observing ethnolinguistic variation in new linguistic domains and social contexts, linguists have also been interested in patterned variation conditioned by speaker's feelings about what they are saying, especially with respect to affect, defined here as the "kind of emotion about some referent or proposition", following [26] and [9]. In particular, Ochs ([9:300], [27:427]) posits that affect is frequently expressed paralinguistically, encoded in gradient phonetic features like vowel lengthening, intensity, and speech rate. In related work, [10] observed that use of a backed and raised /o/ among adolescent girls was indicative specifically of negative affect.

The current study combines research on intonational variation, political speech, and affect in order to examine the ways in which a politician may employ subtle intonational differences to align himself for or against specific issues and communities. In particular, it is interested in whether Obama may differentially employ H* versus L+H* pitch accents and corresponding phonetic implementations, as well as a variety of boundary tones in different affective contexts in a way that may be more similar to the patterns previously observed for speakers of different varieties of American English, including MUSE and AAL.

2. Methodology

Data Collection and Coding

In order to examine the ways in which Obama's speech may show patterns previously observed in MUSE and/or AAL, and may be affected by his orientation towards specific issues, we built a corpus of data from a specific type of his formal speeches. The data consist of four speeches from Obama's Your Weekly Address in 2013 and 2014 (see [6]). Each speech was approximately 2.5 minutes in duration, and the speeches were annotated in Praat using the conventions of MAE-ToBI ([7];[8]). Each speech was rated by two expert coders, with an inter-rater reliability percentage of 92% agreement on presence of a pitch accent PA (Cohen's Kappa=.83), and 79% on PA type (Cohen's Kappa=.70), a somewhat higher rate of agreement than reported in some previous studies (see [27] for review).

Following the MAE-ToBI labelling, the corpus was subsequently annotated for a number of phonetic criteria that have shown to differ between MUSE and AAL, including F0 differences within a pitch accent, and peak delay, also defined as pitch excursion within a given syllable. The corpus was then coded by the first author for affect, here defined as the "kind of emotion about some referent or proposition", following [9] (see also [10],[11]). Following these earlier studies, the phrases were

categorized as having positive, negative, or neutral affect, with the goal of identifying the extent to which affective meaning categories related to phonological choices and phonetic realization in Obama's prosody. The figures below show phrases annotated using MAE-ToBI conventions, as well as a description of their affect coding.

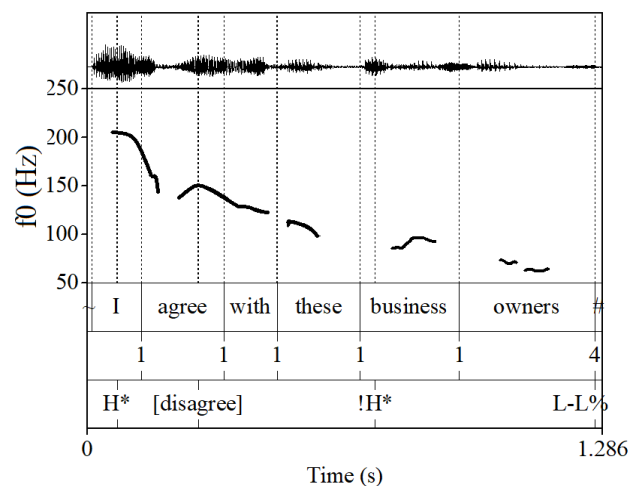


Figure 1. MAE-ToBI-coded spectrogram of Obama uttering the phrase "I agree with these business owners". This phrase contains a visible H* pitch accent on "I" and a !H* pitch accent on the first syllable of "business". This phrase was labelled for positive affect, due to its content, with Obama talking about a constituency with which he is ideologically aligned.

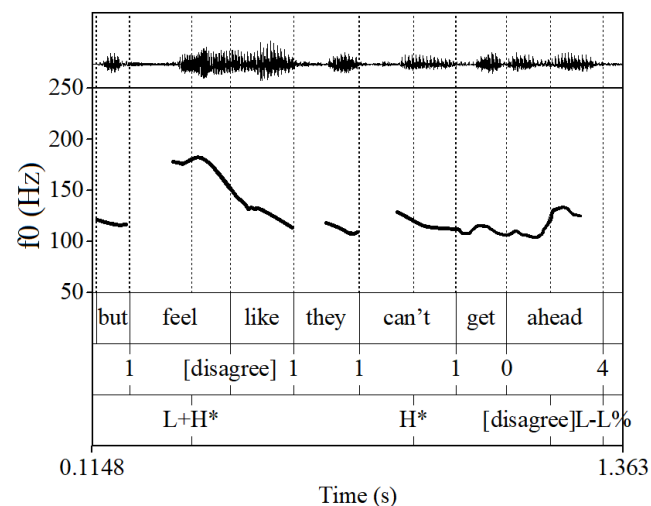


Figure 2. MAE-ToBI-coded spectrogram of Obama uttering the phrase "But feel like they can't get ahead". This phrase contains a visible L+H* pitch accent on "feel" and an H* pitch accent on "can't", but note that the H* on "can't" is based on a decision to resolve a disagreement on the break index between "feel" and "like", in the direction of the coder who labelled it a level 3 break. This phrase was labelled for negative affect, due to its content, with Obama talking about his criticism of negative economic effects his constituents have experienced.

Statistical Analysis

A number of different mixed-effects regression models were implemented using the Lme4 package ([28]) in R ([29]) in order to analyze the corpus of speeches. Logistic mixed-effects models were built to examine the relationship between (1) pitch accent type and affect, and (2) boundary type by affect. Linear mixed-effects regression models were built to test differences in (3) F0 slope rise for L+H* pitch accents by affect, and (4) F0 peak in pitch accent by affect. Though the data were originally coded with three affect levels (negative, positive, and neutral), due to a limited number of tokens coded as neutral, statistical comparisons were only conducted between negative and positive affect phrases. Data visualizations were conducted using the ggplot2 package [30].

3. Results

Overall, results indicate that pitch accents are subject to variation by the affect of the entire phrase, and that the realization of L+H* accents in particular is subject to more nuanced phonetic effects. However, we observe no significant association with boundary tones; affective meaning contrasts were predictive of neither Obama’s boundary tone types, nor their phonetic realization.

3.1 Boundary by Affect

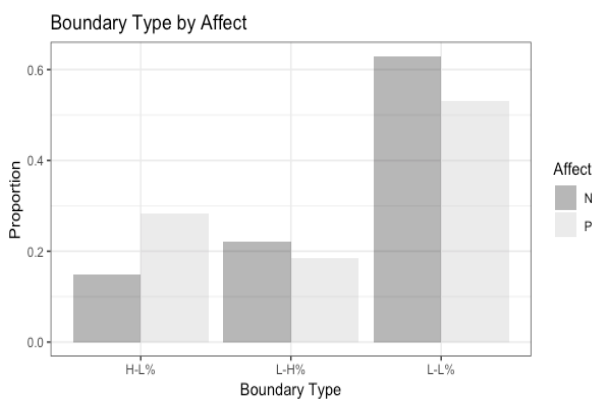


Figure 3: Proportion of use of the three most common boundary tones in this data set, H-L%, L-H%, and L-L%, along with the proportion of the data set that they compose.

With respect to overall distribution of boundary tones in the corpus, Obama employs the L-L% with the greatest frequency, and it should be noted that all utterances in this dataset were declarative [31]. However, the results of the logistic mixed-effects regression model that predicted boundary type based on affect showed no significant effects (Estimate=-.9564, SE=1.0835, z=-.883, p=.37740).

3.2 Pitch Accent Type by Affect

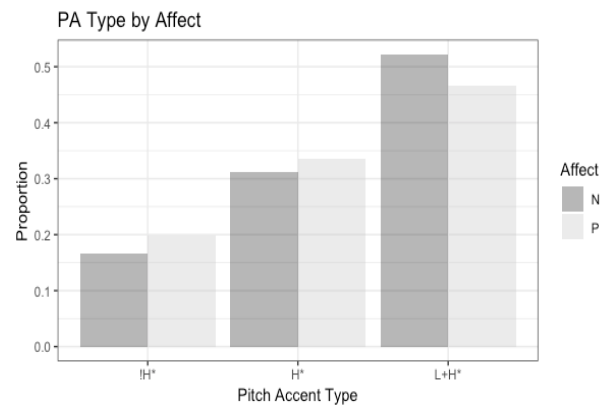


Figure 4: Proportion of use of the three most common pitch accents in this data set, !H*, H* and L+H*, along with the proportion of the data set that they compose.

Overall, Obama employs the H*/!H* pitch accents at approximately the same frequency that he uses the L+H* pitch accent. This is somewhat surprising, given that most descriptions of MUSE posit that L+H* should be significantly less common than H* in ordinary declarative phrases, though this pattern is more common in AAL than in other English varieties ([33]). The results of the logistic mixed-effects regression model predicting pitch accent type based on affect showed that Obama was significantly more likely to employ L+H* pitch accents in negative affect phrases than in positive ones (Estimate =-.7950, SE=.3656, z= -2.175, p=.0297). Given that the L+H* pitch accent is posited to occur with greater frequency in AAL than in MUSE, this result may potentially indicate that Obama aligns himself with a more AAL-like intonational pattern when he is expressing negative affect in the form of disagreement or disapproval towards a particular proposition.

3.3 Affect and Slope

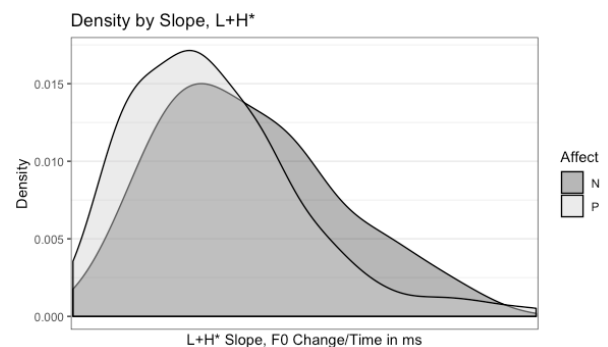


Figure 4: Density of F0 change over time (slope) in L+H* pitch accents in phrases with negative and positive affect. Phrases labelled for negative affect generally have larger slopes, indicating that F0 within L+H* pitch accents increases over a longer time span in negative affect phrases.

Negative affect was found not only to be a predictor of Obama’s use of the L+H* accent, but also of the phonetic realization of this pitch accent (steeper F0 rises within the syllable) when he employs negative affect. However, this difference in slope does

not seem to be driven by higher F0 peaks in negative affect phrases; rather it appears to be related to the actual difference between the F0 minimum and maximum. These findings suggest that Obama may be employing a more AAL-like pattern when he is using negative affect, given that [20] and [21] observe more L+H* realizations with steeper slope among AAL speakers. This has important implications for our understanding of how variety-specific intonational features may be involved in the construction of sociopolitical meaning.

4. Discussion

The results of the statistical analyses demonstrate that Obama uses more L+H* pitch accents with negative affect phrases than positive affect phrases. Additionally, L+H* pitch accents have a more dramatic slope when Obama uses them with negative affect, but this does not appear to be driven by F0 peak. These findings suggest that the use of this particular pitch accent type, and with a realization characterized by a steeper F0 slope, in this context may also carry negative indexical meaning that speakers may exploit for both political and ethnolinguistic purposes.

These findings contrast with those in most previous literature on the use of L+H*; to our knowledge, the association between this pitch accent and negative orientation towards a proposition has not been reported. In the case of Obama, we posit that his use of L+H* in such contexts is not necessarily driven by structural factors, but rather that this change represents style-shifting on his part, as seen in [18]. In principle, Obama may be consciously or subconsciously using this particular intonational pattern to align himself with AAL-speaking constituents against his political opponents, who in general do not command AAL [18].

In this way, we also observe possible interactions between ethnolinguistic variation and variation conditioned by affect, stance, and other performative orientations. Ultimately, we observe that speakers may differentially employ intonational contours in manners conditioned not only by their dialect background but also by their orientation towards a particular topic or even interlocutor. This presents some potential for interaction of ethnolinguistic identity performance and stance, as well as audience design if intonational variables are subject to style-shifting along continua of identity alignment.

Future studies may compare Obama across audiences, topics, and stances to see if these results hold across less formal speech contexts, domains, or different interlocutors. They may also examine audience response to use of different intonational contours in political contexts to test how much these differences in intonational production are salient for different types of listeners.

More broadly, however, these findings show that analyses of intonational variation should necessarily take into account not only internal-linguistic factors, but also a myriad of complex social factors that may influence a speaker's performance in a given context. Furthermore, they should also take care to consider the role of speaker orientation towards topics at hand, given that such an alignment may influence the ways in which speakers employ variation at every linguistic level, including intonation.

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6. References

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