ABSTRACT

SELKE, DAULTON JOSEPH. “All I Did Was Stand in the Middle”: A Case Study of Pitch Contours and Boundary Maintenance in the Prosody of Tupac Shakur (Under the direction of Dr. Robin Dodsworth and Dr. Steve McDonald).

While sociologists have dedicated much attention to the processes by which individuals construct their participation in (or rejection of) group membership, the role of language as a resource for performing this boundary maintenance has generally been restricted to the level of discourse. Parallel threads of research in sociolinguistics have demonstrated the utility of fine-grained features of linguistic structure in the performance of identity, showing that even the articulation of individual sounds is a powerful resource in the enaction and uptake of identity work. Inspired by the case-study approach of Holliday, Bishop, and Kuo (2020), the present study looks to connect these cross-disciplinary threads by drawing on the sociological framework of boundary maintenance to assess the use of prosodic variables in the construction of a racial boundary. Using affective stance as a proxy for expression of in- and out-group alignment, I draw on the quantitative methods of variationist sociolinguistics to characterize highly specific features of Tupac Shakur’s intonational variation at these sites of boundary maintenance. Qualitative content analysis then illuminates the discursive context of stylistic variation found to be significant in the quantitative modeling. The results offer evidence for the use of some prosodic features in the performance of boundary maintenance, though the motivation for these features proves multiplex.

“All I Did Was Stand in the Middle”: A Case Study of Pitch Contours and Boundary Maintenance in the Prosody of Tupac Shakur

by
Daulton Joseph Selke

A thesis submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the requirements for the degree of
Master of Science

Sociology

Raleigh, North Carolina

2023

APPROVED BY:

_____

Dr. Robin Dodsworth Co-Chair

_____

Dr. Steve McDonald Co-Chair

_____

Dr. Walt Wolfram

DEDICATION

For my parents, Paul and Tana, who give more than they have.

BIOGRAPHY

Daulton Selke is a fourth-year student in the Sociology PhD program at North Carolina State University. He specializes in sociolinguistics and inequality across dimensions of class, race, and gender. This includes emphases in sociophonetics, the social meaning of speech sounds, social psychology, cultural sociology, and linguistic discrimination. He received his bachelor's degree in writing with a minor in applied linguistics in 2017 from Grand Valley State University in Allendale, Michigan. He currently resides in Cary, North Carolina by way of Walled Lake, Michigan.

ACKNOWLEDGEMENTS

Many thanks to my co-chairs, Steve and Robin, whose inimitable guidance, patience, and consideration proved invaluable to the completion of this project during a very difficult time. Thanks as well to Walt, who provided incredibly helpful feedback on this paper and whose work was an early and resounding inspiration for my interest in the social life of language. I would be remiss not to also thank Erik Thomas and Jeff Mielke, without whom I'd have been helpless navigating the world of acoustic measurement.

Special thanks as well to my dearest nana, Paula Cornell, whose occult brilliance still pushes me to be better than I am. I'm forever grateful for the enduring friendship of Stevie Kimmet and Kevin Lynn, who make this feel like home (in all its complexity). Thank you always to my brothers Devon Green and Matias Carvajal. And, last but not least, thank you to sweet Caroline Taheri.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

GLOSSARY OF PHONETIC TERMS

Term	Definition
Prosody/Suprasegmental Features	In phonetics and phonology, these refer to rhythm, intonation, duration, or stress. They are granular aspects that occur across features said to be segmental (i.e., discrete), like single vowels and consonants, and they often communicate important pragmatic information. For example, one might utter "What are you doing?" using relative monotone with a rising phrase-final pitch to indicate a genuine question. Someone else might produce the same string of sounds without the final rise and with added stress on the words "what" and "doing" to communicate strong disapproval of someone's actions rather than a genuine inquiry into the nature of those actions.
Frequency	The number of times that a soundwave repeats its cycle during a slice of time, typically measured in cycles per second, or Hertz. This reflects the initial vibrations of an object, such as the vocal folds, as well as the resulting acoustic resonances that ripple out at multiples of the initial vibration's frequency.
Fundamental Frequency (f0)	The acoustic frequency of the vocal folds' vibration. This is what listeners perceive as pitch. A continuous f0 track is calculated across time using an auto-correlation algorithm from the speech-analysis software, Praat.
Glottalization	This refers to constriction of the glottis (the space in between the vocal folds) during production of another speech sound that does not canonically involve glottal articulation. This serves a number of different roles, both phonologically and phonetically, across world languages, but is important here as an indicator of the end of an intonational phrase, as glottalization generally occurs prior to the termination of speech as a consequence of the speech articulators slowing prior to the end of an utterance.
ERB	This is short for equivalent rectangular bandwidth. Frequency (recorded in Hertz) is a linear measure, but the human auditory system is logarithmically sensitive to changes in frequency. ERB results from a numerical transformation applied to frequency measurements to reflect the human perception of frequency intervals. It is especially useful for treatment of low frequencies and thus f0 measurements. ERB also serves as a form of normalization for intonational features, aiding in comparability with other speakers.
Declination	The gradual lowering of fundamental frequency throughout the course of an utterance, which results from the slowing of vocal fold vibration prior to the termination of speech. This is measured by calculating the regression slope of the fundamental frequency track across an utterance.
Pitch Accent	A site of tonal prominence in some stressed syllables that cannot be explained by lexical stress. With respect to other parts of the

	utterance, the fundamental frequency will be notably higher or lower on these accents. English is said to contain 5 categorical pitch accent types associated with specific contours of the fundamental frequency track. These accents do not create word-level contrast, but they are used to communicate pragmatic information.
H* Accent	A type of pitch accent that either starts at a relatively high point in the fundamental frequency track of an utterance or arrives at a relative high point through an especially sharp rise. Often used to draw focus toward key information.
L+H* Accent	A bitonal pitch accent that begins at a relative low point before gradually rising to a point of high prominence across the course of a syllable. These have been associated with expression of disagreement.
Excursion	This is a measure used for bitonal pitch accents. For the present study, this is only taken for L+H* accents, which involve prominence on a high tone following a dip into a relatively low region of the pitch track. Excursion is calculated as the difference between the f0 maximum of the pitch-accented syllable and the immediately preceding f0 minimum.
Slope	This measure captures the rise or fall of bitonal pitch accents. Slope here is taken for all L+H* accents and is calculated as excursion divided by time (in seconds).
Break Index	An element of the ToBI intonational transcription system intended to capture breaks within prosodic phrases. These are generally numbered 0-4, with the first few indicating breaks between words, breaks between words and contracted forms, or breaks between prosodic phrases within the larger intonational phrase. Most of the breaks between 0-3 are either redundant with the orthographic transcription or outside the purview of this study. Break 4 refers to the end of an intonational phrase and was recorded during data collection here in order to help track the number of intonational phrases.
Boundary Tones	This concept is unrelated to the sociological concept of boundaries and refers to particular tonal contours associated with the end of an intonational phrase. Think of the high-rising tone associated with the end of yes-no questions (or declarative statements intended as questions, sometimes referred to as ‘uptalk’). These generally precede pauses and/or coincide with glottalization and enlongation of the final syllable of an utterance.

INTRODUCTION

A key question within the realm of identity scholarship concerns how and under what circumstances individuals construct differences between themselves and others—differences that aggregate to inform and shape group demarcation. Sociologists have employed the study of boundary processes to understand how both symbolic and material boundaries are shaped by social forces as well as how these boundaries inform human behavior; mostly generally, the study of boundaries explores the social construction of 'us vs. them' at the micro-, meso-, and macro-levels (Lamont and Molnar 2002). Sociolinguists, in the meanwhile, have been concerned with the role of social location in parsing the full envelope of variation in language and, increasingly, how the leveraging of one's identity can inform the realization of language variation across all levels of linguistic structure—from the fine-grained production of individual sounds to the sweeping turns of conversation (Bucholtz and Hall 2004; Podesva 2006; Silverstein 2003; Eckert 2008; Benor 2010).

While language has been a focus of much scholarship exploring interactional boundary processes within sociology, the scope has been mostly limited to the level of discourse and, as analytical objects, specific linguistic features are often secondary to the attitudes communicated through conversation. However, sociolinguistic research has shown that even something as subtle as the articulatory realization of individual sounds can be a powerful resource in the communication of identity. Thus, the present study looks to unite these two threads by drawing on sociolinguistics' fine-grained analytical tools for classifying language in order to broaden the scope of language as both a consequence of social boundaries and a means by which symbolic boundary work is performed. I look to explore whether and how language varies during

interactional boundary work, and, if it does, to what end this variation might serve in the production and maintenance of boundaries as a function of identity visibility.

The linguistic variable under investigation here is prosody--an interrelated set of acoustic correlates of speech rhythm and intonation that has demonstrated inter- and intra-language variation (Lee 2015; Burdin, Holliday, and Reed 2018), salience for racial and ethnic identification (Thomas and Reaser 2004), and expressive power for the communication of semantic and pragmatic meaning (Barth-Weingarten, Dehé, and Wichmann 2009). The analysis concerns the intonational contours in the interview speech of Tupac Shakur in order to replicate and extend the findings of Holliday, Bishop, and Kuo's (2020) case study on Barack Obama and the variable use of a prosodic feature associated with an AAE linguistic repertoire. Tupac exists in a unique space in terms of audience and performance pressures. He was a native speaker of AAE and, through his association with hip hop and larger social movements surrounding black liberation, aligned himself significantly with oppositional identities of the street conscious, gangsta persona (Jeffries 2011; Alim 2002). Nonetheless, Tupac was a wildly successful figure with massive crossover appeal who received consistent (and exceptionalist) praise for articulateness and intelligence[1]—features often indexical of whiteness (Smitherman and Alim 2012). This may suggest an ability—conscious or otherwise—to utilize diagnostic features of

[1] For just one example, Dr. Mark Anthony Neal gave a talk at a 2003 Harvard symposium dedicated to Tupac scholarship, and he situates Tupac within the framework of Gramsci's organic intellectual, arguing that Tupac worked to elevate the concerns of a subordinated class in a manner that aligns these class concerns with more traditional intellectuals. This reflects Tupac's flexibility in both expression and uptake across both subaltern and mainstream audiences, and it is only one of numerous scholarly treaments of Tupac's life and work, which itself reflects Tupac's reach and his versatility in audience uptake.

AAE prosody in the construction of identity and the enforcement of symbolic boundaries, particularly between racial categories.

I first employ a quantitative analysis to explore the frequency of different acoustic correlates of intonation in the speech sample. Drawing on prior research, I highlight several intonational variables shown or suspected to vary across European American English (EAE) and African American English (AAE). The interview used to collect the speech data centers primarily on discussions of Tupac's experience growing up in the US as a black man and his perceptions of US race relations more generally. In order to connect instances of phonetic variability to the maintenance of symbolic boundaries, I assess Tupac's affective stance toward the topics and propositions under discussion. This encourages comparability with Holliday et al (2020) while utilizing a topical context that allows for affective stance to estimate boundary maintenance throughout the discourse.

BACKGROUND

Boundaries & Boundary Maintenance

Though the puzzle of group categorization extends back to the sociological big three of Marx, Durkheim, and Weber, the contemporary notion of boundary work first appeared in the work of Thomas Gieryn (1983), who developed a framework designed to explore the ideological boundaries between different scientific disciplines. In other words, Gieryn investigated the social construction of the sciences as separate from one another and the means by which epistemological legitimacy is constructed through discourse. This framework has been expanded in the decades since to explore both the instantiation and the consequences of boundaries delineating various elements of social location and identification in people, which allows for an anti-essentialist perspective on the emergence of group categorization. Boundary work now

encompasses the broader cognitive schema, cultural resources, and interactional strategies employed by social actors to include and exclude others (symbolic boundaries), as well as the material boundaries of inequitable resource distribution (social boundaries) that result from these classificatory schema (Lamont 2001; Lamont 2002).

One key process in this field concerns the maintenance of boundaries, or the means by which social actors enact and enforce the symbolic boundaries between different groups. This can involve anything from the hoarding of high-status cultural capital (Schwalbe et al 2000) to the leveraging of covertly prestigious cultural resources and in-group taxonomies (Graham 2019:2034). Highlighting both static and dynamic components in these processes, Bhatt, Goldberg, and Srivastata (2022:8) distinguish between two sub-types of boundary maintenance: *boundary retention*, or "the extent to which individuals sustain and entrench in pre-existing symbolic differences between social groups," and *boundary reformation*, "the degree to which individuals alter the substance of symbolic boundaries by creating new cultural markers of distinction between social groups." At the discursive level, langauge serves as a key vehicle for the expression of in-group taxonomies, and specific linguistic constructions can themselves serve as cultural resources on which social actors can draw to communicate in-group solidarity or enforce out-group exclusion.

Studies of boundary maintenance have more predominantly focused on language at the discursive level. Lamont (2000) provides an enduring and formative study of boundary maintenance in this vein by analyzing qualitative interview data provided by blue-collar workers in America and France to reveal the maintenance of moral boundaries that contribute to distinction between categories of race and class. The discourse of Lamont's participants demonstrates that in-group workers use competing perceptions of moral righteousness and the

legitimacy of personal ethics to differentiate out-group workers. Some work in this discursive vein has also investigated talk related to the perception of language or dialect. Bail (2008) reviews a number of studies that highlight the significance of national language(s) in the maintenance of symbolic boundaries and formulates a measure of salience to assess the relative importance of different cultural resources used in boundary work. While he finds variability depending on the national context, knowledge of official languages emerges as a salient diagnostic for immigrant identity. Likewise, Massey and Magaly (2010) explore boundary work in the construction of Latino identity in the US, finding that lack of native English proficiency strengthens a symbolic boundary between being Latino and being American. On the other hand, knowledge of Spanish serves as a resource in construction of a shared Latino identity, and Spanish proficiency attenuates the perceived significance of differences on the basis of birthplace and regional dialect of Spanish.

However, an emerging but still underdeveloped thread involves focus on language and linguistic structure itself. For example, Graham (2019) explores the subcultural boundary maintenance strategies of internet trolling and, while the discourse of trolls on internet message boards is also considered, Graham highlights the role of key lexical items in the expression of belonging between trolls and as a means to identify and remove outsiders. Key to many of the ruses purportated by trolls from Graham's study is the embedding of specific slang words or community-specific acronyms, which, when uttered unwittingly by troll victims, contributed to demarcation between those in on the joke and those outside of the community.

Bhatt, Goldberg, and Srivastata (2022) utilize methods from natural language processing to explore linguistic style as a form of boundary maintenance in workers at an organization affected by a recent merger. Aided by the Linguistic Inquiry and Word Count dictionary

(LIWC), Bhatt, Goldberg, and Srivastata quantify the language of emails in multi-dimensional space to produce a measure of semantic relationality in order to operationalize linguistic style both pre- and post-merger. They find evidence of both boundary retention and boundary reformation, and measures of social location tend to predict whether prior symbolic distinctions are maintained or reinvented. Those with greater tenure and in work networks with higher local in-group density were more likely to retain pre-merger stylistic features, whereas those employees with lesser tenure and those acquired through the merger were more likely to reinvent symbolic distinctions across time periods.

Less explored in boundary studies is language at the level of speech sounds (phonetics and phonology). Despite this underrepresentation in the boundary literature, there is theoretical precedence for including pronunciation in the repertoire of cultural resources available in boundary work. Pierre Bourdieu's work on habitus—or the embodiment of social circumstances that "[…]govern [one's] perception and appreciation of average or individual chances"—was pivotal to early conceptions of the structure of symbolic boundaries (Bourdieu 1977:655). Bourdieu considers the articulatory gestures associated with one's language variety to be a component of this embodiment, and he argues that aspects of pronunciation should be considered on par with discourse in terms of potential to index social location (Bourdieu 1977:653). One recent study draws on a habitus of sound to extend Bourdieu's thinking to contemporary notions of boundary maintenance. Schwarz (2015) explores participants' framing of loudness as a tool for symbolic boundary maintenance. While this study includes non-linguistic measures of loudness in terms of music-listening and neighborhood noise levels, Schwarz also assesses loudness of speech. He finds that, especially as reported by higher-status respondents, perceived loudness of speech serves as a symbolic index of a "ghetto" identity for individuals from lower-

class neighborhoods. Thus, Schwarz provides evidence suggesting that the way one says something can be just as important to consider as the words themselves or the discursive context in which the words occur.

While Schwarz (2015) takes a step toward incorporation of speech sounds within a framework of boundary maintenance, few if any other studies make use of phonetic features to discuss accent and pronunciation in terms of boundary processes. However, the significance of language at other levels of linguistic structure, along with the framework of linguistic habitus laid out by Bourdieu, suggests an important exigency for the incorporation of phonetics and phonology in exploration of boundary maintenance.

. *Stylistic Variation in Sociolinguistics*

A significant body of sociolinguistic research has considered the use of fine-grained speech sounds and the extent to which intraspeaker variation in these sounds can be predicted by individual style. This work has emphasized the role of language in the construction and perception of identity, ultimately demonstrating that individuals leverage unique linguistic features to perform their participation in, or rejection of, various collective identities. Given language's capacity to serve as a proxy for social location, there is good reason to expect that speakers draw on specific linguistic features to perform boundary maintenance and that circumstances underlying the performance of boundary maintenance can inform the scope of stylistic variation.

Labov's (1972) notion of the attention-to-speech model typifies early conceptions of style shifting, where style is determined on a scale of formality, and varying motivation to pay attention to one's speech delineates styles from casual to formal. Casual styles should prompt higher vernacular rates and the inverse is true for formal styles. Regular differences between read

passages and spontaneous speech attest to this idea across decades of sociolinguistic research (e.g. Lieberman et al 1985; Blaauw 1994; Swerts, Strangert and Heldner 1996; Dellwo, Leemann, and Kolly 2015; Holt and Rangarntham 2018) While attention to formality is undoubtedly a factor in intraspeaker variation, this model does not account for the reality that situations calling for equivalent levels of attention to speech can coerce drastically different stylistic performance depending on the social setting. Alim (2002) provides a refutation through Hip Hop Nation Language (HHNL), where written lyrics undoubtedly receive a high level of attention, and yet vernacular rates still increase in hip hop lyrics, likely as a result of an attempt by MCs to align themselves with the audience of HHNL. Moreover, there has been difficulty among scholars to reliably measure style solely in terms of formality or informality (Rickford and McNair-Knox 1994).

Bell's (1984) audience design addresses some of these shortcomings by positing, as the name suggests, that the relationship between a speaker and their audience governs whether and how a speaker switches into different styles. The audience includes both those immediately involved in the conversation as well as those who are merely present and overhearing the exchange. In this sense, familiarity between interlocutors and the degree of shared knowledge about the communicative setting dictate varying speech production styles. See Rickford and McNair-Knox (1994) for a test of assumptions drawn from the audience-design model and confirmation of significant effects from the audience. Bell (1984) also posits the initiative shift, where a person responds not to a real audience but an imagined one, which widens the scope of social structural influence on the nature of the audience.

Silverstein's (2003) indexicality offers a framework that accounts more directly for the variable cognitive processes and interactional settings that link specific linguistic features to both

groups of people and to stereotypical perceptions of the categories associated with said groups. The oft-used analogy for indexicality draws on a simple semiotic cue for fire and makes an association with linguistic features; as smoke is to fire, so is, for example, /ɑɪ/ monophthongization to Southerness[2]. Silverstein characterizes indexicality in terms of order, where the first order of indexicality refers to the demographic characteristics of the speakers associated with a particular linguistic form. Higher order indexicality involves the association between specific linguistic features and perceived characteristics of the demographic category of the first order. For /ɑɪ/ monopthongization, for example, higher order indexicality may involve the association of this feature with stereotypical traits linked to Southerness, such as politeness on the positive end, or, more nefariously, with ignorance on the negative end. Eckert (2008) suggests that these associations can only be made in terms of locally situated indexical fields that preclude static associations and prioritize the dynamism of identity categories and of the interactional context. It is through these socially inflected semiotic associations that speakers perform and interpret stylistic variation in language across different communicative settings.

Wolfram and Schilling-Estes (2006) build on these increasingly nuanced social structural and agentic processes with their speaker design model, which theorizes greater agency in the production of different personae by the speaker rather than imagining them as a passive object of coercive audience effects. Crucially, the speaker design model considers the dynamic emergence of identity in context of both broader indexical associations and the immediate interactional context. Schilling-Estes (1998) demonstrates this proactivity through investigation of

[2] /ɑɪ/ monophthongization refers to the phonological process whereby the underlying form of a word like /ɹɑ̰ɪ̰d/ (‘ride’) is realized more like [ɹɑd] (‘rod’). This is a highly distinctive feature of US Southern English (Thomas 2003; Fridland 2003), and, perhaps more than any other feature, most clearly differentiates Southern English from other varieties of US English.

performance speech in a native of Ocracoke, NC, showing that production in the speaker's performance register did not seem to be primarily motivated by shifts in the speaker's audience. Without explicitly drawing on the sociological boundary literature, Schilling-Estes (2000) also finds evidence for apparent boundary maintenance throughout the course of a dialogue between two speakers of different ethnic backgrounds and with access to different ethnolinguistic repertoires (Benor 2010). During discussions of race relations, the two speakers increased the rates of features associated with each of their ethnolects while also maximally diverging from one another in linguistic style. At least in terms of language production, it seems that speakers are leveraging the frequency of ethnically indexical features to help construct a symbolic boundary reflecting an element of their social location.

This literature demonstrates that, just like the grammatical constraints explored in theoretical linguistics, social constraints can explain considerable linguistic variation observed in individual speakers. Moreover, this variation is, in many cases, the result of interactive and emergent efforts to construct identity rather than the passive recipience of category traits. These social determinants of variation do not reflect essentialist traits of individuals nor of the groups to which they belong, but they instead demonstrate the inextricable tie between identity and linguistic variability and thus the availability of linguistic features as a resource in the maintenance of symbolic boundaries between identity categories.

Distinctive Qualities of AAE and EAE Prosody

While the vast majority of studies in the variationist sociolinguistic tradition are concerned with segmental features (such as vowels and consonants), the study of suprasegmental features, or prosody, remains an underexplored yet crucial dimension of stylistic variation. Schwarz (2015) discussed earlier suggests the recognition of this variable as salient in the

undertaking of boundary work, and, within sociolinguistics, work from Burdin, Holliday, and Reed (2018:354) suggests that prosodic variables "are ethnolinguistically and regionally conditioned by rate of use and different realizations, in a manner similar to what has been previously observed for segmental phonological features." Prosody is composed of acoustic dimensions for stress, intonation, duration, rhythym, and intensity and, while all of these features are fruitful sites of phonetic and pragmatic variation, the present study is primarily concerned with intonation, or the variation of pitch throughout an utterance.

Observations of difference between AAE and European American English (EAE) have been reported as early as Tarone's (1973) work on intonation, which provided important baseline findings that, while limited by outdated methodology, helped drive later comparative studies. Key among Tarone's results is the idea that AAE appears to use an overall wider pitch range than EAE peers—often even moving into falsetto phonation—which Tarone links to the predominance of uniquely AAE styles of discursive play such as signifyin' or playin' the dozens. These features related to the falsetto register and a relatively wider pitch range are also reported in Loman's (1975) study on AAE prosody, which was based on even earlier fieldwork conducted during the 1960s. This link between a distinctively high register and characteristically African American forms of oral tradition suggests that this wider pitch range may serve as an indexical referent of African American identity, which may vary depending on locally situated associations of a given indexical field (Silverstein 2003; Eckert 2008).

A number of more recent studies have confirmed and elaborated upon several of Tarone and Loman's findings, with the idea of a generally wider pitch range for AAE speakers being replicated consistently (Hudson and Holdbrook 1982; Jun and Foreman 1996; Thomas 2011; Thomas 2015). Hudson and Holbrook (1982) found that a wider pitch range appeared to be

driven by a greater expansion into the upper limits of a person's pitch range, as AAE speakers reached much further above their modal pitch than comparable EAE speakers. This coincides with Wolfram and Thomas (2002), who found that AAE speakers tended to produce more high pitch accents than EAE speakers on average. Work from McLarty (2011, 2018) has investigated historical differences between EAE and AAE using modern speakers and archival recordings of former slaves. While he found that the intonation in the speech of former slaves is quite similar to the patterns observed in modern AAE, some notable differences have persisted between AAE and EAE speakers across both time periods. Use of the L+H* pitch accent achieved statistical significance in McLarty's model, suggesting that this accent may be more strongly favored in AAE (though this may also be influenced by sex effects).

Holliday et al (2020) mobilize these findings for exploratory study of apparently distinctive aspects of AAE prosody in context of stylistic variation and ethnic identity construction. Researchers found that Barack Obama favors the use of L+H* pitch accents in declarative statements indicating a negative affective stance, and this bitonal accent has been associated with greater overall use by AAE speakers than EAE speakers[3]. Moreover, Holliday found that the phonetic realization of L+H* accents was also predicted by the adoption of a positive or negative stance, with negative declarative phrases exhibiting significantly steeper fundamental frequency (f0) slopes. As both Holliday (2016) and McLarty (2011) found evidence suggesting that L+H* accents in AAE tend to have steeper f0 rises throughout the syllable, the statistical significance of affect as a predictor shows that Obama may be leveraging prosody to subtly align his ethnic or racial identity relative to the content on which he is taking an affective stance. As intriguing as these findings may be, they remain relatively exploratory given the

[3] Thomas (2015) goes so far as to suggest that H* and L+H* may not be distinguished in AAE.

overall limited research on intonation in AAE. The present study works to test these findings--under different circumstances and with the inclusion of an additional intonational measure—to see whether they hold and under what circumstances aspects of AAE prosody may coincide with the enforcement of symbolic boundaries.

HYPOTHESES

Considering that I chose this interview specifically for its emphasis on race relations and Tupac's characterization of the black experience in America, I anticipate that, for the intonational variables under examination, both their categorical and phonetic realization will vary significantly according to affective stance. This follows from Schilling-Estes's (2004) finding that discussion of race relations tended to provoke ethnolinguistic divergence relative to other topical contexts in the same conversation. I develop competing hypotheses to assess whether Tupac performs boundary maintenance through the increased use of AAE features as he expresses alignment with his peers in poor, black communities during his positive affect utterances, or whether he does so as he expresses disapproval of propositions associated with dominant, white institutions and individuals in his negative affect utterances[4]. As Lamont notes, boundary work tends to focus on the processes by which people are excluded from groups, but these processes of exclusion between groups are concurrent with the foregrounding of shared cultural resources that defines inclusion within groups (1992). Thus, these hypotheses test for boundary retention through the maintenance of linguistic symbolic boundaries but look to distinguish whether this occurs within the framing of inclusion vs. exclusion. The null hypothesis

[4] Though Holliday et al (2020) finds that realization of L+H* pitch accents in Barack Obama's speech was associated with negative affect phrases, it is not safe to assume that it is simply expression of negative affect that governs the use of more AAE-like realizations of L+H*. This is possible, but it may also be the case that topical context is a confounder.

in each case assumes there is no stylistic variation between affective stances and, substantively, that there is no evidence of stylistic variation as a resource for boundary maintenance. For every hypothesis, the a.) variant reflects inclusive boundary maintenance while the b.) variant reflects exclusive boundary maintenance.

Declination

The tendency for AAE prosody to feature more frequent and drastic reaches into the upper limits of the f0 range should result in lower on-average declination rates when a speaker is accessing AAE prosodic features (Thomas 2015).

H1a: Declination rates will be lower in negative affect phrases

H1b: Declination rates will be lower in positive affect phrases

Categorical Use of H vs. L+H* Phonetic Realization of L+H**

As McLarty (2011) and Holliday (2016) find that L+H* tends to be more frequent in AAE speech than in EAE speech, higher rates of L+H* use are expected for speakers increasing salience of their African American identity.

H2a: The categorical use of L+H* will be higher in negative affect phrases.

H2b: The categorical use of L+H* will be higher in positive affect phrases.

*Phonetic Realization of L+H**

McLarty (2011) and Holliday (2016) show that L+H* slopes tend to be larger in the speech of AAE than in EAE, thus:

H3a: Higher L+H* slopes will be associated with negative affect phrases.

H3b: Higher L+H* slopes with be associated with positive affect phrases.

METHODS AND DATA

Data

The speech data collected for Tupac was taken from an interview between Tupac and Black Entertainment Television (BET) reporter, Ed Gordon. As a native speaker of AAE who uses AAE in the interview and who frequently reports on issues close to African Americans, Gordon is closer to the preferable second type of Baugh's (1983) ethnolinguistic interview constructs. Gordon and Tupac are not necessarily personally familiar with one another, but they do share some proximity to black culture, though Tupac, given his overt alignment with black street culture, appears more proximal than Gordon. While tokens of distinctive grammatical variables associated with AAE[5] were not explicitly recorded as part of this study, Tupac also seemed to make much more use of these features in his speech, whereas Gordon was using a register closer to Standard African American English, and this speaks to Tupac's greater proximity to street consciousness (Alim 2002). The interview was chosen for its range of topical emphasis and predominantly featured talk involving Tupac's orientation to black and white audiences, with particular focus on his own position as a young, black male. Tupac is also an ideal point of comparison for a replication of Holliday et al (2020), as his upbringing suggests a natural acquisition of AAE during childhood. Holliday's suggestion that Obama leverages an apparently AAE realization of the L+H* pitch accent as an ethnolinguistic index must be qualified somewhat by the reality that Obama did not make regular use of AAE until his late

[5] This includes widely reported morphosyntactic variables such as habitual 'be,' null copula, and affixal -s absence, as well as phonological features like coronal stop deletion, post-consonantal /r/ deletion, and fricative stopping.

adolescence and early adulthood—a timeframe well past typical childhood acquisition windows. This of course does not preclude Obama from making use of this variable, but, if he is doing so, his patterning may not be generalizable to speakers of AAE who were exposed to one of its varieties from an early age[6].

Limited back-and-forth discussion occurs throughout the interview, as the interviewer generally only contributes brief questions before Tupac gives extensive responses. The interview totals just longer than 20 minutes in length. This provided a total of 168 unique intonational phrases, and these included 455 pitch accents. Of these, 288 (58%) pitch accents were coded as H*, 144 (30%) were coded as L+H*, and the remaining 23 pitch accents fell into a miscellaneous category which included expectedly infrequent accents such as !H*, L*, L*+H, and L+!H*[7].

Intonational Variable Coding

I coded Tupac's speech data in accordance with conventions established by the MAE_ToBI system (Beckman and Elaim 1997). Acoustic measurement of the data was facilitated by the speech analysis software, Praat (Boersma and Weenik 2017). Specifically, I coded each word orthographically, noted each unique pitch accent, and included markers for level 4 break indices, which denote the end of an intonational phrase.

Figure 1 offers an example of the coding strategy. The curving lines above the orthographic transcription represent the f0 track as calculated through Praat's autocorrelation algorithm and serves as the acoustic measure of Tupac's pitch. The first two pitch accents are especially representative examples of the difference in appearance of H* and L+H* pitch accents

[6] Holliday (2017) finds this to be the case with Obama's internal constraints for coronal stop deletion, which differ in key respects from those observed in the larger body of research on the realization of this variable in varieties of AAE.

[7] See Appendix for summary statistics

in the f0 track, where the H* accent is a sharp, high tonal peak that begins at a higher relative tone environment (and generally falls sharply), whereas the L+H* accent shows a gradual rise of the f0 track throughout the pitch-accented syllable (Thomas 2011). The L-L% tone marks an intonational phrase boundary, and I determined these boundaries based on both impressionistic analysis and by identification of glottalization and pre-pausal lengthening in the spectrogram. The pitch is converted from Hz to ERB to aid with comparisons between Tupac and other speakers in future studies. I viewed this f0 track superimposed on a narrowband spectrogram of Tupac's speech, which helped assure that the f0 track was accurate whenever possible (Thomas 2011). Nonetheless, a spontaneous recording will necessarily involve unusable tokens due to background noise, false starts, surrounding voiceless consonants, or nonmodal phonation. Phrases with highly unreliable f0 tracks and those heavily affected by false starts were not included in the analysis. Only declarative phrases were taken in order to aid in comparison with adjacent studies and to control for expected structural differences in intonational contours associated with other phrase types.

Using the ToBI transcriptions to identify areas of tonal salience, I took several acoustic measures of intonation. Pitch-slope and excursion were extracted for each token of the bitonal L+H* accent. Excursion refers to the within-syllable difference between the peak f0 and the closest f0 minimum before the peak, and the slope is excursion over time (in seconds). Declination was measured by calculating the regression slope of the f0 track for a given utterance[8]. While an utterance often included only one intonational phrase, some included more than one and the evidence of a clear declination reset in pitch was the primary motivator for

[8] Due to time constraints, the modeling of declination was completed during an eary stage of the analysis on a sample that included only the first half of the interview data.

delineating regions for calculation of the declination slope (Thomas 2011). Total pitch range was calculated as the difference between the highest pitch accent frequency and the lowest measurable point of the f0 track.

Affective Stance Coding

Lastly, following from Holliday et al (2020) and Ochs and Schieffelin (1989), I coded each phrase for negative, positive, and neutral affective stance. Stance has been a prominent focus of studies on identity work and serves as a performative act of (dis)alignment as speakers evaluate the objects of their speech. Stance theory is largely associated with Du Bois (2007:139) who notes that "stance has the power to assign value to objects of interest, to position social actors with respect to those objects, to calibrate alignment between stancetakers, and to invoke presupposed systems of sociocultural value." Broadly speaking, I looked to see whether Tupac was expressing approval or alignment with the subject matter of each phrase and decided accordingly. This variable helps create a link between subtle phonetic aspects of language variation and the performance of boundary maintenance. In an interview setting where racial tension serves as a primary topical focus, affect toward content of the interview targets sites of boundary enforcement, particularly for racial categories of black and white.

Statistical Modeling

I used linear and logistic regression models run with the lme4 package for the statistical software R in order to test whether affect can predict various aspects of phonetic realization in Tupac's intonation (R Core Team; Bates et al 2015). Graphs displaying descriptive statistics of the data were also produced in R, using the package ggplot2 (Wickham 2016). To test whether declination varied by affect, I built a logistic model where pitch accent is operationalized as a binary, dependent variable and regressed on declination slopes as a continuous measure. This

binary variable included levels for H* and L+H* pitch accents. A similar logistic model was built to test whether a certain affect was significantly associated with use of a particular accent by regressing the same dependent variable for pitch accent on a binary measure of affect; neutral phrases were too few to allow meaningful statistical analysis, so only positive and negative phrases were included in analytical models. A linear model was built to test whether affect predicted the phonetic realization of L+H* accents by regressing a continuous measure of within-syllable f0 slopes on a binary variable of affect. All models are tested against an alpha of .05.

Content Analysis

Given that L+H* pitch accents with steeper slopes were found to be significantly associated with negative affect, I compared the distribution of L+H* slopes by affect and extracted excerpts from the interview transcript containing all the pitch accents in the 3rd quartile of the L+H* slope range for negative affect, as this roughly reflects both the steepest L+H* slopes and the range where density of slopes most consistently differed across affective stance. This amounted to 23 separate interview excepts. I also took a subset composed of the 1st quartile of the negative affect slope range in order to explore variation within negative affective stance orientation that might suggest interactional motivations for the use of more vs. less steep L+H* slopes. This produced 12 interview excerpts. I used an open coding strategy to code for themes related to construction of us vs. them within these subsets, consolidating them when appropriate, and these themes represent the object of analysis for the qualitative portion of this study.

RESULTS

Declination

The results of the logistic regression model predicting declination slope by affect can be found in Table 5. This model yielded a positive coefficient for negative phrases, indicating a slightly greater declination slope for negative phrases than positive ones, but this relationship was not statistically significant. Thus, at least for the given data, declination does not appear to be something that Tupac varies relative to his affective disposition toward a given object of discussion and we are unable to reject the null hypothesis in the case of H1.

Furthermore, while continued research is required on this issue, the declination slopes exhibited here are within a relatively limited range, demonstrating that Tupac's declination habits are in line with some findings presented in Thomas (2015) showing that declination may be relatively lower in AAE (see also Holt and Rangarntham 2018). Thomas (2011:219) shows varying declination slopes for African American and European American women from North Carolina, and Tupac's data aligns more closely with the African Americans in this sample. Figure 1 shows that the furthest Tupac strays from a slope of 0 is about -0.4 ERB/s (roughly 10-15 Hz/s), mirroring the relatively compact line of the female AAE speakers, and contrasting with the EAE speakers who have deviations as large as -120 Hz/s. These are of course inter-sex comparisons and gender related effects may be salient as more research is done. In any case, much more research on both community and interactional trends of AAE declination is required to determine to what extent it constitutes a significant difference in prosodic patterning and whether it is salient in the construction of identity.

L+H Accent Frequency by Affect*

Holliday et al (2020) found that Barack Obama uses H* and L+H* accents at very similar rates, which seems to be more consonant with descriptions of AAE than EAE, where H* is

expected to predominate in declarative phrases. The results for Tupac can be found in Figure 3. While Tupac does not use them at near-identical rates, he still makes frequent use of L+H* accents relative to H* accents—even more so than the AAE speakers observed in the cross-dialectal comparative study on intonational contours conducted by Burdin, Holliday, and Reed (2018). The logistic regression model predicting pitch accent type by affect is displayed in Table 6. This model did not yield any statistically significant values, meaning that overall likelihood of using either pitch accent in a given stance category does not appear to vary for Tupac as it did for Obama. This suggests that, when it comes to the categorical use of H* vs. L+H* pitch accents, Tupac appears to utilize a consistent AAE pattern throughout the course of the interview regardless of affective stance, and there is no evidence to suggest that he is style shifting on this basis. This analysis fails to provide support for H2, and the categorical use of one pitch accent over another does not appear to be leveraged in accordance with affective stance.

Phonetic Realization of L+H by Affect*

The linear regression model predicting within-syllable pitch slope for L+H* accents by affect can be found in Table 7. This model yielded a positive and statistically significant slope coefficient for negative phrases, indicating that the f0 slope tends to be steeper for L+H* pitch accents in negative phrases than for positive ones. This is visualized in Figure 4 and coincides with findings from Holliday et al (2020) on phonetic realization of the L+H* in Obama's speech that extend results from other studies demonstrating steeper f0 slopes found in the L+H* of AAE speakers (McLarty 2011; Holliday 2016). Thus, as with Obama, Tupac appears to use steeper L+H* pitches when he is taking a negative affective stance. Given previous literature suggesting steep L+H* pitches' association with uniquely AAE prosody, this suggests that Tupac may be style shifting toward a more pronounced AAE style of intonation when he is orienting himself in

opposition to another person, group, or idea, and this analysis provides support for H3a. While neither declination nor categorical use of certain pitch accents varied by affective stance alignment, the phonetic realization of the L+H* accent may be a resource in the performance of boundary maintenance as Tupac uses a more AAE prosodic realization during moments of disalignment with the sentiments of a racial outgroup.

Content Analysis of Affective Stances

The overarching structure of the interview between Gordon and Tupac involves Gordon mentioning stances toward Tupac commonly represented in mainstream media and prompting him to respond to the presuppositions within these stances. A significant portion of the interview involves Tupac responding to moral claims against the image that he promotes publicly, which he describes as *thuggin*'. Reminiscent of Anderson's (1999) 'code of the street', this is an apparent attempt to re-signify a term with negative connotation by drawing attention to the structural incentives that shape the crime and violence associated with disenfranchised, black communities in the US and which are commonly moralized by whites. In the process, Tupac responds to claims of his own criminality, to the authenticity of his *thug* image, to his role as a leader in then-new social movements centered around racial equality and affirmation. He engages in both moral and cultural boundary-work throughout these discussions as he characterizes his relationship to the sentiments of white America and to his connection with his peers and other black Americans.

Boundary Maintenance in High Slope L+H Accents*

Renegotiating Moral Boundaries through Symbolic Equivocation

A consistent trend across utterances containing the steepest L+H* slopes reflects Tupac's effort to contest and re-frame moral judgments toward poor black Americans held by whites or

members of the mainstream media industry, often at the prompting of the interviewer. This theme was observed in 9 of the 23 (39.1%) interview excerpts from this subset. Bolded words in subsequent interview quotations indicate words with L+H* pitch accents found in the 3rd quartile of the slope range.

> "So **we** fightin' the same **villains** that they fightin' in the street. But instead of them seein' us fightin' **villains** in the street, we all villains."

> "Nobody but a Vietnam vet in Vietnam. When he came home, how would he be? And that's me. I had to go through all that street war, everything the same, **drugs** that everybody else was getting' turnt out on y'know."

> "Press and the media make you think that a black man armin' himself is **illegal** or criminal or he wants to arm himself to rob a liquor store or some shit. That is for me to defend myself. And it should always be. It's just about surviving y'know."

These three excerpts serve as representative cases of a frequent discursive move made by Tupac for the utterances in this steep-slope subset. A common thread across the interview involved clarification on Tupac's performance of his street conscious, thug identity, and he frequently contested presuppositions made about the moral character of street consciousness. Drawing on vague 'villains' and the more targeted association with Vietnam veterans, Tupac leverages symbolic schema associated with the violent and dangerous behavior attributed to black Americans but which are otherwise morally valorized through ideologies of patriotism and self-

defense. Especially in the case of patriotism, this draws an association with American national allegiance, something that is often tacitly white in discourse on American identity (Feagin 2000; McConnell-Ginet 2020; Lamont 2002). Here he advances the legitimacy of experiences associated with poor African Americans in context of the structural factors that shape them, and he does so while making use of a prosodic variable that a small but developing body of empirical research suggests is associated with AAE. There is also evidence of other segmental variables associated with both AAE and informality in these passages, e.g. null copula ("we fightin'"; "they fightin'"; "we all villains") and velar fronting ("fightin'"; "armin'"; "getting'"), respectively. The simultaneity of features like this throughout this particular discursive theme suggests that Tupac may then be leveraging more dramatic phonetic realization of L+H* accents to increase salience of a street conscious linguistic persona as he contests prejudicial moral ideologies of African Americans by making a case for the inclusion of black experiences through equivocation with symbolic resources deemed morally righteous by white Americans. In sum, he stresses a semantic equivalence between judgments made aross the racial boundary line but maintains distinctiveness in racial identity through phonological and phonetic distinction.

Cultural Boundary Work through Contestation of Knowledge

Another common thread among utterances in the high-slope subset of negative affective L+H* accent involves Tupac making epistemological challenges to the foundation of prejudicial assumptions held about himself and other black Americans. This theme was observed in 7 of the 23 interview excerpts (30.4%) and was deemed non-overlapping with respect to the previous theme.

> "As **my** video was debuting on MTV, I was behind bars getting' beat up by the police department. I got a ten-million-dollar lawsuit. They had—they said they would settle with me and everything. Y'know what I'm sayin. But nobody cared about that, that wadn't what **blew** up all in the news. They didn't see me—They did not see me in TV with my eye busted, my head **busted**. There's pictures of those. And you don't see all them pictures."
>
> "But as far as the media, **they** look at it as something **different**. They don't care about my resume. They don't care about me not getting in trouble. It's just another story, y'know, and it's a real story. They don't have to pay for it and they gon' milk it for all it's worth."
>
> "But because I… now it's like being exiled, y'know, from high society, and that's how I feel. And this whole um-- the **anger** comes from I'm tired of waiting for my past to get to society."

These examples work to illustrate at least two related discursive moves made by Tupac in this subset. First, while this form of boundary work is related to the moral character judgments perceived by Tupac, here he is actively contesting the access to knowledge that would delegitimize negative assumptions about his moral character. Second, he suggests that the true nature of his past has yet to "get to society," and that this is the case not because of a value-neutral ignorance but because of active isolationism and segregation in addition to domination through both physical violence and the construction of popular media narratives. He stresses that

he was not just the subject of police violence that happened to go unnoticed by chance; there was photographic evidence available that the media actively ignored. He does not just passively note the reporting of poor or false information but makes explicit connections between the profit incentives that inform the media's active misrepresentation of his experience. In this sense, he navigates a cultural boundary surrounding differential access to knowledge and advances a case for the superior truthfulness of his own worldly knowledge. This also arguably serves a dual role as another form of moral boundary work, given the associations he makes between the media and the distortion of truth, which he connects to both physical and psychological harm

. It is worth emphasizing that an analysis like this cannot draw a directly causal association between these interactional settings and more pronounced realizations of the L+H* pitch accent (and indeed most variables will not be this straightforwardly fixed in form-meaning connection), but it would be unsurprising to see Tupac leverage a prosodic resource potentially within his ethnolinguistic repertoire (Benor 2010) that would increase salience of his African American identity during the contestation of inaccurate and prejudicial knowledge bases while emphasizing the legitimacy of knowledge unique to him and others who experience the structural inequity associated with being African American in the United States.

L+H Accents in Low-Slope Negative Affect*

The 12 interview excerpts in this subset were more difficult to unify on the basis of shared strategies for construction of us vs. them. The sampling strategy already produced a relatively low sample size for the high-slope subset, and the low-slope subset provided only half that amount. But this subset does work to raise an important qualification to the idea of a rigid, one-to-one association between some of the discursive elements identified in the above analysis and the realization of more dramatic L+H* slopes.

In one sense, several of the excepts did not seem to fit into the major themes observed for the high-slope L+H* subset, and this non-overlap of interactional context could imply that there is a sharp distinction in the discursive setting that prompts high- vs. low-slope L+H* accents. However, these exceptional excerpts were not plentiful enough in the low-slope subset to constitute any real substantive theme of their own that emerged consistently enough to serve as a site of differentiation for shallower vs. steeper L+H* slopes. Moreover, review of the low-slope subset revealed that there are some cases where the most extremely steep L+H* slopes appear in the same utterances as the low-slope accents, as in the following. Here bold indicates especially steep L+H* slopes and italics indicates especially shallow L+H* slopes.

> "Y'know what I'm sayin but that's not what **happens**. People use what they heard in the *media* and that's how they come at me. Then you know we gotta clash"

> "As far as people they want me when they first *see* me to *humble* myself. They want me to be like this and dadada just because they're scared of me. But I don't feel like that's my job to humble myself to show you that I'm not a threat. I'm not a threat. Unless you threaten **me**.

While it is promising to see the level of consistency observed in the high-slope L+H* subset, the presence of these pitch accents in such close proximity to one another in the discursive setting suggests caution in assuming a straightforward form-meaning connection between L+H* realization and certain kinds of boundary maintenance practices, at least insofar as affect alone is the predictor.

DISCUSSION

These findings confirm some previous observations in the study of AAE intonation while finding qualifications for others and generally encouraging continued exploration of prosody in and outside of AAE.

Though declination was not shown here to be a resource for stylistic variation by stance, this does not rule out the possibility that it may vary under other circumstances. Studies of the individual are indeed important, but it's also important not to overgeneralize results. Future research may explore larger swaths of Tupac's speech across a number of different interviews, and style shifting more attributable to varying audiences or topics may emerge. While limited in scope, Tupac's declination data across the interview does coincide with some other available reports on relatively low declination slopes of AAE (Thomas 2015). If lower declination does prove to be characteristic of AAE prosody, strategic construction of ethnic and racial identity through this variable may arise in other situations, in other speakers, or with respect to other audiences and social referees.

While evidence did not emerge to suggest that Tupac's categorical usage of L+H* vs. H* varies significantly according to affective stance, this is another dimension that may still vary across different styles, topics, settings, and audiences, so future studies should seek to explore these possibilities in speakers of AAE. The L+H* accent provided the most robust evidence for prosodic style shifting in Tupac's speech and, with respect to variation in phonetic production, shows agreement with Holliday et al's (2020) novel finding that L+H* may be an ethnically indexical prosodic realization that can be drawn upon to orient oneself negatively with respect to a given subject. While the association of high-slope L+H* accents with negative affect was replicated here, this study further qualifies the discursive context in which negative affect is expressed.

Evidence also suggests that this may be a more proactive style shift, as expected in the speaker-design model of Wolfram and Schilling-Estes (2016). The interlocutors (and any present overhearers in the production staff) do not change throughout the course of this speech data, meaning that the style shifting observed cannot be attributed to a shift in the immediately present audience. Instead, socially constructed referees and the emergent context of discourse appear to influence the variation of L+H* realization.

The qualitative content analysis was limited by the availability of pitch accents specified by the quantitative analysis, but still provided an opportunity to characterize specifics of the interactional context in which Tupac made use of a prosodic variable associated more strongly with AAE, and many of the L+H* pitch accents with the steepest slopes were realized in the process of contesting assumptions about experiences associated with Tupac's in-group and in the process of affirming symbolic resources favored by Tupac's in-group. This may shed light onto questions raised by Alim (2002) in relation to the forces that influence AAE's persistent distinction relative to proximal varieties, which creates an opportunity to include discussion of AAE divergence as a social boundary in addition to the inclusion of linguistic style-shifting as a potential strategy for the performance and negotiation of symbolic boundaries.

However, the limited consistency found in this exploration of the discursive context encompassing Tupac's use of steep-slope L+H* accents should not be assumed to be generalizable to other speakers or communicative settings. While Tupac was observed in several cases to increase salience of AAE prosodic features while performing boundary work to challenge certain popular narratives and to affirm elements of his own experiences and experiences common to other groups of African Americans, this dynamic may well not be reproducible with individuals at different social locations; someone with much less economic

and symbolic power than Tupac, for example, may experience pressure to decrease salience of features with an African American ethnolinguistic repertoire in the same discursive context. Further discourse analytical and other qualitative research should be a priority for situating the style shifting observed here even more closely within the interactional setting that these intonational realizations arise for different speakers. One possibility for future work could involve providing a scale for affect through sentiment analysis to rule out whether it is simply more extreme affective demeanor—which may itself be influenced by racialized discourse--that predicts L+H* realization.

These issues call back to obstacles addressed by Foulkes and Docherty's (2006) form-function problem related to the challenges of polysemy in intonation when it comes to the definition of a sociolinguistic variable. These concerns go well beyond the present study and should motivate all researchers of intonation. Regardless of the locally situated function, this stylistic use of L+H* may indicate, as Schilling-Estes (1998) suggests, that the variable is salient for AAE speakers as a correlate of identity—even if this is unconscious and solely the result of cognitive encoding of sociolinguistic knowledge. Future studies may still adopt this individual case-study approach in order to build enough context for micro-level settings that meta-analyses and other comparative approaches could be used to make macro-level assessments of prosodic variables and the interactional contexts that motivate their envelopes of variation.

Inventive approaches to perceptual studies may also investigate whether the significantly steeper slopes of AAE in L+H* realizations have any influence on ethnic identification tasks undertaken by speakers of different English varieties. McLarty (2018) also rightly notes that, despite the usefulness of ToBI annotations, it is still not entirely clear how the targets of this transcription system actually coincide with perception in speakers, and future research must

investigate how speakers process the various categories of ToBI intonation. These prosodic features have been associated in the literature with certain ethnolinguistic repertoires largely on the basis of relative frequency of occurrence in production and, especially with implications for boundary work in mind, it would be helpful to know how these same features are characterized in perception. While AAE speakers may well make use of these features more often and even consciously or unconsciously leverage them in certain discursive settings, it's not clear what exactly these index for listeners within and outside of these linguistic communities. Research that combines a larger battery of other suprasegmental variables in addition to other salient segmental variables would also be productive for delineating sites of stylistic variation (and could be especially helpful for understanding why L+H* accents with slopes at opposite extremes occasionally appeared in very similar discursive settings). This would also help frame studies that can assess the properties of language as a symbolic boundary, i.e. the the visibility, salience, permeability, and durability of perceptual associations for linguistic features like L+H* realization (Lamont and Molnar 2002). Drawing on methods from work in the vein of Vila-Henninger (2015) could help connect these findings on symbolic boundary maintenance in language production to the ways in which people perceive the strength of these boundaries and how different configurations of social structure influence the perception of language as a resource for boundary work.

It should be noted that the present study is limited in numerous ways. Continued research will necessarily involve greater sample sizes, though this is an issue that plagues much of intonation work generally due to the exceedingly demanding time-constraints of transcription and measurement of acoustic correlates of intonation (Thomas 2011). The sample size limitation was especially meddlesome for the nested mixed-methods approach used to identify the site of

qualitative analysis. As well, I am the only researcher working on this project, meaning that reliability was not established for the identification of tones in the ToBI transcription. This is a key consideration of intonation work, as some especially subtle differences in tone types can breed disagreement among even the most well-practiced intonation researchers, so future research should seek agreement with others trained in intonation (Thomas 2011). A similar issue also exists for the coding of affect, as this could be further bolstered by a more robust system of inter-rater reliability.

Additionally, while some features have been shown to be consistently distinct across AAE and EAE prosody, the relative dearth of study on intonational variation leaves a great deal of room for change in conception of differences between the varieties. Continued intonation research and, ideally, the advancement of automated methods for reliable intonation transcription could present more robust findings that significantly qualify the envelope of this variation, especially in terms of considerations like regional variation in AAE.

Future studies would also ideally include a wider range for the speech sample(s) serving as the subject of the analysis. The use of a publicly available recording was logistically convenient and still provided space for a fruitful analysis, but speech across different communicative settings with different audiences and distributions of topical emphases could have contributed to a stronger analytical purview. Focusing on a subject that was available for interview could have allowed for a more thorough investigation of emergent phenomena, which would have been especially helpful for a study that was so exploratory in scope.

Nonetheless, the present study contributes to understanding of variation in AAE intonation while building off contemporary research threads on sociological boundaries. The inclusion of a discursive variable in a primarily quantitative analysis helps build a much-needed

link between the generalizing techniques of statistical analysis and the locally situated meaning making of lived interaction—both of which are integral to the social construction of linguistic knowledge and the proliferation of linguistic change.

References

Alim, H. Samy. 2002. “Street-Conscious Copula Variation in the Hip Hop Nation.” *American Speech: A Quarterly of Linguistic Usage* 77:288–304.

Alim, H. Samy, and Geneva Smitherman. 2012. *Articulate while Black: Barack Obama, Language, and Race in the U.S.* New York, New York: Oxford University Press.

Anderson, Elijah. 1999. *The Code of the Street.* New York, New York: W.W. Norton and Company.

Baugh, John. 1983. *Black Street Speech: Its History, Structure, and Survival*. Austin, Texas: University of Texas Press

Bail, Christopher A. 2008. “The Configuration of Symbolic Boundaries against Immigrants in Europe.” *American Sociological Review* 73:37-59.

Barth-Weingarten, Dagmar, Nicole Dehé, and Anne Wichmann. 2009. *Where Prosody Meets Pragmatics.* Leiden, Netherlands: Brill Publishers.

Bates, Douglas, Martin Mächler, Ben Bolker, and Steve Walker. 2015. “Fitting Linear Mixed-Effects Models Using lme4,” *Journal of Statistical Software*, 67(1):1-48.

Beckman, Mary E. and Gayle A. Elam. 1997. “Guidelines for ToBI Labeling.” PhD dissertation, The Ohio State University.

Bell, Allan. 1984. “Language Style as Audience Design.” *Language in Society.* 13: 145–204.

Benor, Sarah Bunin. 2010. “Ethnolinguistic Repertoire: Shifting the Analytic Focus in Language and Identity.” *Journal of Sociolinguistics* 14(2):159-183

Bhatt, Anjali M., Amir Goldberg, and Sameer B. Srivastava. 2022. “A Language-Based Method for Assessing Symbolic Boundary Maintenance Between Social Groups.” *Sociological Methods and Research* 0(0) https://doi.org/10.1177/00491241221099555.

Blaauw, Eleonora. 1994. “The Contribution of Prosodic Boundary Markers to the Perceptual Difference between Read and Spontaneous Speech.” *Speech Communication* 14(4):359-375.

Boersma, Paul and David Weenik. 2017. Praat: Doing Phonetics by Computer [Computer program]. Version 5.3.16. http://www.praat.org/

Bourdieu, Pierre. 1977. “The Economics of Linguistic Exchanges.” *Social Science Information* 16(6):645-668.

Bucholtz, Mary and Kira Hall. 2004. “Language and Identity.” Pp. 369-394 in *A Companion to Linguistic Anthropology*, edited by Duranti, Alessandro. Malden, Massachusets: Blackwell Publishing.

Burdin, Rachel Steindel, Nicole Holliday, and Paul E. Reed. 2018. “Rising Above the Standard: Variation in L+H* Contour Use Across 5 Varieties of American English.” Paper presented at the International Conference on Speech Prosody. June 13th-16th, Poznań, Poland.

Dellwo, Volker, Adrian Leeman, and Marie-José Kolly. 2015. “Rhythmic Variability Between Speakers: Articulatory, Prosodic, and Linguistic Factors.” *Journal of the Acoustical Society of America* 137(3):1513-1528.

Du Bois, John W. 2007. “The Stance Triangle.” Pp. 139-182 in *Stancetaking in Discourse: Subjectivity, Interaction, and Evaulation*, edited by Engelbretson, Robert. Philadelphia, Pennsylvania: John Benjamins Publishing Company.

Eckert, Penelope. 2008. “Variation and the Indexical Field.” *Journal of Sociolinguistics* 12:453–476

Feagin, Joseph. 2000. *Racist America: Roots, Current Realities, and Future Reparations.* New York, New York: Routledge.

Foreman, Christina. 2000. “Identification of African-American English from Prosodic Cues.” *Texas Linguistic Forum* 43:57–66

Foulkes, Paul and Gerard Docherty. 2006. “The Social Life of Phonetics and Phonology.” *Journal of Phonetics* 34:409-438.

Fridland, Valerie. 2003. “’Tie, Tied, and Tight’: The Expansion of /ai/ Monophthongization in African-American and European-American Speech in Memphis, Tennessee.” *Journal of Sociolinguistics* 7(3):279-298.

Gieryn, Thomas F. 1983. “Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists.” *American Sociological Review* 48(6):781-795.

Graham, Elyse. 2019. “Boundary Maintenance and the Origins of Trolling.” *new media & society* 21(9):2029-2047.

Holliday, Nicole. 2016. “Intonational Variation, Linguistic Style, and the Black/Biracial Experience” PhD dissertation, Department of Linguistics, New York University.

Holliday, Nicole. 2017. "“My Presiden(t) and Firs(t) Lady Were Black”: Style, Context, and Coronal Stop Deletion in the Speech of Barack and Michelle Obama." *American Speech: A Quarterly of Linguistic Usage* 92(4): 459-486.

Holliday, Nicole, Jason Bishop, and Grace Kuo. 2020. “Prosody and Political Style: The Case of Barack Obama and the L+H* Pitch Accent.” Paper presented at the 10th International Conference on Speech Prosody, May 25-28, Tokyo, Japan.

Holt, Yolanda F. and Balaji Rangarathnam. 2018. “F0 Declination and Pitch Reset in Read Speech of African American and White American Women.” *Speech Communication* 97:43-50.

Hudson, Amelia I., and Anthony Holbrook. 1982. “Fundamental Frequency Characteristics of Young Black Adults: Spontaneous Speaking and Oral Reading.” *Journal of Speech and Hearing Research* 25: 25–28.

Jeffries, Michael P. 2011. *Thug Life: Race Gender and the Meaning of Hip Hop.* Chicago: University of Chicago Press.

Jun, Sun-Ah, and Christina Foreman. 1996. “Boundary Tones and Focus Realization in African-American Intonation.” Paper presented at the 3rd joint meeting of the Acoustical Society of America and the Acoustical Society of Japan, December 6th, Honolulu, Hawaii.

Johnstone, Barbara. 1996. *The Linguistic Individual: Self-Expression in Language and Linguistics*. Oxford: Oxford University Press.

Labov, William. 1972. *Sociolinguistic Patterns: Conduct and Communication.* Philadelphia: University of Pennsylvania Press.

Lamont, Michele. 1992. *Money, Morals, and Manners: The Culture of the French and the American Upper Class.* Chicago, Illinois: University of Chicago Press.

Lamont, Michele. 2000. *The Dignity of Working Men: Morality and the Boundaries of Race, Class, and Immigration.* Cambridge, Massachusetts: Harvard University Press.

Lamont, Michele. 2001. "Symbolic Boundaries." Pp. 15341-15347 in *International Encyclopedia of the Social and Behavioral Sciences*, edited by Smelser, Niel J., and Paul B. Baltes. Oxford: Elsevier.

Lamont, Michel and Virag Molnar. 2002. "The Study of Boundaries in the Social Sciences." *Annual Review of Sociology* 28:167-195.

Lee, Yong-cheol. 2015. "Prosodic Focus Within and Across Languages." PhD dissertation, Department of Linguistics, University of Pennsylvania.

Lieberman, Mark, William Katz, Allard Jongman, Roger Zimmerman, and Mark Miller. 1985. "Measures of the Sentence Intonation of Read and Spontaneous Speech in American English." *Journal of the Acoustical Society of America* 77(2):649-657.

Loman, Bengt. 1975. "Prosodic Patterns in a Negro American Dialect." *Style and Text: Studies Presented to Nils Enkvist* 1(1):219-242.

Massey, Douglas S. and Sánchez R. Magaly. 2010. *Brokered Boundaries: Immigrant Identities in Anti-Immigrant Times.* New York, New York: Russell Sage Foundation.

McConnell-Ginet, Sally. 2020. *Words Matter: Meaning and Power*. New York, New York: Cambridge University Press.

McLarty, Jason. 2011. "AAE and EAE Pitch Accent Types and Frequencies: An Apparent Time Perspective." MA thesis, Department of Linguistics, North Carolina State University.

McLarty, Jason. 2018. "African American Language and European American English: Intonation Variation over Time in the American South." *American Speech* 93(1):32-78.

Ochs, Elinor, and Bambi Schieffelin. 1989. "Language Has a Heart." *Text-Interdisciplinary Journal for the Study of Discourse* 9(1):7-26.

Podesva, Robert. 2006. “Intonational Variation and Social Meaning: Categorical and Phonetic Aspects.” *University of Pennsylvania Working Papers in Linguistics* 12(2):189-202.

R Core Team, R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. URL http://www.R-project.org, 2019.

Schilling-Estes, Natalie. 1998. “Investigating ‘Self-Conscious’ Speech: The Performance Register in Ocracoke English.” *Language in Society* 27(1):53-83.

Schilling-Estes, Natalie. 2004. “Constructing Ethnicity in Interaction.” *Journal of Sociolinguistics* 8(2):163-195.

Schwarz, Ori. 2015. “The Sound of Stigmatization: Sonic Habitus, Sonic Styles, and Boundary Work in an Urban Slum.” *American Journal of Sociology* 121(1):205-242.

Schwalbe, Michael, Sandra Godwin, Daphne Holden, Douglas Schrock, Shealy Thompson, Michele Wolkomir. 2000. “Generic Processes in the Reproduction of Inequality: An Interactionist Analysis.” *Social Forces* 79(2):419-452.

Silverstein, Michael. 2003. “Indexical Order and the Dialectics of Sociolinguistic Life.” *Language and Communication* 23:193–229

Swerts, Mark, Eva Strangert, and Mattias Heldner. 1996. “F0 Declination in Read-Aloud and Spontaneous Speech.” Paper presented at the 4th International Conference on Spoken Language Processing, May 25-28, Philadelphia, Pennsylvania.

Tarone, Elaine E. 1973. “Aspects of Intonation in Black English.” *American Speech* 48:29-36.

Thomas, Erik R. 2003. “Secrets Revealed by Southern Vowel Shifting.” *American Speech* 78(2):150-170.

Thomas, Erik R. 2011. *Sociophonetics: An Introduction.* New York, New York: Palgrave Macmillan.

Thomas, Erik R. 2015. “Prosodic Features of African American English.” Pp. 420-435 in *The Oxford Handbook of African American Language*, edited by Sonja Lanehart. Oxford: Oxford University Press.

Thomas, Erik R. and Jeffrey Reaser 2004. “Delimiting Perceptual Cues Used for the Ethnic Labeling of African American and European American Voices.” *Journal of Sociolinguistics* 8(1):54-87.

Vila-Henninger, Luis. 2015. “Understanding Symbolic Boundaries and Improving Quantitative Analysis of Social Exclusion by Improving the Operationalization of Boundary Work.” *Sociology Compass* 9(12):1025-1035.

Wickham, Hadley. 2016. *ggplot2: Elegant Graphics for Data Analysis*. New York: Springer-Verlag, 2016.

Wolfram, Walt, and Erik R. Thomas. 2002. *The Development of African American English*. John Wiley & Sons.

Wolfram, Walt and Natalie Schilling-Estes. 2016. *American English: Dialects and Variation*. 3rd ed. Maldon: Wiley-Blackwell.

APPENDIX

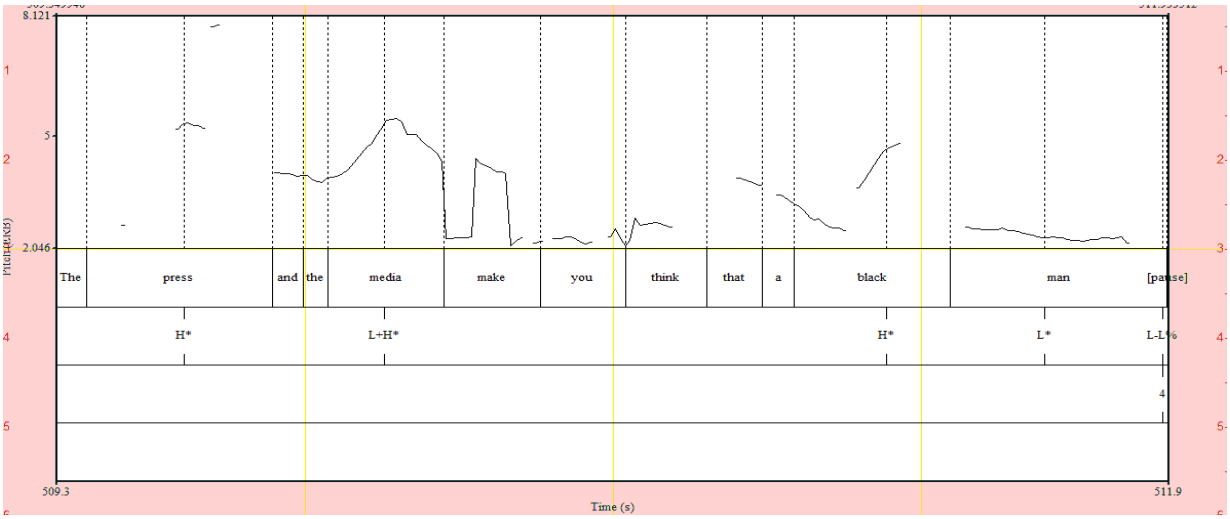

Figure 1. Example of an utterance coded with the ToBI transcription system.

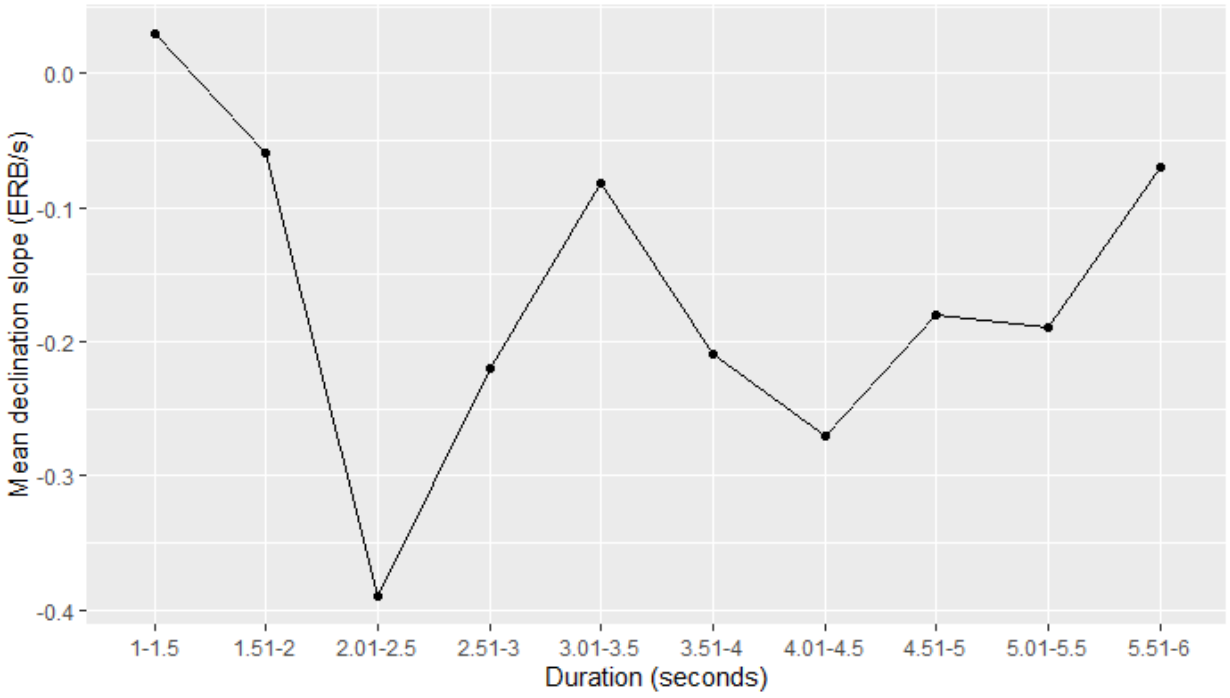

Figure 2. Mean declination slope for utterances arranged in ordinal categories of duration.

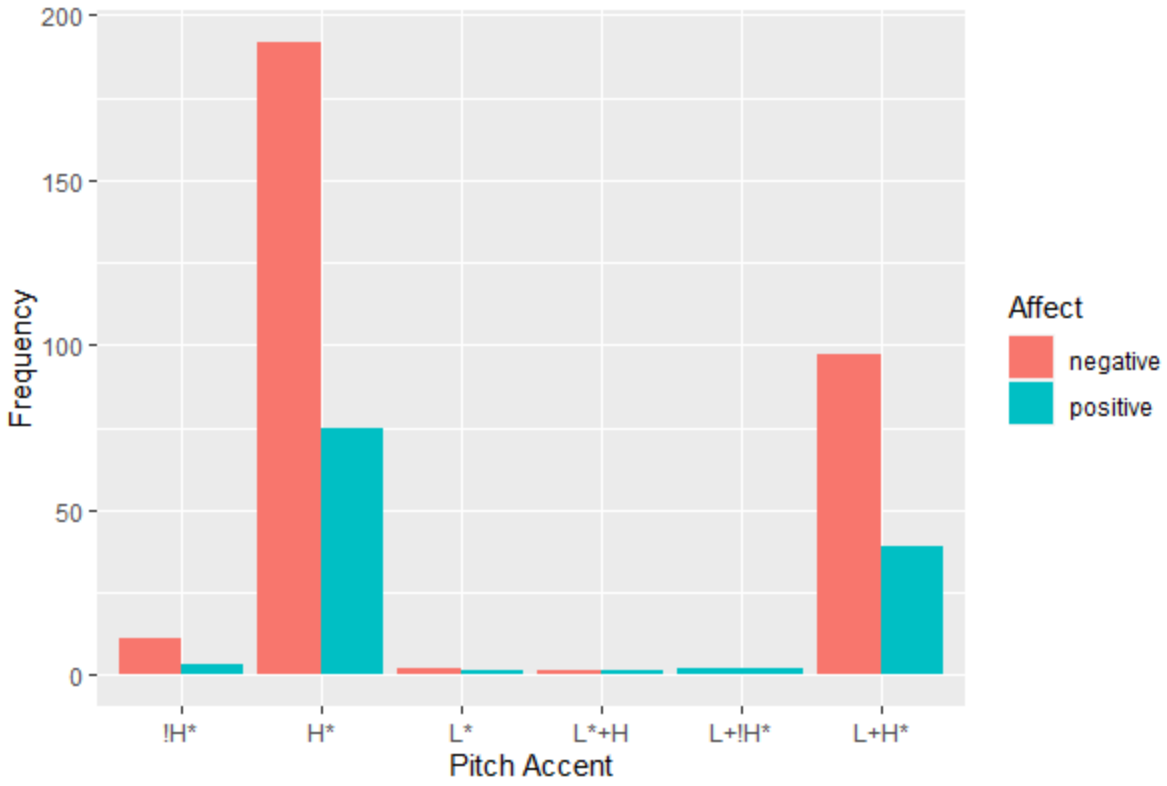

Figure 3. Frequency of pitch accents by affective stance.

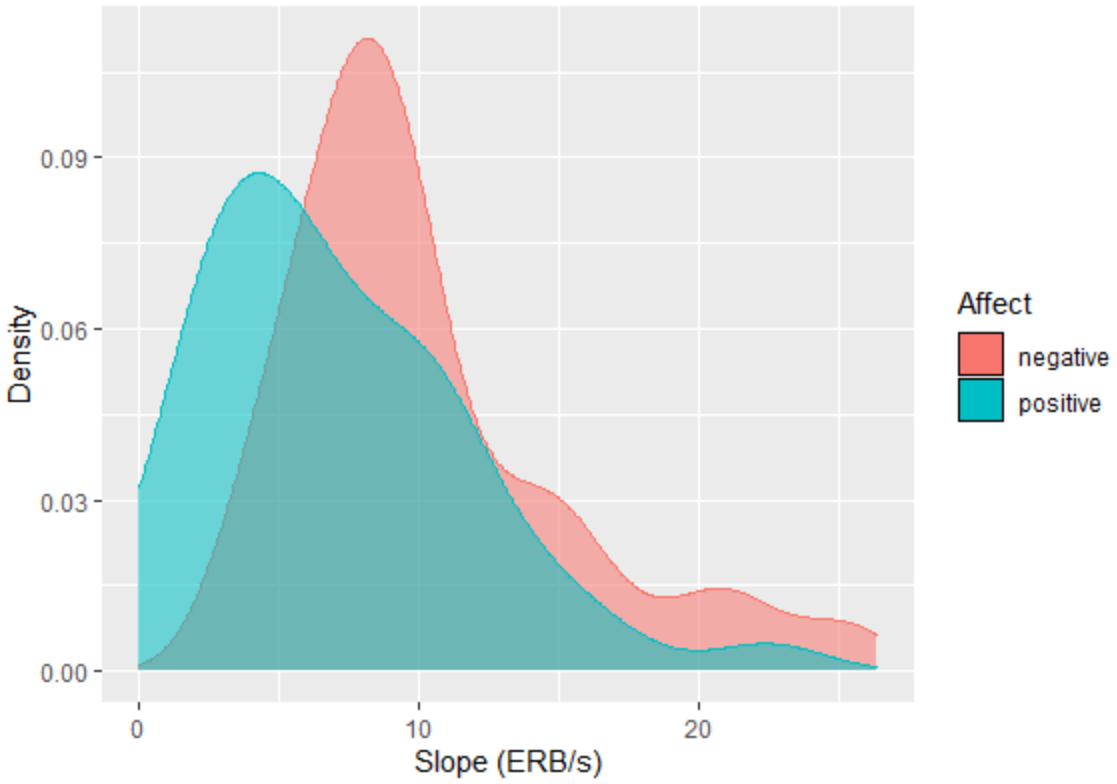

Figure 4. Density of L+H* slopes across categories of affective stance.

Table 1. Frequency of intonational phrases for each affective stance.

Affect	N	Percent
negative	303	66.6%
neutral	31	6.8%
positive	121	26.6%
Total	455	100.0%

Table 2. Frequency of all pitch accents observed in the data.

Pitch Accent	N	Percent
!H*	16	3.5%
H*	288	63.3%
L*	3	0.7%
L*+H	2	0.4%
L+!H*	2	0.4%
L+H*	144	31.6%
Total	455	100.0%

Table 3. Descriptive statistics for all acoustic correlates for the intonational variables.

Correlates[1]	Mean	StDev	Min	Max
f0 maximum (ERB)	4.88	0.81	3.17	7.19
f0 minimum (ERB)	3.84	0.6	2.56	5.68
Slope (ERB/s)	9.45	5.19	0.01	26.34
Excursion (ERB)	1.04	0.56	0.23	3.82
Duration (s)	0.11	0.03	0.04	0.20

[1]Acoustic correlates of L+H* accents

Table 4. Frequency of each ordinal duration category used for calculation of declination.

Duration (s)	Freq
1-1.5	7
1.5-2	6
2-2.5	4
2.5-3	3
3-3.5	3
3.5-4	4
4-4.5	3
4.5-5	2
5-5.5	2
5.5-6	2

Table 5. Logistic regression of affective stance on declination slope.

Affective stance is a binary measure containing levels for positive and negative affect, whereas declination slope is a continuous measure reflecting the regression slope of f0 tracks across an utterance.

	(1)
(Intercept)	-0.185 *
	(0.073)
Negative Affect	0.045
	(0.093)
N	36
R2	0.007

*** p < 0.001; ** p < 0.01; * p < 0.05.

Table 6. Logistic regression of categorical pitch accent on affective stance.

Pitch accent is a binary measure containing levels for H* and L+H* accents, whereas affective stance is a binary measure containing levels for positive and negative affect.

	(1)
(Intercept)	-0.654 ***
	(0.197)
Negative Affect	-0.029
	(0.233)
N	403

*** p < 0.001; ** p < 0.01; * p < 0.05.

Table 7. OLS regression of L+H* fundamental frequency slope on affective stance.

L+H* slope is a continuous measure of within-syllable slope for L+H* pitch accents, whereas affective stance is a binary measure with levels of positive and negative affect.

	(1)
(Intercept)	7.045 ***
	(0.778)
Negative Affect	3.209 ***
	(0.933)
N	138
R2	0.080

*** p < 0.001; ** p < 0.01; * p < 0.05.