Gender and /aɪ/ monophthongization in African American English
Author(s): Julia Thomas
Proceedings of the 37th Annual Meeting of the Berkeley Linguistics Society (2013), pp. 449-463
Editors: Chundra Cathcart, I-Hsuan Chen, Greg Finley, Shinae Kang, Clare S. Sandy, and Elise Stickles

Gender and /aɪ/ Monophthongization in African American English[1]

JULIA THOMAS
University of Chicago

1 Introduction

Monophthongization of /aɪ/ in specific phonetic environments is widely recognized as a characteristic of AAE and Southern English, which differentiates these dialects from the Standard American English (SAE) spoken by White, middle-class speakers in Northern Cities (Bailey and Thomas 1998, Rogers 2000, Anderson 2002). In Northern cities, monophthongal /aɪ/ is used exclusively by African American speakers, and is therefore a marker of ethnic cultural heritage. It may be used as a positive in-group solidarity marker within the Black community, and speakers who identify with or are isolated within the Black community may be more likely to use the monophthongized variant (see Edwards 1992 and Rahman 2002). Seminal investigations on style and identity provide evidence that speakers deliberately employ different phonetic variants to convey social and stylistic information (Campbell-Kibler 2007, Podesva 2007, Eckert 1989, Labov 1966). Social pressure along with a speaker's desire to foster a certain identity may lead him to use an AAE dialectal feature to a greater or lesser extent in different situations or with different interlocutors. The formality of the task or conversation can impact the likelihood and degree of monophthongization, and the ethnicity of the speakers' audience may also be a factor, though the current study is not designed to examine this variable. For instance, Hay, Jannedy, and Mendoza-Denton (1999) find that Oprah is twice as likely to use monophthongal /aɪ/ when addressing an African American guest on her show than when addressing a White guest.

1 Special thanks to Holly Craig at the University of Michigan and Jeffrey Grogger at the University of Chicago for graciously allowing me to access their data for this project and for providing feedback on the analysis. Thanks also to Salikoko Mufwene and Alan Yu for advising and supporting the project.

In addition to style, phonetic environment is crucial in understanding speakers' variable realizations of /aɪ/. Previous studies are in conflict, however, over the role of phonetic environment in monophthongization. Moreton (2004) proposes the Pre-Voiceless Hyperarticulation Hypothesis observing that cross-linguistically diphthongs tend to have a lower F1 and higher F2 before voiceless codas than before voiced ones. In his word-list task experiment, the diphthong /aɪ/ shows the most robust difference in the two environments. Prior analyses of /aɪ/ by Anderson (2002) for Detroit speakers and Fridland (2003) for Memphis speakers suggest that monophthongization of /aɪ/ has been extended from the pre-voiced and final position phonetic environments to the pre-voiceless environment. Anderson (2002) suggests that this change may be occurring in AAE for speakers in other Northern Cities like Chicago and Buffalo. For White speakers in Texas, Oxley (2009) finds both phonetic environment and task variables related to formality to be significant predictors of monophthongization. Gender and a subset of age are also significant predictors in her analysis, with middle-aged White women showing the greatest monophthongization, correlated with the most favorable ratings of their community.

The current study describes the extent of /aɪ/ monophthongization for AAE speakers in Chicago and identifies predictors for use of the dialectal variant. Gender differences are highlighted by examining speakers' deliberate usage of this sociophonetic variable with respect to their local communities. Phonetic context is found to be the best predictor of monophthongization: the pre-voiceless environment serves to preserve the diphthong, while pre-voiced and word-final environments facilitate monophthongization. However, speaker gender is found to play a sizeable and significant role in predicting monophthongization. Females produced tokens with greater diphthongization than males, meaning their realizations of /aɪ/ are more similar to canonical /aɪ/ in SAE. Women also show greater variation and dynamicity across distinct phonetic and conversational environments than men. Rather than making claims about whose speech is more standard, the current study views the local conditions as fundamental to understanding how gender groups pattern differently in terms of the identities they construct (Eckert and McConnell-Ginet 2003). In this light, the differences between men and women in this community suggest greater social mobility for females and greater in-group pressure among men resulting in a divergent use of monophthongal /aɪ/.

2 Methodology

2.1 Data Collection and Processing

The data were collected via recorded interviews at a shopping center in Calumet City, Illinois. Data collection took place in November of 2009. Calumet City is part of the Greater Chicago Metropolis. The 2000 census recorded 39,071 inhabitants, yielding a population density of 5,378.0 people per square mile. The city shows considerable ethnic diversity with a reported majority of African Americans (52.91%), followed by Whites (38.74%) and Hispanics/Latinos (10.86%). The median income for a household in the city was $38,902 and the per capita income was $18,123. It is estimated that about 12.2% of the population were below the poverty line.[2] Data were collected from African American shoppers ranging from 20 to 30 years of age. One field interviewer, a middle-aged African American female, conducted the interviews. Subjects received $20 after completing the interview. Interviews were recorded on small handheld audio recorders.

The interview was designed to elicit speech on a variety of subjects ranging in degree of formality such as music and sports interests in contrast with career skills. The categories are similar to those identified by Labov (2001) as careful and casual speech. The experimental design was concerned primarily with the effect of formality, rather than the effect of audience or speaker identity. Discussion topics designed to elicit formal speech include questions about career/job-search and health-related matters. The topics designed to elicit informal speech included questions about sports, music, television and popular culture.

2.2 Acoustic and Statistical Analysis

The sound files for each individual interview were played using PRAAT. Using spectrographic displays, the segment /aɪ/ was manually labeled and coded for phonetic and conversational environment. The sound files yielded approximately 685 tokens, realized variably, but canonically identified as /aɪ/ for speakers of Northern Cities White English. A PRAAT script was then used to calculate the frequency of F1 and F2 at the onset, midpoint, and endpoint of a segment and to write this information to a text file.

The metric for the presence or absence of diphthongization is a central consideration for this study. Acoustically, /aɪ/ is characterized by formant changes during the production of the vowel and by the relative positions of its formants. In its "purest" form, /aɪ/ entails a shift from some variant of the low, back vowel / / to the high front glide or vowel /i/, though for some speakers it may more realistically be a shift from a more fronted vowel (/a/ or /æ/) to /i/. This means a sharp rise in F2 and a drop in F1 over the course of the segment, resulting in a much greater distance between F2 and F1 at the offset than at the onset. Therefore, three metrics were selected to measure the degree of diphthongization for each token of /aɪ/:

2 http://en.wikipedia.org/wiki/Calumet_City,_Illinois

1) $\Delta F1 = (F1_1 - F1_3)/\text{Duration}$

2) $\Delta F2 = (F2_1 - F2_3)/\text{Duration}$

3) F1-F2 distance at offset = $F2_3 - F1_3$

None of these metrics alone is able to capture the presence or absence of diphthongization. These metrics are adopted from Oxley 2009 which seeks to establish more gradient acoustic measures for monophthongization than simply impressionistic auditory binary classification for /aɪ/. The statistical model for F1-F2 distance proved more powerful than those for ΔF2 and ΔF1, which corresponds with observations in Moreton (2004) about differential predictive power between F1, F2, and F1-F2 distance. Due to limited space, only the results from F1-F2 distance at offset will be presented in depth here.

The statistical analysis was performed using R statistical analysis software. The analysis was carried out independently for each of the metrics: ΔF1, ΔF2, and F1-F2 distance. For each metric, a mixed-effects linear regression was used to model the effects of all fixed variables independently plus all random variables such as idiosyncrasies attributable to individual speakers or lexical items. The potential predictors were selected based on factors that had been identified in the literature on /aɪ/ as having an effect on monophthongization. These included linguistic variables such as phonetic environment and lexical item as well as social variables like education, age (within a narrow range), and gender. Factors not reaching statistical significance in terms of a main effect were double-checked for significant interaction with other variables. Because the factor "topic" was of special interest for the purpose of this paper, it was exhaustively checked for interaction with other variables where data sufficiency allowed. Additional factors were checked for interactions if prior literature gave cause to suggest that might be interdependent (especially for the phonetic variables "duration" and "phonetic environment"). The model listing the factors independently was then compared by an ANOVA to the model in which the variables were given the possibility of interacting. If the interaction resulted in a significantly better model, the interaction was retained. Using this methodology, once established that a variable showed no main effect and no significant interactions for a given metric, this variable was removed from the model. This resulted in three potentially distinct models for ΔF1, ΔF2, and F1-F2 distance.

In addition to the mixed-effects models, data points were also graphed by individual speaker for each of the three metrics. This sheds light on the inter- and intra-speaker variation for the factors that proved to be significant predictors in the models and this visualization allows for comparison across one speaker's realizations of /aɪ/ in different environments and conversational contexts. Likewise, it allows for visualization of trends and outliers examining all speakers across the sample.

3 Results

3.1 Mixed-Effects Linear Regression Model for F1-F2 Distance

When all factors were modeled as possible predictors of F1-F2 distance, the factors age and education were not included because they showed no effect at all on F1-F2 distance, and their inclusion made no improvement to the model's predictive power. Significant interactions were found between environment and duration as well as between topic and sex.

F1-F2 Distance = environment * duration + topic * sex + (1|lexeme) + (1|subject)

The baseline F1-F2 distance is 1045.88Hz for /aɪ/ in final position spoken by a female discussing career.

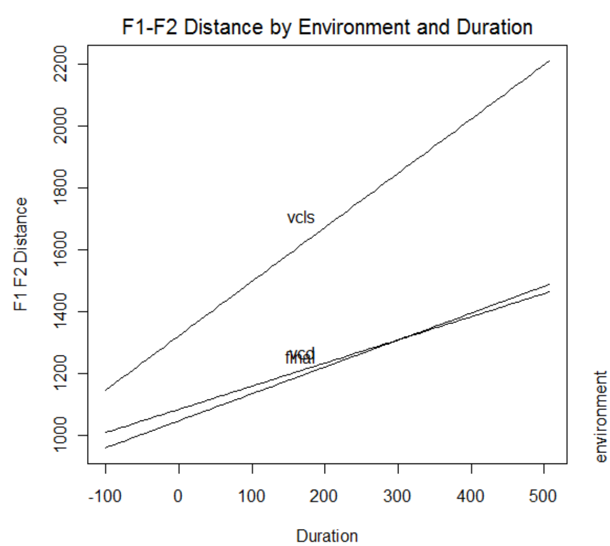

Figure 1: Interaction of duration and environment on F1-F2 distance

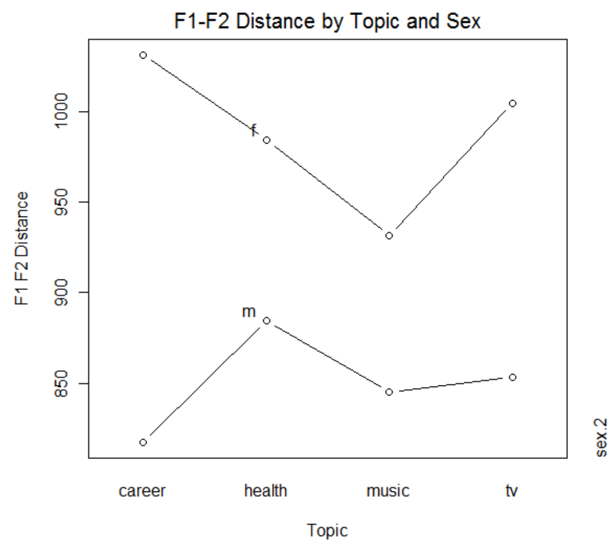

Figure 2: Interaction plot for effect of speaker sex and topic on F1-F2 Distance

The interaction plot in Figure 1 shows the striking effect of phonetic environment and duration on F1-F2 distance. The interaction was statistically significant for the pre-voiceless environment (see table 1 below). Diphthongal tokens of /aɪ/ will have a greater F1-F2 distance at offset, while monophthongal realizations will show a smaller distance between F1 and F2. The positive slope for each line suggests that for all phonetic environments, F1-F2 distance increases as duration increases. For the pre-voiced and final tokens /aɪ/, the trajectory looks nearly identical, while the pre-voiceless group stands apart. For short to average tokens of /aɪ/, the F1-F2 distance for pre-voiceless /aɪ/ is only about 100-200 hundred Hertz greater than the pre-voiced and word-final distances, but for longer tokens, the pre-voiceless environment tends to have F1-F2 distances that are substantially greater than those for /aɪ/ in other environments. For the longest tokens of /aɪ/ in the data set, those in pre-voiceless environment show an F1-F2 distance that approaches 2000Hz, while long tokens before a voiced consonant maintain an F1-F2 distance that is near 1000Hz.

Figure 2 shows the interaction between speaker sex and topic and highlights differences between males and females in the data set. For males, the reduction in F1-F2 distance for the health and music topics was significant (see table 1 below). The figure clearly shows the tendency for females to have a greater F1-F2 distance than men; the F1-F2 distance for women is near 1000 Hz across the data set, while it is closer to 850Hz for men. The plot also reveals that the F1-F2 distances for male speakers and female speakers follow different trajectories from topic to topic. For instance, female speakers show a decrease in F1-F2 distance suggestive of more monophthongization when moving from a discussion about career to a discussion about health, while men show the opposite trend. Female speakers may show more dynamic F1-F2 distances than men; the changes in females' F1-F2 distances across topics are slightly greater than for male speakers. On the whole, the trajectory for F1-F2 distance in females is somewhat unexpected as it involves a drop in F1-F2 distance for the presumably formal topic, health, as well as an apparent increase in F1-F2 distance for the casual topic, TV. This will be discussed in Section 4.

Table 1 shows the factors and interactions that have a significant effect on F1-F2 Distance. The baseline F1-F2 distance is approximately 1045.88 Hz for a token of /aɪ/ in final position spoken by a female speaker talking about career. For F1-F2 distance, main effects were found for duration, pre-voiceless phonetic environments, as well as sex and the conversational topic music. Pre-voiceless phonetic environment is the most robust effect, increasing F1-F2 distance by 275.36 Hz above the baseline. No main effect of the pre-voiced environment was found, suggesting that F1-F2 distances do not differ significantly for tokens of /aɪ/ in final position. Being male also has a significant and sizeable effect on the F1-F2 distance for tokens of /aɪ/, decreasing the distance by 213.97 Hz. This increase is presumably not due to the higher frequency formant structure for women as the metric measures only the distance between F2 and F1 for each speaker's tokens of /aɪ/. A main effect of duration was also found increasing F1-F2 distance by 0.871 Hz/ms.

The main effect of Topic: Music on F1-F2 distance is the only main effect of conversational topic found for any of the 3 metrics in the study. F1-F2 distance for tokens of /aɪ/ when talking about music were 100.01 Hz less than the baseline. In addition to these main effects, significant interactions were identified for duration and environment (pre-voiceless) as well as for males talking about health and music. Like the main effect of duration, the significant interactions involving duration were found to change F1-F2 distance by only 0.883 Hz/ms for the voiceless environment (also reflected in the interaction plot above as a greater difference between pre-voiced tokens and pre-voiceless ones for longer segments than for shorter ones). A substantial interaction did occur for males discussing two particular conversational topics: health and music. The changes brought on by these topics, however, are somewhat puzzling. For health, taken to be a formal topic, the interaction between sex and topic had the effect of increasing F1-F2 distance by 113.91 Hz, suggesting less monophthongization is taking place. What is puzzling, however, is that the interaction between sex and music revealed an even greater increase of 127.67 Hz. This does not follow the expectation created by the literature on styleshifting, nor does it correspond to the main effect. For females discussing music, the interaction again had the effect of reducing F1-F2 distance by -136.23 Hz, yet this reduced F1-F2 distance for a casual conversational topic is more in keeping with predictions made about styleshifting. These findings will be discussed in the following section.

	Estimate	MCMC mean	HPD95 lower	HPD95 upper	pMCMC	Pr(>|t|)
(Intercept)	1045.878	1027.609	928.521	1129.028	0.0001	0.0000
cdur	**0.871**	**0.878**	**0.453**	**1.305**	**0.0002**	**0.0001**
environmentvcd	37.156	34.105	-61.292	131.510	0.470	0.545
environmentvcls	**275.360**	**300.896**	**203.418**	**391.474**	**0.0001**	**0.0000**
sex.2m	**-213.975**	**-220.133**	**-316.459**	**-121.305**	**0.0001**	**0.0000**
topichealth	-46.871	-49.424	-134.048	38.890	0.257	0.282
topicmusic	**-100.006**	**-101.129**	**-183.807**	**25.754**	**0.011**	**0.013**
topictv	-26.888	-29.826	-112.539	48.296	0.464	0.527
cdur:environmentvcd	-0.122	0.029	-0.763	0.783	0.936	0.767
cdur:environmentvcls	**0.883**	**0.888**	**0.215**	**1.560**	**0.011**	**0.010**
sex.2m:topichealth	**113.906**	**122.01**	**11.883**	**237.320**	**0.034**	**0.046**
sex.2m:topicmusic	**127.665**	**139.55**	**41.075**	**245.300**	**0.010**	**0.014**
sex.2m:topictv	62.565	60.83	-152.333	258.977	0.558	0.543

Table 1: Mixed-Effects Linear Regression for F1-F2 Distance. Lower, upper HPD: lower and upper bounds of the 95% Highest Posterior Density intervals for the coefficients; p (MCMC) denotes the corresponding Markov chain Monte Carlo p-value; p (t) denotes the p-value based on the t-distribution. The coefficient estimates are in Hz.

3.2 Inter- and Intra-speaker Variation for F1-F2 Distance

Inter-speaker variation was also examined for conversational topic. Figure 3 shows F1-F2 distance for male speakers by conversational topic. In each sub-graph, the x-axis moves from the more formal topics, career and health, to less formal topics, music and TV. If speakers were styleshifting using /aɪ/, it is predicted that they will use less dialectal AAE features such as monophthongal /aɪ/ for more formal topics like career and health than for less formal topics. In this case, the lines smoothing over the speakers' tokens of /aɪ/ would have a negative slope, as F1-F2 distance would be smaller when more monophthongization was occurring.

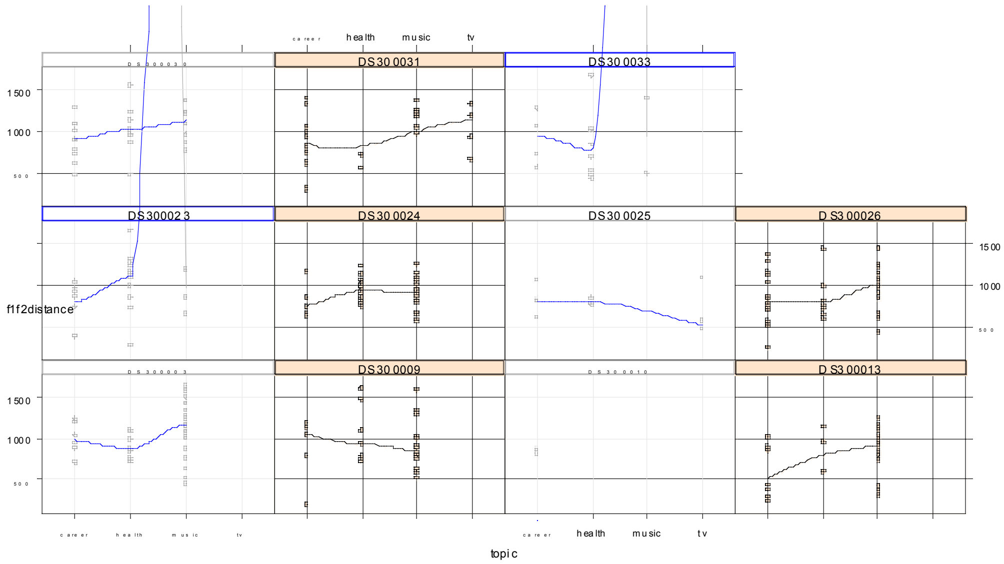

Figure 3: Individual speaker plots for male speakers showing F1-F2 distance as a function of conversational topic.

The sub-plots for individual male speakers reveal considerable variation across speakers in relation to conversational topic. While speakers DS30009 and DS300025 do show smaller F1-F2 distance (suggesting more monophthongization) for music and TV than for career and health, this pattern is by no means prevalent nor is it consistent across speakers. Speakers DS300013 and DS300026, for instance, show the opposite trend with increased F1-F2 distances for music and TV. Finally, other speakers such as DS300023 show sporadic F1-F2 distances across topics within which it is difficult to identify any trend. Examining the role of topic in intra-speaker variation, can enrich our understanding of the patterns that emerge in the mixed-effects model at the population level.

The figure below compares the F1-F2 distances for each female speaker by topic:

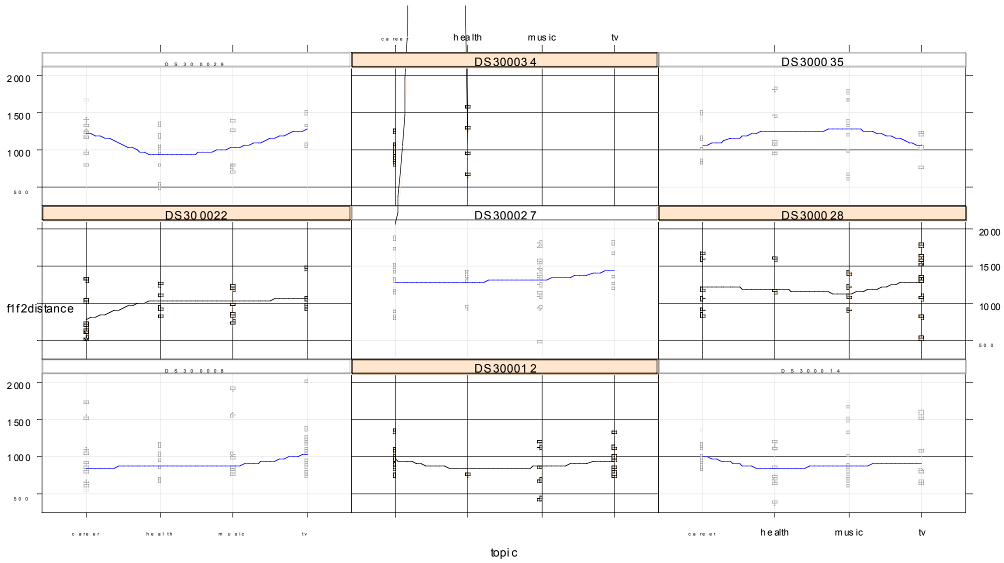

Figure 4: Individual speaker plots for female speakers showing F1-F2 distance as a function of conversational topic.

There is more consistency across female speakers in terms of their F1-F2 distances by topic than for males. This consistent trend, however, is contrary to the prediction that F1-F2 distances should decrease for less formal topics. In comparing the sub-graphs, most of the lines show a similar trajectory from the more formal to less formal topics: a small increase in F1-F2 distances suggestive of less monophthongization. Several subjects (DS300014, DS300028, and DS300029) do seem to show a dip for health or music, follow by a relative rise for their tokens in the TV discussion. Subjects DS300029 and DS300014, in particular, show a noticeable drop in F1-F2 distances between career and health, but the tendency to remain level or rise moving from health to music. This finding is unanticipated, and again, may contribute to a smaller effect of topic in the predictive model. In comparison with men, females show greater consistency within each individual as evidenced by flatter lines in each of the sub-graphs, and they also show greater consistency across individuals as evidenced by similar looking lines for all speakers.

4 Discussion

4.1 Reinforced Importance of Phonetic Environment

The role of phonetic environment is the most critical factor in predicting monophthongization. The pre-voiceless phonetic environment shows less monophthongization than other phonetic contexts as evidenced by greater F1-F2 distances, positive slopes for F2, and negative slopes for F1. The effect of phonetic environment is not only significant; it is also large. Phonetic environment and gender predict the largest changes in the 3 metrics. For instance, the pre-voiceless environment has the effect of increasing the F1-F2 distance by 275.36 Hz above the baseline distance, while the significant effect of a music-related topic only causes a decrease of 100.01 Hz. We can conclude that some degree of monophthongization is the norm in voiced as well as word-final phonetic environments, and that resistance to monophthongization and more limited glide weakening occurs in the pre-voiceless context. These findings are supported by prior accounts of monophthongization in AAE and in other Southern dialects (Oxley 2009, Bailey and Thomas 1998), and they are also compatible with the Pre-voiceless Hyperarticulation Hypothesis presented in Moreton (2004).

The findings here do not support the hypothesis that monophthongization is being extended to pre-voiceless contexts as Anderson (1999) suggested might be the case for Chicago speakers based on her observation of Detroit speakers. Likewise, the current analysis does not confirm Edwards' (1997) finding that there is no significant difference in monophthongization between pre-voiceless and pre-voiced contexts for Detroit speakers. Neither do the findings parallel Fridland (2003)'s findings for Memphis speakers which also observed substantial glide-weakening in the pre-voiceless environment. Fridland emphasizes the importance of a gradient evaluation, acknowledging weakening of diphthongs and not only full monophthongization. She claims that Memphis speakers do have weakened diphthongs before voiceless consonants. The present analysis does not exclude the possibility that a Chicago AAE speaker has a weaker diphthong in the pre-voiceless environments than a SAE might have in this same environment; it merely concludes that there is a highly significant and substantial difference in the degree of monophthongization AAE speakers show before voiceless environments and the degree of monophthongization in pre-voiced and word-final environments. All in all, the present analysis suggests that phonetic environment remains a crucial factor in the way /aɪ/ will be realized. The maintenance of diphthongized /aɪ/ in the pre-voiceless environment may be directly related to the Pre-voiceless Hyperarticulation Hypothesis, as Moreton calls it, which argues that F1 and F2 of a diphthong become more peripheralized to signal a following voiceless segment.

4.2 Key Role of Gender

Males and females in this study were found to use monophthongal /aɪ/ differently with females more likely to produce a variant which approximates the /aɪ/ diphthong found in SAE. They were also found to exhibit greater variation and dynamicity across phonetic environments and conversational contexts than exists for male speakers. Before delving into possible accounts for gender differences in this study, it should be mentioned that the gender factor invoked here is admittedly simplistic. As the study did not begin as a deliberate attempt to assess gender differences with respect to styleshifting, the predictor labeled "gender" here is a binary metric based on biological sex. This is precisely the type of metric Eckert cautions against. In her view, an analysis of gender should involve multiple metrics some of which may be continuous and only one of which should be biological sex. With the caveat that gender is more complex than allowed for in this study, some preliminary observations about differences in /aɪ/ realization between men and women can be made.

The discovery that women's usage tends to fall closer to the standard than men's is by no means new. A considerable amount of literature has observed that women tend to use standard forms more often than men and to accommodate more readily in conversational exchanges than men. Labov (1990) and Mansfield and Trudgill (1994), among others, have both proposed accounts for why this is so. Generalizations have stated that middle-class women are more likely to be conservative in their usage of stable non-standard forms than men or lower-class women, due to a desire for social mobility and an attention to "proper speech" for the purposes of child rearing. These accounts emphasize that women's linguistic behavior is motivated by a greater attention to community norms of prestige and to greater politeness, which leads them to use more conservative forms than men. These accounts seem somewhat arbitrary and even outdated in their description of gender roles. Again, Eckert and McConnell-Ginet caution against generalizations that make polarized claims about whose speech is more standard, men's or women's (Eckert and McConnell-Ginet 2003). They argue that the local history and conditions are most important in understanding how gender groups pattern differently in terms of the identities they construct with respect to their communities of practice. The differences between men and women in the current study may reveal greater social mobility for females and greater in-group pressure for males. Recall that female speakers had the greatest diphthongization for the conversational topic "career" while the same category showed the least diphthongization for male speakers. Due to employment or education, females may come in contact with speakers of White English to a greater extent than males, but because information about the local histories of speakers is not available, it would be hasty to draw too many conclusions.

Motivating women's tendency to maintain the diphthong /aɪ/ to a greater extent than men remains a challenge in this study. There are no significant differences between the groups with respect to education. One finding in particular remains to be explained: for women, the decline in diphthongization from the first formal topic discussed (career) to the second formal topic discussed (health) is not easily explained as both were intended to elicit formal speech. To add complexity, male speakers showed an increase in monophthongization for this same conversational topic. One plausible cause for this significant decline in diphthongization has to do with the speaker's integration and participation in the interview. Since career was the first topic discussed, speakers may have been speaking with more emphasis, speaking more slowly or with more attention than they were the second conversational topic addressed. Despite this methodological fact, however, it is evident that male and female speakers are using /aɪ/ differently within each conversational context. As aforementioned, higher levels of diphthongization for females discussing career may be reflective of the job prestige sought or earned by the women in this study. If these women aspire to careers that involve working with an ethnically-diverse public (as is their community), and the men aspire to positions that are predominantly occupied by members of their own ethnicity, it can be expected that women are more apt to use the standard variant in their discussions about career, while men continue to use the AAE dialectal variant. In this sense, men and women's differential usage of monophthongal /aɪ/ stems from their distinct social identities within the local community.

References

Anderson, Bridget L. (2002) Dialect leveling and /ai/ monophthongization among African American Detroiters. *Journal of Sociolinguistics* , 6: 86-98.

Bailey, Guy and Erik Thomas. (1998). In Salikoko S. Mufwene, John R. Rickford, Guy Bailey and John Baugh (eds.), *African-American English*: *structure, history, and use*. Routledge.

Campbell-Kibler, Kathryn. (2007). Accent, (ING) and the social logic of listener perceptions. American speech, 82.32-64.

Craig, Holly K., & Jeffery T. Grogger (forthcoming, p.c.) Social and Style Constraints on Adult Usage of African American English Variants.

Craig, Holly K., & Washington, J. A. (2006). *Malik goes to school: Examining the language skills of African American students from preschool-5th grade*. Mahwah, NJ: Erlbaum.

Dorrill, George T. (1986). A comparison of Black and White speakers in the South. In Michael B. Montgromery and Guy Bailey (eds.) (1986) *Language Variety in the South: Perspectives in Black and White*. Tuscaloosa: University of Alabama Press.

Eckert, Penelope. (1989). Jocks and Burnouts: Social categories and identity in the high school. New York: Teachers College Press.

Eckert, Penelope and Sally McConnell-Ginet. (1992). Think Practically and Look Locally: Language and Gender as Community-Based Practice. Annual Review of Anthropology. 21, 461-90.

Eckert, Penelope. (2000). Linguistic variation as social practice. Oxford: Blackwell.

Eckert, Penolope and John Rickford. (2001) *Style and Sociolinguistic Variation*. Cambridge University Press.

Eckert, Penelope and Sally McConnell-Ginet. (2003). *Language and Gender*. Cambridge University Press.

Edwards, Walter. (1992) Sociolinguistic behavior in a Detroit inner-city Black neighborhood. *Language in Society* 21: 93-115.

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: 279-298.

Hay, Jennifer, Stefanie Jannedy, & Norma Mendoza-Denton (1999). Oprah and /aj/: lexical frequency, referee design, and style. In proceedings of the 14th International Congress of Phonetic Sciences, San Francisco, August 1999.

Labov, William. *The Social Stratification of English in New York City*. Washington, DC:
Center for Applied Linguistics. 1966

Labov, William. (1972).*Sociolinguistic patterns.* Philadelphia, PA: University of Pennsylvania Press.

Labov, William. (1990). The intersection of sex and social class in the course of linguistic change. Language Variation and Change, 2, 205-254.

Labov, William (2001). The anatomy of style-shifting. In Penelope Eckert and John R. Rickford (eds.), *Style and Sociolinguistic Variation*. Cambridge University Press.

Mansfield, Peter and Peter Trudgill (1994). A sex specific linguistic feature in a European dialect. *Multilingua*, 13, 381-386.

Moreton, Elliott. (2004). The Realization of the English postvocal [voice] contrast in F1 and F2. The Journal of Phonetics, 34, 1-22.

Morrison, Geoffry Stewart. (2007) Theories of vowel inherent spectral change: a review. Unpublished manuscript available online.

Mufwene, Salikoko and John R. Rickford. (1998) African-American English: Stucture, history and use. London, New York: Routledge Publishing Company.

Oxley (2009). (ay) Monophthongization in Deer Park, Texas. M.A. thesis, University of Washington.

Podesva, Robert. (2007) Phonation type as a stylistic variable: the use of falsetto in constructing a persona. *Journal of Sociolinguistics*, 11(4): 478-504.

Rahman, Jacqueline. (2007). "An AY for an AH: Language of survival in African American narrative comedy," *American Speech* 82(1):65-96, Spring 2007.

Rickford, John R. (1999). African American vernacular English : features, evolution, educational implications. Malden, Mass. : Blackwell Publishers.

Rickford, John R. and Faye McNair-Knox (1994). Addressee- and Topic-influenced style shift: A quantitative sociolinguistic study. In Douglas Biber and Edward Finegan (eds.), *Sociolinguistic Perspectives on Register*. New York/Oxford: Oxford University Press. 235-76

Rogers, Henry. (2000). *The Sounds of Language: an introduction to phonetics*. Pearson Education.

Schilling-Estes, Natalie (2002). Investigation Stylistic Variation. In J.K. Chamber, Peter Trudgill, and Natalie Schilling-Estes (eds.) *The Handbook of Language Variation and Change*. Malden, Mass.: Blackwell Publishers.

Trudgill, Peter (2000) *Sociolinguistics: An introduction to Language and Society*, 4th edn. London/New York: Penguin.

Julia Thomas
University of Chicago Classics Building
1120 E. 59th St
Chicago, IL 60637

jmthomas@uchicago.edu