THE VOCALIZATION OF /L/ IN URBAN BLUE COLLAR COLUMBUS, OH AFRICAN AMERICAN VERNACULAR ENGLISH: A QUANTITATIVE SOCIOPHONETIC ANALYSIS[1]

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1. Introduction

The types and extent of regional phonetic and phonological variation in African American Vernacular English (AAVE), have, until quite recently, remained largely unknown and understudied, despite sociolinguists' detailed knowledge of AAVE morphosyntax (Bailey & Thomas 1998). However, with the publication of the papers collected in Thomas & Yeager-Dror (in press), and a series of other recent publications (e.g., Bailey & Thomas, 1998; Thomas, 2001; Wolfram & Thomas, 2002; Fridland & Bartlett, 2006; Labov, et al., 2006), the field has now been given access to a fairly detailed and thorough systematic account of regional variation in the vowel systems of African American (AA) speakers in a variety of locales in the United States. In addition, a good deal of the papers presented in Thomas & Yeager-Dror (to appear) also present much needed research on similarities and differences found between local and regional AAVE varieties and their corresponding European American English (EAE) counterparts.

Although these publications have provided us with a deeper understanding of vocalic variation in regional and local varieties of AAVE, several questions remain open

[1] I wish to thank Donald Winford for providing me with access to the AA data. I also wish to thank Stacey Bailey and Grant McGuire for serving as phonetic judges, as well as Robin Dodsworth for her advice concerning /l/.

for further exploration: 1) beyond vowel system similarities and differences, what are the phonetic similarities and differences among regional AAVE varieties for consonantal variables, such as the vocalization of /l/ and the palatalization of /s/ in consonant clusters such as /_tr/, /_t/, /_p/, and /_k/? 2) In what ways do regional AAVE varieties compare and contrast phonetically with corresponding local and regional varieties of EAE in terms of variation involving consonantal variables? At the time of publication of this paper, systematic explorations of variation involving consonantal variables such as these in AAVE have been rare in the literature, with the notable exception being Labov, et al.'s (1968) study of New York City AAVE, which investigated the vocalization of /l/. Even rarer are systematic comparisons between local EAE and AAVE varieties, with the notable exception being Fix's (2004) unpublished study of /l/ vocalization in a mixed race social network consisting of 6 AA and EA friends living in Columbus, OH.

Given the lack of previous studies, the present study attempts to begin the further discussion of the impact of race on consonantal variation via the impressionistic analysis of the vocalization of /l/ using data obtained from speakers living in Columbus, OH, a metropolis located in the heart of the North American Midland, as it is has been defined on the basis of both lexical and phonological features by Carver (1987) and Labov, et al. (2006). Columbus provides an informative context for exploring contrasts and similarities between AA and European American (EA) vocalized /l/ realization for several reasons. First, as of the 2000 census, Columbus has a population of 1.6 million residents in the Columbus Consolidated Metropolitan Statistical Area. Among the population, roughly 25% are AA and roughly 68% are EA (U.S. Census Bureau, 2000). Second, /l/ vocalization provides a salient variable for exploring comparative patterns of consonantal variation by race because previous studies of Columbus speech have found vocalization to be pervasive in the speech of both blue collar AA (Fix, 2004) and white collar EA (Dodsworth, 2005; Dodsworth, et al., 2006) community members.

However, although Fix's (2004) social network study investigated /l/-vocalization among AA Columbusites and attempted to compare the patterns with EA Columbusites, the study was limited to only 6 blue collar speakers (2 AAs and 4 EAs) living on Columbus's south side, allowing only tentative conclusions to be drawn about the patterns observed. Dodsworth (2005) and Dodsworth, et al. (2006) draw on larger speaker populations and higher token counts, but the foci of their studies was concentrated on either white collar EAs living in suburban and urban areas within the greater Columbus metropolitan area, or white collar EAs living in the Columbus suburb of Worthington, OH. Thus, a detailed comparison of EA and AA patterns of /l/ vocalization in Columbus has yet to be completed.

The following discussion attempts to address this issue by presenting the results of a pilot study investigating the vocalization of /l/ as it occurs in coda, syllabic, word final, and syllable final environments in the speech of urban blue collar AAs, and then comparing these patterns with those found previously among white collar EAs in previous studies. Specifically, the patterns are compared directly with those found among the white collar EAs included in the Dodsworth (2005) study of Worthington, OH, and secondarily with the white collar EAs analyzed in the Dodsworth, et al.(2006) study of urban and suburban Columbus, via the use of a sample population of white collar EAs sharing essentially the same background characteristics. The results of both of these studies are used because they provide detailed enough information on the distribution of vocalized /l/ variants among speakers to allow a comparative statistical analysis of the results to be conducted. In addition, the results are considered qualitatively within the context of Fix's (2004) social network analysis of blue collar Columbus AAs and EAs.

2. Previous studies of /l/ vocalization in North American AAVE and EAE

As studied here, the process of /l/-vocalization is operationally defined as the variable production of "dark" (palatalized) /l/ in syllable or word final contexts. In such instances of "final /l/", the more standard production for this variable, which I call "more articulated" or "nonvocalized" /l/—produced as [ɫ]—involves the tongue-tip making contact against the alveolar ridge, along with the tongue body being raised. The more non-standard form—"vocalized" /l/—involves realizations in which the tongue tip is not touching the roof of the mouth, so that the productions more closely resemble [w] or [ɤ] (Sproat & Fujmura, 1993). In most dialects of English that have been studied, which include Australian English (Horvath & Horvath, 2002), European American varieties of American English spoken in Philadelphia (Ash, 1982), Columbus (Dodsworth, 2005; Dodsworth, et al., 2006), Wisconsin (Carver, 1993), and the Appalachia region (Wolfram & Christian, 1976); and British English (Hardcastle & Berry, 1985; Wells, 1982), this type of vocalized /l/ functions as a back vowel or semi-vowel which may be rounded and/or labialized (Wells, 1982), and may result in a voiced glide (Ash, 1982). Early studies of, and commentaries on, AAVE (*e.g.,* Labov, et al.1968; Labov, 1970, 1972; Fasold & Wolfram, 1970; Wolfram & Fasold, 1974) indicate that /l/-vocalization is also a salient feature of North American AAVE, particularly for Northern speakers of AAVE, closely resembling EAE usage and realization patterns.

However, although it has been widely discussed in the literature as being an AAVE feature, it should be noted that only one extensive phonological study (Labov, et al., 1968) has actually been completed thus far. In this study, Labov, et al. investigated /l/-vocalization among adolescent and preadolescent members of Black and Puerto-Rican peer groups in New York City, with the occurrence of /l/-vocalization described as undergoing similar phonetic conditioning to the occurrence of /r/-vocalization in the speech of these informants. In terms of their description of the distribution of realizations of vocalized /l/ variants, the study was limited to the impressionistic phonetic analysis of vocalization occurring in word-final position, with five variants investigated (clear "l"; dark "l"; unrounded "l"; centralized "l"; and deleted "l").

Among the principal findings of this study were the following:

a) /l/ vocalization is parallel to the vocalization and centralization of /r/ in many ways, but it is less systematic (Labov, et al, 1968:114).
b) vocalization is categorical before liquids and glides (114).
c) the height of the preceding vowel is not a major constraint on the rule (116).
d) the strongest effect is inhibition of vocalization by a following vowel (116).
e) before a following consonant, rounding of the preceding vowel favors deletion; before a following vowel, vocalization is inhibited by rounding of the preceding vowel (116).

f) style has no significant effect on vocalization, but the deletion rule is favored more strongly in group style than single style (119).

Although it has been nearly 40 years since Labov, et al. conducted this study, it remains the most extensive and influential study of /l/-vocalization that has been completed in an AAVE speech community, and it is interestingly that, in the intervening years, most further reports (such as the ones cited above) of /l/-vocalization trends in AAVE speech are actually summaries of the results found in this study.

In regard to the studies of EA patterns of /l/ vocalization in North American referenced above, the most extensive to date from a sociolinguistic vantage point is Ash's (1982) study of Philadelphia. In the study, Ash investigated the occurrence of intervocalic and word-final /l/-vocalization in the speech of 49 speakers in the South Kensington neighborhood of Philadelphia. Among the principal findings of her study were that complex interactions between consonants and pauses occurring as the segment following an underlying /l/ and the frontness/height of vowels occurring as the preceding segment to /l/ are ultimately at the heart of the /l/-vocalization process. Specifically, she found following consonants to have the strongest influence on favoring vocalized variants of /l/ in her data, particularly when the /l/ is also preceded by a low or mid back vowel. When the underlying /l/ is preceded by a high or mid front vowel, then non-vocalization of /l/ appears to be favored.

In addition, Ash also briefly investigated the occurrence of /l/-vocalization in other Midland cities, including Columbus, Pittsburgh, and other smaller cities located throughout Pennsylvania, and compares these results with her Philadelphia findings. The data for this comparison were drawn from an early regional survey conducted by Labov and his associates in 1963-1973 (Labov & Wald, 1969). In general, she found that similar trends typify /l/-vocalization in the White speakers investigated in Columbus and the other Midland area cities, although it should be noted that these findings are based on tokens extracted from the speech of only 16 informants (of which 2 lived in Columbus).

Dodsworth's (2005) study of white collar EA speakers living in the Columbus suburb of Worthington provides more detailed conclusions concerning the phonological and social factors affecting its realization that flesh out the findings of Ash's (1982) within region comparison specifically for Columbus. In her study, Dodsworth conducted a VARBRUL analysis of 724 tokens obtained from 19 speakers, and found preceding and following segment to be significant linguistic factors conditioning the vocalization of /l/ among Worthingtonites. The results of her analysis are contained in table 1.

Specifically, she found that for preceding segments, back and central vowels, as well as labial consonants, most strongly favored vocalization, while front vowels and dorsal consonants most strongly disfavored vocalization. In regard to following segments, she found that dorsal and labial consonants, as well as pause, most strongly favored vocalization, while central vowels most strongly disfavored vocalization. The results generally resonate with those found by Ash (1982) for EAs living in Philadelphia.

Beyond this, Dodsworth (2005) also found that /l/-vocalization may in fact be intertwined with complex social and stylistic factors that ultimately determine how /l/ is realized, either consciously or unconsciously, by EA speakers in the greater Columbus area. Although she found that age and sex were not significant factors impacting /l/-vocalization in Worthington, a factor she did find that was significant was informants' orientation to Worthington. Speakers more strongly oriented to local Worthington identity vocalized /l/ less often than speakers who were less strongly oriented towards Worthington. Dodsworth argues based on these results that lack of vocalized /l/ use is a marker of community identity in Worthington, with the speaker's identity as a Worthington-oriented individual marked specifically by their decreased use of /l/ vocalization.

(total speakers= 21; total tokens=724, input=0.120, p <.005)

Factor (N)	Factor Weight	% Vocalization
Preceding Segment		
Central Vowel (14)***	*0.741*	*28*
Back Vowel (219)	*0.696*	*25*
Labial Consonant (114)	*0.650*	*21*
Coronal Consonant (152)	0.376	9
Dorsal Consonant (26)	0.339	7
Front Vowel (199)	0.296	6
Following Segment		
Dorsal Consonant (35)	*0.781*	*31*
Labial Consonant (187)	*0.657*	*24*
Front Vowels (28)	*0.583*	*17*
Pause (45)	*0.525*	*16*
Coronal Consonants (99)	0.446	12
Back Vowels (72)	0.396	10
Central Vowels (28)	0.162	3
Location of Residence		
"Columbus Outskirts" (185)	*0.615*	*21*
"Worthington Proper" (429)	*0.506*	*15*
Old Worthington (110)	0.293	7
Sex (Not Significant)		
Female (463)		17
Male (260)		12
Age (Not Significant)		
born c. 1990 (33)		18
born c.1975-1985 (182)		15
born c.1965-1975 (182)		15
born c. 1955-1960 (181)		16
born c. 1935-1945 (75)		14
born c. 1920-1925 (70)		12

*(Key: *=() total number of tokens of this category contained in the data set. The % number in the final column represents the % of tokens out of the () total that were vocalized. ** = Factors significantly favoring vocalization appear in italics, as indicated by any weight greater than .500.)*

Table 1: Factors conditioning /l/ vocalization in Worthington, OH (Adapted from Dodsworth, 2005:241)

At the time of the (2005) study, Dodsworth drew heavily on speakers living in either in the core area of Worthington, or speakers who lived relatively close by to this core area, given that the focus of her study was specifically on Worthington speech rather than more generally on Columbus speech. As a result, less comparative data were available from Columbusites living across the community to more robustly test her hypothesis concerning non-use of vocalized variants as a marker of Worthington identity. However, a later study, Dodsworth, et al. (2006) followed up on the findings of Dodsworth (2005) and explored amore general comparison between the vocalization patterns of both suburban and urban Columbusites. As in the Worthington study, age and sex were found to be non-significant factors, while orientation to suburban or urban identity *was* significant. Speakers who were born and raised in urban Columbus showed a significant lead over suburban born and raised speakers, with the results significant at $p<.01$.

Generally speaking, Dodsworth, et al. (2006) confirms the earlier results of Dodsworth (2005) concerning the importance of urban and non-urban affiliation on impacting the amount of vocalization shown by speakers in Columbus. However, a key element for the present study that is missing from Dodsworth, et al. (2006) is an analysis of the impact of linguistic factors such as preceding and following segment, as well as the word environment in which a vocalized token occurs. This was not completed at the time, as the study was designed to focus only on the social factors of urban affiliation, sex, and age. Given that an analysis which takes these factors into consideration among white collar EA speakers is necessary to the present study, a VARBUL analysis of baseline data drawn from a similar population of white collar Columbus EA speakers is undertaken here, in section 4.1, in order to account for these details and better facilitate a detailed comparison of /l/ vocalization trends among blue collar AAs and white collar EAs.

3. Study population and methodology

Data for African American speakers are drawn from the Sample of African-American Vernacular English in Columbus (SAAVEC), a corpus of nearly 12 hours of tape-recorded conversations among 54 working class African American speakers elicited by field worker Tamara Snow in the summer of 1992 during her study of the social networks of African Americans in Southeastern Columbus. The current study focuses on a subset of 15 of the speakers, as they contributed enough tape-recorded speech to ensure that an adequate number of /l/ tokens could be extracted for analysis. Samples consisted of conversational speech and all fieldworkers and participants were African-American and within-group members of a family and their closest neighbors (see Weldon 1994 and McGuire 2002 for more details on this study). All AA speakers were born between 1942 and 1978. The sample characteristics of the AA speakers are presented in table 2.

Data for the comparative analysis of baseline white collar EA speech data were obtained from 24 speakers, all of whom were born between 1935 and 1982. The data were drawn from speakers recorded for the Buckeye Corpus (Pitt, et al., 2007), a collection of 40 one-on-one sociolinguistic interviews conducted by EA researchers at the Ohio State University in 2000-2001 with long-time Columbus residents. The sample characteristics of the EA speakers are also provided in table 2. The EA speakers were chosen based on the following criteria:

a) Extensive background information on the speaker could be acquired from the Buckeye tape recordings themselves.[2]
b) Speakers have lived in greater Columbus community either their entire lives, or for more than 10 years.
c) Speakers who have not lived their entire lives in Columbus were born and raised somewhere in the greater Central Ohio area before moving to Columbus.
d) Speakers are from parts of Central Ohio located within, Midlands dialect region (as defined on phonological grounds per Labov, et al., 2006).

AA Speaker Data Set			
Birthdate	**Number of Speakers**	**Number of Speakers by Sex**	
		Male	**Female**
Born c. 1969-1978	7	5	2
Born c. 1942-1960	8	2	6
Total Number of Speakers	15	7	8
EA Speaker Data Set			
Birthdate	**Number of Speakers**	**Number of Speakers by Sex**	
		Male	**Female**
Born c. 1965-1978	12	6	6
Born c. 1935-1960	12	6	6
Total Number of Speakers	24	12	12

Table 2: Sample characteristics for the AA and EA speaker sample populations

For all 39 AA and EA speakers analyzed in the present study (15 AAs and 24 EAs), the occupation level of adult informants was also used to ensure talkers were representative of either blue collar AA or white collar EA speech. Information on the sex, birthdate, race, locale in which speakers were raised (if known),[3] and occupation of all 39 speakers was also obtained.

For the study of the 15 AA speakers' patterns of vocalization, 350 tokens from nearly 6 hours of recorded and transcribed audio were extracted and then phonetically analyzed impressionistically by the author and two additional judges. The analysts were: a) either trained in phonetic analysis or had sufficient familiarity with the corpus data to make accurate judgments; b) native speakers of English; and c) currently enrolled as graduate students at the Ohio State University in Columbus, OH.[4] Impressionistic analysis was used because attempts to distinguish light /l/ from fully-realized dark /l/ spectrographically using instrumental analysis in previous studies (e.g., Lehiste, 1964;

[2] At the time of writing, extensive background information for the Buckeye Corpus informants obtained via a survey administered at the time of recording has "gone missing" for the project's archives. Thus, I choose the 24 speakers from those for whom I could obtain all necessary information as a result of listening to their recorded conversations.

[3] With regard to speakers for whom we were unable to sufficiently determine this information, the location in which the informant currently lives is listed instead. These speakers include several from the SAAVEC corpus.

[4] Grant McGuire, Stacey Bailey, and David Durian. All three were non-/l/-vocalizers at the time of the analysis.

Ash, 1982) has proven unsuccesful. For the study of the 24 EA speakers' vocalization patterns, 720 tokens were extracted from nearly 24 hours of recorded and transcribed audio, and then analyzed impressionistically by the author, using the same protocols as with the AA data.[5]

As has been noted previously in the literature (e.g., Labov, et al, 1968; Ash, 1982; Dodsworth, 2005), /l/-vocalization is best analyzed as a gradient process, ranging from the presence of "non-vocalized /l/" to "fully vocalized /l/". Therefore, the three phonetic judges again rated data on a 3-point scale, in an attempt to determine whether the underlying /l/ occurring in the word type tokens analyzed was realized as either being either "/l/-ful" (possessing a clearly articulated /l/ variant), a more fully vocalized variant, or "/l/-less" (possessing little or no perceivable articulation of /l/). Represented numerically, the evaluatory ranking scale used for coding the data was operationalized as follows: 0 = speaker realized a clearly non-vocalized /l/; 1 = speaker realized an "intermediate" or "some" /l/ (their realization was more vocalized than not); and 2 = speaker realized a clearly vocalized /l/.

For the phonetic judgment task, each judge was first trained using a series of prototypes of vocalized and unvocalized /l/ variants in order to establish a sense of the acoustic range of variants they would hear. The listeners then independently heard every token two to three times each and judged whether each one sounded closer to [ɫ] or closer to another unspecified sound (i.e., unvocalized /l/). Once these independent analyses were completed, the judges' scores were tallied using Microsoft Excel. The ultimate assignment of a variant "ranking" was determined by considering the three judges' rankings of a realization, so that the most accurate determination of the realization could be made: in the case of agreement among all three judges, the assignment made by the judges was utilized without issue; in the case of agreement among only two out of three of the judges, the ranking on which the two judges agreed was used; in the case of variant judgments among all three judges, the average of the three rankings was instead utilized. In this way, a "majority opinion" among judges for each token was obtained, which helped to neutralize possible perception errors as well as the influence of any single judge in making the final determination for a given realization.

For the baseline comparative data drawn from 720 tokens spoken by the middle class EA Columbusites, the same judgment and preparation routine was used to impressionistically rate /l/ tokens. However, for this portion of the data set, I was unable to rely on additional phonetic judges to rate the tokens due to time limit restrictions over which the course of which this portion of the study could be conducted; therefore, the results for European Americans presented in section 4 represent my sole judgments. Because this is the case, it is very likely that somewhat different results might have been reported below had I been able to compare my results with those of additional raters. As well, it is quite possible that my perceptual boundaries for determining what sounds like a vocalized or nonvocalized variant of /l/ might be quite different from another persons,

[5] The tally sheets containing the impressionistic judgments of vocalization for the /l/ tokens investigated in this study are not included here to conserve space, but they can be made available to interested parties upon request.

and so additional rater judgments would help counter any bias introduced in the judgments reported due to this type of "single analyst error."

To locate /l/ tokens within the data set, TEXTANT,[6] a frequency-based collocation text analysis program developed by Don Hardy of the University of Nevada, Reno Department of English (Hardy, 2005), was used, so that all tokens within the orthographic transcripts could be located quickly and effectively. In addition, the use of this text-analysis tool provided an efficient way of generating the token type frequency analysis tables used throughout the individual feature analysis portions of this paper. During the token location and extraction process, tokens were selected systematically to minimize lexical effects, following the recommendations of Dodsworth (2005) and Ash (1982). For each speaker, attempts were made to extract 30 tokens per speaker from roughly 30 minutes of recorded conversation per speaker, so that comparable numbers of token per speaker could be located. However, in several cases, speakers did not contribute enough speech in any given conversation to ensure that 30 tokens could be collected. Thus, a variable range of 20 to 30 tokens per speaker was ultimately set to reflect this fact.

The first token of every word type located in the conversation segment containing a suitable /l/ token was extracted, except in a few cases where the sound quality of the tape was poor. In these cases, the next token of that type was extracted. In all cases, the utterance within which the word containing the /l/ token occurred was also extracted so that its occurrence within the utterance could be more accurately observed, and in the case of word-final and syllabic /l/ tokens, the phonetic segment of the following word could be obtained. Generally, only one token of any type was extracted for a single speaker, except in several cases were two tokens of a single word type were extracted so that each speaker contributed 30 tokens to the data set within the allotted 30 minute time period. Following extraction and judgment tasks, the linguistic data were also coded for place of articulation for consonantal segments, as well as height (low/mid/high) and frontness (front/back) for vocalic segments, with the coding applied to both the segment immediately preceding and immediately following /l/ for all tokens analyzed.

4. Data analysis

In the following section, the interaction of /l/-vocalization realization and the individual social factors of sex, age, and race of the informant, as well as the impact of the phonological environment in the conditioning of its realization, is discussed. The linguistic factors used to gauge the impact of phonological environment are preceding segment (the segment occur immediately before /l/), following segment (the segment occurring immediately after /l/), and word environment. Four possible /l/-vocalization word environments are represented: word-final (as in *bell* or *call*), syllable-final (as in *almost* or *also*), as the first segment in a coda consonant cluster (as in *cold* or *silk*), and in instances of syllabic /l/ (as in *little* or *couple*).

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[6] A general-use version, on which my customized version is based, is available at http://textant.engl.unr.edu/.

For the analysis, the multivariate statistical program VARBRUL was used, so that comparisons between the results presented here and Dodsworth's (2005) study of Worthington could be most easily facilitated. In sum, three independent VARBRUL analyses are presented. The first analysis (section 4.1) is of the 720 tokens drawn from the white collar EA speakers. The second (section 4.2) is of the 350 tokens drawn from the blue collar AA speakers. The third (included in section 5) is of the entire 1070 token corpus drawn from both the AA and EA speaker populations. In total, 15 AA and 24 EA speakers' use of vocalized and non-vocalized /l/ variants are investigated, with the number of tokens investigated for each speaker ranging between 20 and 30 word token types.

In each analysis, the "vocalized /l/" category is used as the application value. As VARBRUL permits only binomial (two-category) rather than trinomial (three-category) distinctions among linguistic variants to be analyzed, tokens coded as "intermediate" and "vocalized" by the phonetic judges were cluster grouped as one category, while "non-vocalized" tokens served as the second category. This grouping choice was made because the results of a cross-tabulation analysis of differences found among AA and EA speakers based on the three-way category split, contained in table 3, reveal that the strongest difference between the groups is to be found not in their use of the fully vocalized variant, but instead, is found in their use of the intermediate variant. For the vocalized variant, speakers differed by only 1% by race, while they differed by 10% in their use of the intermediate variant (with AAs showing more robust use).

Pearson $x^2 = 1.709^{e1}$, df=2, p <.000

Type of Variant	**Race of Informant**		**Total (1070*)**
	AA (350**)	EA (720)	
Non-vocalized /l/	49%*** (170****)	60% (430)	56% (600)
Intermediate /l/	32% (116)	22% (157)	25.5% (273)
Vocalized /l/	19% (64)	18% (133)	18.5% (197)

(Key: *=total number of tokens from both data sets combined; **=total number of tokens within each data set; ***= % realization across all tokens within each data set; ****= number of tokens realized within each data set)

Table 3: Comparison of non-vocalized, intermediate, and vocalized /l/ realizations among the EA and AA speakers

This difference is significant at the p<.000 level, with a x^2 of 1.709^{e1} (and d.f.=2). Given the significance of this difference, the most sensible grouping for a binomial analysis of variance in the use of vocalized and non-vocalized /l/ variants which takes race into account is thus non-vocalized versus intermediate/vocalized rather than non-vocalized/intermediate versus vocalized.

As is discussed below, race is the only statistical significant social factor coded in the analysis conditioning vocalization. Although, as this analysis also reveals, additional data collection is needed before we can say definitively that the other social factors are indeed insignificant (as the analysis here suggests). As the analysis also reveals in regard to linguistic factors, preceding segments also play a strong role in conditioning /l/ vocalization across populations in Columbus generally, regardless of a given speaker's racial background.

4.1. The distribution of variant /l/ realizations in the EA data set

The first VARBRUL analysis conducted was of the baseline data set concerning patterns of vocalization among the 24 white collar EAs. For this analysis, 720 tokens were used. As the results in table 4 reveal (*p<.02*), sex and age are not significant factors conditioning variation in the EA data set, a finding that resonates with Dodsworth's (2005) Worthington study. As in Worthington, EA females in Columbus show a mild lead (5%) in the use of vocalized variants over men, while differences based on the age of the speaker are virtually non-existent.

Turning to the linguistic factors, we see that the only significant factor impacting variation is preceding segment. In an initial VARBRUL run, with preceding and following segments separated by vowel height (low/mid/high), vowel frontness (front/back), and place of articulation coded for consonants (coronal, dorsal, labial), no social or linguistic factors emerged as significant. However, when the vocalic segment groups were recoded into a simple front versus back contrast (and the height contrast.

(total speakers= 24, total tokens=720, input=0.398, p <.02)

Factor (N)	Factor Weight	% Vocalization
Preceding Segment		
Back Vowel (308) ***	*0.578*	*47*
Labial Consonant (47)	0.483	35
Front Vowel (283)	0.445	36
Coronal Consonant (47)	0.381	30
Dorsal Consonant (5)	0.231	20
Following Segment (Not Significant)		
Dorsal Consonant (12)	0.617	50
Labial Consonant (187)	0.578	46
Coronal Consonant (305)	0.502	40
Front Vowels (99)	0.480	40
Back Vowels (72)	0.427	35
Pause (45)	0.299	24
Word Environment (Not Significant)		
Word Final (414)	0.530	43
Syllabic (112)	0.487	33
Coda (112)	0.475	39
Syllable Final (82)	0.401	38
Sex (Not Significant)		
Female (360)	0.534	43
Male (360)	0.466	38
Age (Not Significant)		
Younger (born c. 1973-1985) (360)	0.510	41
Older (born c.1950-1965) (360)	0.490	39

*(Key: *=() total number of tokens of this category contained in the data set. The % number in the final column represents the % of tokens out of the () total that were vocalized. ** = Factors significantly favoring vocalization appear in italics, as indicated by any weight greater than .500.)*

Table 4: Factors conditioning /l/ vocalization in the EA data set

removed[7]), as in Dodsworth's (2005) Worthington study, preceding segment emerged as a significant factor.

As in the Worthington data, back vowels most strongly favor vocalization when they precede /l/. In contrast to Worthington, consonants, as well as front vowels, all have a strong impact on disfavoring vocalization, a pattern that concurs with Ash's (1982) study of King of Prussia. In particular, Ash found mid/high front vowels to have a strong impact on disfavoring vocalization. In terms of following environment, although non-significant, the trends shown by the influence of the segments on favoring or disfavoring vocalization do generally conform to those found by Dodsworth (2005) in the Worthingon data. However, the differences among segment types do not appear to be as robustly differentiated here, which appears to explain why following segment is not a significant factor impacting variation in the present study population.

4.2. The distribution of variant /l/ realizations in the AA data set

The second VARBRUL analysis, of the 350 AA tokens, is presented in table 5. The results are significant at *p<.008*. As these results reveal, as with EA speakers, sex and age are not significant factors conditioning variation in the AA data set. Differences based on the age of the speaker are again virtually non-existent, although among AA speakers, it is males rather than females who show a mild lead (5%) in use of vocalized variants, in contrast to the EA data set.

Turning to the linguistic factors, we see that, in marked contrast to the EA data, all three factors coded are significant: preceding segment, following segment, and word environment. Also in contrast to the EA data, preceding segment emerged as a significant factor with the data coded to account for both height *and* frontness of the vocalic segments, rather than simply vowel frontness (although the segments for following environment required the same regrouping). In regard to word environment, syllable final and coda /l/ show a sharp contrast in favoring vocalization when compared to word final and syllabic /l/, with the syllabic environment most strongly disfavoring vocalization. For preceding segment, back vowels, regardless of height, most strongly favor vocalization when they precede /l/, essentially the same trend as in the EA data (although note that in the AA data high front vowels specifically have the most robust impact). While in contrast to the EA data, only high and mid front vowels, as well as coronal consonants disfavor vocalization. For following segment, dorsal consonants, front vowels, and pause most strongly favor vocalization, also in contrast to the EA data, where we saw dorsal, labial, and coronal consonants functioning as the strongest favoring segment types. However, both groups show a similar trend for following back vowels strongly disfavoring vocalization.

[7] The central vowel /^/ is also clustered with the back vowels. For Columbus speakers, this is the most sensible choice, given that the nuclei of /aU/, /oU/, and /u/ are all undergoing fronting in AA and EA speech (see Thomas, [1989]/1993; Durian, et al., in press).

(total speakers= 15, total tokens=350, input=0.520, p <.008)		
Factor (N)	**Factor Weight**	**% Vocalization**
Preceding Segment		
High Back Vowel (20)***	*0.807*	*80*
Low Front Vowel (4)	*0.790*	*75*
Low Back Vowel (62)	*0.759*	*77*
Mid Back Vowel (66)	*0.663*	*70*
Labial Consonant (19)	*0.540*	*47*
Dorsal Consonant (5)	*0.526*	*40*
High Front Vowel (75)	0.412	43
Coronal Consonant (50)	0.261	26
Mid Front Vowel (49)	0.180	22
Following Segment		
Dorsal Consonant (22)	*0.789*	*73*
Front Vowels (27)	*0.685*	*63*
Labial Consonant (62)	*0.570*	*51*
Pause (83)	*0.548*	*51*
Coronal Consonant (122)	0.365	51
Back Vowels (34)	0.362	32
Word Environment		
Syllable Final (16)	*0.848*	*94*
Coda (80)	*0.691*	*61*
Word Final (214)	0.430	47
Syllabic (39)	0.308	36
Sex (Not Significant)		
Female (175)	0.438	49
Male (175)	0.562	54
Age (Not Significant)		
Younger (born c. 1969-1976) (168)	0.456	51
Older (born c.1940-1965) (182)	0.533	52

*(Key: *=() total number of tokens of this category contained in the data set. The % number in the final column represents the % of tokens out of the () total that were vocalized. ** = Factors significantly favoring vocalization appear in italics, as indicated by any weight greater than .500.)*

Table 5: Factors conditioning /l/ vocalization in the AA data set

Interestingly, the finding of pause as a factor strongly favoring vocalization concurs with Ash's (1982) and Dodsworth's (2005) previous findings for EA speakers, although the EA speakers drawn from the Columbus population differ somewhat surprisingly from that pattern, with pause showing the strongest tendency towards disfavoring vocalized variants in the data analyzed here. This difference, as well as others between the groups in terms of the relative influence of other favoring preceding and following segment groups suggest that speech norms among EA and AA speakers in Columbus for /l/ vocalization may not be fully shared. However, given the strong influence of following dorsal consonants and preceding back vowels on conditioning vocalized variant, the differences between groups may not be as strong as they might appear at first blush, and are not so great as to rule out the conclusion that at least some overall similarities in speech norms for vocalization exists between the groups. This possibility is investigated in more detail in section 5.

5. Discussion of the results

Although the AA and EA populations compared in section 4 are quite disparate in terms of socioeconomic class, the comparative analysis reveals some interesting linguistic facts about general speech norms within the greater Columbus community. First, if the AA and EA speakers here are representative of their respective segments of the larger Columbus population, the comparison provides additional evidence confirming Dodsworth's (2005) argument that the white collar EA Worthington informants' decreased use of vocalized variants of /l/ marks their status linguistically as members of a separate social community, since Worthingtonites vocalize /l/ significantly less than other communities in Columbus.

Second, it confirms the findings of Ash's (1982) brief comparative study of Philadelphia speech with other Midland's area cities (including Columbus), that /l/-vocalization appears to be a regionally diagnostic feature of Midland speech based on its

(total speakers= 39, total tokens=1070, input=0.434, p <.009)

Factor (N)	Factor Weight	% Vocalization
Preceding Segment		
Back Vowel (456)***	*0.627*	*56*
Labial Consonant (96)	0.463	38
Front Vowel (411)	0.419	36
Dorsal Consonant (10)	0.343	30
Coronal Consonant (97)	0.303	28
Following Segment		
Dorsal Consonant (34)	*0.722*	*65*
Labial Consonant (249)	*0.557*	*48*
Front Vowels (126)	*0.531*	*45*
Coronal Consonant (427)	0.480	43
Pause (128)	0.437	41
Back Vowels (106)	0.410	34
Race		
AA (350)	*0.589*	*51*
EA (720)	0.456	40
Word Environment (Not Significant)		
Coda (192)	0.529	48
Word Final (629)	0.498	45
Syllabic (151)	0.491	34
Syllable Final (98)	0.467	47
Sex (Not Significant)		
Female (535)	0.516	45
Male (535)	0.484	43
Age (Not Significant)		
Younger (born c. 1969-1985) (528)	0.507	44
Older (born c.1940-1965) (542)	0.493	43

*(Key: *=() total number of tokens of this category contained in the data set. The % number in the final column represents the % of tokens out of the () total that were vocalized. ** = Factors significantly favoring vocalization appear in italics, as indicated by any weight greater than .500.)*

Table 6: Factors conditioning /l/ vocalization in the combined AA and EA data set

occurrence in a number of major Midland cities. This can be seen by the fact that all three groups of speakers referenced in this paper variably realize vocalized and nonvocalized variants of /l/ to at least some extent. Furthermore, it suggests that speech norms regarding phonetic conditioning of vocalized variants is generally the same among speaker groups, regardless of race, although as mentioned in section 4.2, at first glance, the results suggest some subtle differences exist between AAs and EAs.

However, as we will now see, when the data is examined more closely, these differences are not actually as strong as they initially appear. This is revealed a the side-by-side comparison of the % realization of vocalized tokens uttered by AA and EA speakers when their co-variance with both the preceding and following phonetic segment is also considered. For these comparisons, the simpler front/back vowel contrast (without further disambiguation of the segment categories by height) is used, as this was the only grouping found to be statistically significant for preceding environment in the VARBRUL analysis of the EA data set in section 4.1. The same grouping contrast is used in following environment comparison to maintain parity between preceding and following environment segment type groupings. It should be noted that the preceding and following segment groupings contained in the analysis below emerged as statistically significant factors (*p<.009*), along with race, conditioning variation in the data when the EA and AA data sets were combined, and all 1070 tokens analyzed, in a third independent VARBRUL analysis (see table 6 for results).

Figure 1 plots a side-by-side comparison of % vocalization exhibited by AA and EA speakers as it co-varies with the type of phonetic segment that precedes an underlying /l/. Here we see that, as previously discussed, back vowels show the strongest influence on conditioning vocalized /l/ realizations among both AA and EA speakers, with 74% of the vocalized tokens occurring after back vowels among AA speakers and 47% among EA speakers. As also discussed, coronal consonants show a strong influence on

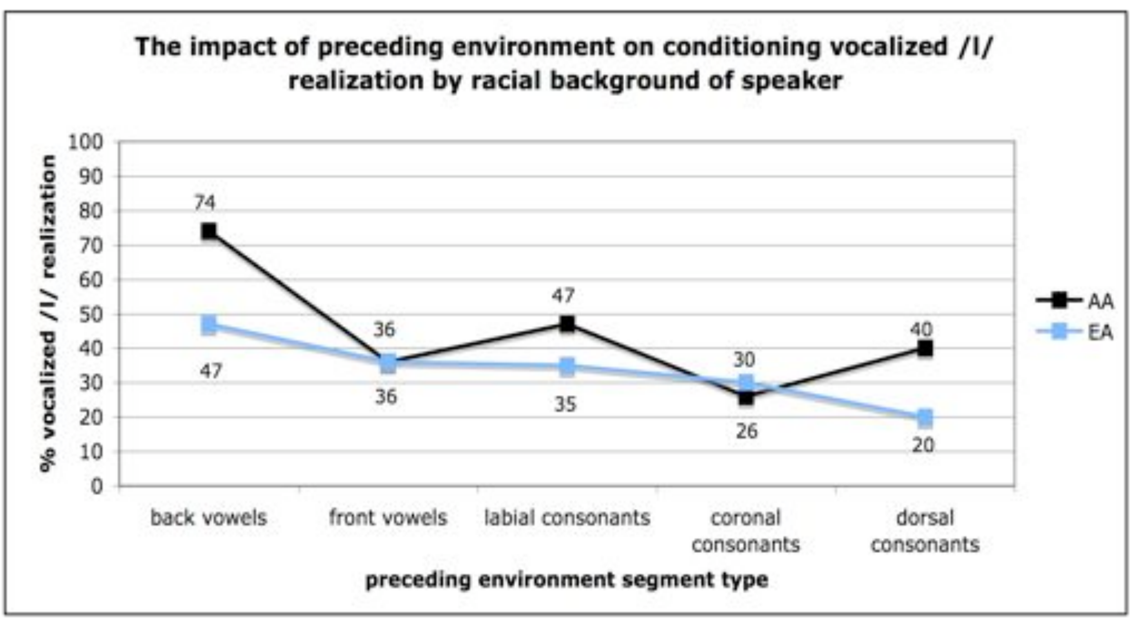

Figure 1: A side-by-side comparison of the impact of preceding environment in the AA and EA data sets

disfavoring vocalization, with only 30% of the vocalized tokens occurring after coronal consonants among AA speakers and 26% among EA speakers. However, AAs and EAs differ in that coronal consonants show a stronger impact in the speech of the AA speakers than the EA speakers, as the strongest segment found to impact EA speech is actually dorsal consonants.

Other differences between the populations include fairly weak differentiation in the impact of front vowels, labial consonants, and coronal consonants on conditioning vocalization among EA speakers, with only a 6% overall difference found between front vowels and coronal consonants, and only a 5% difference between labial and coronal consonants. In contrast, among AA speakers, weak differentiation is found instead between labial consonants and dorsal consonants, as well as between dorsal consonants and front vowels, although the over all difference of 11% between labial consonants and front vowels makes for a strong difference between those two groups, as revealed by the results of the VARBRUL analysis in section 4.2, with labial consonants slightly favoring vocalization and front vowels generally disfavoring vocalization.

The differences between the speaker groups in figure 1 suggest that some differences may exist regarding phonetic conditioning and speech norms among AAs and EAs for /l/ vocalization. However, it should be noted that the higher frequency of vocalized variants among EAs when a front vowel precedes the /l/ may in fact be the byproduct of the stronger ratio of tokens taken from words containing word final and syllabic /l/ tokens than in the AA data set, which has led to the possible skewing of the results for front vowels. This seems possible considering that front vowels conditioned significantly fewer vocalized variants in both the AA data and in Dodsworth's (2005) white collar EA Worthington data in section 2 than among the EA speakers analyzed here.

Also, considering the general cline of variance shown by labial, dorsal, and coronal consonants among both AA and EA speakers, and the similar cline shown by the Worthington data, it also seems plausible that a hierarchy of disfavoring vocalization may exist among these segment types when consonants precede /l/. Given the differences in overall frequency of vocalization among the Columbus EAs, the Worthington EAs, and the Columbus AAs, the data suggests dorsals typically lead over coronals, and coronals typically lead over labials, in disfavoring vocalization. However, once the overall vocalization shown by speakers reaches beyond 50%, as in the difference between the Columbus AAs and Columbus EAs, coronals appear to over take dorsals in showing a stronger disfavoring effect, hence the difference between the groups if one views the % realization differences between the speaker groups as indicating a kind of rank ordering of the environments involved in disfavoring tendencies towards vocalization.

This change in ordering makes sense if one considers that coronals differ from dorsal consonants and the vocalized variants [w] or [ɤ] not only in terms of articulation involving the use (in the case of coronals) or non-use (in the case of dorsals and the vocalized variants) of the tongue blade, but also phonologically in terms of the feature [+front] versus [+back]. In English, coronal consonants differ phonologically from the vocalized variants [w] or [ɤ], in that the coronal consonants as a group tend to be [+front], whereas the vocalized variants and dorsal consonants are [+back]. In the case of less pervasive vocalization trends among speakers—for instance, the white collar EA Worthingtonites—the difference in the feature [+front] versus [+back] may not function as a strong enough contrast on conditioning vocalization of the following /l/ by consonantal segments. However, once frequency of vocalization increases to the levels found among the Columbus AA speakers, the contrast may become significant enough that the impact of the segment groups is modified, perhaps as a result of analogy, modeled on the contrastive relationship of preceding back vowels to front vowels in their impact on conditioning vocalized /l/ variants, or by analogy modeled on a similar consonantal contrast of [+front] to [+back] consonants in the following segment environment.

As shown in figure 2, a similar kind of hierarchical relationship based on the [+front] versus [+back] contrast appears to exist for consonantal segments when they follow a vocalized /l/. Although in this case, the hierarchy of influence is the direction of favoring vocalization, with dorsals leading labials, and labials leading coronals. Unlike preceding segments, here, the ordering of the relationship is the same for both AA and EA speakers, although AA speakers show higher % realization numbers as vocalization is more pervasive in the speech of AAs. AAs show 23% more vocalization than EAs when a dorsal consonant follows, 6 % more when a labial follows, and 11% more when a coronal consonant follows. Phonologically, a hierarchical relationship is plausible if one again considers that dorsal consonants share with the vocalized variants [w] or [ɤ] the feature [+back], whereas coronal consonants are maximally contrastive with the vocalized variants and dorsal consonants on the feature [+front] in English.

One additional difference between the groups in figure 2 that bears noting and discussion is the difference in impact of a following pause on conditioning variation among the populations. Here, we see a 27% difference between the groups, with AAs vocalizing /l/ 63% of the time when a pause follows, in contrast to EAs, who vocalized /l/ only 24%. As with differences for the impact of preceding front vowels discussed above, we argue that this difference may also be the byproduct of skewing, based on the

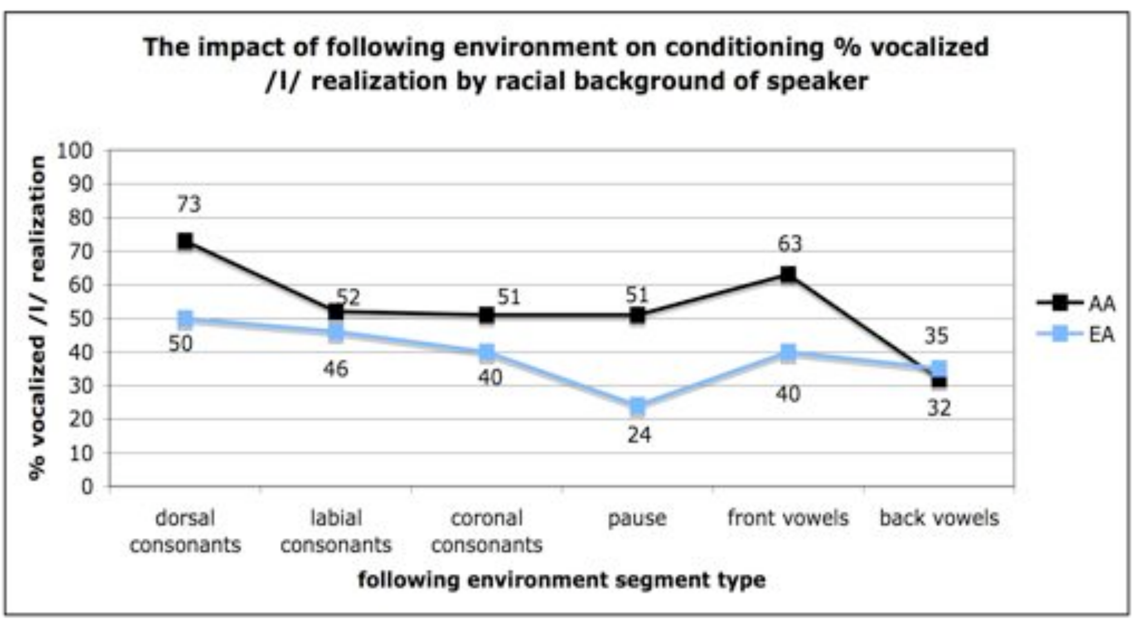

Figure 2: A side by side comparison of the impact of following environment in the AA and EA data sets

difference in the ratio of pre-pause tokens analyzed in the AA set versus the EA data set. A greater number of the EA tokens were drawn from continuous speech, from words with word final /l/ that were immediately followed by another word than in the AA corpus. Therefore, pre-pause tokens are likely underrepresented in the EA data, and given the evidence suggested by the Worthington EA data, it is quite likely a higher percentage of vocalized tokens would be found to occur before pause in the Columbus EA data if more tokens had been used in the analysis, as pause had a factor weight of .524 in the Worthington EA VARBRUL analysis, whereas it had only a weight of only .299 in the Columbus EA analysis.

Based on the combined evidence contained in figures 1 and 2 for explaining why the differences between AA and EA speakers are less than they may appear on the surface, we therefore suggest that speech norms for phonetic conditioning are in fact quite similar for AAs and EAs in Columbus, with the greatest difference between the groups being frequency of realization rather than difference due to phonetic or phonological conditioning differences at the segmental level.

However, one linguistic difference that does appear to be quite robust between blue collar AAs and white collar EAs in Columbus is the impact of word type on conditioning vocalized variants. Although the difference between AAs and EAs for word type was non significant in the VARBRUL analysis, a cross-tabulation of the combined 1070 token data set reveals that this difference is significant at $p <.05$ (x^2= 8.008; d.f.=3) when the covariance of this factor and race are considered. As shown in figure 3, AAs show a significant lead in the realization of vocalized variants in syllable final and coda position. For syllable final position, AAs realize vocalized variants of /l/ 93%, whereas the EAs vocalized only 38%. For the coda position, AAs vocalized 61% of the /l/ tokens,

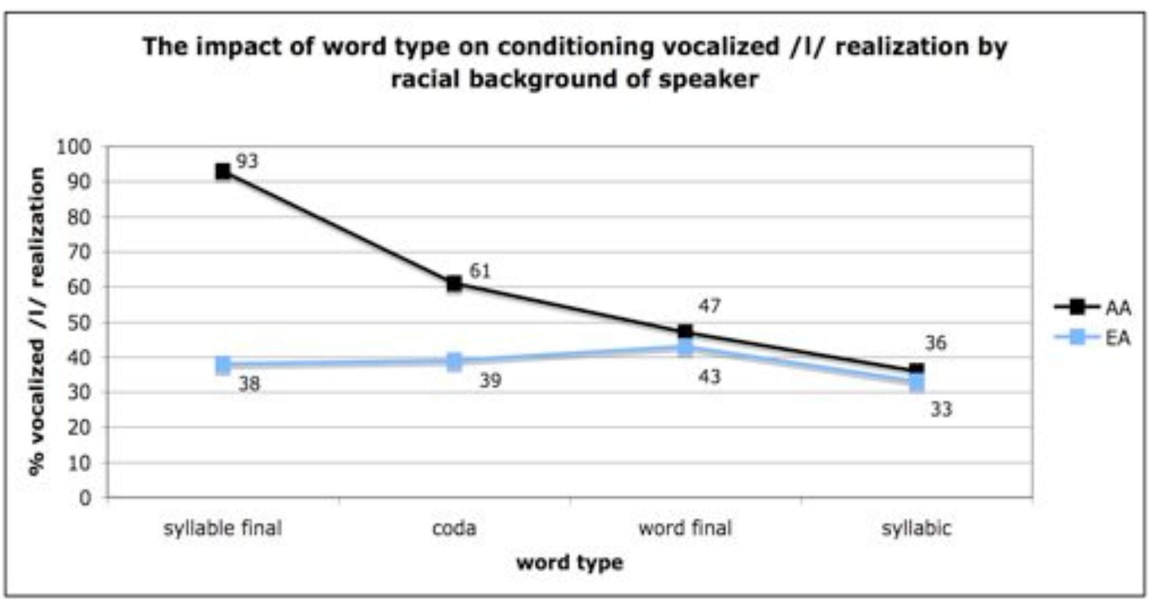

Figure 3: A side-by-side comparison of the impact of following environment in the AA and EA data sets

while EAs vocalized only 39%. Also interesting to note is that the differences between AAs and EAs are essentially non-existent in word final and syllabic position, with AAs leading EAs by only 4% word finally and only 3% in syllabic /l/ position.

Given the robust differences for syllable-final and coda-final position, we argue that these environments may somehow be marked as salient for marking the racial identity of individual speakers in Columbus. In Columbus AAVE, speakers tend to realize word-final consonant clusters as reduced consonant clusters, a process that has been found to operate in a number of blue collar AA speaker communities throughout the United States in previous studies (e.g., Labov, et al, 1968; Wolfram, 1969; Bailey & Thomas, 1998). We suggest that because this is the case, EA speakers may be aware of this tendency in AA speech, and view it as a stereotypical and stigmatized feature of blue collar Columbus AAVE. Furthermore, we suggest that they may view coda /l/ vocalization as being somehow similar, given that the end result perceptually of /l/ vocalization in coda position could sound to EA speakers like a reduced consonant cluster. Thus, EAs, particularly white collar EAs, may in fact be aware enough of vocalization in the coda /l/ environment as to avoid vocalizing it, so as to avoid use of what they perceive as a stigmatized feature of AA speech.

That is, unless an EA speaker is looking to signal more solidarity with AA speakers. In Fix's (2004) study of the social network of a group of six blue collar AA and EA speakers, 2 of whom were AA, 2 of whom were EA but with racially-integrated networks (i.e., those with AA friends), and 2 of whom were EAs without racially integrated networks, she found strong differences between the racially integrated EAs and the non racially integrated EAs in regard to the percentage of vocalization shown by the EAs for tokens occurring in these positions, particularly the coda environment. In her results, the racially integrated EAs vocalized coda /l/ 69%, while the non-integrated EAs vocalized it only 44%. Fix posited that the increased use of vocalization in the coda environment among the racially-integrated EAs is a result of influence from the AA peers, and that their increased use may also be a sign that they are trying to signal increased solidarity with the AA speakers through its use. The data presented here supports Fix's argument, as the percentage of realization shown by the integrated EAs is quite close to that of the AAs in the present study, while the percentage of realization of the non-integrated EAs is fairly close to that of the EAs in the present study.

Hence, a third conclusion presented by the data here is that the results suggest that vocalization, particularly in the coda and syllable final environments, may be marker of blue collar AA linguistic identity in a similar fashion to Dodsworth's (2005) Worthington, OH speakers. Except in this case, AAs may be marking a distinctive cultural identity through the *increased* use of vocalized /l/ variants, rather than *decreased* use, as in Worthington. Given that Labov, et al's (1968) found that vocalization is also pervasive in the speech of blue collar New York City AAVE speakers, its increased use among Columbus AAs may also serve as a kind of "dual status" marker, both of distinctive local AA identity in Columbus, and as a way of indexing a more "national" AA identity. However, it should be noted that given the small N of Fix's (2004) study, as well as the lack of data drawn from *blue collar* EAs in the present study, more data need to be obtained and analyzed in a later study to confirm or disconfirm this conclusion.

Turning to a more general comparison of the AA results with those found in Labov et al.'s (1968) New York City study, when we compare the trends noted in the Columbus AAVE data with the New York City data, the findings presented here confirm three of the main patterns that were noted there. Specifically, both studies noted the pronounced influence of following consonants on conditioning vocalization, particularly when a preceding back vowel is present in the same word among AAs. As well, both studies report that preceding consonants and high front vowels have on the non-vocalization of /l/. In addition, both studies note that the strong influence of coda and syllable final environments on conditioning vocalized variants among AA speakers.

Two additional findings of Labov, et al. (1968) which are confirmed by the Columbus data, but have been qualitatively confirmed by the present study rather than quantitatively confirmed, are the following: a) that vocalization is categorical before liquids and glides (114), and b) that the height of the preceding vowel is not a major constraint on the rule (116). The confirmatory findings in the Columbus data concerning this first point are based on the observations of the three judges who rated the AA data. All three noted this phenomenon when listening to the data for coding purposes. Findings supporting Labov's second point are made available when we consider the AA data as it was presented in the VARBRUL analysis presented in section 4.2 versus how it was presented in the VARBRUL analysis contained earlier in section 5. Here, we see that vowel frontness is by far more important in influencing the vocalization of /l/ than vowel height, as the distributional patterns for vowel segments are more strongly stratified by this feature than by the feature of height.

6. Conclusion

As the results of this pilot study have demonstrated, our understanding of the patterns of variation involving the vocalization of /l/ among blue collar AA speakers, as well as the comparative similarity and difference of these patterns from those found among white collar EA speakers in Columbus, has begun to become rarified. /l/ vocalization has been shown to be a general feature of Columbus speech, utilized to some degree by all AA and EA speakers, with blue collar AA speakers showing the strongest tendencies towards vocalizing, particularly in coda and syllable final position. Furthermore, the results suggest vocalized /l/ may be a marker of AA racial and linguistic identity in Columbus, with this distinctive cultural identity signaled by AA speakers' increased use of vocalized variants.

However, as the results also reveal, additional data collection within both the AA and EA speech communities in Columbus is required, so a more detailed exploration of the conclusion regarding vocalization as a marker of AA identity can be explored. Specifically, data from blue collar EAs in Columbus needs to be obtained so that a more robust comparative study of EA and blue collar AA differences and similarities involving vocalization of /l/ can be completed. As well, further analysis of /l/ in the speech of the AA speakers analyzed needs to be undertaken so that the patterns of variation noted here can be more confidently assessed. Specifically, instrumental analysis of this data is essential, making use of comparative "normative data" recordings obtained from speakers of Columbus AAVE under laboratory conditions, so that a more detailed understanding of /l/-vocalization within this population can be acquired. A second area that needs to be addressed in a future study is the analysis of additional tokenized /l/ data extracted from the untranscribed portions of the AA data corpus. At the present time, only half of this data has been transcribed, and therefore, it is quite possible that nearly twice as many /l/ tokens could be extracted from the data in a future study.

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