WITHIN-REGION DIVERSITY IN THE SOUTHERN VOWEL SHIFT: PRODUCTION AND PERCEPTION

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ABSTRACT

In this paper, we attempt to refine our understanding of the relationship between Southern Vowel Shift (SVS) norms and Southern orientation in the U.S. We ask to what degree Southerners from three different states (TN, NC, VA) show evidence of these shifts acoustically. Most crucially, we examine how much the different locales vary in terms of how much they align with traditional Southern features such as /ay/ monophthongization and /e/-/ɛ/ reversal. Then, through a perception study, we investigate whether differences exist in how the same speakers identify vowel categories in a perception task, looking particularly at how subjects across our three Southern sites compare.

Keywords: Sociophonetics, Vowels, Regional Variation, Southern Vowel Shift, Perception.

1. INTRODUCTION

While the Southern Vowel Shift (SVS) is a well-documented and long-standing feature of Southern American English and a central factor in the persistent "accentedness" of this dialect region [1], recent research has also documented regional variability in Southerners' engagement in the SVS (e.g. [6]) and evidence of decreasing participation in a number of Southern cities (an "urban retreat", e.g. [5]). Yet, recognition of the South as a strongly salient dialect region has not waned – despite the fact that large-scale economic, migratory and social changes have, in fact, significantly altered much of the Southern landscape, leading to key ecological differences among places and speakers. These differences raise the important question: How uniform, in terms of vowel position, is the Modern South and how might socio-cultural and migratory differences within the region have led to differences in engagement with Southern speech norms?

The SVS describes a series of acoustic vowel positions found predominately in the Southern region [10]. A key SVS feature is the reversal in acoustic position of the /e/ and /ɛ/ classes (also affecting the /i/ and /ɪ/ classes in a subset of the South). The instigating shift for this reversal appears to be the weakening of the /ay/ offglide, a feature of Southern English documented as early as the late 19th century [2]. For most Southerners, this weakening results in monophthongal productions of /ay/, particularly preceding voiced or free positions. In addition, the South is resistant to the low back vowel merger, a widespread merger in a number of other U.S. dialects (outside the Inland North). Thus, it is this complex of features in which we are most interested here.

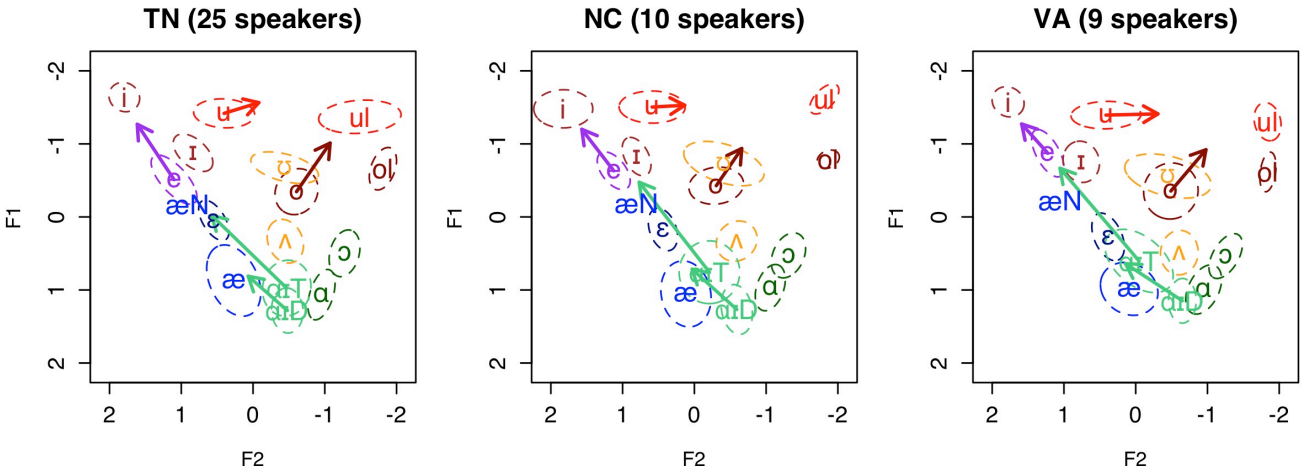
To address the question of intra-Southern variation in SVS participation, we examine the extent to which SVS patterns are found among 44 speakers from 3 different Southern states, Tennessee (TN), North Carolina (NC) and Virginia (VA). Though modern dialectological work typically views TN, NC and VA as part of the larger Southern region, these three states differ both in terms of early settlement patterns and in terms of contemporary migration. By looking at production patterns, we can determine how much these differences are reflected in vowel norms and, by examining perception patterns, we can determine whether such distinctions have a perceptual correlate.

Why should we expect these states to pattern similarly or differently? Both Carver [4] and *The Atlas of North American English* (*ANAE*; [10]) group these three states within the larger South. In addition, *ANAE* indicates all three states show some involvement in SVS features, though none of the three show high use indices. In particular, the urban areas of Memphis and Raleigh show much lower use indices than more rural parts of the states.

However, according to *ANAE* measures, TN and NC in general appear to share more Southern vocalic features such as clearly separate low back classes, a broken /æ/ class, and a strongly upgliding /ɔ/ class. In *ANAE* ([10] Ch. 11), these two states have higher use of these core features than VA, which falls outside the delimiting isoglosses. Still, all three states participate in /ay/ glide weakening in voiced and final contexts and, to some degree, in /e/-/ɛ/ reversal. Thus, though the *ANAE* describes VA as less characteristically Southern, it is clearly not oriented toward Northern norms and shares several key defining Southern features.

With this background in mind, we move to look at data from each state, considering how speakers compare in production (§2) and in perception (§3).

Figure 1: Aggregate vowel plots for three Southern states.



2. VOWEL PRODUCTION IN THE SOUTH

We begin by examining aggregate vowel plots for each of the three Southern states (Fig. 1). The data presented here come from a larger study investigating both perception and production across regional U.S. dialects (cf. [7, 9]). Participants performed an online vowel identification task and a subset of these perception participants were recruited from each of the dialect areas studied to also provide speech data from a reading passage and word list recitation. All vowel measurements were made using Praat [3]. Formant measurements were taken at two time points, 1/3 and 2/3 of each vowel token's duration.

2.1. Tennessee (TN)

Our production data for Tennessee comes from 25 largely younger urban speakers (primarily from the Memphis area). In Fig. 1 (left panel), we see several clear Southern features. First, we see glide weakening in voiced contexts for /ay/ (/ayD/). In addition, Tennesseans' /e/ and /ɛ/ classes are in close proximity, but do not show reversal of these classes, as found in early accounts of the shift. These speakers maintain separate low back classes and exhibit very little upgliding for the /ɔ/ class. One clear feature in this plot is back vowel fronting, both of /u/ and /o/. While this feature is not unique to the South, *ANAE* finds the South as typically very advanced, a finding supported here.

2.2. North Carolina (NC)

Now we turn to the aggregate vowel patterns for our 10 (mainly younger urban) speakers from NC. In Fig. 1 (center panel), again we see some buy-in, though not extensive, to Southern features. Like our TN sample, North Carolinians show /ay/ glide weakening in pre-voiced contexts. Looking at their mid-front vowel classes, we can see that they are not quite as proximal as our TN sample. However, compared to the VA speakers discussed below, it is clear that these vowels are much more proximal, suggesting SVS reflexes at work. There is also separation of their low back vowel classes, again, though, with very little upgliding for /ɔ/. Finally, as with the TN speakers, strong /u/ and /o/ fronting are clearly present.

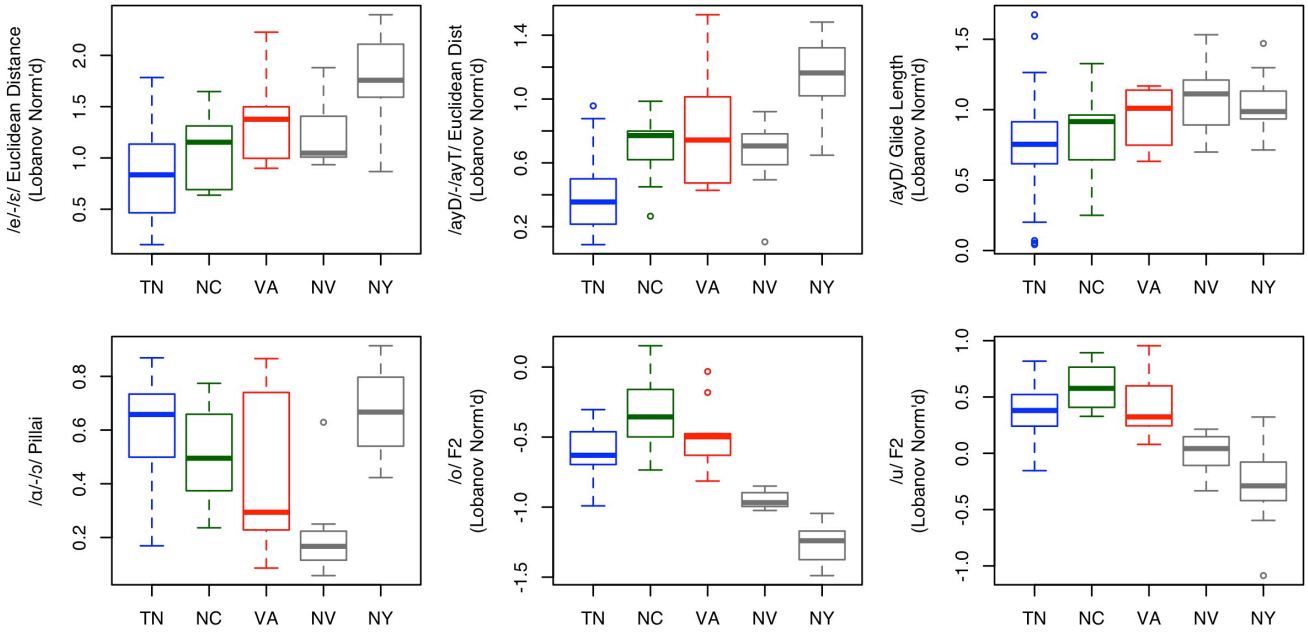
2.3. Virginia (VA)

Fig. 1 (right panel) displays our (also younger) Virginians. Here, again, we see shorter glides in pre-voiced compared to pre-voiceless contexts. Yet, when we look at our previous sites' plots, we see here that the mid front vowels are quite a bit farther apart. In contrast, the low back vowels appear much like the NC sample, with only marginal overlap and distinct means. Again, as with TN and NC, we found little evidence of back upgliding for /ɔ/. Advanced back vowel fronting for both /u/ and /o/ is also clear in the plot. Overall, though, of our three groups Virginians seem to participate least in SVS features.

2.4. Production differences

So, based on this brief look at the production patterns across our Southern locales, it seems that all three sites exhibit some Southern features but vary in the extent of this participation. Fig. 2 displays a series of boxplots of production measures to facilitate a comparison of the sites. We include representative states – New York (NY) and Nevada (NV) – from two other major dialect regions (Inland North and West [10], respectively) to provide points of contrast.

Figure 2: Boxplots for six production measures across five states.



The boxplots show comparisons of the proximity of (i.e. Euclidean distance between) /e/ and /ɛ/ (upper left), proximity of /ayT/ and /ayD/ (a rough measure of "Canadian Raising"; upper center), /ayD/ glide length (upper right), degree of low back merger, measured via Pillai scores ([8]; lower left), and the fronting of back vowels via F2 of /o/ (lower center) and /u/ (lower right) for each speaker group.

What we can see in these plots verifies our sense of variability across these Southern groups – with TN showing the most adherence to Southern vowel norms, in particular with more /e/ and /ɛ/ proximity, more /ay/ glide weakening, and more distinct low back vowels. VA shows the least.

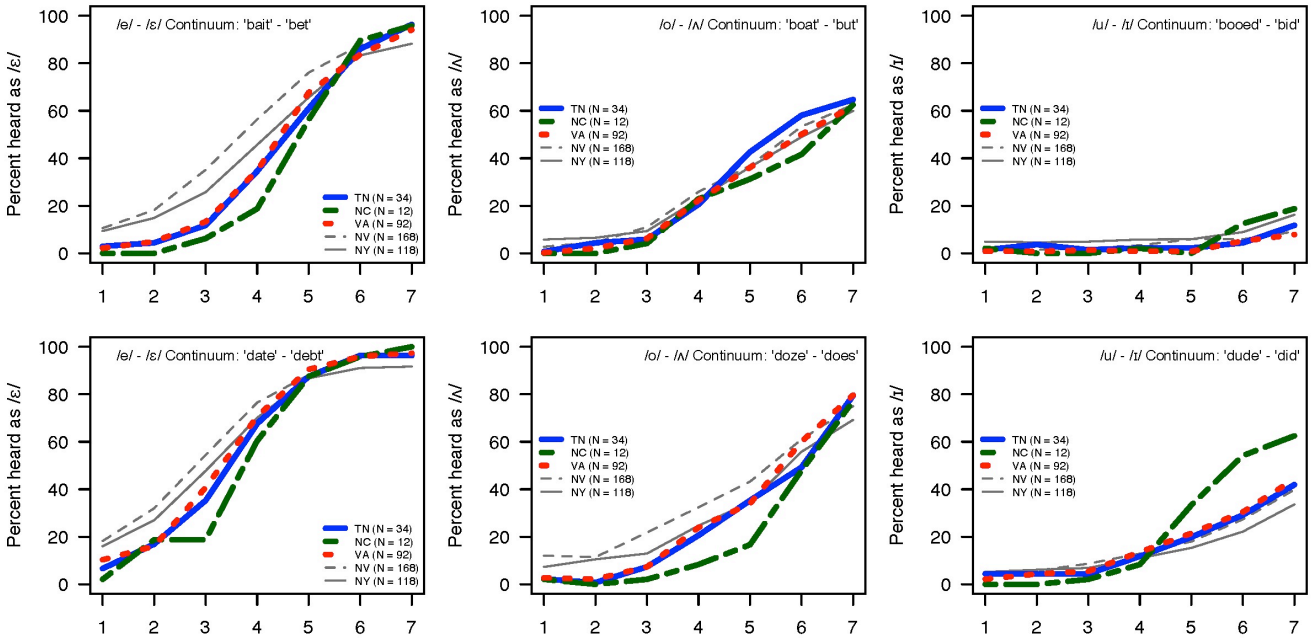
To assess statistical differences in the data, a series of ANOVAs were computed on the production measures, testing the influence of region (for just the three Southern sites) on speaker-level means. As in the plots, a general trend emerges across many of the measured features for these three sites, with a consistent order of TN > NC > VA, in terms of degree of participation in "classic" Southern features. For one, our Tennesseans show significantly more proximal /e/ and /ɛ/ classes than our Virginians ($F(2,41) = 5.802$, $p < 0.01$; Tukey HSD: TN-VA $p < 0.01$, TN-NC $p = 0.32$, NC-VA $p = 0.23$). Also, while there is not a significant difference among the sites in terms of glide length (/ayD/: $F(2,41) = 1.248$, $p = 0.30$; /ayT/ (not shown in the boxplots): $F(2,41) = 2.027$, $p = 0.15$), TN has a less raised /ay/ nucleus in pre-voiceless position ($F(2,41) = 10.360$, $p < 0.001$; Tukey HSD: TN-VA $p < 0.001$, TN-NC $p < 0.05$, NC-VA $p = 0.52$). The main exception to the TN lead is that NC has more fronted back vowels than the other states (although the only significant difference between the regions is the TN-NC comparison for /o/ F2 (/u/ F2: $F(2,41) = 2.461$, $p = 0.10$; /o/ F2: $F(2,41) = 6.608$, $p < 0.01$; Tukey HSD: TN-VA $p = 0.38$, TN-NC $p < 0.01$, NC-VA $p = 0.18$).

So, what emerges overall is a continuum of "Southerness" in terms of production, with TN having more strictly SVS features and NC displaying greater back vowel fronting – a shift found in all three major regional dialects rather than a uniquely Southern feature.

3. VOWEL PERCEPTION IN THE SOUTH

With these production patterns in mind, we now consider where along a synthesized vowel continuum participants from each state (and including NY and NV, for contrast) perceive vowel category differences (e.g. at what point does one hear 'bait' vs. 'bet'). The web-based perception test measured vowel category judgments for five vowel continua, embedded into two different consonant contexts. The perception test was not designed to directly measure the production differences noted above, but nonetheless provides a means to compare these same subject populations in terms of perception. As noted above, the production subjects (in §2) were a subset of the perception subjects. Fig. 3 displays the vowel identification patterns for each region at each of 7 points along the synthesized continua, for six of the ten total continua, focusing on the perception continua that relate to the production differences identified across our Southern sites (in §2), namely /e/-/ɛ/ and back vowel fronting. (See [9] for a fuller discussion of the perception study and its continua.)

Figure 3: Identification functions for 6 vowel pairs across five states.



As can be seen, for several continua the Southerners pattern differently than subjects from the North and West, yet the three Southern sites are roughly similar to one another. (We do not report statistics for sake of space – in all cases we do not find significant differences between the three Southern sites; the visible differences for NC in the plots likely arise due to the low *N* for that group.)

In production, Virginians patterned more like non-Southerners in terms of /e/-/ɛ/ Euclidean distance. However, as seen in Fig. 3, despite much less participation in this SVS shift, VA shows similar perception to TN, the most shifted speakers in production. Again, all three Southern groups appear to align as a regionally oriented "perceptual" dialect in contrast to the non-Southern comparators.

Unlike the /e/-/ɛ/ shift, back vowel fronting is affecting production in all U.S. regional dialects. Still, Southerners showed more advanced fronting, and North Carolinians were significantly more fronted for the /o/ class than TN speakers. In terms of perception, however, we do not see any significant differences across the Southern sites, suggesting the sites are perceiving this continuum fairly similarly, perhaps reflecting a more unified norm. In terms of /u/ fronting, we also see here that there is in fact not much difference across the sites in the perception of the /u/ continuum for the labial context. For the post-coronal context in both back vowels (a context promoting fronting in production) NC appears to show a different perceptual trend compared to other groups. This however is likely a result of the smaller subset of subjects we have for this group. More data are required to accurately assess this putative difference.

In general, our lack of significant differences suggests a relatively high degree of perceptual similarity across our Southern sites.

4. CONCLUSION

The Southern U.S. is often described as one large regional dialect area despite significant sub-regional differences. As recent research suggests a "young retreat" from classic Southern features such as those unique to the SVS [5, 6], it is worth investigating how much this movement away from Southern norms affects different sites in the South. Here we have presented data from three different states, TN, NC, and VA. These data, we believe, nuance a notion of a unified "Southern dialect".

In production, our speakers vary quite a bit in how much they participate in typical features such as /ay/ monophongization and /e/-/ɛ/ reversal. Overall, Virginians appear to be not as "Southern" as our other two sites on these measures. Yet, all three participate quite strongly in larger changes, such as /u/ and /o/ fronting, that affect speakers beyond the South. Likewise, all three regions maintain separate low back vowels, contrasting them as a group with e.g. the West. Despite some variation in production for our Southern sites, looking at how our Southern participants from each site hear vowel classes that are affected by the SVS, we find greater perceptual homogeneity than their production data may indicate. To close, a unified Southern dialect may be more of a perceptual reality than a productive one.

5. ACKNOWLEDGMENTS

This research has been supported by grants # BCS-0518264 & BCS-1123460 (PI Fridland), and BCS-1122950 (PI Kendall) from the National Science Foundation. We thank Craig Fickle and Charlie Farrington at the University of Oregon, and Sohei Okamoto and Kaylynn Gunter at the University of Nevada, Reno, for support with various aspects of this research.

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