

The Impact of Higher Education on Philadelphia Vowels

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1 Introduction

This paper examines the effect of higher education on speakers' vowel systems. In quantitative sociolinguistic studies, educational attainment has often been treated as a simple measure of number of school years completed (e.g., Labov 2001). We delve deeper into the role of higher education by comparing speakers from a single upper-working-class neighborhood in South Philadelphia who have broadly comparable socioeconomic backgrounds but different educational profiles. We distinguish not only between speakers who do and don't make the decision to pursue higher education after high school, but also between different tiers of educational institutions. The novel contrast that we set up between community colleges, regionally-oriented universities, and nationally-oriented universities proves to be a fruitful one, with each tier of higher education showing a different degree of impact on vowel quality.

Not all of the vowel features that we examine, however, are responsive to higher education; we argue that local features are only sensitive to correction when they bear negative social evaluation. Changes from below proceed apace regardless of speakers' educational achievement. This result is consistent with the view that the effect of higher education is one of socially-mediated accommodation, rather than automatic convergence driven by interaction frequency.

2 Previous Work

The effect of higher education on variable linguistic features is not a new topic, but has attracted heightened attention in recent years, accompanying a revived interest in late adolescence as a formative period. An important predecessor to this study is Wagner's 2008 dissertation, which followed Philadelphia teens during the transition from high school to college in order to discover how the college setting might affect their participation in the local phonology. She found that students generally *do* continue participating in community changes after high school, but only if they continue to socialize with local peers and maintain strong ties to the community.

Bigham's 2010 work on accommodation by speakers of different dialects at Southern Illinois University is also of particular relevance to this study for its nuanced look at the phonetic outcomes of accommodation. Bigham concludes that contact between Midlands and Northern Cities college students results in Midlands speakers both accommodating to the higher-prestige Northern Cities dialect and continuing to participate in the changes associated with their home communities. He proposes that this is possible because the accommodation occurs "not through the wholesale adoption of new forms but rather through an expansion or reduction of the range of previously existing forms" (2010:193). His view of accommodation allows him to reconcile some of the tension between what he calls the 'mechanistic frequency of interaction model', where accommodation is a deterministic outcome of exposure to other speakers, and the 'identity-based similarity attraction model', where accommodation is socially-motivated (2010:206). We will undertake a close examination of this approach to accommodation in Section 5.3, where we look at two individual speakers' realizations of the variants.

3 The Variables

This study addresses four features of the Philadelphia vowel system: the split short-a system, the low-back distinction, the raising of /ey/ in checked syllables, and post-coronal /uw/ fronting. These

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four variables were chosen in order to examine the possible effects of higher education on a range of variable types: one which is stable and bears local negative social evaluation (/æh/), one which is stable and bears supralocal negative social evaluation (/oh/), one which is a local unmarked change in progress (/eyC/), and one which is a nation-wide unmarked change in progress (/Tuw/).

3.1 Split Short-a and the Low-Back Distinction

The Philadelphia dialect has a phonemic distinction between tense /æh/ and lax /æ/ (Ferguson 1972) where most North American dialects have a single TRAP vowel. This distinction is called the short-a split. Phonetically, the short-a vowels occupy the space from lax lower-mid [æ] to tense upper-mid ingliding [eə]. The distribution of lexical items across the two classes is largely but not entirely predictable from the following phonological segment. The unpredictability stems from lexical and morphological irregularity; in the set of affective adjectives ‘mad, bad, glad, sad’, for example, only ‘sad’ is lax. Past research has shown that the phonetic peripheralization of the tense /æh/ class behaves like a stable variable in Philadelphia (Labov 2001:160). It patterns systematically with class and style, with particularly tense pronunciations bearing negative social evaluation (Wagner 2008).

Somewhat similarly, Philadelphia maintains a distinction in the low-back vowels such that /oh/ (‘caught’) is raised and peripheral in comparison to /o/ (‘cot’). Extremely phonetically tense /oh/ is a recognizable and negatively-evaluated stereotype of New York City speech (Becker 2010, 2011). In 1970s Philadelphia, such social evaluation was directed almost entirely at /æh/ (Labov 1994:343), but this issue has not been recently investigated with respect to /oh/. Although it is unclear whether /oh/ is seen as a negative feature of the local accent within Philadelphia, it is safe to assume that most Philadelphians have some familiarity with the New York stereotype due to its prominence in the national media.

We will group these two pairs of vowels together as the ‘stable’ features, as they are not believed to be undergoing change in progress. We also refer to them as the ‘marked’ features because they are available for social evaluation and style-shifting. They differ from each other in the geographic extent of their social salience, with tense /oh/ being much more widely recognized than tense /æh/.

3.2 /ey/ Raising and /uw/ Fronting

As a counterpoint to the two stable features, we also investigate two current changes in progress. Together, they will be referred to as the ‘unmarked’ features, due to the fact that they are both changes from below which have thus far failed to attract overt commentary or social correction.

The first such variable is the raising of the /ey/ nucleus in Philadelphia, so that *plate* sounds more like *pleat* (Labov 2001). This raising does not occur in word-final or pre-hiatus positions (Fruehwald 2011); /ey/ in a raising environment is generally described as checked /ey/ or /eyC/, while free /ey/ or /eyF/ denotes the non-raising context. In a diachronic study of /ey/-raising since the 1970s, Jeff Conn (2005) finds a steady increase in vowel height over time, with no significant effect of socio-economic class or gender, suggestive of a lack of social evaluation.

The final variable under study is the fronting of /uw/. Dramatic fronting of the /uw/ nucleus after coronal consonants (henceforth /Tuw/, as opposed to /Kuw/ elsewhere) is a widespread phenomenon found in most North American dialects (Labov et al. 2006). Fridland reports that /uw/-fronting is still a change from below, even in the South, where it is the most advanced: “In general, with a few exceptions (Ward 2003), fronting has made inroads across class groups [. . .] suggesting a prestige (or at least unmarked) association with these fronted variants” (2012:188). In Philadelphia, fronting after non-coronal consonants also occurs, but is considerably less advanced and more idiosyncratic in nature. Like /eyC/ raising this variable is an unmarked change from below, but it differs in that it is not localized to Philadelphia.

4 Data and Methods

Eight speakers from two blocks in the same upper-working-class neighborhood in South Philadelphia were interviewed. Interviews took place in participants’ homes or in quiet university study

Educational status	Name	Sex	Age	Degree	Institution
No higher ed.	Barbara	F	42	H.S. diploma	N/A
	Patricia	F	65	H.S. diploma	N/A
Community college	Raymond	M	19	Assoc. (in prog.)	Phila. C.C.
Regional	Michelle	F	22	B.S. (in prog.)	Drexel
	Dan	M	46	B.S.	Peirce
	Matt	M	22	Dropped out	Shippensburg
National	Nicole	F	30	B.A. & M.A.	Penn
	Michael	M	20	B.A. (in prog.)	Penn

Table 1: Demographic and educational characteristics of the Philadelphia speakers.

rooms, and lasted 30–60 minutes. They were structured around the thematic conversation modules of the Philadelphia Neighborhood Corpus (1972–2010), and included minimal pair tasks for the short-a distinction.¹ The recorded interviews were orthographically transcribed and forced-aligned, and vowels were automatically extracted using the FAVE suite (Rosenfelder et al. 2011).² Vowel measurements were then Lobanov-normalized (as recommended by e.g., Adank et al. 2004) and rescaled back to Hertz-like values (Thomas and Kendall 2007).

We group our speakers by the decisions they made in pursuing higher education. Their demographic and educational characteristics are summarized in Table 1. Barbara and Patricia finished high school but did not attend college; we therefore take their speech to represent the Philadelphia system free from the influence of higher education. One speaker, Raymond, attends a locally-oriented two-year community college, while three speakers—Matt, Dan, and Michelle—attend what we deem regionally-oriented universities.³ Finally, two speakers are associated with the nationally-oriented University of Pennsylvania: Nicole completed both a BA and MA, and Michael is a current undergraduate.

5 Results

We begin with an examination of the stable variables, the short-a split and the low-back distinction, and then turn to the changes in progress, /ey/-raising and /uw/-fronting. For each type of variable, we examine each educational group in turn.

5.1 Stable Variables

Based on the prior research discussed in Section 3.1, we expect traditional Philadelphia speakers to have strong phonetic distinctions between /æh/ and /æ/ and between /oh/ and /o/. True to this expectation, the two speakers who do not have higher education, Barbara and Patricia, both have a widely split short-a system and a clear distinction between /o/ and /oh/. Furthermore, Raymond, the speaker pursuing a locally-oriented education at a two-year community college, also maintains unambiguous distinctions for the short-a classes and the low back classes. Both of these pairs are essentially non-overlapping in their distributions, indicating that his phonetic production matches that of speakers of the traditional system. Evidently, attending a locally-oriented institution does not impact the quality of locally-stable vowels; when it comes to tense /æh/ and /oh/, Ray is very much

¹The original fieldwork did not include low-back minimal pairs because we did not expect that Philadelphian speakers would be at any risk of losing the distinction.

²This yields the following token counts: 862 short-a, 1,172 low-back, 838 /ey/-raising, 568 /uw/-fronting.

³The distinction between “regional” and “national” institutions is based on our understanding of name-recognition and reputation outside of the mid-Atlantic region.

a typical Philadelphian. Figure 1 illustrates these distinctions with individual charts for Barbara and Ray's realizations of these four vowels. There is marginal overlap in the cloud of tokens for each vowel, which is normal even for distinct phonemes.

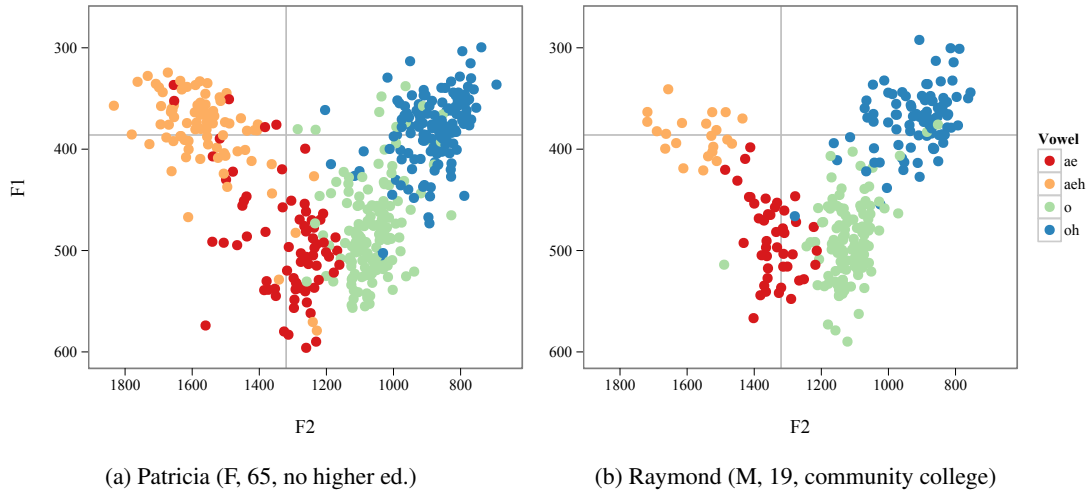


Figure 1: Stable variables for Patricia and Raymond.

In contrast, the short-a classes show a moderate degree of overlap among the speakers who have attended regionally-oriented universities. The distinction between /oh/ and /o/ is maintained, however. This attenuation of tense /æh/ can be seen in Figure 2a, which shows vowel tokens for Michelle, who is representative of the three speakers in our sample affiliated with a regional university.

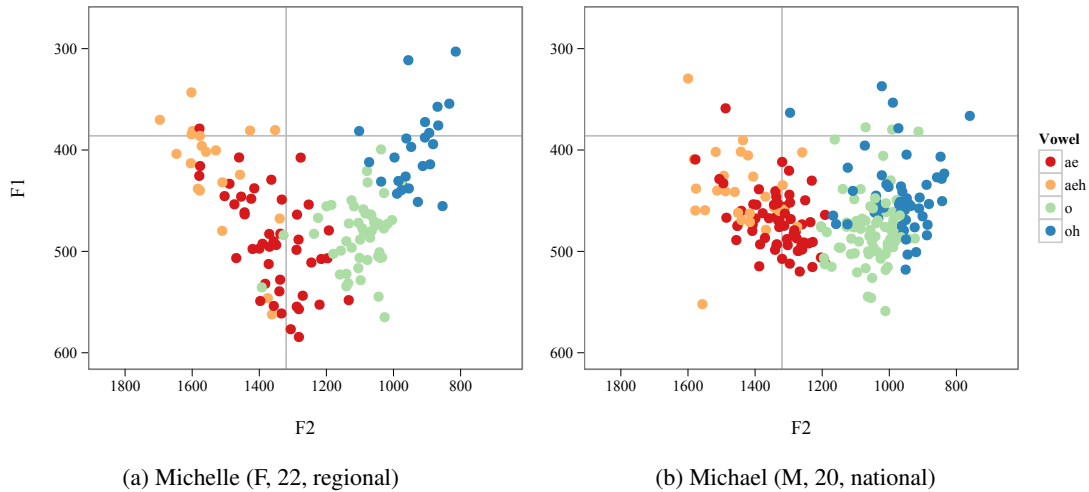


Figure 2: Stable variables for Michelle and Michael.

Finally, the speakers who are attending or attended a nationally-oriented university, Michael (see Figure 2b) and Nicole, show heavy overlap between /æh/ and /æ/ in a phonetically low position. This completes the attenuation of /æh/ begun by the regional-school speakers. Even more strikingly, the low-back distinction shows the same degree of overlap in a similarly low position. From both a statistical and perceptual point of view the vowel pairs are still phonologically distinct for these speakers: *t*-tests confirm that there is a statistically significant difference ($p < .001$) between /æh/ and /æ/ and between /oh/ and /o/, and a follow-up minimal pair task with Michael also indicated that he is able to distinguish the members of these pairs.

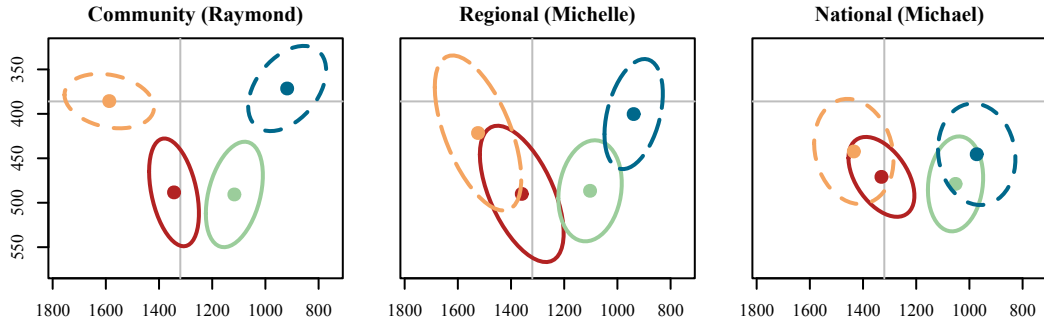


Figure 3: Stable variable summary.

Higher education’s impact on stable socially-evaluated features is summarized in Figure 3, which presents means and 95% confidence intervals for three representative speakers. Ray’s tense-lax pairs are the most distinct, following the traditional pattern, so simply attending an institution of higher education does not suffice to trigger attenuation of tense /æh/ and /oh/. At the other extreme are the speakers attending the most prestigious and nationally-oriented university, for whom both tense vowels are lowered so far as to be nearly indistinguishable phonetically from their lower lax counterparts. Michael’s vowels show this near-complete collapse of these distinctions, while his sister Michelle’s system is intermediate between these two poles. Speakers like Michelle who attend a university that is regionally-oriented do show modification of the local vowel system, which is more advanced in /æh/-lowering than in /oh/-lowering. The stable features thus show a pattern where movement away from the traditional local vowels is correlated with education that is outwardly- rather than locally-oriented.

5.2 Changes in Progress

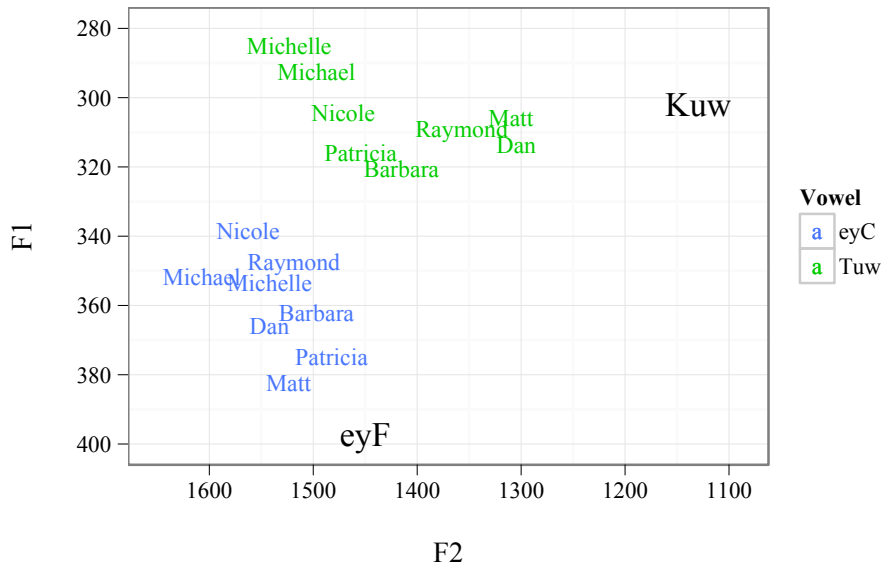


Figure 4: Changes in progress: speaker means for /eyC/, /Tuw/; overall means for /eyF/, /Kuw/.

The results on the changes in progress, shown in Figure 4, present a marked contrast with the results for the stable features. Both the raising of /ey/ in checked syllables and the fronting of /uw/ are changes from below, failing to attract social attention. There is not a particularly clear pattern defining the degree to which individual speakers participate in these changes, although it does seem to be the case for both that younger speakers and female speakers are more likely to be ahead of the

mean. What is particularly notable, though, is that the same speakers who were retreating away from the local norm for the stable features are at the leading edge of the changes here, with Michael and Nicole being among the three most advanced speakers. This is true not only for the national-level change of /uw/-fronting, but also for the local change of /ey/-raising.

5.3 Mechanisms of Accommodation

Sections 5.1 and 5.2 looked at the general properties of the vowel systems of our eight speakers. We showed that the traditional Philadelphia features of the short-a split and the low back distinction are sensitive to correction with higher education, while the unmarked changes of /ey/-raising and /uw/-fronting are unaffected. Here we pursue a closer comparison of the marked features from two different male speakers: Raymond, who is a student at a locally-oriented community college, and Michael, a student at the nationally-oriented University of Pennsylvania. At the time they were interviewed in 2010, both were first-year students still living with their parents in South Philadelphia. Raymond was 19 and Michael was 20.

The discussion here is framed in terms of the distinctions Bigham 2010 draws between *accommodation via reduction*, *accommodation via expansion*, *convergence*, and *divergence* in his study of speakers from Southern Illinois (part of the Midlands dialect area) having contact with speakers from Northern Illinois (part of the Inland North dialect area) while at university. In *accommodation via expansion*, local speakers “maintain their wide range of variation, but the center of that range becomes more like” the range of the incoming speakers to whom local speakers may be accommodating (Bigham 2010:201). Note that the term “expansion” is somewhat misleading here, as speakers are actually maintaining the same overall range of tokens but shifting the distribution within that range. In *accommodation via reduction*, on the other hand, local speakers end up with vowel forms that are intermediate between their presumed original values and those of incoming speakers. Expansion and reduction are contrasted with the simpler outcomes of *divergence* and *convergence*, wherein speakers either adopt or reject, depending on their social motivations, the same forms as the speakers they are in contact with.

Figures 5 and 6 show the complete set of tokens for both Raymond and Michael for the short-a and low-back classes, respectively. In each vowel chart, tokens from Raymond are represented by filled symbols and tokens from Michael are represented by open symbols. The tense vowels /æh/ and /oh/ are shown in red, while the lax /æ/ and /o/ are shown in blue. In Figure 5, Raymond’s split short-a system is characteristic of typical Philadelphian speakers, with almost no overlap between the tense and lax categories. By contrast, Michael’s tense class almost completely overlaps his lax class *as well as* containing tokens which are just as extreme as Raymond’s most tense tokens. Michael has not simply accommodated away from the Philadelphia system, but rather he has added less-tense /æh/ realizations to his repertoire. In this way he can ‘have his cake and eat it too’ by being able to accommodate to the supralocal prestige norms of his university environment while still maintaining local forms. This is a pattern unlike any of the four Bigham identifies. We suggest that the term ‘accommodation via expansion’ might more appropriately be identified with this kind of outcome, where the speaker who shows accommodation ends up with a wider range of options than the local vowel system provides, such that their repertoire encompasses both local and non-local variants. What Bigham calls ‘accommodation via expansion’ could more aptly be called *accommodation via redistribution*, since the overall range of options stays the same but the bulk of the distribution shifts.

The other marked feature, /oh/, shows a different outcome. Again, Raymond has a robust traditional distinction between /o/ and /oh/, while Michael has blurred the distinction between the two. However, this time Michael does not have very many extreme tokens at all, and certainly none as extreme as Raymond’s. Rather, it looks like Michael’s /oh/ and /o/ categories have moved closer together, mostly through the lowering of the tense /oh/ class.⁴ Michael has corrected the most extreme tokens that would likely attract comment, without converging completely to a low or even merged /oh/. His range of /oh/ tokens is also more restricted than Raymond’s, leading us to suggest that this case could be described as accommodation via reduction.

⁴Note that this is not a case of merger, as the administration of a minimal pair task to Michael indicates that he still distinguishes these classes effortlessly.

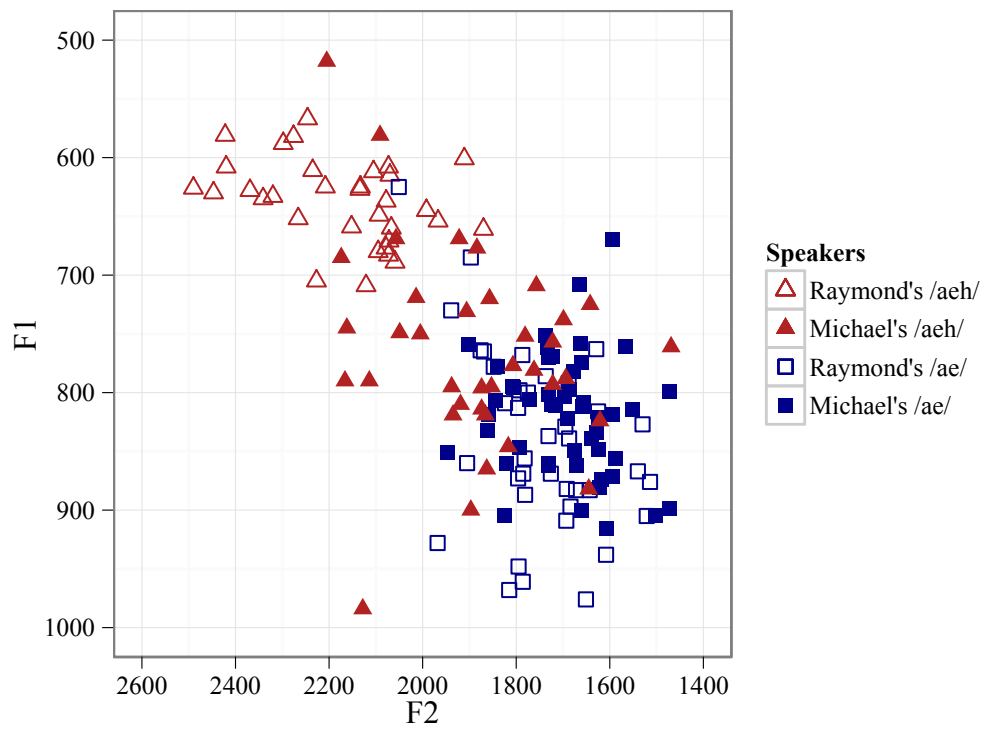


Figure 5: Raymond and Michael's short-a token distribution.

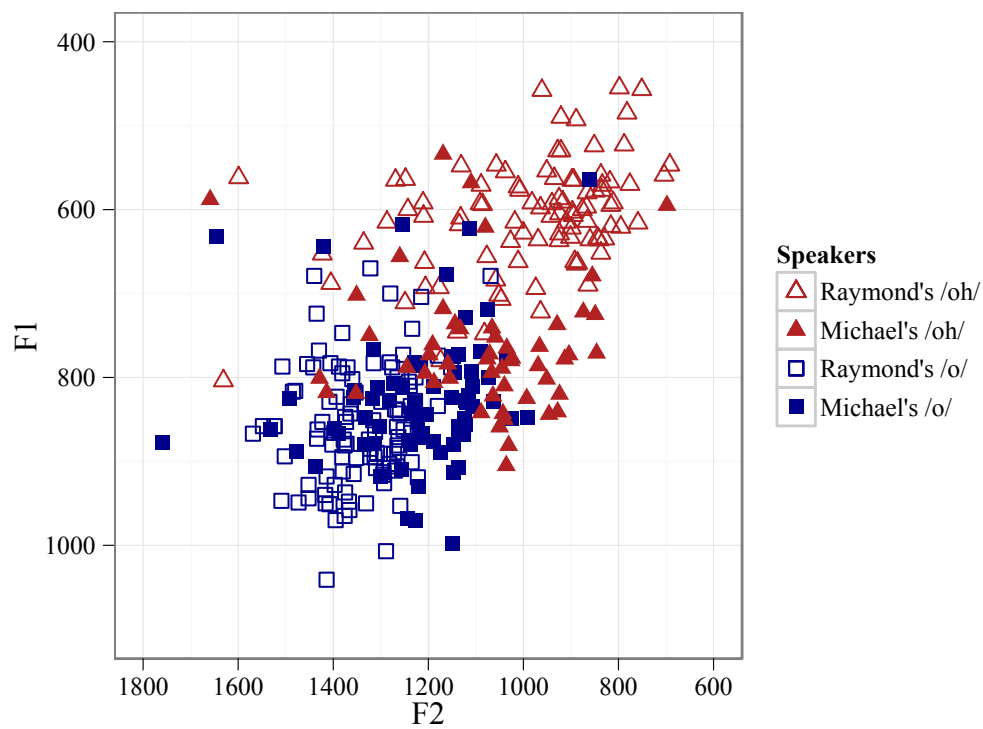


Figure 6: Raymond and Michael's low-back token distribution.

6 Discussion

Our results provide support for the idea that higher education affects speakers' vowel systems, with social awareness playing an important role in determining which variables are subject to correction. Speakers who are attending or attended four-year universities modulate their speech away from the Philadelphia feature of phonetically-extreme /æh/, which has a negative social evaluation. It appears that the retreat from tense /æh/ is not a wholesale rejection of the local accent, but rather a gradient sociolinguistic phenomenon. Different degrees of attenuation of the short-a distinction are associated with different types of institutions. This bears a resemblance to the stylistically-induced correction that has been observed for /æh/ (Labov 2001:79), which might be taken to suggest a social impetus. However, the proportion of non-local classmates a student at a regional university encounters might reasonably be expected to be intermediate between community college and an elite nationally-oriented university. This leaves open the possibility that the attenuation of phonetic tenseness in /æh/ is a low-level automatic convergence effect, rather than being socially motivated.

The behavior of /ey/, however, is not consistent with such a mechanistic explanation. Although /ey/-raising is similarly local to Philadelphia, it is not corrected the way tense /æh/ is. Instead, the local feature of /eyC/-raising behaves like the supralocal feature of /uw/-fronting in avoiding correction. Nicole and Michael, who lower /æh/ so thoroughly, are in the vanguard of these changes, just as we expect given their age. A speaker from Philadelphia attending a nationally-oriented university with a geographically-diverse student body can expect to encounter a majority of classmates who do not have raised /ey/ in their vowel systems. If the educational effects we report here were the outcome of automatic convergence, we would expect such a speaker to end up with /eyC/ in a lower position alongside /eyF/. We argue that the lack of correction for /eyC/ indicates that the relevant factor is the degree of social salience. Just as /ey/-raising and /uw/-fronting fail to attract overt commentary in the speech community, they are not sufficiently salient to invite correction with exposure to higher education. This is consistent with Wagner's conclusion that "when speakers have no social incentive to withdraw from a change, they will continue to move along with the rest of the community" (2008:208).

A salience-based explanation might also be put forward for the slightly different behavior of /oh/ compared to /æh/. Although Nicole and Michael show correction of /oh/ just as extreme as for /æh/, the speakers affiliated with regional universities do not correct /oh/ in the same way. We suggest that /oh/'s social relevance exists on a national level, being a well-known stereotype of New York speech (see, for example, the recurring sketch "Coffee Talk with Linda Richman" on the comedy show Saturday Night Live, as well as frequent media attention to "cawfee tawk"). Avoiding association with this stigma might thus be most relevant to speakers who aspire to upward mobility to a degree that might take them out of their home speech community. Speakers who plan to stay in Philadelphia may not even recognize this feature as characteristic of their own speech. If this is true, it could account for the difference between the short-a and low-back outcomes in our comparison of Michael and Raymond. Michael is socially motivated to maintain local forms of tense /æh/ in addition to adopting the new prestige norms, because /æh/ has local social significance. He has no comparable motivation to maintain tense tokens of /oh/, because it is not an equally meaningful part of Philadelphians' local dialect.

Although the details are not identical, the speaker-level accommodation outcomes shown in section 5.3 resemble in their complexity the outcomes Bigham documents (that is, they do not exemplify wholesale convergence or divergence). He argues that these distinct outcomes of dialect contact are "operationalized mechanisms of accommodation . . . [that] can support both the mechanistic frequency of interaction model (supported by, e.g., Trudgill 2004) and the identity-based similarity attraction model" (Bigham 2010:206). We concur that complex accommodation outcomes may reflect speakers' strategic use of both local and supralocal forms to maintain ties to their home social networks while simultaneously connecting to new peer groups. We suggest, though, that this dual social motivation is sufficient to account for complex attested outcomes without positing multiple models for accommodation.

7 Future Directions

Our results raise several questions which would be worth exploring in further research. While it is clear that speakers who attend a nationally-oriented university correct away from negatively-evaluated features, this study is not able to discern whether this is a change which occurs only *after* enrollment, or whether it might begin earlier, in fact being driven by the speaker's aspirations of upwards mobility. Work by De Decker (2006) on high schoolers in rural Ontario suggests that the latter might be the case; he found a strong distinction between students who were more locally-oriented compared to students who expressed an intention to attend college in an urban area. Investigation of this topic should include exploration of the influence of changing peer groups from high school to college. This research would naturally also benefit from a larger sample, which could include a wider range of college institutions, as well as an updated experimental investigation of the social salience of these local features.

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