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Wendy Baker-Smemoe

Brigham Young University, wendy_baker@byu.edu

David Bowie

University of Alaska, Anchorage

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Linguistic behavior and religious activity



Wendy Baker-Smemoe^a, David Bowie^{b,*}

^a Department of Linguistics and English Language, Brigham Young University, 4057 JFSB, Provo, UT 84602, USA

^b University of Alaska Anchorage, Department of English, 3211 Providence Dr, Anchorage, AK 99508-4614, USA

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ABSTRACT

Studies have found that Mormons and non-Mormons in Utah exhibit significant linguistic differences. We break this down further by investigating whether there are also differences between Mormons who actively participate in the religion and those who do not, and find significant differences with a medium or larger effect size between the groups for multiple variables. We conclude that when investigating the linguistic correlates of religious affiliation in a community, it is vital to elicit not just respondents' religious affiliations, but also their level of participation within that religion.

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1. Introduction

Many sociolinguists assume that religious affiliation has no effect on linguistic behavior in speech communities in the United States (at least for non-plain Anabaptist communities). This assumption makes sense, since religious affiliation isn't a fixed trait, and is subject to individual change at any time: the Pew Forum on Religion and Public Life found that close to half (44%) of all adults in the United States have left the religion—or lack of religion—they were raised in (these and other statistics on religious behavior in this paper are taken from [Pew Forum on Religion and Public Life, 2008](#)). Since religious affiliation can thus be seen as a matter of personal whim, one might well decide that it can't be reflected in a linguistic system (aside, perhaps, from some lexical items), particularly given the general assumption that childhood linguistic development is largely determinative of adult linguistic behavior ([Bailey, 2005](#); [Lenneberg, 1967](#)). Recent work has, however, cast doubt on the assumption that religious affiliation is unimportant (see, among others, [Baker and Bowie, 2009](#); [Benor, 2004](#)).

There are likely several reasons that religious affiliation may correlate with linguistic behavior. However, to give one possible explanation, religious affiliation does have an effect on one's social networks, particularly in areas where there is a high degree of religious affiliation (as is the case in the United States, for example). For those who attend worship services regularly (about 40% of the U.S. population), religious congregations provide a “third place” ([Oldenburg and Brissett, 1982](#)) for social networks to develop aside from home and work; this effect may be strengthened due to the frequency with which entire families are part of the same religious tradition. In fact, for some religions the structure of congregations may encourage very strong religion-based social networks (for examples of this for Mormons, see [Chatterton, 2008](#); [Duke, 1998](#); [Mauss, 1994](#); [Meechan, 1999](#); [Rosen and Skriver, 2015](#)). Further, since we know that social networks based on religion can influence linguistic behavior ([Baker and Bowie, 2009](#); [Di Paolo, 1993](#); [Fox, 2010](#); [Milroy, 1987](#); [Samant, 2010](#), among others), and since evidence is building that childhood linguistic development is not entirely determinative of adult linguistic behavior ([Bowie, 2010, 2011](#); [Bowie and Yaeger-Dror, 2015](#); [Sankoff and Blondeau, 2007](#); [Wagner, 2012](#); [Wagner and Sankoff, 2011](#), among

* Corresponding author. Tel.: +1 907 344 1334.

E-mail addresses: wendy_baker@byu.edu (W. Baker-Smemoe), david.bowie@uaa.alaska.edu (D. Bowie).

others), it only seems sensible to track religious affiliation, including changes in religious affiliation, as part of sociolinguistic studies.

Previous research on the correlation between religious affiliation and linguistic behavior has focused mainly in areas where religious activity and membership in a specific ethnic group overlap. These differences can be as large as a choice between different languages (e.g., [Johnson-Weiner, 1998](#); [Keiser, 2012](#)) or as small as individual morphemes or sounds (e.g., [Benor, 2011](#)).

Other studies suggest that when religion is a defining factor in language maintenance and use, this is often the result of social and physical segregation in the community, whether state- or self-imposed (e.g., [Bosakov, 2006](#); [Kingsmore, 1995](#)). Kingsmore, for example, found that language differences between Catholics and Protestants in Belfast could be explained by geography rather than religion. However, a potential confound is that in Belfast, neighborhoods are generally either predominantly Catholic or Protestant.

In these studies, teasing apart confounding variables such as location and ethnicity were difficult (since Belfast Catholics and Protestants tend to live in separate neighborhoods, as do Muslims and Christians in Bulgaria). However, more recent research has demonstrated that a correlation between religion and linguistic behavior occurs not only in areas where ethnicity and religion create confounds. So, for example, [Freeouf \(1989\)](#) found pronunciation differences in native German-speaking settlers in Indiana who differed only in whether they were Catholic or Lutheran. Since then, other researchers have found that religion can play a role in determining a speaker's social networks and, as a result, their language use, at least in areas where religion is a salient social characteristic of the community (e.g., [Baker and Bowie, 2009](#); [Chatterton, 2008](#); [Johnson-Weiner, 1998](#); [Meechan, 1999](#); [Germanos and Miller, 2015](#); [Rosen and Skriver, 2015](#)).

In order to look more closely at the interaction between social networks based on religious affiliation and linguistic behavior, in this study we examine the effect of both membership and level of participation in a religious group by investigating language use in Utah County, Utah, a region that is largely (about 79%) made up of members of The Church of Jesus Christ of Latter-day Saints (better known “Mormons”, the label we use in this paper). (The geographic location of Utah County in relation to the rest of the contiguous United States is shown in [Fig. 1](#).) Specifically, we look at differences not just between self-identified non-Mormons and self-identified Mormons, but we divide the Mormons further into those who actively participate in that religion (in local terms, which we adopt here, “active Mormons”), and those who do not actively participate in that religion (in local terms, “inactive Mormons”).

Utah County is an excellent location for a study of social networks based largely on religious affiliation. There is no neighborhood segregation between Mormons and non-Mormons in Utah County, and there are extremely few K–12 schools that cater to the Mormon population, and the few that do exist are quite small, leading to effectively no educational segregation. (Of course, most of the schools in the region are largely Mormon, but that is simply a reflection of community demographics, not a reflection of religious segregation in the educational sector.) Further, sociological work has noted that active participation in the Mormon religion involves a large investment in time, generally centered around local (if not hyperlocal, particularly in this community) networks of other Mormons ([Cornwall, 1998](#); [Mauss, 1994](#)). Further, religion is a highly salient characteristic in Utah County, as can be seen even just by casual observation of local television or newspaper reporting.

In addition, a number of linguistic variables of interest have been reported in previous research conducted in Utah County and bordering areas; these include, for example, tense-lax vowel mergers before /l/ ([Di Paolo and Faber, 1990](#); [Faber, 1992](#); [Faber and Di Paolo, 1995](#)), the *card-cord* merger ([Bowie, 2003, 2008](#)), /t/-glottalization ([Eddington and Savage, 2012](#)) /aɪ/-monophthongization ([Morkel, 2003](#)), and proredicate *do* ([Di Paolo, 1993](#)). (Many, but not all, of these variables are locally



Fig. 1. Location of Utah within the contiguous United States (left), and of Utah County within Utah (right).

salient.) Previous research on Utah English suggests that at least some of these features may be the result of a high percentage of the first English-speaking settlers coming from England (Di Paolo, 1993), as well as Labov et al.'s (2006) "southeastern" region (Morkel, 2003). In addition, earlier work in this community has found some correlation between certain linguistic features and religious affiliation (Baker and Bowie, 2009; Di Paolo, 1993).

Baker and Bowie's (2009) study of Mormons and non-Mormons in Utah County found that trained listeners from outside the community perceived differences, some with large effect sizes, in the vowel production of Mormons and non-Mormons, with Mormons more likely to merge vowels before laterals and to raise short-*a* without diphthongization; in addition, the Mormons and non-Mormons were both rated as participating in the *cot-caught* merger, but with different targets for the merged vowel. The suggestion, reasonably enough, was that these differences most likely occur because social networks in Utah County are formed mainly around religion. Unfortunately, though, that study only looked at whether individuals self-identified as Mormons or not, and didn't take into account whether the Mormons actively participated in their religion or not, even though the formation of social networks based around a religion would, at least in most cases, be tied to actually participating in that religion.

This is particularly important given studies in other communities that have found that religious activity can have an effect on patterns of linguistic variation. So, for example, Samant (2010) investigated whether ethnically Lebanese Muslims exhibited features of the Northern Cities Shift (NCS) by interviewing high school students who differed in terms of gender, religious activity, and ethnicity. Samant demonstrated that whether or not features of the NCS were found was related in part to how active the speaker was in the Muslim community and worship services—and this along with finding that even those Muslim speakers who used features of the NCS did so differently than the non-Muslim speakers in the area. Similarly, Fox (2010) found that young Bangladeshis living in Tower Hamlets in London differed in the degree of their identification with the Muslim community of which they are a part, with speakers who had a strong identification as Muslim being less likely to have typical features of vowels found in Cockney. Again, while those with both strong and weak ties to the Muslim community differed from each other in their production of English vowels, both groups also differed from other Cockney speakers.

The results of these two studies suggest that even though religion certainly is one speaker characteristic upon which speakers can and do create social networks, it is possible for speakers to be peripheral or marginal members of a religious group,¹ and therefore for speakers to differ in how and to what degree religious affiliation affects language use. It has long been known that peripheral or marginal members of groups can be linguistically distinctive (e.g., Labov, 1973), but more recent studies have found that such individuals can actually be the innovators in language change (Moore, 2010; Rose and Sharma, 2002). It is possible, then, that non-participating members of a religion may be seen as either peripheral or marginal members of larger social networks or communities of practice, and therefore may demonstrate language use different from core members of the group and may also be linguistic innovators.

Applying this to Utah County, this means that it is important to look at the peripheral or marginal group of inactive Mormons in relation to both their active Mormon counterparts and the non-Mormons in the community. These inactive Mormons likely have relatives, neighbors, and coworkers who are active Mormons (particularly given the large majority of Utah County residents who self-identify as active Mormons), but they may also socialize and interact more with non-Mormons than do the active Mormons, especially given the nature of Mormon orthopraxy.² Looked at another way, inactive Mormons may in effect be peripheral or marginal members of either the active Mormon and the non-Mormon groups, or both of them. Thus, analyzing the linguistic behavior of the inactive Mormons as a separate group may help demonstrate their position in the Utah County community. Such findings may then add to our more general understanding of how hyperlocal multiplex networks and membership in more than one network influence and determine language change and use.

2. Methodology

To investigate this, we interviewed 191 residents of Utah County, Utah. Sampling was primarily conducted by random geographic sampling, but due to the low number of inactive Mormons contacted in this manner, the subsample of inactive Mormons was expanded by asking other respondents for individuals that would fit in that group.³ Among the demographic questions respondents were asked about their religious affiliation, and (if they gave an affiliation) how frequently they generally participated in organized religious activities. Self-identification of religious affiliation split the group into 155 Mormons and 36 non-Mormons; the Mormons were further divided into 124 active Mormons (those who reported participating in organized religious activities at least weekly or nearly weekly) and 31 inactive Mormons (who reported less

¹ Following Moore (2010), we consider peripherality and marginality to be related but not identical concepts. To use Moore's example, a high school sports team member who participates in some team social activities outside of official games, but who also belongs to the choir and other networks is a peripheral member of the sports team social network. On the other hand, a marginal member of the team might be a backup player who often does not practice with the team or attend games.

² For example, devout Mormons do not consume coffee, black tea, or alcohol, and do not smoke cigarettes; as a result, they would be less likely to, e.g., hang out with friends in bars or coffee shops.

³ Although specific questions about respondents' social networks were not asked as part of the interview, it is worth noting that, as a result of this method of expanding our sample of this particular group, the research team became aware that nearly all of the inactive Mormons in the sample had grown up in an active Mormon family, and that in most cases at least most of the rest of their birth family remained active participants in the Mormon church. This became important later in the study.

Table 1
Vowels and environments examined.

Vowel	Environment	Example word	Vowel	Environment	Example word
/i/	Word-final	<i>bee</i>	/o/	Pre-lateral	<i>bowl</i>
/ɪ/	Pre-nasal	<i>bin</i>	/o/	Pre-rhotic	<i>board</i>
/ɛ/	Pre-nasal	<i>ben</i>	/ʌ/	Pre-obstruent	<i>but</i>
/ɛ/	Pre-lateral	<i>bell</i>	/ʌ/	Pre-nasal	<i>bun</i>
/e/	Word-final	<i>bay</i>	/ʌ/	Pre-lateral	<i>hull</i>
/e/	Pre-lateral	<i>bait</i>	/ɔ/	Pre-obstruent	<i>bought</i>
/æ/	Pre-obstruent	<i>bat</i>	/ɔ/	Pre-lateral	<i>ball</i>
/æ/	Pre-nasal	<i>ban</i>	/ɔ/	Pre-rhotic	<i>born</i>
/u/	Pre-lateral	<i>boot</i>	/ɑ/	Pre-obstruent	<i>bot</i>
/u/	Word-final	<i>boo</i>	/ɑ/	Pre-lateral	<i>doll</i>
/ʊ/	Pre-lateral	<i>bull</i>	/ɑ/	Pre-rhotic	<i>bar</i>
			/aɪ/	Word-final	<i>buy</i>

frequent participation). A review of the demographic characteristics of the respondents indicated that the groups did not differ significantly in terms of parental background (in that most respondents' parents were also from Utah), amount of education, or age.

Data was acquired by the use of a relatively short (approximately 10 min) survey that included questions designed to elicit individual words that contained features previously identified as characteristic of Utah English,⁴ plus a few demographic questions. The prompts were quite straightforward; for example, participants were asked "What's the opposite of cold?" to elicit the word *hot*. These prompts were used instead of word lists to avoid spelling pronunciations and to elicit something approaching the participants' natural pronunciations while still maintaining the control over responses needed to acquire comparable data from short interviews. All elicited tokens came from isolated words where the vowel in question was in full stress position. In most cases, the participants provided the desired word; if they did not, they were asked other questions until they produced the desired word, or until it was clear that they would not produce the word. Respondents could skip any question they wished, though this was rare.

As mentioned above, the elicited words were chosen because they contained one of a number of vowels in environments that have been shown to be of interest in previous studies of Utah English (particularly Bowie, 2003, 2008; Di Paolo, 1992; Di Paolo and Faber, 1990; Faber and Di Paolo, 1995; Lillie, 1998; Morkel, 2003). Several of these involve mergers (or, perhaps, near-mergers) before liquids, as in the minimal pair sets *bell-bill*, *bell-bail*, *pull-pole-pool-hull*, and *card-cord*. Other possible mergers that were investigated included *bed-bad*, *pin-pen*, and *cot-caught*. In addition, the diphthong in the word *buy* was elicited for analysis, given findings that its glide may be weakened or even absent in some contexts in Utah English (Morkel, 2003). A list of the vowels that were elicited for analysis, along with the environments they were elicited in, is given in Table 1. Some of these (e.g., word-final /i/ as in *bee*) were not expected to show variation, but were included as references to compare other vowels to; the behavior of all three groups with respect to these vowels were, however, still analyzed.

All of the interviews were recorded using either a Shure unidimensional microphone and Marantz CD recorder, or an Eridol digital recorder. (Each speaker was recorded using only one machine or the other.) After the recordings were digitized, the individual words containing the targeted vowels were extracted from the speech stream using Praat (Boersma and Weenink, 2012), giving a total of 7725 tokens.

We then performed acoustic analyses of the vowels produced by the three groups. We measured formants at the midpoint of each vowel,⁵ with separate measurements taken for the nucleus and glide of *buy*. (None of the tokens of *buy* were monophthongized, so that was not an issue.) All formant measurements underwent Lobanov normalization (Lobanov, 1971) and were then scaled to Hertz-like F1n and F2n values using the Vowels.R package (Kendall and Thomas, 2012) for R; the overall behavior of each group for each vowel and environment was compared.⁶ To give a very broad overview in advance of what follows, unlabeled medians for each vowel produced by each group, separated out by environment (so that the vowels in, e.g., *but*, *bun*, and *hull* are represented by different points), are shown in Fig. 2; the unbalanced distribution of the vowel points is because, first of all, back vowels were sampled in more environments than front vowels, and second, all three groups participate in a lowering of high back vowels in pre-lateral environments.

⁴ We refer to "Utah English" for the variety of English spoken in this region not because it is a terribly descriptive term—the political boundaries of Utah are clearly artificial, and unlikely to coincide with linguistic isoglosses—but rather because that is what most of the literature uses for English spoken more or less in this region. Something like "Urban Southern Wasatch Front English" might be more precise, but we opt for the simpler term.

⁵ We recognize that this approach means that we ignored things such as, e.g., vowel trajectories in favor of having a single point of comparison across groups, even in cases where one would clearly expect more points of measurement to be better. From our spot-checking (and wider non-systematic observation) of the production of the three groups, however, we suspect that this did not affect the results except possibly for one variable, which we discuss later.

⁶ We used *t* tests to determine whether the vowels overlapped on the scaled F1n and F2n axes. We chose the usual arbitrary significance level of $p < .05$ as the cutoff for statistical significance, but because there was such a danger of false positives from repeated testing we applied a Šidák correction (Šidák, 1967), with the result that we did not accept a result as statistically significant unless it achieved a significance level of $p < .0011$.

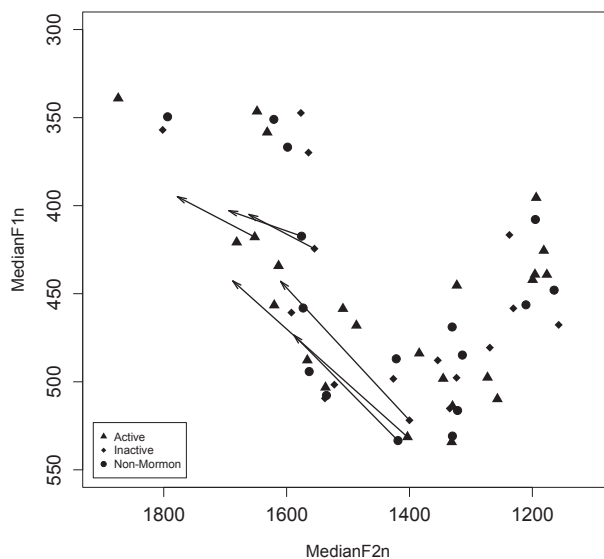


Fig. 2. Reference chart of normalized medians for all measured vowels, as produced in isolated word list presentation by each group of speakers.

3. Results

The first thing that comes out of an analysis of these three groups' behavior is that they do, on the whole, all behave similarly to each other. That is, for the vast majority of tested features, there is no statistical difference between the groups. This is unsurprising, both given the previous findings of Baker and Bowie (2009) that Mormons and non-Mormons show more similarities than differences as well as the simple fact that the speakers are all members of a fairly compact region with no residential segregation. There were, however, some interesting differences; those variables that showed a statistically significant difference in position between at least two of the groups are given in Table 2 and discussed in more detail in the text that follows, following the order given in the table.

Pre-nasal /ʌ/ (as in *bun*) was produced significantly differently by the active Mormons compared to the other groups, but there was no difference statistically between the inactive Mormons and the non-Mormons. The actual difference is shown in Fig. 3, which highlights the pre-nasal medians of /ʌ/ by showing them larger than the other vowels. Median productions of pre-obstruent /ʌ/ are shown on the chart by an ellipse around those; as you can see, all three groups front /ʌ/ pre-nasally at least somewhat with regard to its pre-obstruent position, but the active Mormons front it (and, to some extent, raise it) noticeably more than the other groups. Further, effect size testing shows this to be a large effect.⁷ For this variable, at least, it is clear that the inactive Mormons pattern with the non-Mormons. In fact, the degree of fronting exhibited by the inactive Mormons is slightly less than that of the non-Mormons.

Pre-obstruent /a/ and /ɔ/ (as in, respectively, *bot* and *bought*) need to be discussed together, because they turn out to be part of a single pattern; their position in the vowel space is shown in Fig. 4, with /a/ and /ɔ/ highlighted with larger symbols. These vowels appear to be separate, perhaps in a state of near-merger (which might be expected, given that they were in a state of near-merger in Salt Lake County, immediately to the north of Utah County, several years ago, as reported in Di Paolo, 1992), but statistical testing shows that all three groups actually have the first two formants of these vowels fully merged. (This is a case where the simplicity of the median values obscures the strongly overlapping distribution.) Since these vowels are fully merged,⁸ it is unsurprising that both vowels showed the same significant difference: active Mormons and inactive Mormons produce them differently with medium effect sizes, and there are no differences among the other groups.

The difference between the active and inactive Mormons in these vowels, though, also reflects the facts for the overall apparently merged vowel: the active Mormons and inactive Mormons behave differently (specifically, the active Mormons produce the merged vowel higher than the inactive Mormons), again with a medium effect size. It is worth noting, particularly in light of later discussion, that even though there are no statistically significant differences between the non-Mormons and either of the other groups, that the non-Mormons' median production of the apparently merged /a/ ~ /ɔ/ vowel (that is,

⁷ All effect sizes were determined using a Hedges' *g* test (Hedges, 1981), using cutoff points of $g < 0.2$ as a very small effect, $0.2 \leq g < 0.5$ a small effect, $0.5 \leq g < 0.8$ a medium effect, and $g \geq 0.8$ a large effect. Note that these are more conservative cutoffs than those usually used, which would use 0.2, 0.5, and 0.8 as midpoints rather than minima for small, medium, and large effects, respectively.

⁸ That is, fully merged for these measures. Other features may be in use to distinguish these vowels (as may well be the case; see Di Paolo, 1992 for a nearby speech community), but here we are simply looking at first and second formant values as an indirect measure of each vowel's height and backness, and so we're actually reporting on whether that aspect of vowel production is the same or different among the three groups.

Table 2
Variables showing significant differences between groups.

Vowel	Environment	Example word	Significant differences
/ʌ/	Pre-nasal	<i>bun</i>	Active Mormons vs. inactive Mormons; Active Mormons vs. non-Mormons
/ɔ/	Pre-obstruent	<i>bought</i>	Active Mormons vs. inactive Mormons
/ɑ/	Pre-obstruent	<i>bot</i>	Active Mormons vs. inactive Mormons
/aɪ/	Word-final	<i>buy</i>	Active Mormons vs. inactive Mormons; Active Mormons vs. non-Mormons

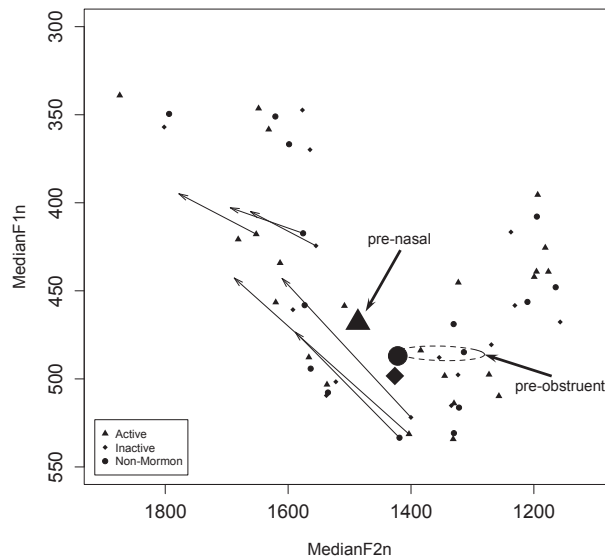


Fig. 3. Formant medians for /ʌ/, with pre-nasal tokens larger and pre-obstruent tokens circled.

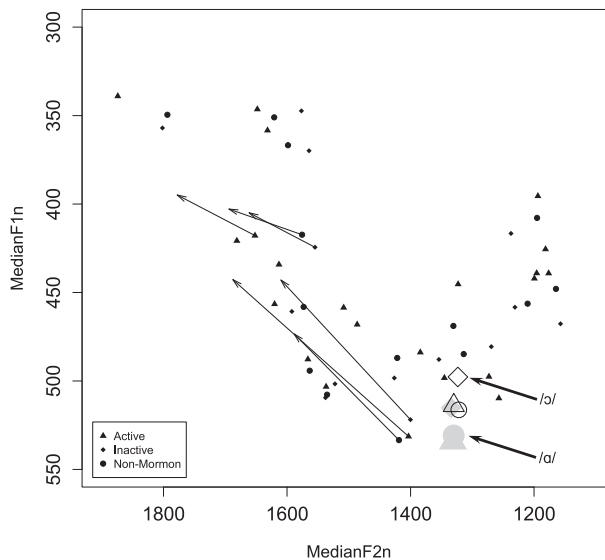


Fig. 4. Formant medians for /ɔ/ (outlined) and /ɑ/ (grey) tokens, before obstruents.

taking the median of the /ʌ/ and /ɔ/ vowels when collapsed into a single group) falls between the active and inactive Mormons' production.

Finally, the glides of word-final /aɪ/ (as in *bite*) are produced differently by the active Mormons and the non-Mormons. All of the groups produced the nucleus of the diphthong in (statistically speaking) the same location, so the only differences are found in the glide, which the active and inactive Mormons both produced higher than the non-Mormons, and with the active

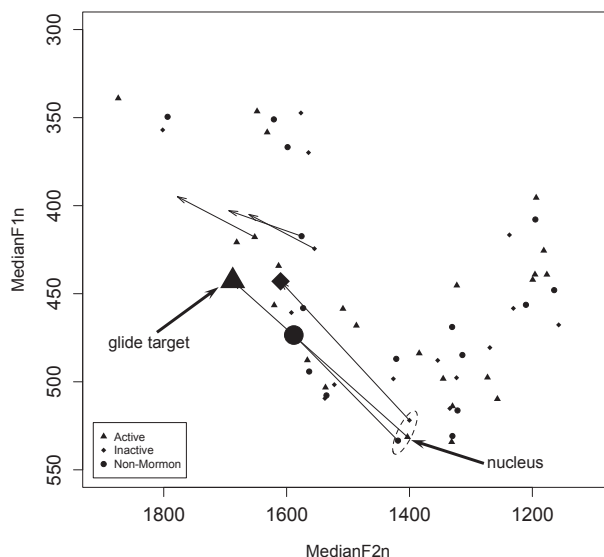


Fig. 5. Formant medians for /aɪ/, with glide targets larger and nuclei circled.

Mormons producing it further front than the other groups.⁹ This is presented graphically in Fig. 5, which shows medians of the three groups' production, with the glide targets shown as larger symbols (since that is where the differences occur) and the nuclei circled. The height difference is a large-sized effect (with the fronting difference being a medium-sized effect), but even though a large effect is generally thought of as something that even a casual observer might recognize, non-systematically asking various speakers of the local variety whether they've noticed anything related to this feature suggests that it may be below the level of consciousness despite its size.¹⁰

Finally, we wish to note that there were several other variables that did not show statistical significance, but still showed a medium- or large-sized effect. Some of these, presumably, were properly excluded by our application of a Šidák correction (Šidák, 1967), but we suspect that some of these results were false negatives resulting from the application of an very conservative standard for statistical significance. Therefore, they may merit further consideration in future research, though we don't discuss them further here.¹¹

4. Discussion and conclusions

First of all, in Utah County, Utah, there are clearly differences in linguistic behavior between active Mormons, inactive Mormons, and non-Mormons. Put another way, not only do Mormons and non-Mormons exhibit differences in their phonological systems, as would be expected given the differences in their social networks (as described by Baker and Bowie, 2009; see also Di Paolo, 1993; Mauss, 1994), there are linguistic differences among Mormons based on their level of activity within that religious tradition.

This actually makes sense—as discussed above, active participation within the Mormon church requires a sizable investment of time in religiously defined (and often hyperlocal) social networks, but those who self-identify as Mormons who don't actively participate in the religion have presumably opted out those networks, or at least out of devoting quite so much time to them (Albrecht, 1998; Albrecht and Cornwall, 1998; Mauss, 1994). This leads to an intriguing problem, though: Given

⁹ This finding leads us to wonder whether at least some of the weakening of glides Morkel (2003) found in Utah English /aɪ/ was related to this difference. Future research on this variable in this community taking into account religious differences is clearly needed.

¹⁰ The mismatch between the effect size and the salience of this variable leads us to wonder if there is something related to the trajectories of /aɪ/ among these three groups that would provide a better description of what exactly the differences are. Recall that these differences were found using midpoint measurements, and so it is entirely possible that, say, the beginnings and ends of the diphthongs are the same and it's only the bits in the middles of the glides that are different. Therefore, we plan to conduct follow-up studies in which we track the entire trajectory of the diphthong, rather than just two points.

¹¹ For completeness, though, the statistically insignificant variables showing a medium-sized effect were: between the active and inactive Mormons, pre-nasal /ɛ/ as in *Ben*, word-final /e/ as in *bay*, pre-obstruent and pre-nasal /æ/ as in *bat* and *ban*, word-final /u/ as in *boo*, pre-lateral and pre-rhotic /o/ as in *pole* and *bore*, pre-obstruent and pre-lateral /ʌ/ as in *but* and *hull*, and pre-lateral /a/ as in *doll*; between the active Mormons and non-Mormons, word-final /e/ as in *bay*, and pre-lateral and word-final /u/ as in *pool* and *boo*; and between the inactive Mormons and non-Mormons, pre-nasal /ɛ/ as in *Ben*, pre-nasal /æ/ as in *ban*, pre-lateral /u/ as in *pool*, and pre-obstruent and pre-lateral /ʌ/ as in *but* and *hull*. Large effects were, naturally enough, rarer among the statistically insignificant results, but they were: between the active Mormons and non-Mormons, pre-lateral /ʌ/ as in *hull*; and between the inactive Mormons and non-Mormons, pre-lateral /u/ as in *book*, pre-obstruent /ɔ/ as in *bought*, and pre-obstruent /a/ as in *bot*. (There were no statistically insignificant large effect size differences between the active and inactive Mormons.)

the nature of Mormonism in Utah County, most of the people there who are inactive Mormons grew up, at least for the most part, as active Mormons. This means that the inactive Mormons would have most likely grown up with active Mormon linguistic features, and so linguistic differences between active and inactive Mormons seem to reflect the linguistic effects of choices made later in life than initial language acquisition. This means that not only do we have what appears to be yet another example of post-adolescent language change (that is, language change following the passage of a hypothesized “critical period” for language acquisition, following [Lenneberg, 1967](#); see [Bowie and Yaeger-Dror, 2015](#) for a review of the literature on this), we have post-adolescent language change that results from a voluntary choice.

The nature of the differences is also interesting. Applying very conservative standards for what counts as a difference between groups, we documented four clear (and in some cases large) differences between groups. It is noteworthy that, under these standards, it was always the active Mormons that were significantly different from other groups, and the inactive Mormons. So, with the pre-obstruent /ɑ/ ~ /ɔ/ (i.e., *bot* vs. *bought*) contrast, the active Mormons were significantly different from the inactive Mormons, with the non-Mormons’ production lying between (but not significantly different from) the other groups. Similarly, the active Mormons fronted /ʌ/ before nasals (as in *bun*) significantly more than both of the other groups, and even though the other groups weren’t significantly different from each other, the inactive Mormons showed what appears to be slightly less fronting than the non-Mormons.

Basically, for those variables, the pattern appears to be that the inactive Mormons may be linguistically more different from the active Mormons than they are from the non-Mormons (though only slightly so). If this holds up, then it leads to an intriguing possibility: When people change their social networks from being fully part of an in-group (in this case, the inactive Mormons changing their networks such that they can be called “inactive” with respect to Mormonism), they may choose to mark themselves linguistically as being different from that in-group—and, in this case, possibly even overshooting the differences between the in-group (the active Mormons) and the out-group (the non-Mormons) so that they’re even more different, perhaps via a sort of hyperaccommodation ([Garrett, 1992](#); [Yaeger-Dror, 1991](#)). Of course, this doesn’t hold for all variables, since the inactive Mormons didn’t come close to overshooting the non-Mormons’ production of the glide of the /aɪ/ (as in *buy*) diphthong, though they were closer to the non-Mormons than to the active Mormons, but it is a testable possibility, and one that should be investigated in cases of malleable social identities beyond religion. (And, of course, as pointed out in [Trudgill, 1986](#), one shouldn’t expect every vowel in the system to be equally susceptible to accommodation pressures.)

However, even if hyperaccommodation cannot be proven, however, the basic finding is clear: When dealing with social identity labels that can be changed at any point in the lifespan, or even with how completely individuals puts that identity into practice in their everyday lives, changes in those identities or activity levels can result in differences in linguistic behavior. As a result, sociologists of language, linguistic anthropologists, sociolinguists, and others in related fields need to be take care to take into account voluntary and malleable social characteristics (such as religion) when conducting their analyses of linguistic behavior. This is, of course, often done, but it needs to be done in a systematic way so that we can develop a better understanding of the ways (at least largely) conscious and voluntary choices interact with (at least largely) unconscious and involuntary forms of linguistic behavior.

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