Social correlates of two vowel changes in Northern England

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Abstract: This article describes two vocalic changes in the Northern English dialect of York. A combination of real and apparent time data indicate fronting of tense back vowels in the GOAT and GOOSE lexical sets, and diphthongization of traditionally monophthongal mid-vowels in the FACE and GOAT lexical sets. The latter process of change, a northward diffusion of more prestigious southern forms, has been noted for some other Northern English dialects, but has not been described acoustically in published work. We show that these two vowel changes have different social meanings in the community. As is the case in previous studies, GOAT and GOOSE fronting is not strongly associated with different speaker groups in the community. Monophthongal realizations of FACE and GOAT, on the other hand, are strongly associated with the speech of the local community, especially working class speech. The results align with predictions of Labov's (1994) Principle III of vowel change in that they show that GOOSE fronting precedes GOAT fronting. However, we show that a full understanding of the trajectories of change requires attention to social indexical properties of these variants. The results furthermore support Watt (2002) and Watt and Milroy's (1999) suggestion that associations of place for FACE/GOAT variants in many Northern English communities are shaping patterns of change.

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1. Introduction

Recent variationist literature has focused new attention on the problem of explaining how different kinds of borrowings diffuse across dialects at different rates. Motivated in part by recent descriptions of global processes of diffusion including quotatives *be like* and *go*, several studies have sought to understand how some features diffuse quickly across geographic and social space apparently unmediated by extensive face-to-face accommodation, while others proceed more slowly, apparently requiring interpersonal contact (Meyerhoff & Niedzielski 2003, Eckert 2004, Milroy 2007, Buchstaller 2008, Stuart-Smith 2007). Milroy (2007), drawing on a briefer discussion of these issues by Eckert (2004), describes diffusions of the former type as *off the shelf* changes, which at the outset of diffusion into a community lack strong locally meaningful associations, but acquire these over time. The latter type, which Milroy calls *under the counter* change, is typically slower and more strongly tied to local social distinctions. From the perspective of much of this literature, a crucial property of such global or macro-level processes of diffusion appears to be the absence of strong local symbolic anchoring, which makes these features readily appropriable into individuals' stylistic repertoires.

This article addresses these issues by focusing on two vocalic changes in the Northern English city of York— GOAT/GOOSE fronting and FACE/GOAT diphthongization. We report evidence from real and apparent time comparisons suggesting that fronter variants of GOAT/GOOSE and diphthongal realizations of FACE/GOAT are both entering the local community. Our results for GOAT/GOOSE align with other recent findings in suggesting a set of phonetic conditioning effects that are fairly constant across dialects (Baranowski 2008, Fridland 2008, Hall-Lew 2009, Jansen 2010, Koops 2010, Hughes et al. 2011, Flynn 2012). Unlike in many North American studies, however, our results show fronting across the entire F2 formant trajectory rather than fronting principally in the nucleus. In addition, we argue that meanings of place shape individual speakers' use of FACE/GOAT monophthongs in a very different way from GOAT/GOOSE fronting. A controlled

measure of subjects' attitudes toward different kinds of association with the local community is shown to be a much stronger predictor of the former variable than the latter. These results support Watt (2002) and Watt and Milroy's (1999) suggestion that associations of place for FACE/GOAT variants in many Northern English communities, are shaping patterns of change. Based on these results, and participants' evaluations of different accents in the community, we propose that these two processes of change differ in their local social symbolism: FACE/GOAT monophthongs are strong stereotypes of York speech, particularly of the working class, while diphthongal variants are linked with "posher" Southern accents; GOAT/GOOSE fronting, as a rapidly spreading global shift, bears no particularly strong local symbolism beyond associations with youth speech (Fridland 2008).

Our discussion is organized as follows: in section 2, we discuss previous work on change in FACE/GOAT and GOAT/GOOSE, particularly in Northern English dialects; in section three we describe our data and method; in sections four and five we present results on FACE/GOAT monophthongisation and GOAT/GOOSE fronting, respectively; in section six we summarize the main consequences of our findings.

2. FACE/GOAT diphthongization and GOAT/GOOSE fronting in Northern England

2.1 FACE/GOAT diphthongization Northern England

Over the past two decades, the literature on sound change and dialect contact in the UK has been dominated by discussion of a set of innovations spreading outward from Southeast England. Several of the sound changes best described from this perspective include t-glottaling (Milroy et al. 1994, Docherty & Foulkes 1999, Kerswill & Williams 2002, Llamas 2007, Watson 2006, Foulkes & Docherty 2006), th-fronting (Trudgill 1988, Milroy 1996, Williams & Kerswill 1999, Richards 2008), labiodental /r/ (Foulkes & Docherty 2000) and changes on constraints on *was/were* variation (Tagliamonte 1998, Britain 2002, Richards 2008, Cheshire & Fox 2009). Most accounts of these

processes of change have focused on local speakers' understandings of linguistic variants as indices of place and their overlap with other meanings including, age, gender, class and ethnicity (Richards 2008, Llamas 2007, Cheshire & Fox 2009). Despite this recent focus on linguistic indices of place, very little variationist work, and no acoustic work, has focused on variation between monophthongal and diphthongal realizations of the FACE and GOAT lexical sets, a principal shibboleth of Northern English speech.[1]

The most extensive study of variation in mid vowels in northern English dialects is Watt's (1998, 2000, 2002) and Watt and Milroy's (1999) work from Newcastle upon Tyne, based on auditory analyses of word list and conversation data collected in the mid 1990's. Watt (2000, 2002) distinguished several different variants including, principally: (i) front and back closing diphthongs [eɪ] and [əʊ], similar to the variants found in standard Southern English dialects; (ii) "pan-northern" monophthongs [eː] and [oː], variants with wide currency across northern England (with some variation in height); and (iii) "localized" centering diphthongs [ɪə] and [ʊə], found among conservative Newcastle speakers and some immediately surrounding communities, but not elsewhere in northern England. In addition, for back vowels in the GOAT set, Watt (2002) and Watt and Milroy (1999) distinguish a fronter monophthong, [ɵː]. Fronted, schwa-like variants for the GOAT set have also been reported in Yorkshire (Williams and Kerswill 1999, Watt and Tillotson 2001). The apparent time evidence from Watt's and Watt and Milroy's Newcastle studies suggests gradual loss of the highly localized centering diphthongs. There is some increase in the use of southern closing diphthongal variants, particularly among middle class speakers, but, much more importantly, an increase in northern monophthongs. Watt and Milroy (1999) interpret these results

[1] Dialectological descriptions of these features include dialectal literature (Orton, Sanderson and Widdowson 1978, Trudgill 1990)

as suggesting a process of regional dialect leveling shaped by different kinds of meaning attaching to the different variants. Centering diphthongs in the community are associated with older industrial working class Newcastle life. The pan-northern monophthongal variants accommodate a less marked identity as northerners, but "Modern Northerners" (Watt 1998:7). That is, the fact that Newcastle speakers in Watt and Milroy's sample do not tend more strongly toward southern [eɪ] and [əʊ], according to their analysis, is a consequence of the emblematic status of these features as markers of northernness, and local speakers' indexing of these meanings through speech. Neither Watt (2002) nor Watt and Milroy (1999) report on controlled attitudinal data or systematically collected qualitative data in support of these claims, however.

In order to test the claim that patterns of FACE/GOAT monophthongisation are strongly shaped by identities of place, we present controlled data examining whether the same community members that express strong allegiance to the local community best conserve the local monophthongal forms. We do so with data from another northern English city, York, where variation between monophthongal and diphthongal realizations of FACE/GOAT is also found. We compare attitudinal effects for FACE/GOAT with those for GOAT/GOOSE fronting, which the literature suggests has no particularly strong place-related meanings, as we discuss next.

2.2 GOAT/GOOSE fronting as a global process of diffusion

A striking pattern emerging from the sociophonetic literature of the last three decades is the prevalence of fronting of GOOSE, or GOAT and GOOSE together, in English dialects across the globe. This includes dialects in the UK (Henton 1983, Bauer 1985, Hawkins & Midgley 2005, Trudgill 2001, Kerswill and Williams 2005, Kerswill & Williams 1999 Watt & Tillotson 2001), North America (Clarke et al. 1995, Thomas 2001, Fridland 2008, Baranowski 2008, Hall-Lew 2009), South Africa

(Mesthrie 2010), Australia (Cox 1999) and New Zealand (Easton & Bauer 2000). Two properties of GOAT/GOOSE fronting that make this variable of particular interest for theories of diffusion are that, much like quotative *be like*, GOAT/GOOSE is spreading very quickly, and in many contexts seems to lack strong indexical links to local social distinctions (Fridland 2008). As Fridland (2009) notes for North American dialects, it has diffused into speaker groups that often do not participate in sound changes anchored to local social factors. In particular, GOOSE fronting has been reported among African American speakers in several communities (Fridland and Bartlett 2006), Chicano speakers in Los Angeles (Fought 1999) and Asian Americans in San Francisco (Hall Lew 2009).

Within UK dialects, fronting of GOOSE has been described for dialects in both northern and southern England, including RP (Henton 1983, Bauer 1985, Hawkins & Midgley 2005); Milton Keynes (Kerswill & Williams 2005); Carlisle (Jansen 2010); and Manchester (Hughes et al. 2012). Fronting of GOAT has been described for RP (Grimson 1970, Wells 1982, Trudgill 2001), Hull, Reading and Milton Keynes (Williams and Kerswill 1999, Kerswill and Williams 2005), Newcastle (Watt & Milroy 1999), Bradford (Watt & Tillotson 2001), Manchester (Hughes et al. 2012) and some Scottish English dialects (Jones 1997). A cross dialectal acoustic study by Ferragne and Pellegrino (2010) with fairly small samples of wordlist data from 13 dialects across the UK and Ireland suggests some evidence of fronting of goose in nine of these dialects.

The literature, however, suggests some phonetic differences between these processes of change within North American dialects, and between North American and UK varieties, which raises the question of whether the different patterns of change described are the "same change" (Thomas 2001, Baranowski 2008, Koops 2010). Most notably, while some sources suggest that in most US dialects, fronting of GOOSE is mainly in the nucleus (Hall-Lew 2009, Koops 2010), available descriptions suggest that it is rather the whole vowel that fronts in the UK (Kerswill & Williams 2005). In the case of GOAT, fronting has been reported more in the off-glide in both North

American and UK studies (Kerswill and Williams 2005). A second possible difference between back vowel fronting in the US and UK concerns Labov's generalization (Labov 1994: 208) about back vowel fronting, namely that GOAT fronting is parasitic on GOOSE fronting. Specifically, Labov observes that GOOSE fronting typically precedes GOAT fronting temporally and is further advanced in the vowel space in dialects where both vowels front, a pattern that has shown up in several US dialects. Nevertheless, Watt (2000) reported GOAT fronting in Newcastle in the absence of GOOSE fronting. That is, while several members of Watt's sample used [ɵː] variants for GOAT, fronted /u/ was not observed. Watt (2000: 95), in fact, describes the vowel in Newcastle GOOSE as among the closest to cardinal /u/ found in modern English. Watt's results suggest the possibility that northern English dialects are more generally exceptional in flouting Labov's generalization. We address this question below.

3. Data and Method

3.1 The City of York

Participants in our study were all native speakers of English from York, England (population ~200,000, UK Census, 2009). Variation in morphosyntactic, lexical and consonantal features of this dialect have been reported on in an extensive set of publications by Tagliamonte and colleagues, and we refer readers to these sources for additional descriptions of the community and dialect (Tagliamonte 1998, Tagliamonte and Smith 2002, Tagliamonte et al 2005, Tagliamonte and Temple 2005, Tagliamonte and Roeder 2009, Tagliamonte and Baayen, 2012).

Unlike most other cities in Yorkshire and northern England, York's economy is not based principally on industry but rather on tourism. York is known for its well-preserved Roman and medieval architecture, including its Minster (cathedral), ramparts surrounding the city and snickleways—narrow pedestrian streets through the medieval and Elizabethan old quarter. York is

also more economically advantaged than many surrounding communities, with a lower unemployment rate than the rest of the surrounding Yorkshire and Humber regions (UK Census, 2001 data). In a 2012 survey by a leading national real estate firm, York ranked second in a list of desirable cities to live in the UK.[2] Several participants in our study cited the history and architecture of York as well as its relative economic advantages as reasons for enjoying living in the community and for wishing to stay in the community. Comments by participants Sean and Brendan[3] in (1) typify a way that some speakers in our data value perceptions of the community by outsiders, especially its "poshness".

(1) ***Brendan and Sean***

Brendan: I really like York and I really like the fact that I come from York as well, because if you- if you say like, you're talking to your friends from down south and whatever they're all like, "Where you from?" And then you're like, "up north." And they're all, "What? Like Birmingham?" or like-.

Sean: Birmingham up north?

Brendan: Yeah that's north to them, innit? You know, or like, you know some scabby place like Grimsby.

Sean: Middlesbrough.

Brendan: You're like, "no, I'm from York." And, "ooh the posh place." And everyone goes, "ooh from York, oh it's really nice."

Sean: "Oh yeah, York. York's nice. I've been on holiday, yeah."

Brendan: "It's really nice there." And it's like, "Yeah it is." That's really cool.

[2] http://www.rightmove.co.uk/news/files/2012/02/Rightmove-Happy-At-Home-Index.pdf
[3] All participant names are pseudonyms.

Sean: I live there mate.

We focus more on participants' perceptions of the community and different groups within it shortly.

3.2 Sampling and recording procedures

Our data come from two sources. One data set, which we will call the 2008 sample was gathered in 2008-2011, and consists of 18 speakers, 18-22 years old at the time of recording. To examine the possibility of change in real time, we compare data from this 2008 sample with data from a 32-speaker sub-sample of Sali Tagliamonte's York Corpus project gathered in the mid-to-late 1990's (Tagliamonte 1996-1998).[4] The 1998 sub-sample was constructed to be matched as faithfully as possible to the sex, educational and occupational profiles of speakers in the 2008 sample. To gauge evidence of change in real time within the 1998 sample, we divided this sample into a younger (17-31) and older (59-78) group. We summarize this sampling in Table 1, below. Details on each speaker's age, sex, educational attainment and occupation are provided in the appendix.

Table 1: Sampling summary

Age group	**Women**	**Men**
2008 sample (18-22, M=20.3)	10	8
1998 sample, younger (17-31, M=23.0)	8	8
1998 sample, older (59-78, M=65.2)	8	8

[4] We're extremely grateful to Sali Tagliamonte for sharing this excellent data set with us.

The 1998 samples were sociolinguistic interview data and are discussed in detail in several of Tagliamonte's publications (see especially Tagliamonte 1996-1998). The length of each interview varies from recording to recording but generally lasts approximately 45 minutes per speaker.

The data collected in the 2008 project were of three types. First, adapting Milroy et al.'s (1994-1997) procedure, we recorded participants speaking in pairs, usually of the same sex. These data, therefore, are not from interviews, but rather from conversations between two members of the community in self-selected pairs. To facilitate conversation in this context, we provided conversational prompts modeled on traditional sociolinguistic interview topics—childhood narratives, school, community etc. The fieldworker, who was present but did not participate in the data collection sessions, explained that the prompts outlined topics that subjects could choose to discuss if they wished to, but were they were not required to do so. This portion of the data collection session lasted approximately 45 minutes. The researcher facilitating the data collection sessions was a native speaker of Yorkshire English.

Following the conversation task, each participant was recorded reading a 200-item wordlist, containing 10 GOAT items and 16 FACE items. No GOOSE items were included in the wordlist.

The final portion of the data collection session was an ethnographic interview with each pair, lasting about 20 minutes. The total set of ethnographic interview data was just over three hours, ten minutes. The interview focused on participants' perceptions of ways the local community was changing, and perceptions of different accents in the local community. As part of this task, the interviewer asked each subject each of the questions in (2) below. We then assigned a value to each answer on a 3-point scale: 1 point for a positive answer, -1 for a negative answer and 0 for a neutral response, and combined these scores into an index, intended to measure participants' identification with the local community. The possible range for this index is therefore -4 to 4.

(2) a. Do you like living here in York?

b. Do you plan to settle here in York?

c. Do you like the York accent?

d. Are you proud to be from York?

We note that asking these questions in paired interviews allows for carryover effects in that one interviewee's answers to these questions may influence that of the other interviewee. We nevertheless chose this technique for its ability to stimulate revealing debate among participants about meaningful differences in language use in the community, which we discuss in detail below.

We extracted approximately 35 tokens per vowel per speaker from the conversational data, and all relevant word list tokens—10 for GOAT and 16 for FACE. We did not extract tokens from the ethnographic interview portion, part of which focused explicitly on attitudes toward language use.

For each token, we took 9 time-normalized F1 and F2 measurements initially using a Praat script, and then hand-corrected (McDougall 2004, 2006). We normalized the data using Watt and Fabricius' modified procedure using the *Vowels* package for R (Kendall & Thomas 2012) with reference vowels FLEECE, START and THOUGHT, for which measurements was taken at the vowel midpoint only. (See Fabricius et al. 2009 Flynn 2011, Flynn and Foulkes 2012 on evidence that that Watt and Fabricius' modified procedure is best suited to sociophonetic analysis.) Five tokens per speaker were measured for each reference vowel.

We measure GOAT fronting by comparing age group data for the seventh time-normalized measurement point for F2 and GOOSE fronting at the fifth time-normalized measurement points for F2. As we explain shortly, these points correspond to the parts of the formant trajectory that show

the greatest degree of fronting, that is, the greatest cross-age-group difference. To measure FACE and GOAT diphthongization, we took, for each token, the Euclidean distance between onset and offset using the first and ninth normalized values for F1 and F2 (Fabricius 2007).

4. FACE/GOAT monophthongisation

We begin by plotting normalized mean F1 and F2 values by sex and age group. Figure 1 below plots, for men and women, mean F1 and F2 values for reference vowel midpoints and mean values for each of the time-normalized measurement points for FACE, GOAT and GOOSE. The data shown are from spontaneous speech.

Figure 1: Mean F1 and F2 values by lexical set and age group for women and men

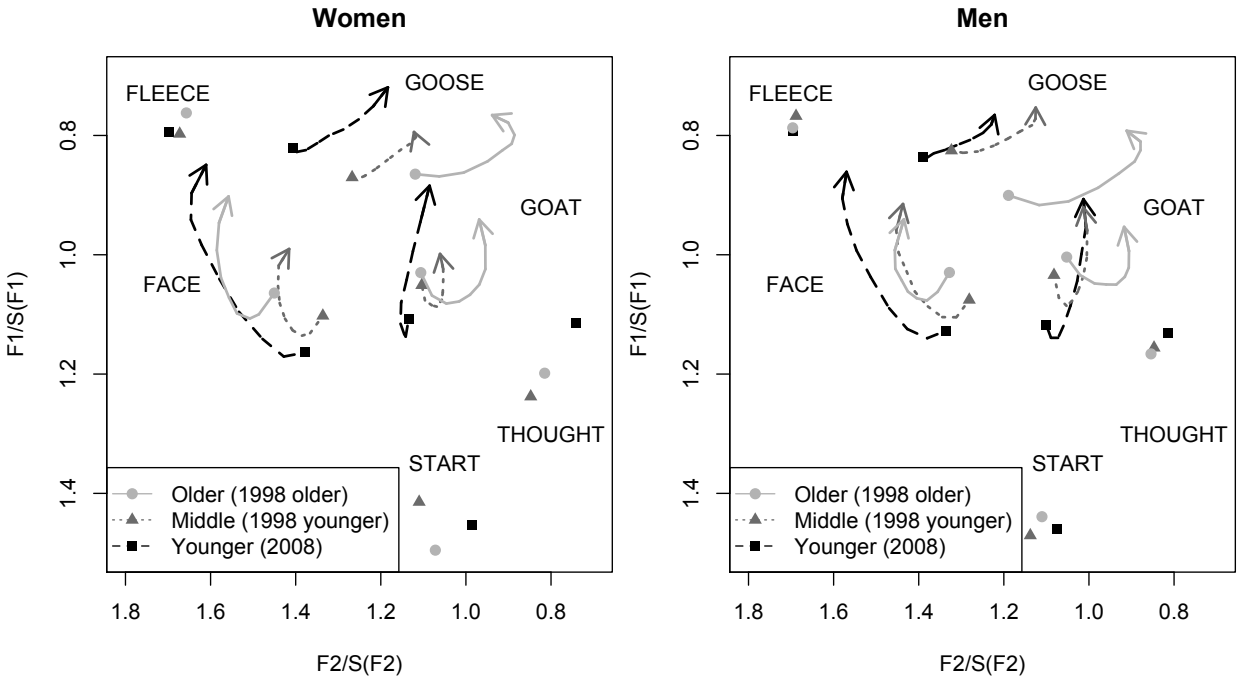
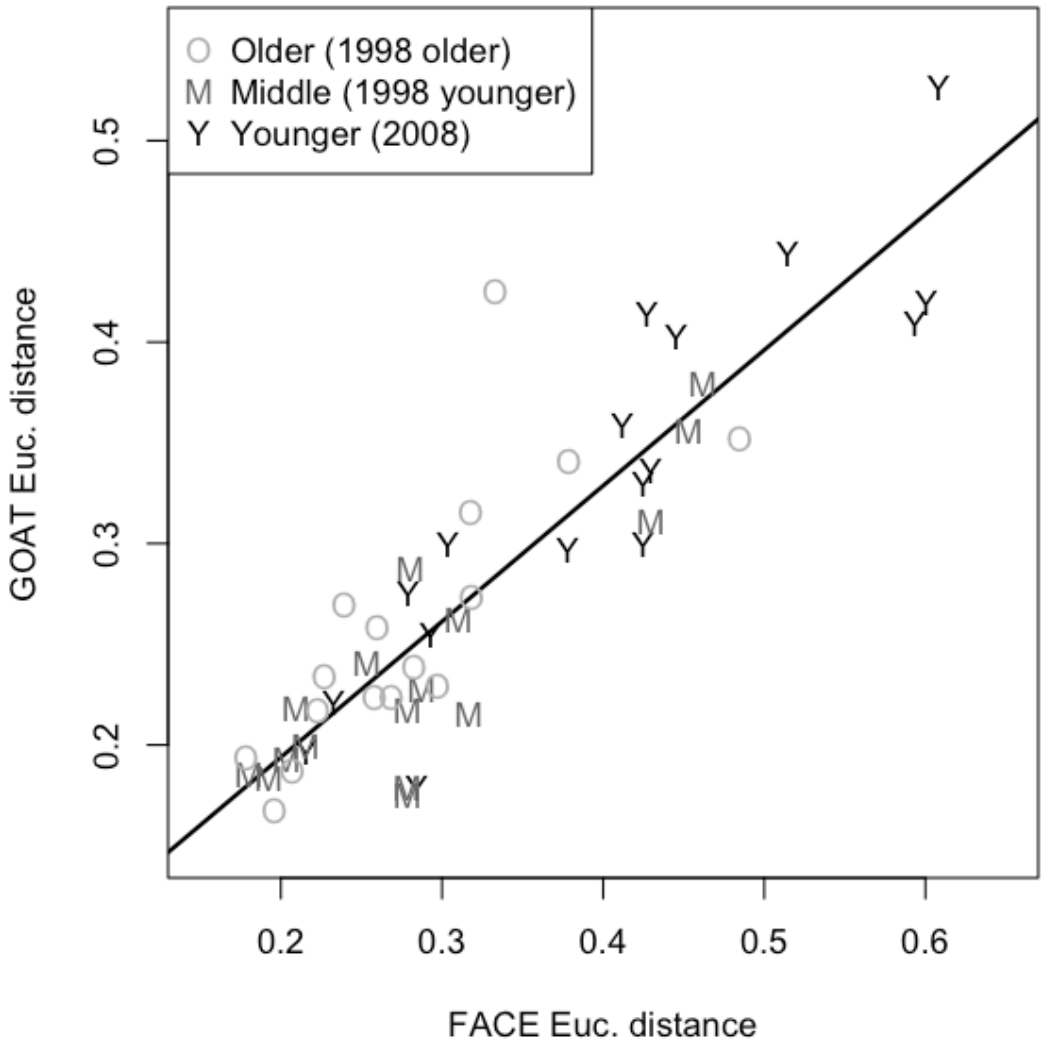


Figure 1 suggests two findings of particular relevance to the discussion. First, the plots show, on average, greater acoustic movement in the vowels for GOAT and FACE in the 2008 sample than in the older samples. The differences between the two 1998 samples is less dramatic, and indeed among women, the older 1998 speakers appear to show more diphthongal realizations for GOAT and FACE than the younger 1998 subsample. We return to these facts shortly. Second, Figure 1 shows that the 2008 speakers differ from their elders in showing fronter realizations of GOAT particularly in the offset, and fronter onsets and offsets for GOOSE. Among male speakers, the 2008 sample does not seem to show dramatically fronter realizations of GOAT offsets and GOOSE, but, in all cases, the older 1998 speakers show the backest realizations for GOAT and GOOSE. We consider these differences further in light of the dynamic formant analysis of F2 presented in section 4.

Figure 2 plots mean Euclidean distance values by speaker for FACE and GOAT, again showing conversational data only. Lower values indicate more monophthongal realizations. It shows a very tight cross-speaker correlation in Euclidean distance values for FACE and GOAT (Spearman's rho=.90, $p<.0001$). These results are similar to results reported by Watt for Newcastle suggesting that the same speakers who diphthongise FACE also diphthongise GOAT.[5] They align with approaches to sound change where sound change applies to phonological features—[-high, -low] vowels in this case.

[5] Though note that the Newcastle facts are complicated by an additional variant for FACE and GOAT, namely centering diphthongs. See Watt (2002) for discussion.

Figure 2: Mean Euclidean distances for GOAT and FACE by speaker



Despite the apparent motivation for treating FACE and GOAT diphthongization as a single process of variation and change, we treat these two vowels separately in the analyses to follow, since coarticulatory effects have different consequences for these two vowels. For example, a following velar might be expected to favour backer offsets for both GOAT and FACE. In the case of FACE where the tongue body is in anterior position, coarticulation with a following velar requires a greater degree of movement than for GOAT, where the tongue body is already back. Thus, a following velar generates a more diphthongal realization for FACE, but not for GOAT. In addition, much previous

literature suggests that realization of goat are conditioned in part by individual speakers' realizations of GOOSE, while FACE is, by hypothesis, insensitive to the realization of GOOSE (Labov 1994, Baranowski 2008). We therefore fit separate models for GOAT and FACE which we summarize in turn, below.

4.1 GOAT diphthongization

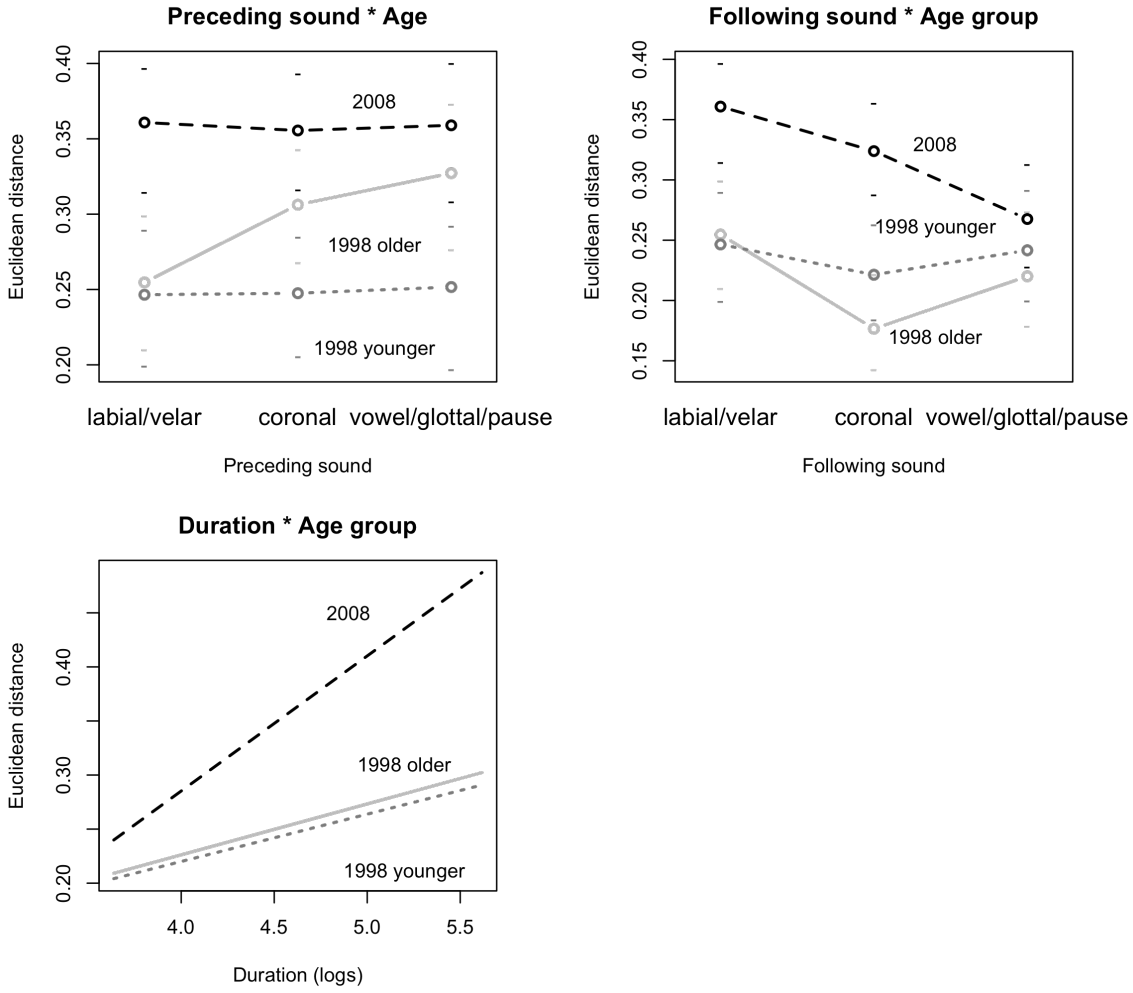
We examined linguistic and social effects on variation in FACE and GOAT diphthongization by fitting a series of linear mixed effects regression models, with normalised Euclidean distance measurements of FACE and GOAT tokens as the dependent variable and random intercepts for speaker and lexical root. The analysis was conducted using the lmer() function in the lme4 package in R. The fixed social predictors tested were the speaker's attitudinal index score, style, speaker sex and speaker age group. Because the 1998 corpus does not include wordlist, or attitudinal score data, these predictors are excluded in models with all three age groups and included in separate models with only the 2008 data. We treated the attitudinal score as a continuous variable with possible values ranging from -4 to 4 (see above). Style and speaker sex were factors with two levels each: word list vs. conversation; and male vs. female respectively. The age group factor had three levels corresponding to speaker age and sample as described above: 1998 older sample; 1998 younger sample and 2008 sample. The fixed linguistic predictors tested were the natural log of vowel duration (Klatt 1973),[6] and following and preceding voicing, manner and place of articulation. (Coda-/l/ was coded as a velar. Onset /l/ was coded as a coronal.) In a few cases, values for following and preceding voicing, manner and place of articulation are recoded in different ways in the different models summarized below for reasons to be made clear shortly.

[6] The purpose of this step was to make the data more normally distributed and better suited for modeling.

Variables were selected using a step-up procedure similar to that employed in Goldvarb (Sankoff et al., 2012) and Rbrul (Johnson, 2012). Fixed main predictors improving the model significantly (α=.05) were added level-by-level. We then used this same step-up procedure to evaluate two-way combinations of variables where plotting suggested a possible interaction. The analysis revealed no interactions with >2 predictors.

We begin by describing a model of GOAT diphthongization, with all three age groups (N=1712, r-squared=.40). The step-up procedure described above selected interactions for preceding sound * age group, following sound * age group and log-duration * age group. The analysis revealed no significant main effects or interactions for speaker sex or for preceding or following manner of articulation or voicing. We illustrate the selected fixed effects in the partial effects plots below. The confidence intervals shown are 95% Bayesian confidence intervals, estimated by MCMC-sampling (10,000 samples) using the *LanguageR* package in R.

Figure 3: Partial effects for a model of GOAT diphthongization



The upper left panel in Figure 3 plots partial effects from this model for the interaction between preceding sound and age group. This plot shows that the 2008 subsample favors longer Euclidean distances, and the 1998 older and younger subsamples tend toward shorter Euclidean distances, but that the preceding sound effect is not constant across age groups. Preceding labials and velars favor shorter Euclidean distance measurements vis-à-vis coronals and vowels/glottals/pauses only among the 1998 older speaker. This effect plausibly reflects well

known coarticulatory effects of labials and velars together with the somewhat exceptional shape of GOAT formant trajectories for the 1998 older speakers. Coarticulation of the onset of GOAT vowels with a preceding velar or labial will yield lower formant values. In the former case, the onset will have a backer realization and in the latter case, lip-rounding and protrusion co-occurring with labials will extend the vocal tract and produce lower formant values (Stevens 1997:474, 2001:292). Figure1 shows that the 1998 older speakers have fairly horizontal GOAT formants unlike the 1998 younger speakers and 2008 speaker groups. For this reason, coarticulation of GOAT onsets with preceding labials and velars will therefore shorten the Euclidean distance between onset and offset for the 1998 older speakers to a greater extent than for the 1998 younger speakers and 2008 speakers.

Similar effects are shown in the upper right panel of Figure 3 which plots the interaction between age group and following sound. For both the 2008 and 1998 younger speaker speakers, labials and velars favor longer Euclidean distance values for GOAT and coronals favor shorter measurements. Among the 1998 older age group, however, this effect is much stronger. We again relate this to well-known coarticulatory effects of these sounds together with flatter formant trajectory for GOAT for the 1998 older speakers. That is, for the 1998 older speakers, coarticulation of a GOAT offset with a following labial/velar stretches the Euclidean distance measurement to a greater extent than for the 2008 and 1998 younger samples that show more vertical trajectories.

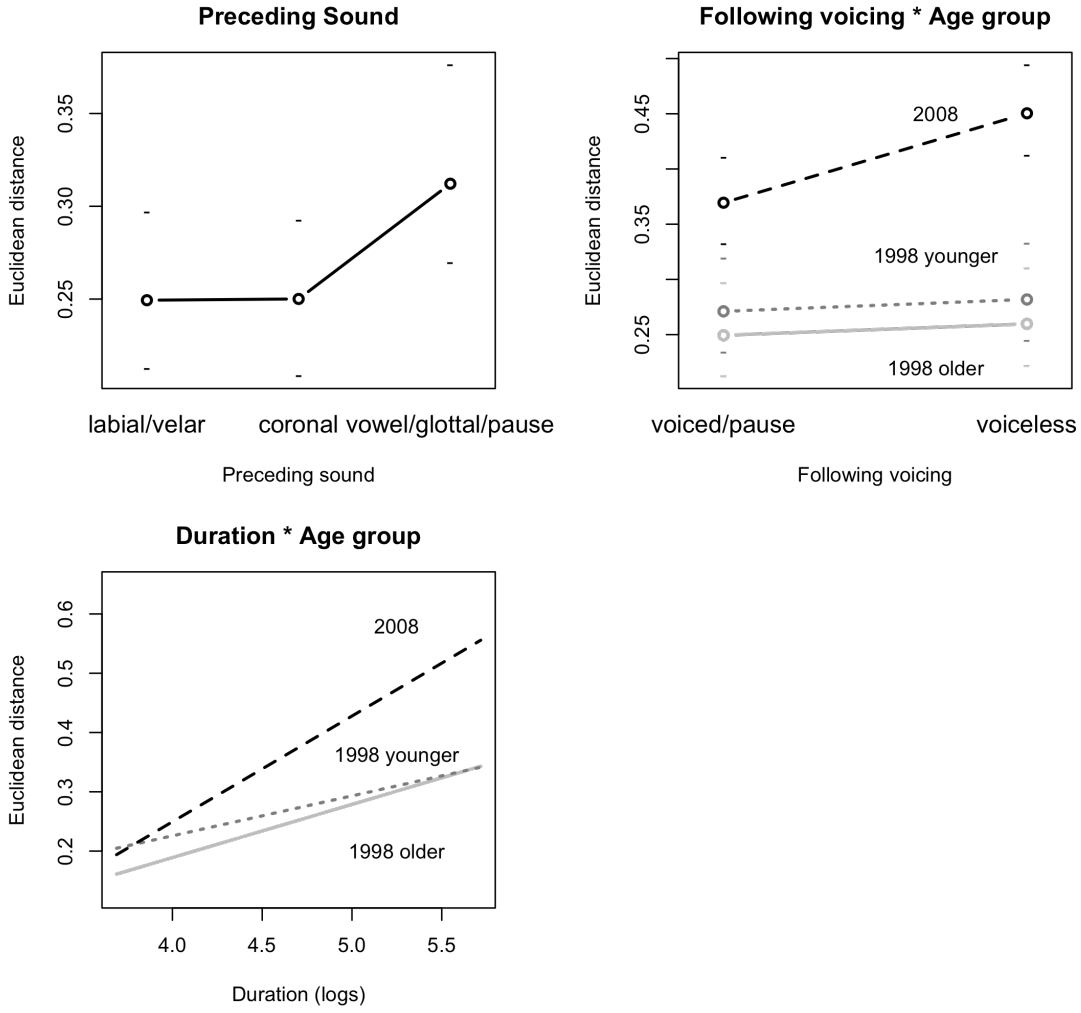
Finally, the lower panel in Figure 3 shows partial effects for the interaction between vowel duration and age group. This plot shows, again, that Euclidean distance values for the 2008 sample are higher than those for the 1998 samples which differ very little. The different slopes for these age groups, however, show that the effect of vowel duration on Euclidean distance is much stronger for the 2008 sample than for the 1998 samples, though the slope is positive for all three sub-samples. We take this interaction to reflect articulatory undershoot. In short-duration tokens, the articulators have less time to make the lingual gesture resulting in abbreviated gestures and shorter Euclidean

distance measurements. For the 1998 subsamples, which are more monophthongal, the duration effect is weaker since the lingual gesture required is shorter.

4.2 FACE diphthongization

Analysis of FACE diphthongization yielded similar results. We again fit a model for a set of data containing all three age groups using the procedure described above for GOAT diphthongization. The analysis revealed a significant fixed main effect for preceding sound and significant interactions for log-duration*age group and following voicing*age group, which we illustrate in the plots below (N=1862, r-squared=.56). The analysis revealed no significant main effects or interactions for speaker sex, preceding or following manner of articulation, or preceding voicing.

Figure 4: Partial effects for a model of FACE diphthongization



The upper left panel in this figure shows effects for preceding sound similar to those described above for GOAT: a preceding vowel, glottal or pause favours longer Euclidean distance measurements, vis-à-vis preceding coronals, labials and velars. The plots in the upper right panel and lower panel of Figure 4 show two interactions contributing significantly to the model. Both plots show that, as in the case of GOAT, the 2008 speakers show higher Euclidean distance values than the 1998 subsamples. (See also Figure1.) The upper right panel shows that among the more

diphthongal 2008 speakers but not among the more monophthongal 1998 subsamples, following voiceless sounds favour longer Euclidean distance measurements vis-à-vis following voiced sounds and pauses. This voicing effect for diphthongs is reminiscent of well-known following voicing effects on PRICE monophthongs in several North American and UK dialects (Moreton & Thomas 2004, Trudgill 1999:72, Orton, Sanderson, & Widdowson 1978) dialects. We know of no previous literature reporting following voicing effects for FACE vowels.

Finally, the lower panel of Figure 4 shows a duration * age group interaction similar to that reported above for GOAT: the effect of duration is much greater for the 2008 than for the 1998 samples, whose slopes are similar. We again take this to be a simple undershoot effect. That is, the duration effect is greater among the 2008 speakers, because they are more diphthongal, and duration consequently has a greater effect on the realization of the tongue body gesture during production of the diphthong.

The data presented so far provide some real time evidence of change toward diphthongal realizations of FACE and GOAT with York speakers from the 2008 sample showing longer Euclidean distance values overall than speakers from the two 1998 samples. The 1998 data, however, suggest little evidence of an apparent time difference, and we return to this issue shortly. The contrast between the 2008 sample and the 1998 samples, however, is in keeping with Watt's (2000, 2002) and Watt and Milroy's findings (2002) from Newcastle, where upgliding diphthongal realizations of FACE and GOAT were more frequent among younger speakers, suggesting a gradual increase in diphthongal realizations of these vowels in the community. A question raised by the above real time results, then, is how to explain this change in the community. We consider these issues in the following section in view of evidence on stylistic and attitudinal correlates of FACE/GOAT diphthongization.

4.3 Attitude toward the community and style as correlates of FACE/GOAT diphthongization

As discussed in section 2, Watt (2000) and Watt and Milroy (1999) explained conservation of northern monophthongal forms among some speakers as reflecting dialect loyalty. In the ethnographic interview portion of our 2008 data collection sessions, participants volunteered metalinguistic comments about the use of diphthongal vs. monophthongal realizations of FACE/GOAT in the community in five of nine interviews, thus demonstrating overt awareness of the indexical potential of these vowels. In most cases, the comments were used as evidence that given community members have "broad" local accents. FACE/GOAT monophthongs, were in fact one of the most frequently invoked kinds of evidence for a given community member having a "York" or "Yorkshire" accent together with definite article reduction, another stereotypical feature of Yorkshire speech (Tagliamonte and Roeder 2009). One such example comes from the excerpt in (3) where Dan and Mike are discussing whether each has a "Yorkshire accent". They agree that Dan has one, and as evidence, Dan cites his pronunciation of the name "Dave".

(3) *Dan and Mike*

Mike: You definitely have a Yorkshire accent.

Dan: Yeah I've pr- - I do.

Mike: But I don't really have one I don't think.

Dan: Well I used to think that it was just in the way that I would say like, say if I said like, "Dave," [[dɛːv]] it would just have like an [ɛː].[7]

Mike: "Dave" [mimicking] Yeah, [ɛː].

[7] Note that the York monophthongal variant is slightly more open than the [eː] realization described by Watt for Newcastle.

Similarly, Kerry and Camille agree that Camille has a "broad Yorkshire" accent and Kerry notes Camille's pronunciation of the vowels in *post* and *coat* as examples of this.

(4) ***Kerry and Camille***

Interviewer: Ok. What accent would you say that you had? How would you describe it?

Camille: Broad Yorkshire [laughs].

Kerry: You're a lot broader than I am.

Camille: Yeah.

Kerry: You've got your "post" [poːst].

Camille: Yeah.

Kerry: And your "coat" [koːt]…

In a third interview, Lois laughs about a roommate who she says "goes broad" (uses more Yorkshire accent features) when talking on the telephone with her grandfather from West Yorkshire, and cites her pronunciation of the vowel in *no* in doing so.

(5) ***Lois***

Well I said to her, "were you talking to somebody in your family?" And she said, "yeah." It was her granddad. And I said, "is- is he really broad Yorkshire, by any chance?" "Yeah he is." I said, "I can tell cos you changed completely. And you went so broad." It was kind of, "no" [noː]. all that sort of going on.

Finally, in the excerpt in (6), Nikki offers an imitation of a Yorkshire accent with the phrase *off down the road*, with a monophthong in *road*.

(6) *Michelle and Nikki*

Interviewer: So if you had to pick one word to describe it like, York, or Yorkshire or northern or, something else, what- which one would you pick- do you think most fits what you think your accent sounds like?

Nikki: I'd say northern.

Interviewer: northern (0.5) mm, okay.

Nikki: Probably Northern yeah, to me.

Interviewer: How about you Michelle?

Michelle: Yorkshire [laugh]

Interviewer: You'd say Yorkshire.

N: "Off down [ʔ] road"[ɹoːd][8]

In addition, in a few instances in our interview data, monophthongal productions of FACE/GOAT were linked with another kind of social identity in the community, namely "chavs". This is a generally pejorative term for a type of young person in York and elsewhere in contemporary Britain.[9] For several of the participants in our study the label "chav" seemed to have class connotations, as chavs were described as people typically living on council estates (means-

[8] Note that in this example the definite article is reduced to a glottal stop. See Tagliamonte and Roeder (2009).

[9] "Chavs" is a label frequently used in York and surrounding communities, but other UK communities have other labels, including "dings" and "scallys" that seem to correspond to the set of meanings typically associated with "chav" in York.

tested public housing). Other participants described what a "chav" is in terms of ways of dressing, often used by other groups of young people in urban areas: expensive athletic shoes, "trackie" athletic trousers tucked with trouser legs into socks, gaudy jewelry and baseball caps turned backwards. Girl chavs were described in one interview as teens who have babies and wear big hoop earrings, hair gel and have dyed hair with conspicuous roots. Other practices associated with chavs by our participants included petty criminality such as vandalism and drug use and rude comments to or intimidation of strangers in public spaces. Other participants also associated chavs with a rejection of schools and defiance toward older community members.

When asked how chavs typically speak, the most frequently mentioned feature was profanity, however in three interviews participants associated chav speech with local accent features, noting that chavs often tend to speak with "strong" or "broad" Yorkshire accents. The excerpts below from Dan and Mike and Josh and Joe, note this and as examples note the pronunciation of the words *mate* and *road*, which they produce with monophthongs.

(7) ***Dan and Mike***

Dan: I think- I think that like chavs might talk in a Yorkshire accent.

Mike: They swear loads.

Dan: Yeah.

Mike: Chavs generally swear really [inaudible].

Dan: Yeah and they use loads and loads of slang. Well like, chav slang, like "banging".

Mike: Yeah. (1.0) "You got two [inaudible] that you can like effing lend me mate?" [[mɛːt]]

(8) *Josh and Joe*

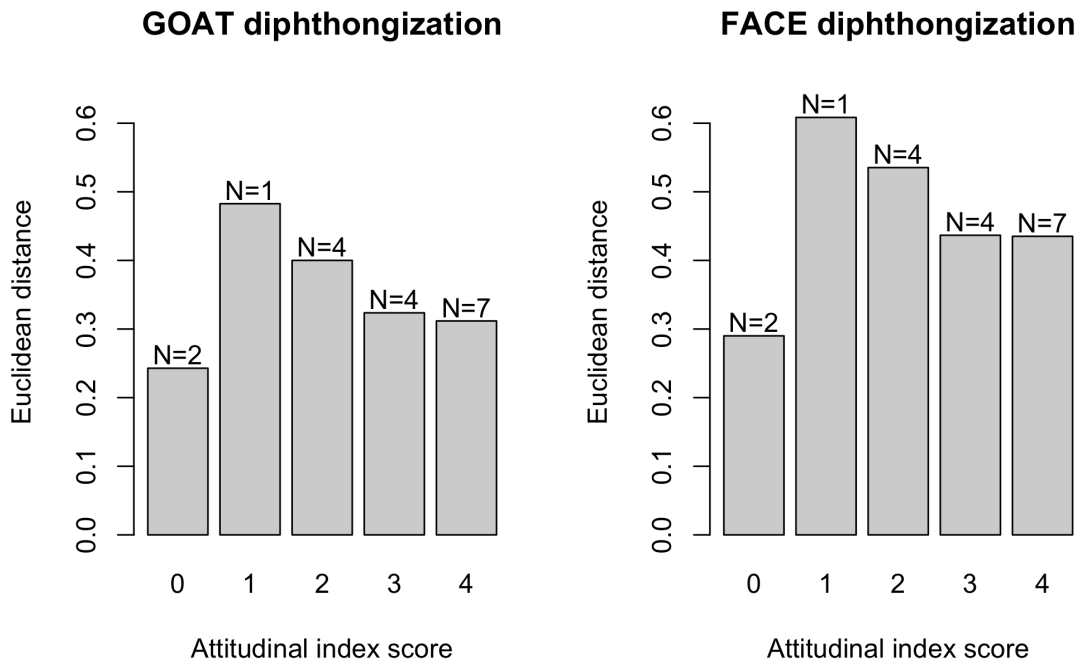
Joe: Basically the (1.5)- I don't know about dropping letters of the end of words, cos I tend to do that as well.

Josh: Yeah I do that quite a bit. They [chavs] do it more and er (1.4) instead of saying "road" [ɹəʊd] it'd be "road" [ɹɵːd].

We return shortly to the possible importance for our analysis of perceptions of chav speech. To examine the relationship between individuals' attitudes toward the local community and use of diphthongal vs. monophthongal realizations of FACE/GOAT, we correlate participants' mean Euclidean distance values for FACE and GOAT, with an index of scores to the questions in (2), as described in section 3.

We plot mean Euclidean distance measurements for FACE and GOAT by the attitudinal index score (ranging from +4 to –4) in Figure 5. The Ns above each bar represent the number of speakers for each score.

Figure 5: Mean Euclidean distance measurements by attitudinal index score.



The two panels in this plot show a similar pattern with slightly higher Euclidean distance values for FACE than GOAT. This similarity reflects the fact that diphthongization of FACE and GOAT correlate closely across speakers in the sample. (See Figure 2, above.) The two panels indeed show some evidence of a negative correlation between mean Euclidean distance and attitudinal index scores. With the exception of the two speakers with 0 values for the attitudinal index and low mean Euclidean distance scores, the plots show that more monophthongal realizations for FACE and GOAT correlate with positive attitudes toward the community and dialect.

The two speakers on the left edge of this plot with 0-values for the attitudinal index score were friends recorded together, Michelle and Nikki. They were exceptional not only in their disaffection with the community, but also in their way of expressing attitudes toward the community. In particular, Nikki is the only participant to use profanity during the interview not in

imitation of a chav (*Who the fuck d'you think you are? [Addressing an absent community member]*), and was flippant in answering several interview questions, including that in (9).

(9) ***Michelle and Nikki***

Interviewer: Have either of you got anything else you want to add about what it's like to live in York or what you think of Yorkshire people, Yorkshire speaking.

Michelle: No.

Nikki: Kill the tourists and I'll be happy. I'm a very depressing child.

She also expressed particular resentment toward her parents' generation, when asked about differences between the way older and younger members of the community speak.

(10) ***Michelle and Nikki***

Nikki: [I] think it's a generation thing and they don't think we have the same education that they did,

Interviewer: Okay

Nikki: and they try to belittle us and, some people it works and some it doesn't. I couldn't, to be brutally honest, couldn't give two flying pigs' rear ends

Michelle: [laugh]

Nikki: what their education was.

Michelle and Nikki explicitly identified as non-chavs in their interview. (No participant, in fact, self-identified as a chav.) However, throughout their interview, Michelle and Nikki displayed a casual toughness and defiance often associated with chavs in the community, whose speech, in our

interview data, is also stereotyped as involving monophthongal realizations of FACE and GOAT. The data from our participants' descriptions of chav speech and from Nikki and Michelle's interview therefore suggest that monophthongal realizations of FACE and GOAT may be associated with more than one way of orienting toward the local community. For 16 of the 18 participants, monophthongal realizations of FACE and GOAT seem to correlate well with allegiance to the local community, based on the index of questions in (2), although Michelle and Nikki's data pattern differently. The speaker comments discussed above suggest that for these and other young speakers in York, FACE and GOAT monophthongisation can mean something other than a strong identification with the community, including youthful defiance, toughness and disaffection.

We examine further the possible relationship between attitudes toward the community and FACE/GOAT monophthongisations by including by-speaker attitudinal index scores as a predictor in separate models of FACE and GOAT diphthongization (for the GOAT model N=632, for FACE, N=849). We also included in these models a style factor (wordlist vs. spontaneous speech), to test evidence for style shifting, as reported by Watt (2000) for Newcastle. We exclude the 1998 data, for which there is neither attitudinal data nor wordlist data. Because we have only one observation per speaker for the attitudinal index data, we do not fit a by-speaker random intercept in these models. We also excluded Nikki and Michelle's data for the reasons just discussed.

For the sake of space, we do not discuss in detail all of the main effects and interactions contributing significantly to these models, which are similar to those for the three-age group models above. For both the FACE and the GOAT model, however, the attitudinal index score contributed significantly ($p<.0001$ for both models),[10] correlating negatively with Euclidean distance, as illustrated in Figure 5. In addition, with log-duration as a co-variate in the models, style was selected

[10] These p-values were obtained by comparing change in log likelihood with a model without this term in the step up procedure.

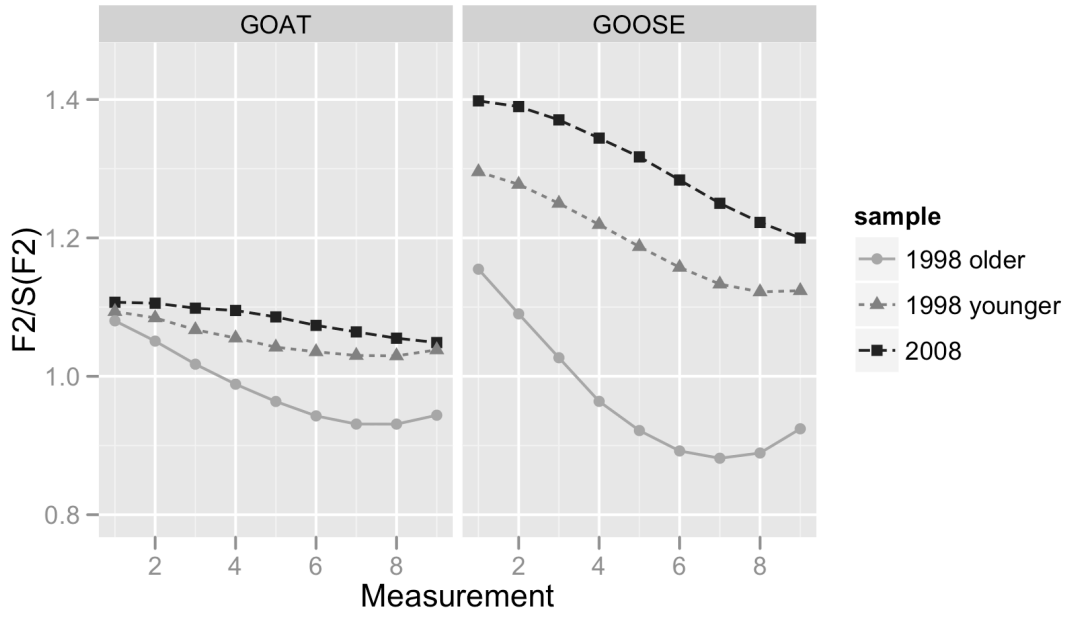
in our FACE model (p=.02), but not for the GOAT (p=.18). For FACE, the wordlist context favored more diphthongal realizations suggesting that more standard, less local forms appeal to speakers in more formal styles.

To summarize, the results described so far support two main conclusions about FACE/GOAT diphthongization in York. First, the real time comparison between the 2008 sample and the 1998 York Corpus subsamples suggests evidence of change toward diphthongal realizations. Second, evidence from ethnographic interview data provide some support in favour of Watt's (2000) and Watt and Milroy's (1999) suggestion that variation between diphthongal and monophthongal realizations of FACE/GOAT correlates with speakers' identification with the local community. We showed that for most speakers in our 2008 sample, variation in FACE/GOAT diphthongization correlated with attitudes toward the community expressed in an ethnographic interview. Two speakers in the sample, however, show different patterns, which we took to indicate different kinds of meaning that FACE/GOAT monophthongs can have in the community. We consider these issues further in light of data on GOAT/GOOSE fronting in York which we discuss in the next section.

5. GOAT/GOOSE fronting

Figure 1 showed evidence of fronting of GOAT and especially GOOSE, among both men and women. For GOOSE, this figure suggests that the whole vowel is fronting, while for GOAT, the greatest difference appears to be in the offset. To examine the patterns of fronting in more detail we now turn to quantitative acoustic data taken from the whole vowel. Figure 6 shows mean normalized values for F2 measurements by age group across the whole trajectory, showing each of the nine time-normalized measurement points. As with Figure 1the data are drawn from spontaneous conversation.

Figure 6: Mean F2s by measurement point and sample



The left panel of Figure 6, showing mean normalized trajectory shapes for GOAT by age group, indicates that the greatest difference in mean F2s between the 2008 sample and the 1998 older sample is toward the end of the vowel, at the 7th measurement point in particular. Closer to the onset there is little difference in mean F2 values across the three samples. These data therefore align with Kerswill and Williams' (2005) auditory analysis of GOAT in Milton Keynes suggesting that fronting of GOAT is more towards the offglide.

The right panel of Figure 6 shows plots for GOOSE, where the age group difference is greater. As Fridland (2008) notes in discussing similar results in her Nevada English data, this difference between GOAT and GOOSE may in part reflect the fact that, toward the top of the vowel space there is less proximity to other vowels (especially long vowels) and therefore more freedom for variation without overlapping potential phonological competitors. The difference between the age groups is considerable across the trajectory but greatest at the mid-point: among the oldest

speakers, the mean trajectory is somewhat bow shaped, indicating that the vowel retracts steadily from its start point before fronting slightly again. By contrast, the trajectories are straighter and less steep among younger groups, suggesting a steady retraction with less overall movement than the oldest group and with no terminal fronting. These dynamic data therefore differ from descriptions of GOOSE fronting in some US English dialects where fronting is mainly in the nucleus (Hall-Lew 2009, Koops 2010). In the present sample, fronting is across the vowel trajectory and greatest around the midpoint. In the statistical analyses of GOAT and GOOSE fronting described below, we use as our dependent variable the fifth F2 measurement for GOOSE and the 7th measurement for GOAT, since these measurements correspond to the portion of the formant trajectory with the greatest age group difference.

We note that these plots reveal nothing direct about articulatory differences across speaker groups in implementation of GOAT and GOOSE. In particular, the difference in F2 visible between the older and younger groups in Figure 6, may partly reflect unrounding, an issue not so far considered in detail in the variationist work on GOAT and GOOSE fronting. (Hughes et al. (2012) offer a brief discussion of these issues, suggesting unrounding as a correlate of GOAT and GOOSE fronting.)

We turn now to the cross-speaker correlation between GOAT and GOOSE fronting, a focus of much of the recent literature on GOAT and GOOSE fronting across English dialects (Labov 1994, Watt 2000, Hall-Lew 2004, 2009, Baranowski 2008, Hughes et al. 2012). Labov's (1994) seminal generalization about high back tense vowels is that GOAT fronting is parasitic on GOOSE-fronting. That is, fronting of /u/ in a community is predicted to be temporally prior to fronting of /o/, and the latter is always further forward in the vowel space in processes of change. Based on auditory analysis of GOAT and GOOSE in Newcastle, however, Watt (2000) noted that some speakers exhibited GOAT fronting, but had back realizations of GOOSE, in violation of Labov's generalization.

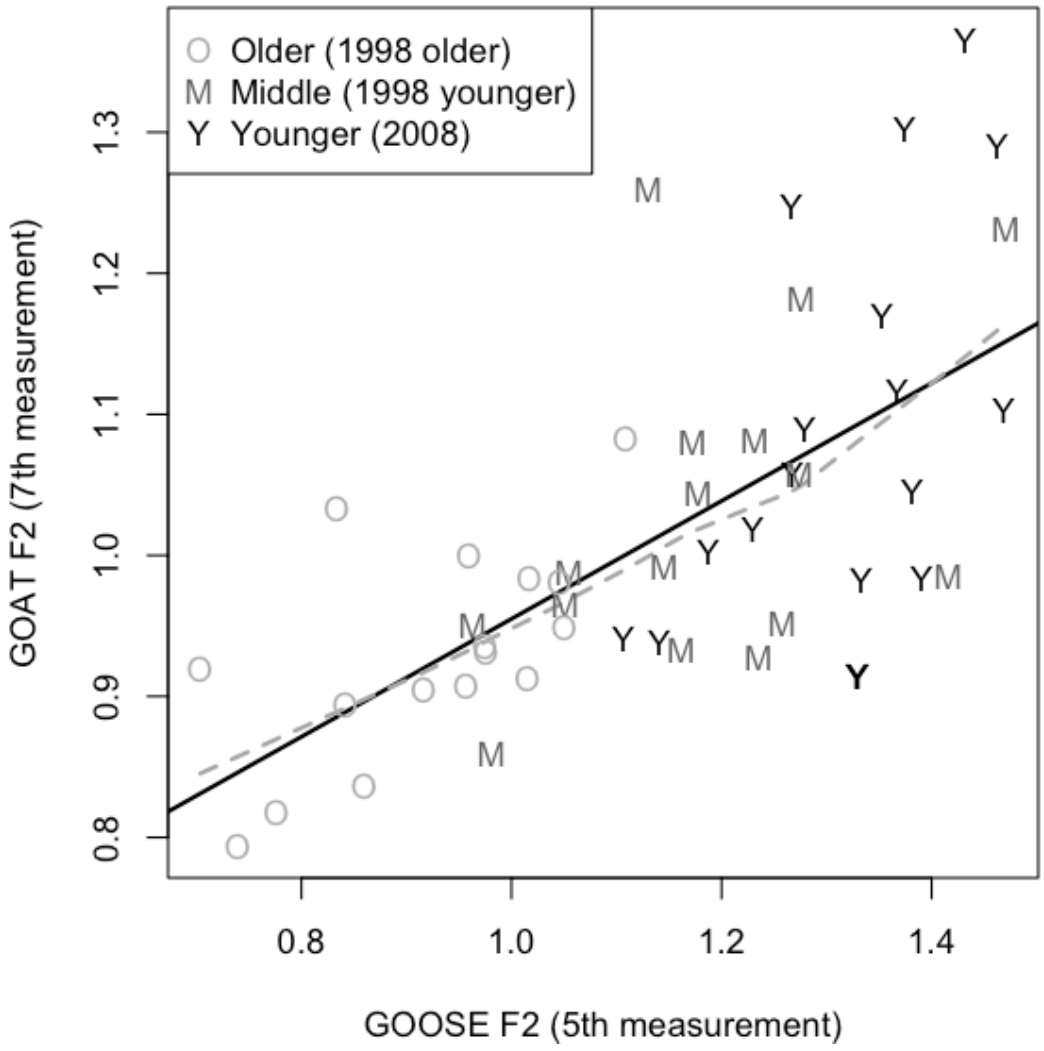
These results raise the question of whether northern UK English dialects are more generally exceptional from the perspective of Labov's discussion of the relationship between /o/ and /u/ fronting and if so, why?[11]

Figure 7 plots mean F2 values for GOAT, by speaker, against those for GOOSE, using the measurement point of maximum difference between age groups. The figure shows a positive correlation (Spearman's rho=.67, p<.0001) in F2's for these two vowels, again suggesting evidence of related processes of change.[12] Note, again, that F2 values for GOOSE are higher for those for GOAT, in keeping with Labov's generalization. The smoother line (dashed) shows no pronounced curvature, suggesting no evidence of a generational lag in GOAT fronting vis-à-vis GOOSE fronting. (Linear models with quadratic and cubic terms did not improve model fit vis-à-vis a model with a simple linear term.)

Figure 7: GOAT and GOOSE mean F2 by speaker

[11] Dominic Watt (p.c.) notes that another possible counterexample to Labov's generalization is RP, which, for quite some time has had fronted nuclei for GOAT. Conservative speakers, however, can have quite back realizations for GOOSE. See Wells (1982).

[12] Also to be considered is whether this correlation improves if two different sets of time-normalized measurement points for the correlation are taken rather than the 7th for GOAT and 5th for GOOSE, used here. Correlations with the other ((9x9)-1=) 80 possible correlations using our dynamic method were generally substantially lower, though a few were slightly higher but comparable (all rho's<.72).

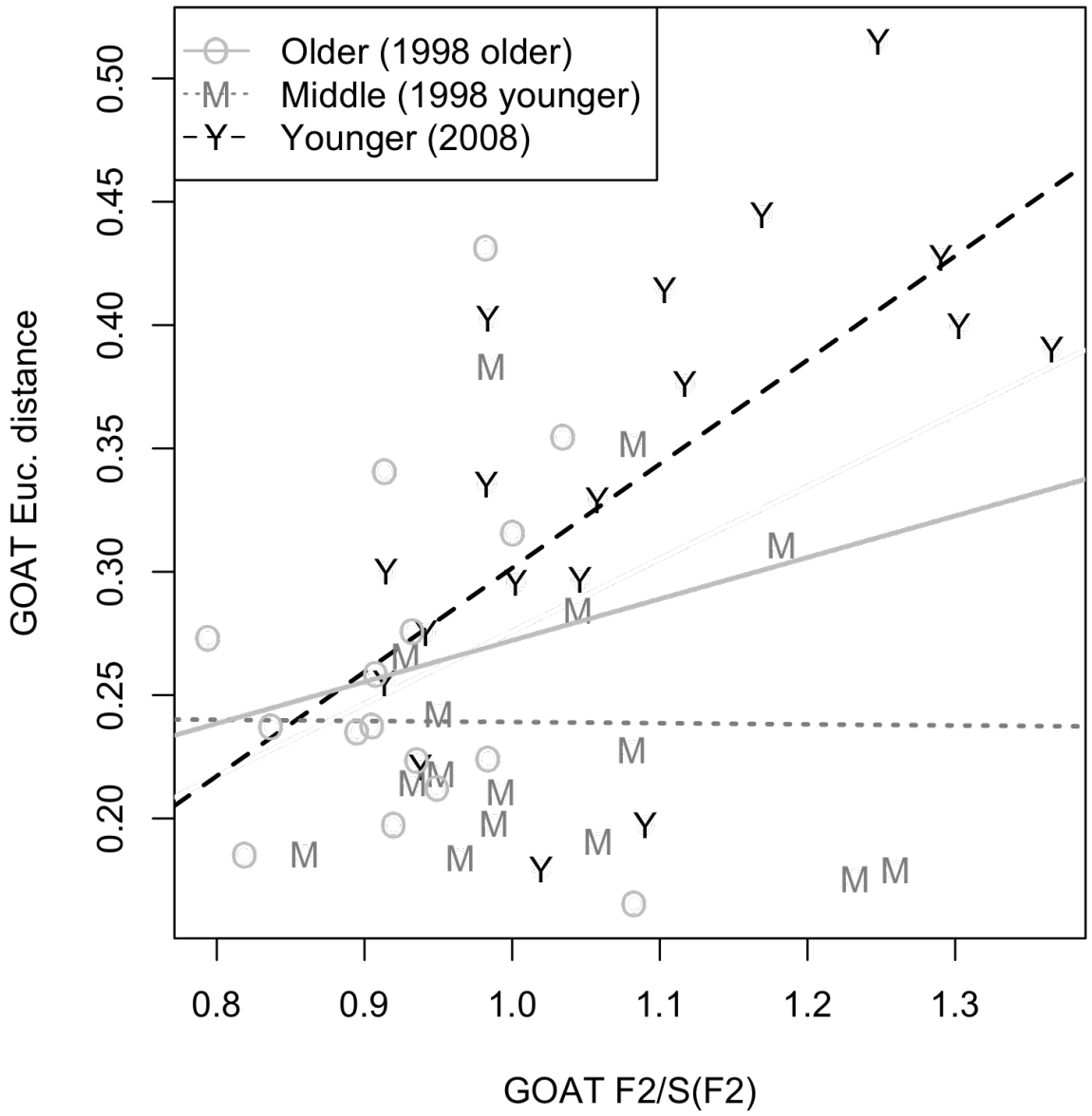


The cross-speaker correlation between GOAT and GOOSE fronting in Figure 7 is nevertheless somewhat weaker than that for FACE and GOAT in Figure 2 discussed above. This fact may be related to another issue carefully procrastinated in the discussion so far, namely the relationship between GOAT fronting and GOAT diphthongization. In particular, Figures 1 and 6 above, showing that fronting of GOAT is mainly in the offset in York, suggest the possibility that GOAT fronting and GOAT diphthongization may be at least partially a unified processes of change, with fronting of the

offset of GOAT contributing to the greater Euclidean distance values among younger speakers. Figure 8 below plots by-speaker mean Euclidean distance values for GOAT against mean F2 values for GOAT. The plot shows a weak positive correlation between the two vectors (Spearman's rho=.29, p=.044). The degree to which these two variables correlate, however, varies by age group. In particular, among the 1998 older and 1998 younger age groups, the correlation is fairly weak. These speakers are generally monophthongal, but some among them have fairly fronted (monophthongal) realizations for GOAT and other, backer realizations. Among younger speakers, on the other hand, this relationship is clearly much stronger. Whether a given younger speaker tends toward diphthongal realizations of GOAT is closely related their degree of fronting of GOAT.[13] We return to this fact shortly, after discussing social and phonetic effects on GOAT and GOOSE fronting.

[13] A separate linear mixed effects model with an interaction term for agegroup and (by-speaker) mean F2 value (7th measurement), revealed a highly significant interaction p<.0001.

Figure 8: Mean GOAT Euclidean distance values and mean GOAT F2s by speaker

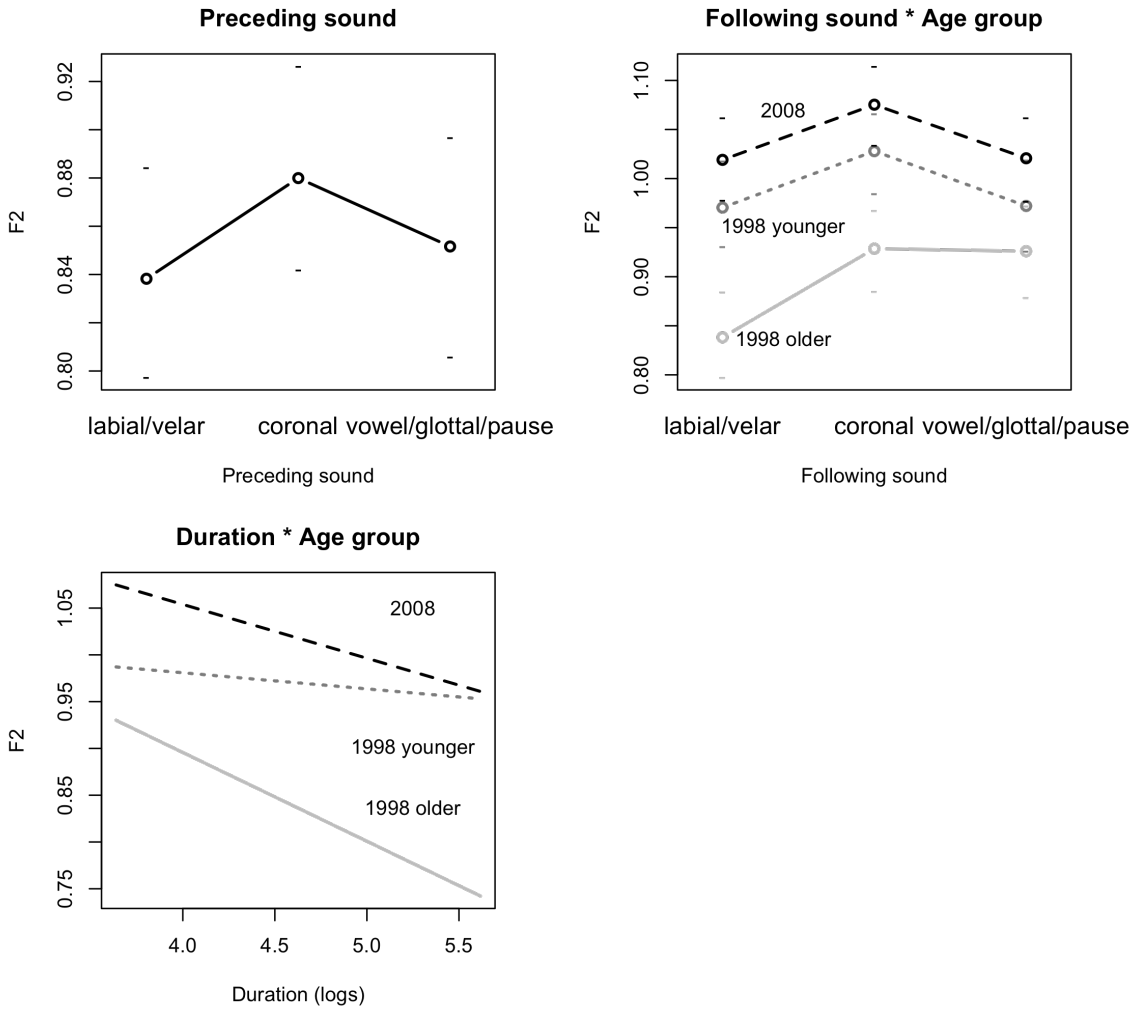


5.1 GOAT fronting

We begin by describing models for GOAT fronting using all three age groups. Variables were again selected using the procedures described in section 4, and, as in the FACE/GOAT diphthongization models with all three age groups, only conversational data were used. The analysis revealed significant main fixed effects for preceding sound and significant interactions for age group * duration, and age group * following sound (N=1703, r-squared =.63). Figure 9 plots partial effects

for these terms. The analysis revealed no significant main effects or interactions for speaker sex nor for preceding or following manner of articulation or voicing.

Figure 9: Partial effects for a model of GOAT fronting



The upper left panel in Figure 9 shows familiar coarticulatory effects of the preceding sound: coarticulation with a preceding coronal yields somewhat higher F2 values, while coarticulation with a preceding velar/labial produces lower F2 values, as discussed above (Flemming 2003). Preceding vowels/glottals and pauses pattern between these two classes of sounds.

The upper right panel in Figure 9 shows an interaction between following sound and age group: among the 1998 older speakers, the difference between the effect of following coronals and

labial/velars is much stronger than among the 2008 and 1998 younger samples.[14] These facts suggest that among the younger two age groups, GOAT fronting is expanding into contexts which for the oldest age group strongly inhibit fronting. In addition, this plot shows an age group effect also apparent in the F1~F2 plots in Figure 1: the 2008 sample speakers have the highest F2 values, followed by the 1998 younger speakers and the 1998 older speakers with the backest realizations.

Finally, the lower panel in Figure 9 shows a somewhat surprising interaction between age group and duration. For all age groups, log-duration is inversely correlated with F2, but the slope is steeper for the 2008 and 1998 older speakers than for the 1998 younger speakers. We relate this to the different trajectories for GOAT among these three age groups, as shown in the F1~F2 plots in Figure 1. Like the 1998 older speakers, the 1998 younger speakers are fairly monophthongal, but like the 2008 speakers the vowel offset is somewhat fronted, so the trajectory is mainly vertical. Overall F2 difference between onset and offset is therefore smallest for 1998 younger speaker group, and greater for the 1998 older and 2008 subsamples. Consequently undershoot in short duration tokens has a relatively stronger effect on F2 for these latter speaker groups and a weaker effect on the 1998 younger speaker group.

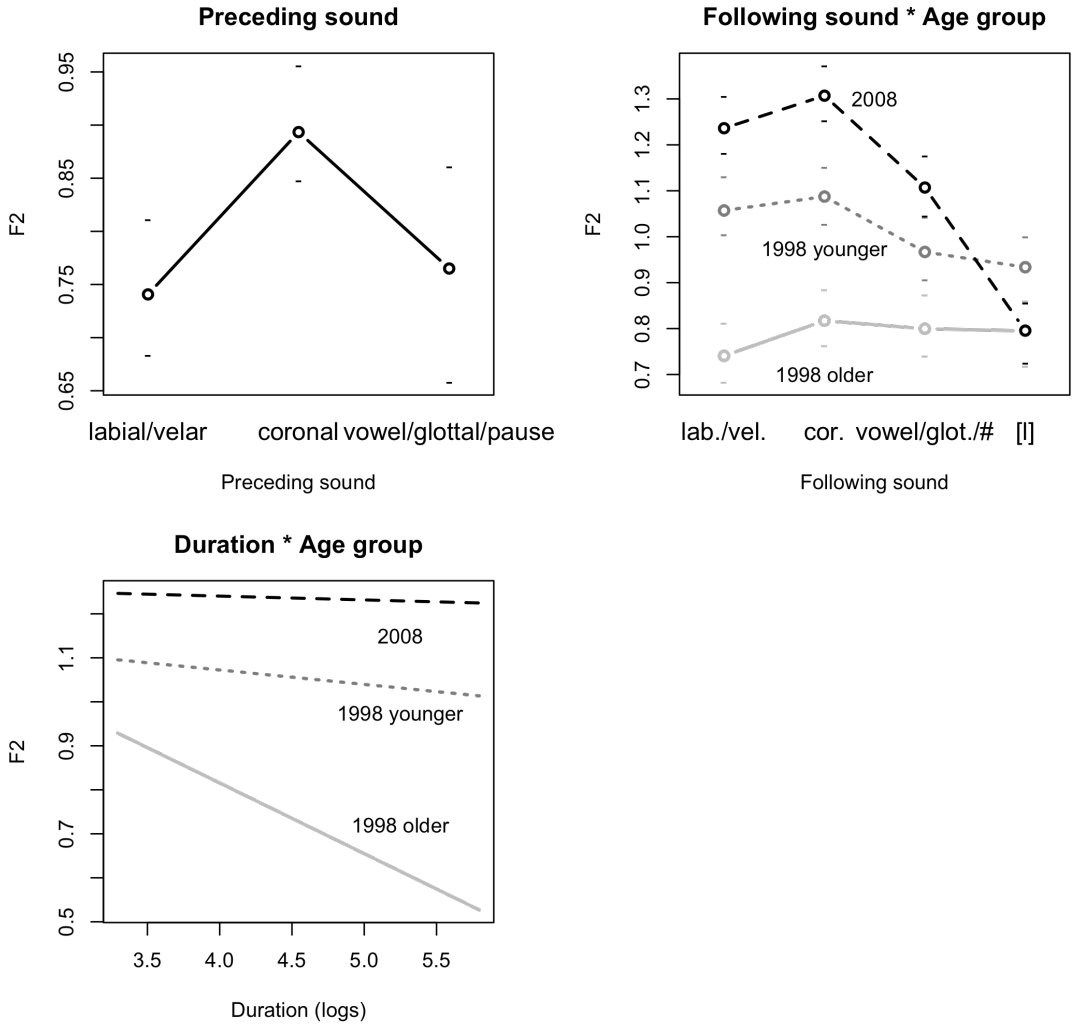
5.2 GOOSE fronting

Similar effects emerged in our model of GOOSE fronting with all three age groups. As in our model of GOAT fronting, the analysis revealed a fixed main effect for preceding sound and interactions for following sound * age group and duration * age group (N=1901, r-squared=.78). For this data set, unlike for our set of GOAT tokens, a greater number of following [ɬ] tokens (205)

[14] In many dialects, GOAT fronting has been reported to be inhibited by a following [ɬ]. Our data set contains only 11 tokens with following [ɬ], which have been coded as velars.

allowed us to treat this environment as a separate level. We illustrate these effects in the partial effects plots in Figure 10. The analysis revealed no significant main effects or interactions for speaker sex nor for preceding or following manner of articulation or voicing.

Figure 10: Partial effects for a model of GOOSE fronting



The upper left panel of this figure shows that, as with our GOAT data, preceding coronals strongly favour higher F2 values for GOOSE. Preceding labials/velars and vowels/glottals/pauses

favour lower F2s. The upper right panel of Figure 10 illustrates the interaction between following sound and age group in this model. It shows that the effect of a following [ɬ] differs across age groups. Among the youngest sub-sample, it strongly disfavours fronting, among the 1998 younger speakers, somewhat less so and among the older speakers it is fairly weak. The figure, therefore, suggests unsurprisingly that this following-[ɬ] effect is strongest among speakers with the greatest degree of fronting (Ash 1996, Hall-Lew, 2004, Flynn 2012). Among older speakers, for whom GOOSE is already realized fairly far back, the inhibitory effect of a following [ɬ] on fronting is weaker.

Finally, the lower panel in Figure 10 shows an interaction between duration and age group. As in the case of the GOAT model described above, for all three age groups, F2 correlates negatively with log duration, but for the older 1998 data this effect is stronger than for the 1998 younger sample and the 2008 sample. As in the case of GOAT fronting, we suggest that this negative correlation reflects an abbreviation of the tongue-backing gesture in GOOSE vowels illustrated in Figure 1. In particular, note that the 1998 older speakers have somewhat more diphthongal realizations for GOOSE than the 1998 younger speakers and 2008 speakers. Consequently, shorter durations for GOOSE tokens among the 1998 older speakers have a stronger effect in raising F2 than among the 1998 younger speakers and 2008 speakers.

5.3 Attitude toward the community and style as correlates of GOAT/GOOSE diphthongization

The data presented in the previous two sub-sections suggest evidence of change toward fronted variants of GOAT and GOOSE in York. From the perspective of the stylistic and attitudinal

data presented in section 4, a question that arises is whether cross-speaker differences in GOAT and GOOSE fronting are related to attitudes toward the local community as we suggested above in the case of variation between diphthongal and monophthongal realizations of FACE and GOAT vowels.

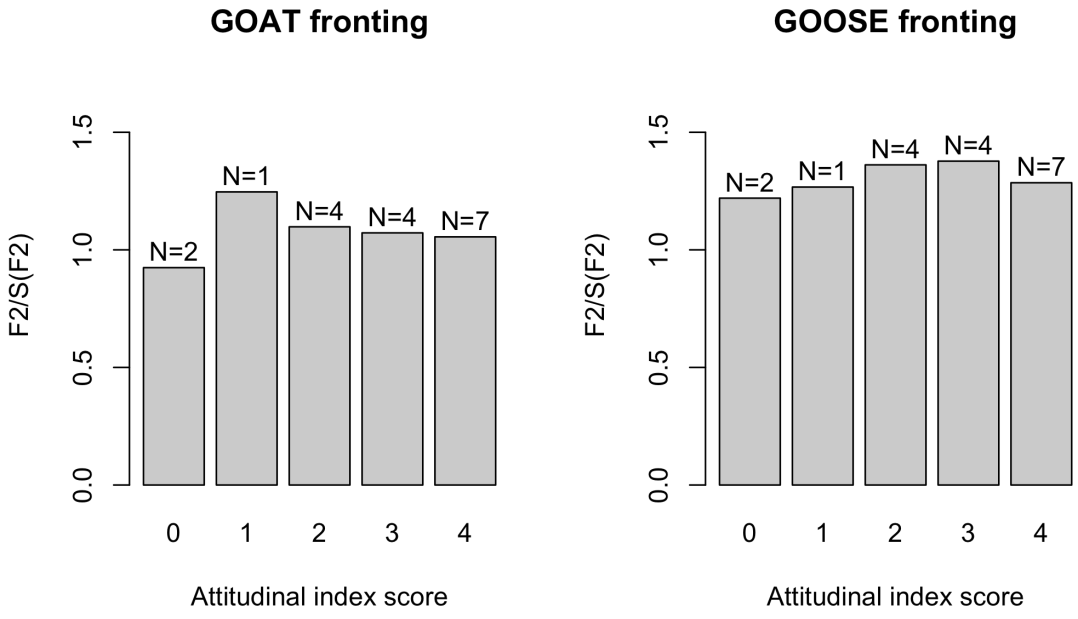
In the ethnographic interviews, none of the participants connected any local practices or meanings to realizations of GOOSE in the community. This, again, contrasts sharply with participants' observations about monophthongal realizations of GOAT and FACE which were frequently linked with "typical York/Yorkshire" speech but also "chav" speech.

Our interview data featured only one instance of a participant invoking GOAT fronting in describing different ways of speaking in the community. In excerpt (8), from Josh and Joe's interview, Joe imitates a chav saying *road*, with a fronted monophthong, [ɵː], and his comments indicate an overt association between fronted monophthongs and chav speech. We speculate that such perceptions, if they are more general, may be related to an issue raised earlier, namely, why none of the younger speakers in our sample tend toward fronted monophthongal variants of GOAT. Figure 8 showed that while a few middle-aged speakers tended toward fronted monophthongs for GOAT, younger speakers did not. From the perspective of the evidence on perceptions of GOAT monophthongs in the community in section 4 together with evidence that GOAT/GOOSE fronting is most advanced among younger speakers, the absence of this pattern in the data is surprising. Specifically, fronted monophthongal variants of GOAT would seem to offer younger speakers a way to participate in a phonetic practice associated with young people—back vowel fronting—while conserving local monophthongal forms. Joe's comments, however, suggests the possibility that such forms may in fact be associated with chav speech in the community, a way of talking unanimously condemned in our sample. If so, the fact that few speakers in our data tend toward these forms may

reflect these speakers' efforts not to sound "chavvy". Future work might usefully explore perceptions of these variants in greater detail.

To assess further the relationship between attitudes toward the local community and GOAT/GOOSE fronting, we correlate mean F2's for GOAT and GOOSE with speaker attitudinal index score, following a procedure similar to that for FACE/GOAT diphthongization in section 4. The left and right panels of Figure 11 plot these correlations for GOAT and GOOSE respectively.

Figure 11: Mean normalized F2s for GOAT and GOOSE by attitudinal index score.



The left panel of Figure 11 shows a pattern very similar to that for GOAT diphthongization in Figure 5, above, which stands to reason given the correlation between GOAT fronting and GOAT diphthongization among younger speakers illustrated in Figure 8. The two speakers with 0-values for the attitudinal index, Michelle and Nikki, again show the lowest mean values in the sample for F2 fronting. Excepting these two speakers, the left panel of Figure 11 suggests a negative correlation between the attitudinal index score and GOAT F2. That is, leaving aside Michelle and

Nikki, the more positively speakers oriented toward the community on the index described above, the lower their mean GOAT F2. The right panel in Figure 13 shows mean F2's for GOOSE by attitudinal index score. Michelle and Nikki's values are, again, the lowest in the sample and the seven participants with the most positive scores (4) also show lower mean F2s.

We tested these correlations by fitting separate linear mixed effects models to the 2008 data with each speaker's attitudinal index score as a predictor, following the procedure described in 4.3. For space reasons we again do not discuss the details of these models here, but note that with Michelle's and Nikki's scores omitted, both models revealed significant negative effects for the attitudinal index predictor, though somewhat more weakly for GOOSE ($p=.04$) than for GOAT ($p<.00001$).[15] In addition, as in the case of GOAT diphthongization, the GOAT fronting model with the 2008 data revealed no significant style effect. We were unable to test for a style effect for GOOSE, since the wordlist did not contain GOOSE tokens.

To summarize, the data show strong evidence of fronting of both GOAT and GOOSE in the community. Fronting of both GOAT and GOOSE has been reported across a wide range of UK dialects particularly in the south (Henton 1983, Bauer 1985, Hawkins & Midgley 2005, cf. Jansen 2010). The present set of result, therefore contributes to findings of GOAT/GOOSE fronting in Northern UK English dialects as well (Watt and Tillotson 2001, Jansen 2010). For both GOAT and GOOSE, analysis of the attitudinal data revealed some evidence of a negative correlation between speakers' identification with the local community and back vowel fronting. For many community members these features nevertheless appear to be much less emblematic of "traditional" local speech than monophthongal forms of FACE/GOAT.

[15] For the GOAT model, N=632. For the GOOSE model, N= 603.

6. Conclusion

The goal of this article has been to provide a description of two vocalic changes in the city of York. In particular, the data presented in sections four and five support two sets of conclusions.

1. Change toward diphthongal realizations of FACE/GOAT and fronting of GOAT/GOOSE. Comparisons across the three age groups discussed above provide support for diphthongization of FACE/GOAT and for fronting of GOAT/GOOSE. In the case of GOAT/GOOSE fronting, evidence for change comes from both the apparent time comparison between the 1998 younger and 1998 older sample and the real time comparison between the 2008 sample and the 1998 samples. The phonetic conditioning of fronting is similar to that described in much previous work on back vowel fronting in UK and North American dialects, and from this perspective appears to be a similar process of change to those described in many other English dialects (Thomas 2001, Fleming 2003, Baranowski 2008, Fridland 2008). Unlike in North American English varieties, however, GOOSE fronting is across the formant trajectory and not principally in the nucleus (Koops 2010). In this way, GOAT/GOOSE fronting are like the diffusion of *be like* as described in recent work in varying somewhat in linguistic conditioning from locale to locale (Buchstaller 2008, Buchstaller and D'Arcy 2009).

For FACE/GOAT diphthongization, analysis revealed a real time difference between the 2008 and 1998 samples, but little apparent time difference between the 1998 samples. These facts may indicate a somewhat slower rate of change for FACE/GOAT diphthongization, than for GOAT/GOOSE fronting, which we attribute to the very strong links that community members make between diphthongal vs. monophthongal variants of FACE/GOAT and different local social categorizations. Relatively little variationist literature has focused on diphthongization of FACE/GOAT in UK English

dialects.[16] However, these findings align partially with Watt's (2000) auditory results of FACE/GOAT in Newcastle, suggesting incipient change toward southern diphthongal realizations in York. The present York data also revealed a following voicing effect akin to that reported for PRICE diphthongisation in many dialects of English, whereby following voiceless sounds favour more diphthongal realizations of FACE.

2. Different social evaluations of the changes. Both processes of change examined here are "external" changes in that the innovative forms are well established diffusions from outside the community. Nevertheless, two sets of facts suggest that these two changes differ in their social conditioning. A first concerns participants' evaluations of different accents in the community. In interview sessions, participants frequently identified monophthongal realizations of FACE/GOAT as typifying York or Yorkshire dialects. In addition, some participants also linked monophthongal FACE/GOAT with chavs. In contrast, in just over 3 hours of ethnographic interview data, none of our participants' descriptions of differences in ways of speaking within the community focused specifically on GOOSE fronting. These data indicate that variation between monophthongal and diphthongal forms of FACE/GOAT are socially anchored in the community in a way that GOAT/GOOSE fronting is not.

Second, in our 2008 sample, differences across individuals in FACE/GOAT diphthongization correlated strongly with how individuals oriented to the community. Speakers who expressed the strongest allegiance to the community and the greatest willingness to continue living in York were tended toward conservative monophthongal variants while those who identified less strongly with the community tended toward diphthongal forms. A by-speaker index of scores for different

[16] See Shützler 2011 for some remarks on dipthongization of mid-vowels in Edinburgh middle-class speech.

attitudes toward the community were strongly correlated with FACE and GOAT monophthongisation. This index also correlated negatively with GOOSE fronting but much more weakly.

The contrast between these two vowel changes speaks to a more general issue raised at the beginning of this article, namely, the nature of differences across communities in the way that external borrowings are interpreted locally. While the dialect of York has historically been monophthongal with respect to FACE/GOAT, diphthongal realizations have long been familiar to community members through contact with southerners, whose speech, associated with the more affluent and culturally more influential south, has long been more prestigious than northern dialects (Milroy 2000). The temporal stability of this sociolinguistic distribution is plausibly one factor explaining the strong symbolic link between FACE/GOAT monophthongs and meanings of place in northern communities. In contrast, GOAT/GOOSE fronting is a much more recent process of change in UK Englishes and in the community is not strongly associated with any particular social distinction except being young. In this way, GOAT/GOOSE fronting can be classified as *off the shelf* variables — features without strong local symbolic anchoring, and as such a readily available resource for stylistic appropriation (Milroy 2007, Fridland 2008). The best example of such changes may be diffusion across Englishes of *be like* quotatives (Buchstaller 2008, Buchstaller & D'Arcy 2009), though other such cases are also discussed in Milroy (2007) and Meyerhoff & Niedzielski (2003). The literature on the nature of such diffusions leads us to expect that fronting of GOAT/GOOSE will continue to expand into Northern English dialects much more rapidly than diphthongization of FACE/GOAT. Future work might usefully address this prediction.

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Appendix: Sampling information

Table 2: 2008 Sample

Pseudonym	**Age**	**Sex**	**Education**	**Occupation**
Camille	22	F	Uni	student
Emma	22	F	18	Shop assistant
Kerry	22	F	Uni	student
Lois	21	F	Uni	student
Anna	20	F	Uni	student
Cathy	20	F	Uni	student
Rachel	20	F	Uni	student
Saskia	20	F	Uni	student
Nikki	18	F	18	Vocational ed. student
Michelle	20	F	18	Housekeeper
Joe	22	M	Uni	Student
Josh	22	M	Uni	Student
Sean	21	M	18	Agricult.
Jake	20	M	18	Manual
Brendan	19	M	16	Office work
Dan	19	M	18	Unempl.
Mike	19	M	18	Shop assist.
Ivan	18	M	16	Office work

Table 3: 1998 Sample Younger speakers

Pseudonym	**Age**	**Sex**	**Education**	**Occupation**
Kirsty Young	31	F	Up to 16	Housewife and partner in firm
Ivy Robinson	28	F	Up to 16	Post office worker
Louise McGrath	27	F	Up to 16	Bingo supervisor, pub landlady
Karen Dilks	26	F	Up to 16	Unemployed
Sophie Ball	23	F	Uni	Factory
Sarah Boggin	23	F	Up to 18	Waitress
Sandra George	22	F	Uni	Nurse
Nancy Heath	20	F	Uni	Student
Richard Allen	26	M	Uni grad	Unempl.
Mark Aspel	24	M	Up to 16	Manual
Luke Preston	24	M	Uni grad	High school teacher
Paul Gregory	23	M	Up to 16	Driver
Chris Giles	20	M	Up to 18	Officework
Ryan Mitchell	20	M	Up to 16	Manual labourer
Daniel	19	M	Up to 16	Manual labourer
Nick Hudson	17	M	Up to 18	Student

Table 4: 1998 Sample, Older Speakers

Pseudonym	**Age**	**Sex**	**Education**	**Occupation**
Marjory Peters	70	F	Up to 18	Office secretarial work
Sue Evans	69	F	Up to 18	Primary teacher
Lilly Jackson	64	F	Up to 14	Factory worker
Maria Griffith	63	F	Up to 15	Office work
Emma Michaels	63	F	Up to 16	Clerk
Judy Lowe	62	F	Up to 18	Office work
Maureen Londry	62	F	Up to 14	Manual
Tara Harlow	62	F	Up to 15	Officework
Walter Evans	72	M	Up to 15	Army officer farm labourer, office worker
Malcolm Michaels	67	M	Up to 16	Carriage works
Albert Jackson	66	M	Up to 14	Railway worker
Bradley Lowe	62	M	Up to 14	Office work
Neil Thomas	62	M	Up to 15	Driver
Derek Burns	60	M	Up to 18	Teacher
Harry Stanton	59	M	Up to 14	Manual
James Tweddle	78	M	Up to 16	Retired insurance broker, organist