

Ethnic variation in real time

Change in Australian English diphthongs

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Ethnic and ethnolectal variation in migrant communities have received much attention, but the manifestation and longevity of this variation is not yet well understood. Capitalising on Barbara Horvath's foundational study of social variation in Australian English, and a comparable, recent corpus of sociolinguistic interviews (Sydney Speaks 2010s), we present a real-time test of ethnic variation in the speech of approximately 170 Australians over a 40-year period. We examine the speech of Anglo-, Italian- and Chinese-Australians, focusing on five diphthongs considered to be characteristic of Australian English. Analyses of over 20,000 tokens reveal no wholesale differences among ethnic groups, but they do reveal some differences in the progression and social conditioning of changes over time, which we argue are best understood in relation to the social nature of the changes undergone.

Keywords: ethnolects, ethnic variation, diphthongs, Australian English, language change, gender, socio-economic status

1. Ethnic and ethnolectal variation

A prominent question in sociolinguistics has been the role of ethnic minorities in variation and change. Apparent time studies have provided evidence that ethnic minorities may help drive change forward, from Labov's pioneering studies in New York (1966, 1972) and Horvath's study of Sydney, Australia (Horvath 1985), to more recent work in other major urban centres (e.g., Cheshire, Jacomine & Adger 2015; Gross et al. 2016). It has also been observed that ethnic minorities may make use of distinct ways of speaking that characterise them as members of a particular ethnic group, using what are known as "ethnolects", or, where multiple ethnicities are involved, "multiethnolects" (Clyne 2000). Ethnolectal variation has been described in *Multicultural London English* (e.g., Cheshire et al. 2011), *Kiezdeutsch* in Berlin (e.g., Wiese 2009), and varieties spoken in Australia (Clyne, Eisikovits & Tollfree 2001,

2002) and Toronto, Canada (Hoffman & Walker 2010). As migrant communities tend to undergo language shift towards the majority variety over time, such ethnically driven variation has been associated with identity, where the (multi)ethnolect is considered to serve “as a means of establishing a distinctive linguistic identity” for second or third generation migrants who may no longer speak the community language (Clyne, Eisikovits & Tollfree 2002: 134).

While we might predict influence of the immigrant language on the ethnolectal variety, there is work to suggest precisely the opposite, where members of migrant communities exhibit patterns of use consistent with change “in a direction quite different from what would have been predicted from the structure of the immigrant language” (Labov 2008: 318). In her foundational study in Sydney, Australia, Horvath proposed that teenage Greek- and Italian-Australians were ahead in a change towards more “general” Australian English vowel realisations, moving away from both “broad” speech, associated with the working class, and “cultivated” speech, associated with the middle class and British Received Pronunciation (1985: 94). She interpreted this as Greek- and Italian-Australians differentiating themselves from their first-generation migrant parents’ accented vowels; in using these newer forms, rather than indexing their ethnic identity, they appeared to be making an effort to “sound Australian” (Horvath 1985: 176). Wong and Hall-Lew similarly report that Chinese Americans in San Francisco and New York City adopt regional patterning, and that in doing so, they “construct a local, mainstream identity, thereby distinguishing themselves from foreign-born Chinese New Yorkers” (2014: 37). Similar observations have been reported for Turkish and Moroccan youths in Holland (van Meel, Hinskens & van Hout 2014) and diverse ethnic groups in Sweden (Gross et al. 2016), where the linguistic behaviour of ethnic minorities has been accounted for in terms of regional and social differences in the majority community rather than influence from the minority languages.

In this paper, we present a real time test of the longevity of ethnic variation, capitalising on sociolinguistic interviews recorded in Sydney in the late 1970s (cf., Horvath 1985), and comparing these with an analogous set of interviews made in the late 2010s. We consider the speech of three ethnic groups – Anglo-Australians (the hegemonic community), Italian-Australians (an established migrant community), and Chinese-Australians (a newer community) – and compare their patterning for five diphthongs – FLEECE, FACE, GOAT, MOUTH, and PRICE.¹ These diphthongs are of particular value for a study of ethnic variation over time in Australia, as they

1. These vowels can be broadly captured in the IPA developed for Australian English as /^ɪi, æɪ, əɪ, æɔ, əɔ/ (see Cox & Palethorpe 2007). Given the variation in these vowels, we follow standard practice in sociophonetics and use the lexical set labels which capture the category without presupposing a given pronunciation (Wells 1982).

form the basis for the socio-stylistic variation along the broad/general/cultivated continuum (cf., Mitchell & Delbridge 1965), they were the focus of Horvath's analysis of Australian English across ethnic groups in the 1970s, and they are known to have undergone change over time (Cox & Palethorpe 2012). We report on the patterning over time for the majority ethnic group, Anglo-Australians, which we compare with the patterning of the Italian and Chinese communities. There are some apparent ethnic differences, but once these are contextualised over time and in relation to broader social conditioning, we find that they are best understood as responding to wider social patterns rather than as a specific expression of ethnic affiliation or orientation.

2. Variation in Australian English

While Australian English exhibits “relative regional homogeneity” (cf., Cox & Palethorpe 2012: 299), social variation across gender and class has been identified. This is particularly so for the five diphthongs considered here, with “cultivated” realisations being traditionally associated with females and higher levels of education, and “broad” realisations with males and lower levels of education (cf., Mitchell & Delbridge 1965: 33). The so-called “broadness continuum” of Australian diphthongs has contracted over time, with a shift to more “general” Australian English, a change which has been interpreted as a manifestation of Australia's move away from an exonormative model of British orientation towards an endonormative Australian model (Schneider 2007: 124). This re-orientation to domestically prescribed norms has reified largely positive attitudes linking the “general” Australian sociolect with an Australian identity (Bradley & Bradley 2001: 280), and ascribing it a degree of overt prestige.

Variation across ethnic lines has also received some attention. Exploring ethnolects in Australia, Clyne, Eisikovits and Tollfree (2001, 2002) describe phonological, lexical and morphosyntactic features typical of Greek-, Yiddish-, and German-Australian English. Quantitative analyses of ethnic variation have identified differences in fronting of /θ/ and deletion of word-initial /h/ by Italian-Australians (Horvath 1985: 102–103), lengthening of word final (er) by Greek-Australians (e.g., *teacher*, *remember*, Grama, Travis & Gonzalez 2020; Kiesling 2005), patterning of the PRICE and GOAT vowels by Greek-, Italian-, and Lebanese-Australians (Kiesling 2001), and realisation of /l/, voice onset time and VC rhyme by Lebanese-Australians (Clothier 2019; Clothier & Loakes 2018; Cox & Palethorpe 2006). Other studies, however, have found no evidence of ethnic variation. For high rising terminals in 1970s Sydney, “virtually complete assimilation” of the Anglo patterns were found for Greek- and Italian-Australians (Guy et al. 1986: 40). Likewise, in this same

dataset, for the five diphthongs under study here, Greek- and Italian-Australian realisations were not found to be qualitatively different from Anglo-Australians (Horvath & Sankoff 1987: 191–193).

However, Greek- and Italian-Australians overall were ahead in the shift towards general Australian English, which Horvath interpreted as an attempt to “remove themselves as far as possible from the low prestige of being a migrant” (1985: 95). Differences across ethnic groups were also found in social conditioning, in that gender and class impacted the vowel realisations of Anglo teenagers, but not those of Greek and Italian teenagers (1985: 81). In this way, then, “ethnicity ... remain[ed] a distinctive social variable” (1991: 315) inasmuch as it represented a diminished sensitivity to dominant social norms of class and gender. This gives rise to questions of how ethnic differences may be manifested, how they may change over time, and how they interact with other social factors.

3. Changing ethnic diversity in Australia

While Australia was highly multilingual prior to colonisation, it is today a predominantly English-speaking country, in which the majority of its some 24 million people are Anglo-Celtic monolingual English speakers. Over the past 40 years, however, there has been an influx of migrants from diverse backgrounds; the latest census conducted in 2016 reported that just over one half of the population was born in Australia to Australian-born parents, and 49% were either born overseas themselves, or have at least one parent born overseas (Australian Bureau of Statistics 2016). The makeup of this population has also changed substantially, in particular with the phasing out of the White Australia Policy in the 1970s (a policy which restricted migration to people of European ancestry, favouring immigrants from Britain in particular). The increasing diversity in Australia between the 1970s and the 2000s was described at the time as “one of the most important transformations of Australian society” (Khoo 2003: 258); this period falls within that covered by this study, rendering it a particularly relevant timeframe in which to examine ethnic variation over time.

An indication of ethnic diversity is language spoken in the home, as reported in the five-yearly national census. In 1970s Australia, some 12% of the population reported speaking a community language at home (Australian Bureau of Statistics 1981).² The most widely spoken languages were Italian and Greek, spoken by people who had come to Australia as part of post-World War II migration schemes (Jupp 2001). Speakers of these two languages together accounted for nearly one third of

2. “Community language” is the preferred term in Australia, corresponding to what is often referred to as minority, immigrant, or heritage language (cf., Clyne 1991).

all community language speakers at that time (Italian 17%, Greek 12%) (Australian Bureau of Statistics 1991, the first year for which comparable data for individual languages is available). The third most widely spoken community language was Cantonese (accounting for 7% of the population of community language speakers), owing primarily to migrants from Hong Kong, who came to Australia under a Business Migration program conducted in the 1980s (Jupp 2001: 218). Today, close to one quarter of the Australian population speaks a language other than English at home (Australian Bureau of Statistics 2016), and the most widely spoken community languages across the country have changed. Mandarin is overwhelmingly the most widely spoken, followed by Arabic, Cantonese, and Vietnamese, and then by Italian and Greek. Italian and Greek now each account for approximately 6% of all community language speakers, about half of the proportion they represented in the 1991 census.

We focus here on Sydney, an ideal location in which to test questions surrounding ethnicity and language change, as Australia's largest city (with a population of close to five million), and as the most diverse (where some 38% of the population report speaking a language other than English at home) (cf., Benson & Hatoss 2019). Furthermore, this was the location for the legacy data available to us, thus allowing for the real time comparison.

4. Data for the study of ethnic variation over time

The data for this study come from two comparable corpora of sociolinguistic interviews, recorded over two time periods, and compiled under the umbrella of Sydney Speaks (Travis, Grama & Gonzalez In Progress): the Sydney Social Dialect Survey, collected by Horvath in the late 1970s (Horvath 1985), and Sydney Speaks 2010s, under compilation from 2016. Here, we report on the patterning of some 23,000 vowel tokens from 173 speakers drawn from these corpora.

4.1 Participants

Participants were all living in Sydney at the time of the interview, and, for the 2010s data, were also born there or had moved there before the age of six, and had spent all or most of their lives there (this information is not available for the 1970s data). This population is stratified according to age, gender, ethnicity, and socio-economic status, as summarised in Table 1.

Four age groups are represented: for the 1970s participants, Adults (most of whom were born in the 1930s) and Teenagers (born 1960s), and for the 2010s, Adults (born 1960s, the same period as the 1970s Teenagers) and Young Adults (born 1990s).

Three ethnic groups are represented: Anglo-, Italian- and Chinese-Australians, with distinct time-depth for each group, as seen in Table 1, in accordance with their migration history. We use the term “Anglo” as a short-hand for Anglo-Celtic Australians who were born and raised in Australia; for the 2010s, these speakers are minimally fourth generation Australians (that is, their parents and at least three of four grandparents were born and raised in Australia).³

As noted above, the Italian-Australian community is a well-established migrant community that has been in Australia since the post-World War II period. The 1970s teenagers included in the study are largely the children of these migrants. The 1970s teens and 2010s Adults are all second-generation Italian-Australians, defined here as having either been born in Australia or arrived before the age of six. The migration history of this community means that there is a relatively small population of second-generation Young Adults in the 2010s, and we have therefore included third-generation Italian-Australians for this age group. (This is the case for three of the twelve Italian Young Adults.)

The Chinese participants are all second-generation Australians, whose parents speak Cantonese and were born and raised primarily in Hong Kong, but also Guangzhou, China. Though the Mandarin-speaking community is now the largest migrant community in Australia, we selected the Cantonese-background community due to its greater time-depth, as described above. We refer to these participants as being of Chinese, rather than Cantonese, background, in accordance with their self-identification as “Australian Born Chinese” (ABC), and because not all participants speak Cantonese. Given the migration history of this community, the adult second-generation population today is relatively small (cf., Australian Bureau of Statistics 2016), and thus we restrict our analysis to Young Adults, born in Australia around the 1990s.

We apply a three-way distinction for socio-economic class, which, following Horvath, we label Lower Working Class, Upper Working Class and Middle Class (1985: 47). For the 1970s data, we use the categories to which participants had originally been assigned, determined on the basis of occupation (cf., Horvath 1985: 46). For the 2010s, we use a composite measure based on occupation, education level, suburb, and school type, which we collapse into three levels for comparability with the 1970s data.

3. Six of the 51 Anglo participants in the 2010s corpus had one grandparent who was born outside Australia in another English-speaking country. We also note that one participant had an Aboriginal-Australian grandparent. We did not set out to exclude indigenous Australians from our sample; the resulting Anglo sample is largely an artefact of Sydney’s demographics, where just 1.5% of the population identifies as Aboriginal and/or Torres Strait Islander (Australian Bureau of Statistics 2016).

As can be seen in Table 1, there is a representative sample of class and gender groups for Anglo and Italian Teenagers in the 1970s, and Anglos in the 2010s. As the 2010s corpus is under compilation, we lack representation across socio-economic class for the Young Italians, and we therefore leave class comparisons for contemporary Young Italians for a future study. Additionally, we lack Lower Working Class participants of Chinese background. This is not due to a sampling bias, but rather is representative of the community, in which its members tend to be very well educated, hold high-status occupations, and live in wealthier suburbs in Sydney (as gleaned from recent census data, Australian Bureau of Statistics 2016). The high socio-economic status of this community is important for interpreting the patterns we observe in the data, as we will see below.

Table 1. Participants by age, gender, ethnicity and socio-economic status

	1970s				2010s				Total speakers / ethnicity & class
	Adults		Teens		Adults		Young adults		
	b. 1930s		b. 1960s		b. 1960s		b. 1990s		
	32–64 y/o		12–18 y/o		42–61 y/o		18–31 y/o		
	Female	Male	Female	Male	Female	Male	Female	Male	
Anglos									
Middle	4	3	4	4	4	2	4	5	30
Upper Working	4	3	3	4	5	6	5	5	35
Lower Working	4	2	5	4	5	3	3	4	30
Italians									
Middle			3	3	2	3	1	0	12
Upper Working			4	4	4	4	5	5	26
Lower Working			5	5	3	4	1	0	18
Chinese									
Middle							5	7	12
Upper Working							6	4	10
Total speakers / age & gender	12	8	24	24	23	22	30	30	173

4.2 Speech data

To test for change over time, we rely on spontaneous speech data. Both corpora use the well-established method of the sociolinguistic interview, involving an unstructured set of topics, aimed at getting the participant talking while paying minimal attention to their speech (Labov 1984: 32–42). To enhance the naturalness of the speech and the possibility of recording ethnolectal features – the use of which may be inhibited with outsiders (cf., Clyne, Eisikovits & Tollfree 2002) – the 2010s

interviews were conducted by community members who recorded their friends, extended family members, and friends of friends. Below is an excerpt from one such interview with a Young Chinese-Australian woman about how she came to work in a tutoring centre.

(1)

Amanda: .. *I only went there to help,
because my sister had to go there for tutoring.
.. That was the .. very beginning of me being at that tutor centre to begin with.
.. cause,
... my sister needed tutoring,
.. so she went there,
.. and because she had t- --
needed to go there extra in the holidays,
.. she can't go by herself,
so I had to go with her.* [SydS_CYF_025: 37:59–38:15]⁴

The 1970s interviews lasted around 45 minutes, and the 2010s interviews from 60 to 90 minutes. We selected approximately thirty minutes (or 5,000 words of speech) to transcribe from each speaker, providing a total of some 70 hours of speech, and 750,000 words for the analyses presented here.

We produced time-aligned orthographic transcriptions in ELAN (Lausberg & Sloetjes 2009). To prepare the vowels for analysis, the data were then force aligned using a local build of LaBB-CAT (Fromont & Hay 2012). Vowels in grammatical words and unstressed syllables were excluded from the analysis, and, to control for lexical effects, no more than four instances of any one word were taken per speaker. The remaining 140,000 vowel tokens were manually checked by trained phoneticians, and boundaries were adjusted to ensure accurate demarcation of vowel boundaries.

To capture dynamic vowel behaviour, F1 and F2 measurements were taken at 11 equidistant points along the vowel using a script built with the *rPraat* (Bořil & Skarnitzl 2016) and *PraatR* (Albin 2014) packages in R (R Development Core Team 2019).⁵ Formant values were then normalised following Lobanov (1971) on the basis of all vowel measurements.

4. This information gives the corpus, recording code and number, and time stamps of the beginning and end of the excerpt.

5. The formant settings were manually set for each vowel, for each speaker; formant tracks were hand-checked for a subsample of tokens, and settings were adjusted as needed to produce the most accurate formant trackings. Greater adjustments were required for the 1970s recordings, which were made on cassette recorders and were of poorer quality than the 2010s digitally recorded data.

This process yielded approximately 51,000 tokens of the target diphthongs – FLEECE, FACE, GOAT, MOUTH and PRICE – in a variety of phonological contexts. To control for the effect of phonological environment, we focus here on vowels in pre-obstruent position, the most well-represented context in the data. Table 2 gives the total number of vowel tokens per type, along with the most frequent words in which the vowel occurs in the data analysed.

Table 2. Distribution of vowel types

Vowel	Number	Five most frequent words
FLEECE	6,206	<i>people, even, speak, need, teacher</i>
FACE	7,420	<i>make, made, take, maybe, place</i>
GOAT	3,227	<i>close, suppose, goes, road, spoke</i>
MOUTH	914	<i>house, allowed, south, thousand, houses</i>
PRICE	5,561	<i>like, five, quite, right, side</i>
Total	23,328	

5. Australian English in real time

We begin our exploration of ethnolectal variation over time by considering the speech of the youngest cohort, and the only age group for which we can compare the behaviour of all three ethnic groups: Anglo-, Italian- and Chinese-Australians. The longitudinal nature of the corpus allows us to contextualise what we observe for this group in terms of broader changes that have taken place in Australian English from the 1970s, taking account of patterns of social variation among Anglo-Australians.

5.1 Ethnic variation in Young Adult Australians in the 2010s

The patterning of the 2010s Young Anglo-, Italian-, and Chinese-Australians ($n = 60$) is given in Figure 1, which shows the mean behaviour across speakers of each diphthong over its trajectory. As can be seen, the vowel realisations of the Italians, the more established migrant group, are virtually identical to those of the Anglos, and while the Chinese are also similar, there are some differences specifically for FLEECE, FACE and MOUTH – both FLEECE and FACE occupy higher and fronter positions, and MOUTH occupies a backer position for Chinese-Australians than for Anglo- or Italian-Australians.

Initially, this patterning may appear to be evidence of ethnolectal variation among Chinese-Australians, but once we contextualise it in relation to both changes over time in Australian English and the social nature of this patterning, a different interpretation emerges.

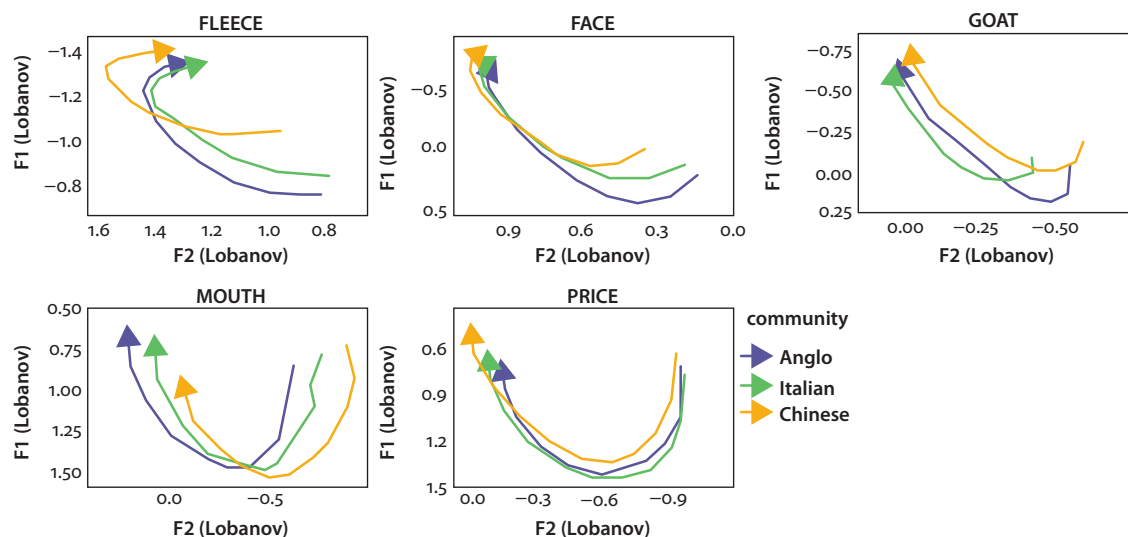


Figure 1. Mean diphthong trajectories for 2010s Young Adults by ethnicity

5.2 Anglo-Australians over time

To examine change over time, we plot in Figure 2 the mean vowel trajectories of the oldest and youngest Anglo participants in the sample – 1970s Adults and 2010s Young Adults ($n = 46$). Clear from the figure is that each of the diphthongs has changed radically over time: FLEECE and FACE have fronted and raised; GOAT has backed and raised; MOUTH has lowered and backed; and PRICE has lowered and fronted.⁶ Many of these changes are similar to changes over time identified in analyses of more controlled contexts, from wordlists employing the hVD frame to read passages (see, e.g., Butcher 2012; Cox 1999).⁷

Once we situate the apparent ethnolectal differences in the youngest group seen in Figure 1 in relation to the changes over time in Figure 2, we observe that Young Chinese-Australians are at the leading edge of a general shift in Australian English diphthongs. This finding parallels Horvath's observation that migrant teenagers were leading the same change in the 1970s (1985: 94). To understand this more fully, we examine the social nature of these changes, considering social class and gender over time.

Figure 3 depicts change over time broken down by class, and Figure 4 by gender for all Anglo participants ($n = 95$). Here, we focus just on the vowel nucleus (the 20% measurement through the vowel). The horizontal axis represents change over

6. There are also changes in the trajectory length of FLEECE, MOUTH, and PRICE over time, which we do not address here.

7. As a reviewer notes, the change in these diphthongs is reminiscent of a reversal of the Diphthong Shift described for London (cf. Kerswill, Torgersen & Fox 2008).

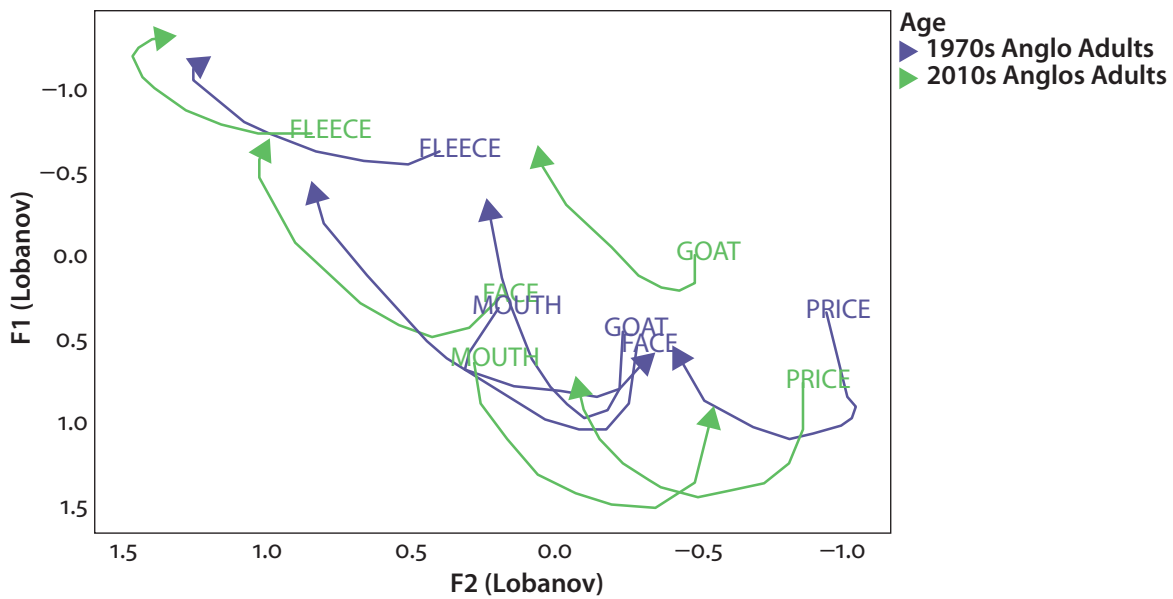


Figure 2. Mean diphthong trajectories for Anglo-Australians by age: 1970s Adults and 2010s Young Adults

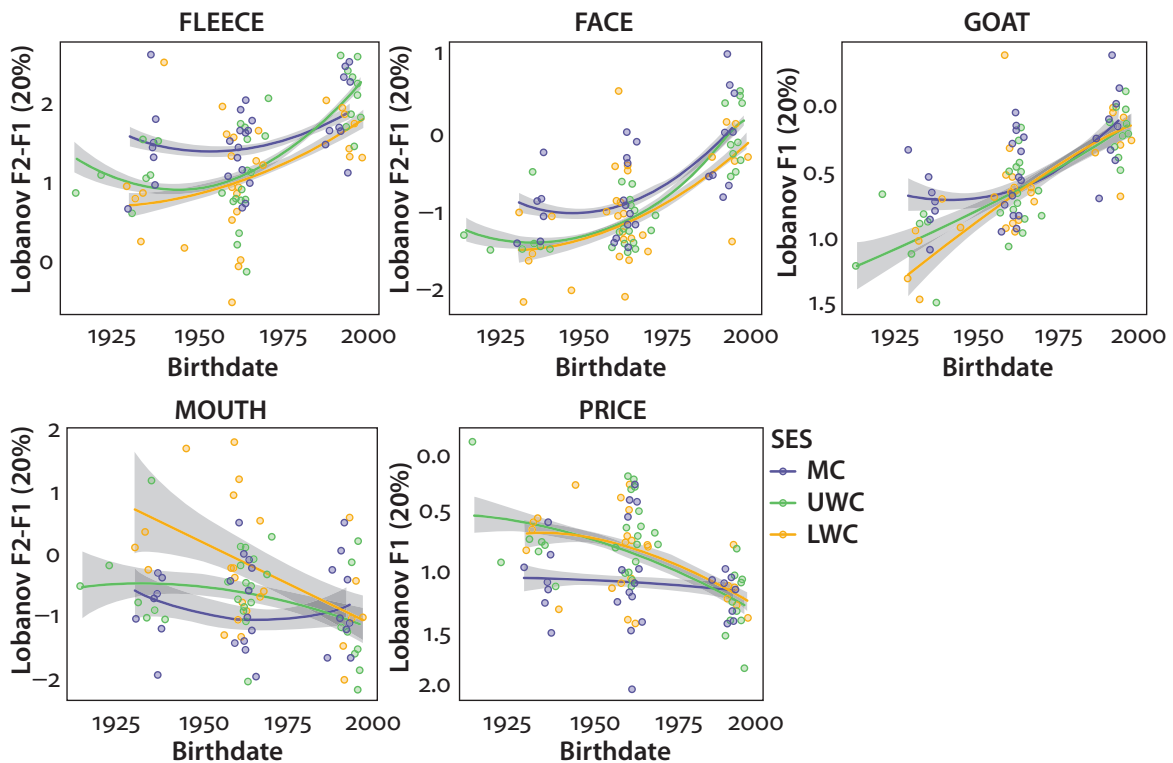


Figure 3. Mean diphthong nuclei over birthdate for Anglo-Australians by socio-economic status (MC = Middle Class, UWC = Upper Working Class, LWC = Lower Working Class)

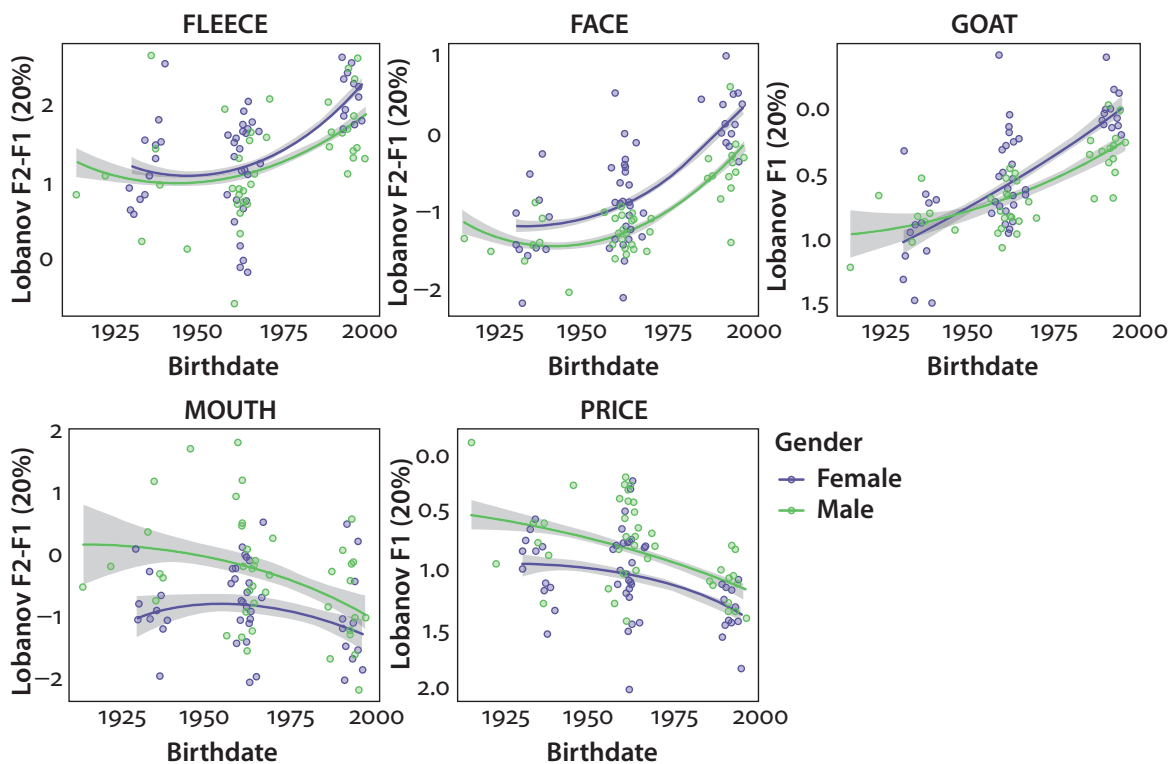


Figure 4. Mean diphthong nuclei over birthdate for Anglo-Australians by gender

time by birthdate (note that the 1970s Teens and 2010s Adults are collapsed here, as they share the same birthdates). On the vertical axis, for GOAT and PRICE, we plot F1, and for FLEECE, FACE, and MOUTH, we capture movement along the front diagonal by plotting the difference between F2 and F1 (following Dodsworth & Benton 2017: 377). This allows us to meaningfully depict the changes of different vowels in similar ways – higher on the vertical axis corresponds to higher, and for FLEECE, FACE, and MOUTH, also fronter, realisations.

We glean three things from Figure 3 about the role of social class in this change. First, 1970s participants show clear class differences: Working Class 1970s Adults produce realisations that are noticeably distinct from their Middle Class counterparts. In FLEECE, for example, Lower Working Class speakers produce the lowest, most centralised realisations, Middle Class speakers produce the highest, frontest realisations, and Upper Working class speakers are in between. All vowels show a generally similar pattern, though to varying degrees. Second, these distinctions contract over time, such that class differences are much less pronounced for 2010s Young Adults than for 1970s Adults.

Third, and of particular interest to us here, is that Middle Class speakers are ahead of both Upper and Lower Working class speakers in the change. For each vowel, the observed movement over time is away from realisations that, in the 1970s, characterised working class speech, and towards realisations that typified

the Middle Class. In some cases (namely PRICE and MOUTH), this has meant that the Middle Class has undergone relatively little change over time. In this way, these sound changes can be interpreted socially as a move away from working class vowel realisations.

Figure 4 depicts the change by gender. Unlike class differences, which contract over time, gender differences are retained, as predicted by Horvath (1985: 176). Both men and women have participated in the changes over time, but for each diphthong, women are in advance of men. The direction of the change in terms of gender, then, is away from male realisations.

Taking account of both class and gender, we can characterise the observed sound changes as a move away from working class, male vowel realisations, or away from “broad” vowels, towards a more overtly prestigious, “general” Australian English. The stability of the Middle Class for some vowels supports previous suggestions that the change is not in the direction of “cultivated” realisations, that is, towards British Received Pronunciation, but towards unique Australian variants (e.g., Cox & Palethorpe 2012: 313, Horvath 1985: 91).

This then provides a social context within which to interpret the variation that we observed among the 2010s Young speakers (Figure 1) – the Chinese-Australians differentiate themselves from Anglo-Australians in the sense that they are less broad; that is, their vowels are the most differentiated from historically working class, male realisations. Their orientation towards the overtly prestigious variants for the dominant group corresponds with their social characteristics described above, as a solidly middle class community.

We address the impact of gender below, but first, what of the Italian-Australians, who have greater social distribution, and whose diphthong realisations pattern more closely to those of Anglos?

5.3 Anglo and Italians over time

For the Anglo- and Italian-Australians, three time points are available for comparison: 1970s Teens, 2010s Adults, and 2010s Young Adults. For these analyses, we focus on a subsample ($n = 89$) that excludes Lower Working Class speakers, as the proportionally greater number of Lower Working Class Anglos than Italians may weaken comparability.

Linear mixed-effects models were conducted using *lme4* (Bates et al. 2019), fit separately to F1 and F2 at the 20% mark with centred vowel duration, and a three-way interaction between age (1970s Teens, 2010s Adults, 2010s Young Adults), community (Anglo, Italian) and gender (female, male) as predictors, and with speaker and word as random intercepts. Model fit was assessed by comparing

models via ANOVA with and without the relevant interactions. Non-significant three-way interactions were simplified into multiple two-way interactions, and pruned if non-significant. In the summaries we present below, we include some non-significant main effects as predictors to aid in comparison across models. Plots of models were obtained using *sjplot* (Lüdtke & Schwemmer 2018), and *p*-values were derived via Wald-statistics approximation.

Here, we present results for FLEECE and FACE as examples of the general changes identified in Section 5.2. The models fit to FLEECE are reported in Table 3 for F1 and Table 4 for F2, and to FACE in Table 5 for F1 and Table 6 for F2. Figure 5 plots the estimates from the models fit to FLEECE and FACE, showing F1 and F2 over time by gender, for Anglos and Italians; model estimates are on the vertical axis, where higher values correspond to higher or fronter (that is, less broad) vowels.

We begin with FLEECE. It is evident from the results here that both Anglos and Italians participate in the raising and fronting of FLEECE over time described in Section 5.2, but there are some differences in the way this change progresses. In terms of height (F1), gender and ethnicity have no significant impact on realisations, indicating that the raising of FLEECE is a community-wide change. The same is not so for F2. First, while men and women exhibit fronting over time, men tend to produce backer FLEECE than women (seen in the lower F2 estimate), for all but the 2010s Anglo Adults. Furthermore, the Italians and the Anglo males show significant incremental raising across the three age groups. The Anglo women, on the other hand, are relatively stable from the 1970s Teens to 2010s Adults, only fronting in the 2010s Young group. For F2 then, we see that Anglo men and women have fronted at different rates, while Italians have fronted incrementally at each time interval. Though there have been differences across the communities at different points in time, no such differences are retained long term, resulting in the similarities we see today.

Table 3. Linear mixed-effects regression model fit to F1 of FLEECE ($n = 3,351$), Anglos and Italians over time

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=1970 Anglo male Teens)	-0.397	0.064	-6.210	-
2010s Adults	-0.218	0.052	-4.195	<0.001
2010s Young Adults	-0.446	0.070	-6.362	<0.001
Italian	-0.067	0.063	-1.075	0.282
Female	-0.018	0.061	-0.296	0.767
duration (centred)	0.775	0.181	4.279	<0.001

Table 4. Linear mixed-effects regression model fit to F2 of FLEECE ($n = 3,351$), Anglos and Italians over time

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=1970 Anglo male Teens)	0.364	0.087	4.171	–
2010s Adults	0.371	0.120	3.097	0.002
2010s Young Adults	0.654	0.113	5.768	<0.001
Italian	0.135	0.114	1.185	0.236
Female	0.418	0.124	3.362	0.001
duration (centred)	0.655	0.183	3.575	<0.001
2010s Adults:Female	–0.432	0.169	–2.562	0.010
2010 Young Adults:Female	–0.158	0.165	–0.958	0.338
2010s Adults:Italian	–0.271	0.135	–2.009	0.045
2010s Young Adults:Italians	–0.088	0.171	–0.515	0.607
Female:Italian	–0.168	0.173	–0.969	0.333
2010s Adults:Female:Italian	0.472	0.225	2.096	0.036
2010s Young Adults:Female:Italian	0.046	0.249	0.814	0.854

Table 5. Linear mixed-effects regression model fit to F1 of FACE ($n = 3,880$), Anglos and Italians over time

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=1970s Anglo male Teens)	1.055	0.078	13.516	–
2010s Adults	–0.001	0.098	–0.007	0.995
2010s Young Adults	–0.460	0.095	–4.819	<0.001
Italian	0.135	0.097	1.394	0.163
Female	–0.316	0.059	5.344	<0.001
duration (centred)	3.593	0.207	17.316	<0.001
2010s Adults:Italian	–0.212	0.118	–1.798	0.072
2010s Young Adults:Italians	–0.253	0.142	–1.788	0.074

Table 6. Linear mixed-effects regression model fit to F2 of FACE ($n = 3,880$), Anglos and Italians over time

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=1970s Anglo male Teens)	–0.179	0.045	–4.000	–
2010s Adults	–0.009	0.039	–0.226	0.821
2010s Young Adults	0.530	0.049	10.929	<0.001
Italian	0.051	0.042	1.198	0.231
Female	0.213	0.042	5.103	<0.001
duration (centred)	–0.460	0.143	–3.226	0.001

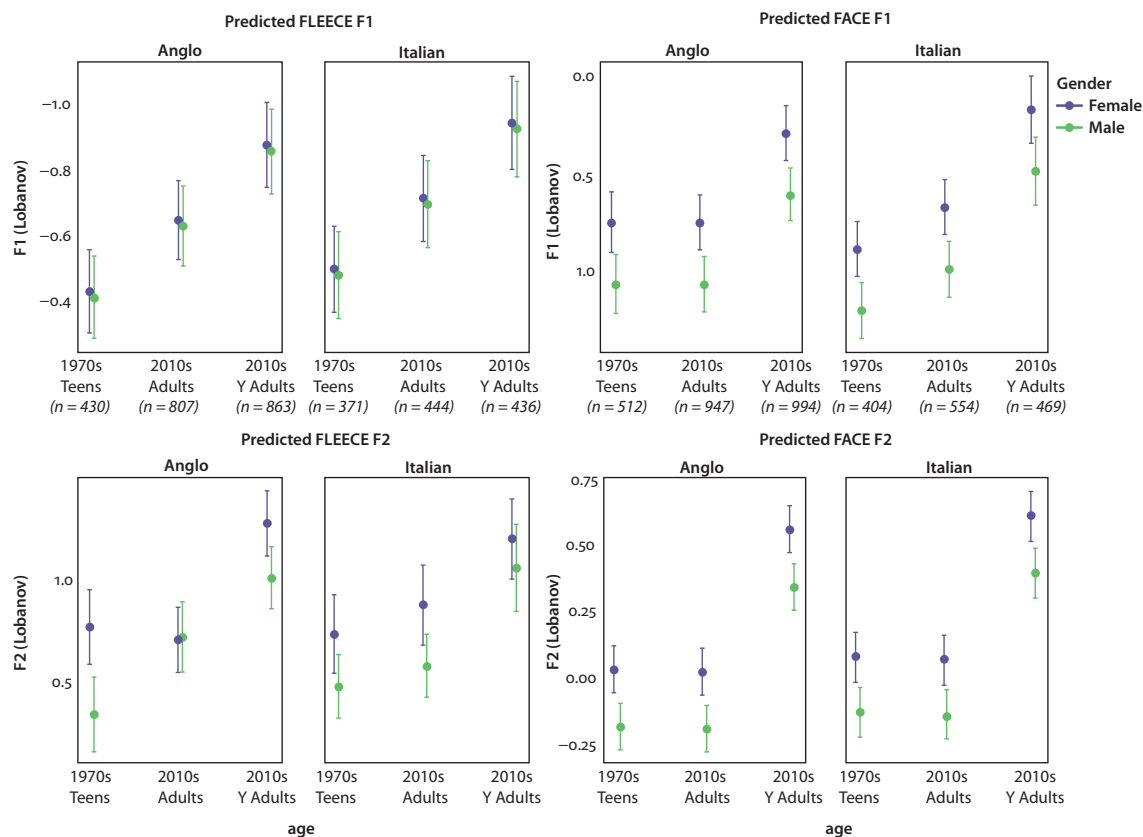


Figure 5. Predicted F1 (top) and F2 (bottom) of FLEECE (left) and FACE (right) for Anglos and Italians, with separate estimates for women and men

For FACE, we again observe general raising and fronting over time, consistent with what we saw in Section 5.2, and again, this holds for both Anglos and Italians. The change takes place a generation later than for FLEECE; the vowel is stable between the 1970s Teens and 2010s Adults for both communities, prior to the raising and fronting observed in the youngest group. This holds for all but F1 for the Italians, who exhibit incremental raising at each time point. As with FLEECE, changes to FACE have taken slightly different trajectories for Anglos and Italians, but there is relatively little difference between the two ethnic groups today.

Overall then, FLEECE and FACE are impacted by age and gender, and while both Anglo- and Italian-Australians undergo parallel changes over time, the groups differ somewhat in their uptake of these changes (consistent with what Horvath observed for 1970s Teenagers, in some cases leading the change, and in some cases with a less pronounced gender distinction than that of the Anglo-Australians (1985: 91–95)). Today, any community differences that might have existed have been lost, with the Anglos and Italians patterning very similarly for these two vowels. We find similar behaviour for GOAT, MOUTH, and PRICE (though for reasons for space, we do not present those results here). In general, across these five

diphthongs, Italians pattern alongside Anglos, and gender differences are always larger than ethnic differences. Remaining to be seen is how the Chinese-Australians pattern according to gender.

5.4 Ethnic and gender variation in Young Adult Australians in the 2010s

We return now to the 2010s Young Adults, paying special attention to whether the differences for ethnicity that we identified in Section 5.1 are borne out once we consider gender independently. To illustrate, we again focus on the nuclei of FLEECE and FACE and restrict the sample to Upper Working and Middle Class speakers (in this case 2010s Young Adults, $n = 52$). Identical linear mixed-effects models were fit to F1 and F2 at the 20% mark, with centred vowel duration, and an interaction between gender and ethnicity as predictors, and speaker and word as random intercepts. Table 7 and Table 8 show the output from the models fit to FLEECE F1 and F2, respectively, and Table 9 and Table 10 that from the models fit to FACE F1 and F2. Figure 6 shows plots derived from those models for both vowels.

Within-gender comparisons of Anglo and Italian vowels indicate no significant differences between the two ethnic groups, corroborating the findings from Section 5.3: Anglo and Italian women pattern similarly, as do Anglo and Italian men, and for both groups, men produce broader realisations than women (lower and backer FLEECE and FACE). But while vowel realisations for Chinese Young women parallel those of Anglos and Italians, the same is not so of the Chinese men, who produce higher and fronter FLEECE, and higher FACE than Anglo and Italian men, placing their realisations more in line with those of women. For GOAT, MOUTH, and PRICE, we similarly find that Chinese men and women tend to behave as a single group, while Anglos and Italians exhibit robust gender differences with males tending to produce broader realisations. In other words, broader diphthong realisations are associated with Anglo and Italian, but not Chinese, men.

Once again, when presented in isolation, the distinct behaviour of the Chinese males may appear to be evidence for ethnolectal variation. But interpreting it in relation to the broader social conditioning provides an alternative account. Young Chinese-Australians do not conform to the dominant Australian gender norms for diphthong realisations, in that both men and women orient strongly to the linguistic behaviour characteristic of middle-class Australians. And this orientation is precisely in the direction that the entire community has shifted over time. For Young Chinese-Australian men and women today, then, “sounding Australian” (Horvath 1985: 176) is tied to overtly prestigious linguistic behaviour, in line with the socio-economic status of this community.

Table 7. Linear mixed-effects regression model fit to F1 of FLEECE ($n = 2,131$), 2010s Young Adult Anglos, Italians, and Chinese

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=Anglo females)	-0.939	0.073	-12.906	-
Italian	0.024	0.114	0.212	0.832
Chinese	-0.112	0.097	-1.159	0.247
Male	0.149	0.099	1.508	0.132
duration (centred)	0.161	0.186	0.864	0.388
Italian:Male	-0.193	0.163	-1.180	0.238
Chinese:Male	-0.303	0.135	-2.244	0.025

Table 8. Linear mixed-effects regression model fit to F2 of FLEECE ($n = 2,131$), 2010s Young Adult Anglos, Italians, and Chinese

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=Anglo females)	1.276	0.072	17.732	-
Italian	-0.064	0.110	-0.579	0.563
Chinese	0.054	0.094	0.572	0.568
Male	-0.252	0.096	-2.628	0.009
duration (centred)	2.145	0.197	10.869	<0.001
Italian:Male	0.115	0.159	0.725	0.468
Chinese:Male	0.259	0.131	1.975	0.048

Table 9. Linear mixed-effects regression model fit to F1 of FACE ($n = 2,539$), 2010s Young Adult Anglos, Italians, and Chinese

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=Anglo females)	0.197	0.098	2.022	-
Italian	-0.128	0.154	-0.835	0.404
Chinese	-0.035	0.131	-0.264	0.792
Male	0.427	0.134	3.194	0.001
duration (centred)	2.905	0.202	14.356	<0.001
Italian:Male	0.035	0.222	0.158	0.874
Chinese:Male	-0.470	0.182	-2.580	0.010

Table 10. Linear mixed-effects regression model fit to F2 of FACE ($n = 2,539$), 2010s Young Adult Anglos, Italians, and Chinese

Predictors	Estimates	Standard error	<i>t</i>	<i>p</i> -value
Intercept (=Anglo females)	0.554	0.065	8.537	-
Italian	0.138	0.101	1.364	0.173
Chinese	0.093	0.086	1.084	0.278
Male	-0.193	0.088	-2.203	0.028
duration (centred)	0.554	0.161	3.432	0.001
Italian:Male	-0.186	0.146	-1.277	0.202
Chinese:Male	0.067	0.119	0.558	0.577

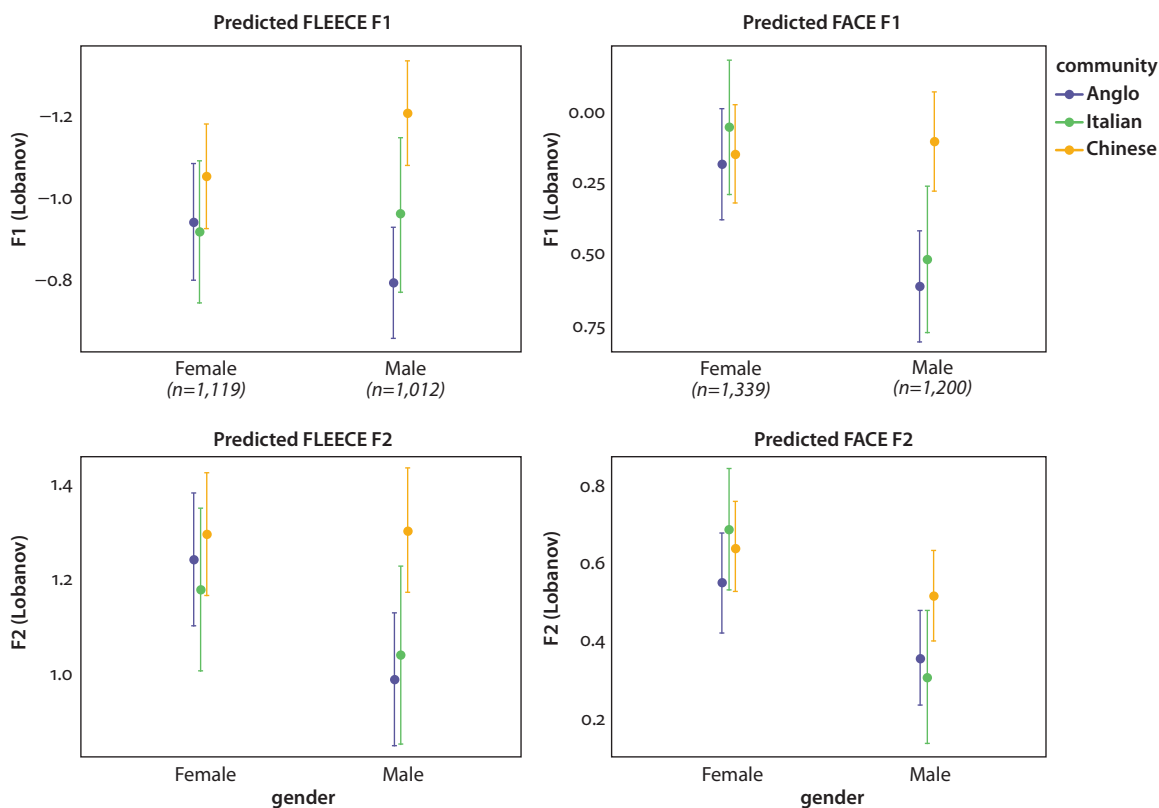


Figure 6. Predicted FLEECE (left) and FACE (right) in F1 (top) and F2 (bottom), 2010s Young Adult Anglo, Italian, and Chinese men and women

6. Migrants and the progression of change

Overall, we have found little support for the longevity of ethnic differences. Instead, we observe remarkable similarities in the vowel realisations of Anglo-, Italian- and Chinese-Australians in Sydney today. This suggests a shared vocalic system across these diverse groups, consistent with what has been reported for these same communities in major urban centres in North America (Becker 2014; Hoffman 2010; Wong & Hall-Lew 2014). We have also observed a largely shared system across Anglo-, Italian- and Chinese-Australians today for other variables studied in this data set, including quotative choice (Lee 2020) and word-final *-er* (Gramma, Travis & Gonzalez 2020). Thus, whether, and where, ethnolectal variation lies in this community remains to be seen, but other phonetic features, and in particular consonantal realisations and prosody, may be areas worthy of future investigation.

Here, we have seen a general move away from broad (working class male) diphthong realisations for Anglo-Australians over time, resulting in a contraction of class differences, alongside a retention of gender differences, with males as a group producing consistently broader vowel realisations. Despite small differences over time between Italian- and Anglo-Australians in the progression of these changes, they have nevertheless proceeded largely in parallel, such that today, the two groups

pattern very similarly. Chinese-Australians, on the other hand, do exhibit some differences, particularly with respect to social conditioning. The Chinese-Australians studied here do not evince the gender distinctions evident in the speech of Anglo- and Italian-Australians. We note that Italian-Australians in the 1970s show less of a gender distinction than Anglos, and Horvath also reported diminished social conditioning for 1970s Italian and Greek teenagers (1985: 81). This would suggest that while newer migrant groups may be less sensitive to the social norms of the dominant group, over time they may come to adopt those norms, something which can be tested for the Chinese community in the future.

The lack of a gender distinction for the Chinese-Australians studied here is seen in that both females and males produce diphthong realisations that conform to prestige norms typical of higher socio-economic classes. This is consistent with the middle-class orientation of this community, and with the observation that “upwardly mobile ethnic minority groups favor the accent of the dominant majority, especially in contexts where the advantages associated with the majority are salient” (Callan, Gallois & Forbes 1983: 423). This patterning does not appear to be unique to Australian Chinese. In a study of the change towards increased rhoticity in New York City, Becker found that Chinese New Yorkers strongly favoured the overtly prestigious /r/-ful variant (2014: 157). In both cases, this situates the Chinese as vanguard adopters of changes in progress, and it may be that, in this way, they epiphenomenally push change forward, in a similar fashion to what Horvath proposed for Greek- and Italian-Australian teenagers in 1970s Australia (1985: 94).

As noted above, “ethnolectal” variation has been tied to an expression of ethnic identity. But for the Chinese-Australians studied here, rather than marking their “Chinese-ness”, they appear to be responding to the linguistic norms of that section of society with which they closely identify and associate, namely middle class Australia. This is in contrast to the typical interpretation of ethnolects as nonstandard varieties (cf., Eckert 2008: 26–28), and indicates that ethnolectal variation is closely related to the social standing of different ethnic groups, as they are sensitive to the social patterning of linguistic variation around them.

As Eckert notes, “there is no obvious way to distinguish between a dialect with ethnic features and an ethnolect” (2008: 27). What we have seen here leads us to conclude that patterns of ethnic variation must be studied in relation to variation and change in the broader community, as ethnicity cannot be considered independently from other social factors. Here, by contextualising the patterning observed today in relation to that observed over 40 years in real time and from a broad cross-section of Australian society, we find differences in the social conditioning of the diphthongs of Australian English for these three ethnic groups, suggesting that their linguistic behaviour can best be explained as a response to broader social norms.

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