Ethnicity and social class in pre-vocalic *the* in Australian English

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Abstract

Across varieties of English, the realisation of pre-vocalic definite article *the* is undergoing change, with a move away from non-glottalised FLEECE towards both glottalised FLEECE and SCHWA. Here, we examine this change in apparent time in a socially stratified corpus of spontaneous speech with 91 native speakers of Australian English of Anglo-Celtic, Italian and Chinese background. Analyses of 1,207 tokens reveal that the increase of both new forms is led by women and middle class speakers. An overall higher rate of newer variants by Italian and Chinese Australians is attributable not directly to ethnicity, but to its intersection with social class.

Index Terms: sociophonetics, sound change, *the*+VOWEL, ethnicity, social class

1   Introduction

Across most varieties of English, definite article *the* shows morphophonological alternation, occurring with a FLEECE vowel before another vowel (e.g. *the other* [ði: ˈɐðə]), and SCHWA before a consonant (e.g. *the same* [ðə ˈsæɪm]) [1]. The pre-vocalic environment, however, is undergoing change, with an increase in SCHWA and in glottalisation found for American English [2], British English [3, 4], New Zealand English [5, 6], and, most recently, Australian English [7]. This change has been reported to be led by ethnic minorities and in ethnically diverse communities, in accordance with the understanding that greater diversity serves to drive change forward [3, 4, 6, 7].

Here, we examine change in apparent time in Australian English, as observed in a corpus of sociolinguistic interviews conducted in the 2010s in Sydney with Adults (born 1960s) and Young Adults (born 1990s). We consider two ethnic minority groups who have not been included in the *the*+VOWEL literature to date, Italian and Chinese Australians, and compare their patterning with that of Anglo-Celtic Australians. To better discern the nature of the change, we consider the increase in SCHWA and increase in glottalisation following FLEECE independently of each other, and find that, while these two changes are parallel in many ways, they are not identical.

Prior work on this variable has primarily focused on the increase of SCHWA relative to FLEECE over time [2-4, 6], and provides evidence that this is quite a recent change, with minimal SCHWA being reported for older speakers [6], or in older data [2], and with rates in some cases as high as 100% for younger speakers [3, 4, 6]. An increase in glottalisation with FLEECE has received less attention, but has also been observed [5], and in one case, found to be greater than the increase in SCHWA [7].

A consistent pattern reported for the social conditioning of this change has been the leading role of ethnically diverse speakers: Bangladeshi boys in London, UK [3, 4]; more diverse neighbourhoods in Auckland, New Zealand [6]; and Lebanese Australians in Sydney, Australia [7]. Beyond this, results for the social nature of these changes vary. In the UK, the increase in SCHWA has been found to be led by young men [3, 4]. In Australia, on the other hand, Cox and colleagues found that women were in the lead [7], and a similar tendency was observed by Meyerhoff and colleagues in New Zealand [6]. Social class has not been widely examined, though Hay and colleagues found "non-professional" speakers were ahead in the change in New Zealand [5]. These results thus do not present a clear picture of the social nature of the move away from non-glottalised FLEECE.

In the data examined here, we also find that the Italian and Chinese Australians are ahead of their Anglo-Celtic peers in the move away from non-glottalised FLEECE. To interpret this, we consider ethnicity alongside social class. Though most often considered independently, prior work has observed links between ethnicity and class, from Laferriere's classic study of ethnic variation in which she reported an effect of education on the differential uptake of changes by Jewish and Italian Americans [8] (cf. also [9]). Likewise, a favouring of standard features in British Asian English in contrast to Multicultural London English has been tied to the higher socioeconomic status of the former [10]. For *the*+VOWEL, we find that apparent ethnic differences are diminished once we take into account social class, leading us to conclude that the two must be considered together.

2   Methods

The data come from the Sydney Speaks corpus, a socio-linguistic corpus comprising recordings made in the 1970s-1980s and the 2010s with some 260 native speakers of Australian English [11]. In this paper, we report on the speech of 91 participants recorded from 2014 to the present. As summarised in Table 1, this includes Adults (born 1960s) and Young Adults (born 1990s) of Anglo-Celtic background and Young Adults from two migrant communities, Italian and Chinese Australians, all of whom were born and raised in Australia (or arrived before the age of six) to parents from Italy and Hong Kong or Guangzhou, China. There are even numbers of men and women for each community group.

The sample is further stratified by social class, determined on the basis of a composite measure of occupation, level of education and school type, and broken into three groups: Middle, Lower-Middle and Working Class. All three class groups are represented for Anglo-Celtic and Italian Australians, though there is a predominance of the Lower-Middle Class for the latter, due to the fact that, at the current stage of data collection, one half of the Italian Australians are university students. For the Chinese Australians, there are no Working Class participants, a reflection of the generally high socio-economic status of this community (as evident from census reports [12], and as described in [13]). This social distribution turns out to be key to interpreting the patterns observed.

Table 1. Demographic breakdown of participants.

| | Adults (45-64 yrs) | Young Adults (18-32 yrs) | | |
	Anglo	Anglo	Italian	Chinese
Middle	9	9	5	9
Lower-Middle	10	10	9	13
Working	8	7	2	

Sociolinguistic interviews were conducted by community members (Anglo-Celtic, Italian and Chinese Australians from Sydney), primarily within their own networks, with friends, extended family, and other acquaintances. They lasted between 60 and 90 minutes, and approximately 30 minutes (or 5,000 words) were transcribed per participant, providing a total of over 500,000 words for the analyses presented here.

All instances of *the* preceding a vowel-initial word were extracted [using the search function in LaBB-CAT, 14], giving an initial total of 1,708 tokens. We set aside tokens occurring in overlap or where there was background noise and those where *the* was not immediately followed by another word (including those followed by a pause, a filled pause such as *um*, or truncation) (n = 431). All remaining tokens were auditorily coded blind by two trained listeners, with spectrograms also reviewed in Praat in some cases for clarification. Tokens were coded both for realisation of the vowel in pre-vocalic *the* (vowel type, FLEECE vs. SCHWA) and for glottalisation following the vowel (present vs. absent, without distinguishing type or duration of glottalisation, following [7]). Coders also noted cases where they were unable to make a determination, including where the vowel in *the* was assimilated with the following vowel (n = 41), and instances of emphatic *the* (n = 2, both of which were realised as FLEECE with no glottalisation).

All discrepancies between the coders were checked by a third coder, auditorily for vowel type (n = 152) and by reviewing the spectrograms in Praat for glottalisation (n = 90). In most cases, this allowed for a determination to be made, though a small number of cases were unidentifiable, generally due to assimilation with the following vowel, and excluded (n = 27). This left a total of 1,207 tokens which had been coded both for vowel type and glottalisation.

Of the four possible realisations, non-glottalised FLEECE (the older form) is the majority variant, accounting for close to two-thirds of all instances (n = 776). The remaining tokens are largely made up of glottalised FLEECE (13%, n = 155) and glottalised SCHWA (20%, n = 243), as non-glottalised SCHWA is vanishingly rare (n = 33), as also reported in other studies [2, 4, 5, 7]. We, therefore, set aside non-glottalised SCHWA in the analyses that follow, leaving a total of 1,174 tokens for analysis distributed across three variants.

Figure 1 presents spectrographic representations of each of these three variants. Non-glottalised FLEECE appears on the left where no stop closure between *the* and the following vowel is evident, in contrast with the irregular glottal vibrations seen in the glottalised realisations in the middle (also for FLEECE) and on the right (for glottalised SCHWA, which we will simply refer to as SCHWA from here on).

3 Results

3.1 An overview of *the* alternations

We begin by considering the overall distribution of the three variants across age and ethnicity, to gain an overview of the change in apparent time for the Anglo Australians (comparing the Adults and Young Adults), and of community differences for the Young Adults (comparing the Anglo, Italian and Chinese Australians). Figure 2 presents the rates of the three variants for Adult Anglos in the first set of columns, then Young Adult Anglos, Italians and Chinese respectively.

This chart indicates that, for the Adult Anglos, FLEECE with no glottalisation (at a rate of 83%) is used nearly to the exclusion of the other two variants, neither of which reaches 10%. For the Young Adult Anglos, the proportion of FLEECE with no glottalisation has dropped substantially (to 64%), while both FLEECE and SCHWA with glottalisation have increased (to 21% and 16% respectively). Thus, in these speakers, we see the same apparent time change that has been reported elsewhere.

Also consistent with other reports, the ethnic minorities appear to be ahead in this change – both the Italian and Chinese Australians exhibit a lower rate of non-glottalised FLEECE than their Anglo peers (at 56% and 47% respectively), and a higher rate of SCHWA (at 31% and 37%). Glottalised FLEECE, however, is produced at a similar rate across all three groups.

This differential patterning for vowel type suggests that the change is twofold, involving an increase in glottalised FLEECE that applies across all three communities equally, as well as an increase in SCHWA, in which the ethnic minorities are in the lead. Confirming the independence of the two incoming variants is the fact that speakers' rates of use of these forms relative to the older non-glottalised FLEECE do not correlate; that is, a high rate of SCHWA is not indicative of a correspondingly high rate of glottalised FLEECE, or vice versa (for the 72 speakers who produce at least five tokens of glottalised and non-glottalised FLEECE, and at least five tokens of SCHWA and non-glottalised FLEECE, $r(70)$ = .17, p = .146). We will see below that it is not only in the rate of uptake by the ethnic minorities that these two incoming forms differ.
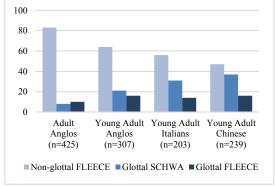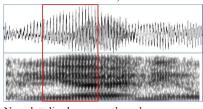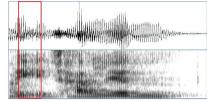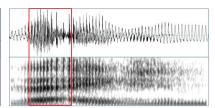
Figure 2: *the*+VOWEL realisations for Age by Community

Non-glottalised FLEECE: *the only*   Glottalised FLEECE: *the Italian*   Glottalised SCHWA: *the Asian*

Figure 1: *Spectrographic representations of three variants for the+VOWEL.*

3.2 Modelling the variation

In order to model the variation, we analysed separately the alternation between glottalised and non-glottalised FLEECE on the one hand, and SCHWA and non-glottalised FLEECE on the other. We also analysed separately the patterning for the Anglo Australians, comparing the Adults and Young Adults to assess change in apparent time among the majority community, and the patterning for the Young Adults, comparing the Anglo, Italian and Chinese Australians, to assess the role of ethnicity in the change. Thus, four independent analyses were conducted, and are reported below. Analyses were done using mixed-effects logistic regression, with the lme4 package in R [15, 16].

For each analysis, realisation was the dependent variable, with the more conservative, non-glottalised FLEECE, the reference level. The social predictors of Socio-economic Class and Sex were included in all models, and Age was included in the model for Anglo Australians (Section 3.2.1), and Ethnicity in that for the Young Adults (Section 3.2.2).

For linguistic predictors, we included Stress and Height of the word-initial vowel in the following word, based on reports in the literature of a favouring of SCHWA when the following syllable is stressed [17, 18], and with high-front vowels (in particular, FLEECE), in what has been interpreted as a dissimilation effect [6, 17]. Observation of the patterns evident in the raw data indicated that the most meaningful classification for the following vowel was a three-way Height distinction between High, Mid and Low vowels. 80% or more of each of these categories was made up of a small set of vowel types, respectively KIT and FLEECE (the most frequent forms being *Italian, eastern*); GOAT, DRESS, and LOT (e.g. *only, end, Australian)*; and STRUT, TRAP, and FACE (e.g. *other, accent, Asian*). And finally, though not included in the previous literature, we tested for an effect of Word Class, distinguishing between Adjectival and Nominal uses (e.g. *other, only* vs. *end, area*) determined by considering each instance in context.

Speaker and Word were included as random intercepts. All word types that occurred only once (approximately one half of all word types) were pooled into a single level as, with such low frequency, they would not have lexically specific probabilities, and their inclusion may make the model oversensitive to lexical particularities [19-21]. We tested for relevant three- and two-way interactions, and then pruned the models to leave only significant predictors.

We now turn to these analyses, first presenting the apparent time comparison among Anglo Australians, before moving on to consider ethnic variation for the Young Adults.

3.2.1 The+VOWEL in apparent time

We have already noted the minimal use of both glottalised FLEECE and SCHWA for the Anglo Adults, and the substantial increase for both forms for the Young Adults (Figure 2 above). The regression analyses confirm the increase in these variants in apparent time, with the Young Adults having a significantly higher rate of each than the Adults (as described below). However, comparisons of the two regression analyses reveal both similarities and differences in the way in which glottalised FLEECE and SCHWA are coming into the system.

Both newer variants are most favoured with women (for glottalised FLEECE, $\beta = 0.81$, $p < .05$ and for SCHWA, $\beta = 1.29$, $p < .05$), and with the Middle Class (see below), and they are both favoured with high stressed vowels (e.g. with *eastern, inner, English*). But they differ, first, in that glottalised FLEECE appears to be more sensitive to linguistic conditioning than SCHWA. Glottalised FLEECE is favoured by Adjectives over Nouns ($\beta =$

0.73, $p < .05$), but there is no Word Class effect for SCHWA. There is also a marginal main effect of vowel Height for glottalised FLEECE, which is most favoured with High vowels (vs. Low vowels, $\beta = 0.96$, $p = 0.074$), while for SCHWA, an effect of vowel Height exists only in interaction with Stress. There are also some differences in the social conditioning, as presented in Figure 3 for glottalised vs. non-glottalised FLEECE, and Figure 4 for SCHWA vs. non-glottalised FLEECE. Glottalised FLEECE is favoured by the Young Adults over the Adults ($\beta = 0.78$, $p < .05$), and, for both age groups (evidenced in the lack of an interaction), by the Middle Class over both the Lower-Middle ($\beta = -0.88$, $p < .05$) and Working Class ($\beta = -0.79$, $p = .095$).

For SCHWA, Age has a significant main effect, such that SCHWA is favoured by the Young Adults over the Adults ($\beta = 3.44$, $p < .001$), but there is also a significant interaction with Social Class. While there is no Class effect for the Adults, for the Young Adults, SCHWA is most favoured by the Middle Class. This interaction suggests that class differentiation is more recent for SCHWA than for glottalised FLEECE. It also appears to be more defined for SCHWA, which exhibits a gradual weakening in the favouring effect from Middle to Lower-Middle to Working Class, while for glottalised FLEECE, the Middle Class has the highest rate, but there is no difference between the Lower-Middle and Working Class. We now turn to consider how these differences surface when we compare the different communities for the Young Adults.
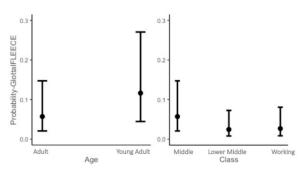

Figure 3: Predicted probability of glottalised FLEECE vs. non-glottalised FLEECE for Age (left) and Class (right): Anglo Australians
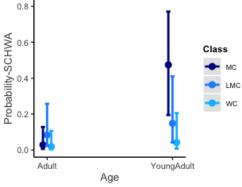

Figure 4: Predicted probability of SCHWA vs. non-glottalised FLEECE for Age by Class: Anglo Australians

3.2.2 The+VOWEL across ethnicity

As we saw above in Figure 2, the rate of glottalised FLEECE is similar across communities, while for SCHWA, both the ethnic minorities have a higher rate than the Anglo Australians.

Before concluding that ethnic minorities are leading in the change to SCHWA, it is important to bear in mind the patterning for Social Class among the Anglo Australians that we have just seen, specifically, the lagging of the Working Class in this change. The fact that there is a higher proportion of Working Class Anglos in the sample than both Italians (due to sampling) and Chinese (reflective of the nature of the community; Table 1) means that the samples are not directly comparable.

In order to meaningfully compare the patterning of the Young Adults, we, therefore, set aside the Working Class participants, and ran regression analyses on the 55 remaining participants, making a two-way distinction between Middle and Lower-Middle Class. We ran the same two analyses that we ran for the Anglo Australians, comparing glottalised and non-glottalised FLEECE, and then SCHWA and non-glottalised FLEECE.

For the linguistic predictors, we find generally similar effects across the communities as those we reported above: a favouring of glottalised FLEECE with High vowels (as a main effect vs. Low vowels, $\beta = 1.66$, $p < .05$), and in interaction with Stress, and with Adjectives ($\beta = 0.83$, $p < .05$); and a favouring of SCHWA with Stress ($\beta = -4.39$, $p < .0001$), with no effect for vowel Height or Word Class. There are no significant interactions between Community and the linguistic predictors, indicating that all groups draw on the same linguistic system in participating in this change. What of the social effects?

For glottalised FLEECE, there is no effect for Community, neither as a main effect nor in interaction with Sex or Social Class. For all communities, glottalised FLEECE is favoured by women ($\beta = 0.66$, $p < .05$) and there is no significant effect for Social Class. This is consistent with the parallel rates seen across the communities in Figure 2.

For SCHWA also, across all communities, there is a favouring effect by women ($\beta = 1.72$, $p < .01$), but, crucially, there is no main effect for Community, despite the higher rates by Italian and Chinese Australians (Figure 2). The Community effect emerges only in interaction with Social Class. As depicted in Figure 5, for the Anglo Australians, the Middle Class favours SCHWA over the Lower-Middle Class, but for the Italian and Chinese Australians, there is no significant difference between the two social classes (as verified by separate analyses). For the Chinese, both class groups pattern similarly to the Middle Class Anglo Australians, and for the Italians, both lie in between the Middle and Lower-Middle Class Anglo Australians. It is this differential class patterning, then, that boosts the rate of SCHWA overall for the Italian and Chinese Australians.

Why might there be greater ethnic difference for SCHWA than for glottalisation of FLEECE? This can partly be accounted for by the weaker stratification overall, seen in Figure 4, with the Lower-Middle Class patterning similarly to the Working Class. Further, it may also be partly due to the overall lower rate of occurrence of this variant, which minimises the impact of the class distribution.

4   Discussion and conclusions

The analyses of spontaneous speech in Sydney corroborate findings across the English-speaking world, including in Australia, that there is an ongoing move away from non-glottalised FLEECE in *the*+VOWEL. This change is being led by young women, in accordance with previous findings in Australia [7], but distinct from what has been observed in the UK [3, 4]. Here, we have also identified a leading role for the Middle Class speakers, and this, coupled with the sex effect, may be indicative of the social meaning of these newer variants in Australia, and an association with overt prestige.
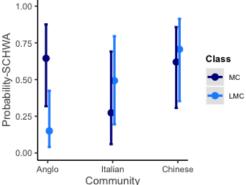

Figure 5: Predicted probability of SCHWA vs. non-glottalised FLEECE, for Community by Social Class: Young Adults.

As in other studies, the shift away from non-glottalised FLEECE is greatest for ethnic minorities, here, applicable specifically to an increase in SCHWA, while glottalised FLEECE is parallel across the three communities. The explanation for this apparent community difference lies in the intersection between social class and ethnicity. First, the rate of SCHWA for the Anglo Australians is driven down by the higher proportion of Working Class speakers, who disfavour this variant. Second, a favouring of SCHWA by Middle over Lower-Middle Class Anglo Australians is not replicated for Italian and Chinese Australians, for whom there is no distinction between these class groups. Furthermore, both the Middle and the Lower-Middle Class Italian and Chinese Australians exhibit greater favouring of SCHWA than the Lower-Middle Class Anglo Australians, thus bumping up the overall rate for these communities.

General patterning in accordance with middle-class norms has been observed for Chinese Australians across a range of variables, for which they appear to strongly favour forms that are associated with overt prestige, including, for changes in diphthong realisations [22]; the pre-nasal vs. pre-obstruent split for TRAP [23]; velar vs. alveolar realisations of (ing) [24]; and, beyond phonetics, the long-term change from *will* to *be going to* [25]. Given the generally high socio-economic status of this community, it appears that part of being a Chinese Australian is belonging to the Middle Class, with speech patterns being one mechanism by which that may be marked. The Italian community overall is not afforded the same social status, but in the sample here, eight of the nine Lower-Middle Class participants are university students, who may be experiencing upward mobility, rendering them potentially more attentive to norms of overt prestige.

As this is a change driven by the Middle Class, this puts the Italian and Chinese Australians examined here at the forefront of the change. However, they lag in changes that are not led by the Middle Class [23, 25]. Thus, their role as leaders we would argue is not a direct artefact of greater diversity, but of the "particular esteemed educational, occupational, and linguistic values" [8] of these communities in combination with the social meaning of the variable under consideration.

We conclude that apparent ethnic differences should be assessed in relation to the broader social differentiation of the relevant variables, and general social contextualisation of the ethnic groups under study, as this will allow us to better understand the ways in which ethnic diversity may impact patterns of language variation and change.

5 Acknowledgements

6 References

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