



A first look at declarative rises as markers of ethnicity in Sydney

Anna Bothe Jespersen¹

¹Phonetics Laboratory, DTAL, University of Cambridge

abj28@cam.ac.uk

Abstract

This paper investigates the differing distributions and phonetic properties of declarative rises in the English of Aboriginal and non-Aboriginal Australian speakers from Sydney. Declarative rises in both varieties can be divided into 5 broad contour types based on f₀ trajectory. It is shown that Aboriginal and non-Aboriginal speakers use very similar amounts of declarative rises, both overall and within the 5 rise types. However, there is a robust difference in the height of the rises, with Aboriginal speakers consistently producing rises 2 semitones below the standard Australian English speakers. This makes declarative rises a potential marker of ethnicity for the Aboriginal speakers, and highlights the need to look beyond linguistic features that are stereotypically associated with a variety when determining group differences.

Index Terms: High rising terminals, uptalk, intonation, Australian English, Aboriginal English, ethnicity.

1. Introduction

One of the most salient sociophonetic markers of Australian English is the high rising terminal (HRT), a rising intonation used with declarative utterances. HRTs are well-documented in standard Australian English, but we have very little evidence of their phonetic and phonological characteristics in the English spoken by Aboriginal Australians. Previous work on this dialect group has generally been concerned with broad sociolinguistic or educational issues, and has focused on lexis, grammar or general linguistic description. Thus most of the evidence we have of Aboriginal English prosody is impressionistic in nature. Furthermore, the majority of studies have focused on varieties associated with remote communities from the Central, Northern and Western areas of Australia, which are relatively close to the country's two creoles. However, this limited focus does not reflect reality: Aboriginal Australians, like the rest of the country's citizens, mainly reside in Australia's urban South-East.

This paper aims to add to our knowledge of Aboriginal English prosody, focusing on the urban Aboriginal English spoken in Sydney. This variety has attracted very little attention from linguists, and the few published studies focus on segmental features, and generally find no or few consistent differences from the standard [1, 2, 3, 4]. These reports are surprising given the well-established tendency for ethnic minority groups to distinguish themselves from the ethnic majority by means of linguistic features [5]. In this way, linguists working on ethnic minorities in urban spaces as ethnically diverse as the United States [6], England [7] New Zealand [8] and Denmark [9] have found ethnic minorities distinguishing themselves from the standard variety by means of sociophonetic markers.

Given its focus on declarative rises, this paper takes as its starting point the fact that very little is known about Aboriginal English prosody [10]. We know from the sociophonetic literature that prosodic features such as voice quality [6], rhythm [11] and pitch range and intonation contours [8] can be used to index ethnicity in varieties of English. One potential explanation for the reported lack of contrast between standard and Aboriginal Sydney English might therefore hinge on the segmental foci of previous studies. Specifically, the HRT has been shown to index ethnic identity in related minority varieties. In this way, Britain and Newman's [12] results for Maori English suggest that the HRT is used significantly more among Maori than non-Maori New Zealanders, and Guy and Vonviller [13], Horvath [14] and Jane Warren [15] report that recent immigrants to Australia were found to use higher numbers of HRT rises in comparison with speakers of standard Australian English.

In terms of their phonology, HRT rises have variable realisations across different varieties of English. In Standard Southern British English, HRT contours are reported to be realised as low-onset high range rises (L* H-H%) [16]. Ritchart and Arvaniti [17] found that in Southern Californian English, low-onset low-range rises (L* L-H%) were used with the majority of HRT nuclei. In various Antipodean varieties it has been reported that several types of rises can function as HRTs. Research on New Zealand English by Paul Warren and his colleagues [18, 19] found that speakers produced a variety of intonational rises, and that statement and question rises were realised differently. Fletcher and colleagues [20, 21, 22] showed that in standard Australian English, different types of high rises are used for declaratives and interrogatives, and that the HRT category itself comprises several different types of rises, most prominently the low-onset high rise L* H-H%. They also note that high-range fall-rises behave in similar ways to more conventional HRT rises. A recent pilot study on Sydney Aboriginal English added further evidence to the latter claim [23]. This study also provided preliminary evidence for the sociophonetic nature of declarative rises in Sydney Aboriginal English, showing that the height of declarative rises varied with different speech styles.

This paper reports on a proof of concept study investigating potential differences in the phonological inventory and phonetic realisation of declarative rises across Aboriginal and non-Aboriginal varieties in Sydney. The first step in this investigation was to compare the overall frequency of declarative rises for each ethnic group, after which the individual frequency of the different rise types was examined. Secondly, comparisons were made of the excursion of f₀ trajectories from the bottom elbow (low turning point) to the peak (high end point) both overall and within each rise type. This study investigated both HRTs and other types of declarative rises.

2. Methodology

1.1. Speakers and recordings

The data consisted of radio interviews recorded electronically from online broadcasts from two local radio stations. Koori Radio and Burwood Radio are both located in Sydney’s inner west, and broadcast to Sydney and its surrounding area. The recorded programmes were light entertainment shows consisting of unstructured or semi-structured interviews with members of the stations’ local neighbourhoods. The topics covered during interviews were mainly related to community and personal issues, as well as to contemporary popular culture. The recordings of 6 Aboriginal and 6 non-Aboriginal speakers were analysed, with about 7 minutes of speech analysed from each recording. The speaker samples were balanced for gender (2 x 3m and 3f) and age, with 3 speakers in each group being characterised as younger (28-36), and 3 as older (58-75). All speakers were resident in Sydney at the time of recording, and had lived there for a minimum of 20 years.

1.2. Labelling and analysis

All recordings were carried out in Audacity, streaming via VLC at a 44.1 kHz sampling rate with a resolution of 32 bits. The resulting .wav files were labelled at the word level in Praat [24] and annotated using the ToBI framework for intonational transcription [25], following the conventions for Australian English (as set forth in e.g. [20]). This analysis yielded 2352 declarative intonation phrases, which were categorised as having broadly falling, rising-falling, level, high plateau, rising, or falling-rising final f_0 contours. In addition, a small number of complex contours (fall-rise-falls, fall-rise-fall-rises, rise-fall-rises and rise-fall-rise-falls) were excluded from the analysis. For all rise and fall-rise tokens ($n=430$), f_0 values were extracted at the low f_0 turning point or starting point of rise, and at the boundary tone. The extent of the rise f_0 between these two anchor points was then calculated. All f_0 values were expressed in semitones (benchmark 50).

Separate analyses were performed for rises annotated as low-range low rises ($L^* L-H\%$), high-range low rises ($L^* H-H\%$), high-range high-rises ($H^*H-H\%$), low fall-rises ($H^* L-H\%$) and high-range fall-rises ($H^*+L H-H\%$). The latter annotation was chosen following Fletcher and Harrington [20] to represent the similarity between the boundary configurations of the low onset high-rise and high fall-rise ($L^* H-H\%$ and $H^*+L H-H\%$). The statistical analyses relied on linear mixed effects modelling in *R* [26] using *lme4* [27] and *gmodels* [28]. The mixed effects models had rise type, ethnicity, age and gender as fixed effects, as well as their interactions. As random effects, the models had intercepts for speaker, as well as by-speaker random slopes for the effect of rise type. After visual inspection of residual plots, the f_0 values were submitted to Log10 transformations to correct for left-skewed distributions.

2. Results

2.1. Rise types

As found in the earlier pilot study [23], speakers of both ethnic groups produced five broad groups of rises. Figures 1-5 provide representative examples of these 5 rise types, as uttered by a young Aboriginal female speaker.

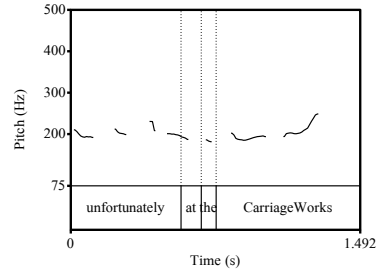


Figure 1: A low-onset low rise ($L^* L-H\%$).

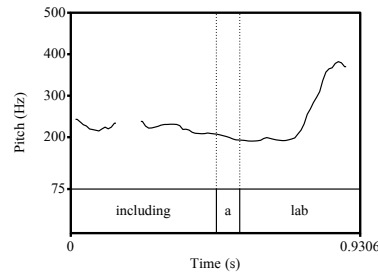


Figure 2: A low-onset high rise ($L^* H-H\%$).

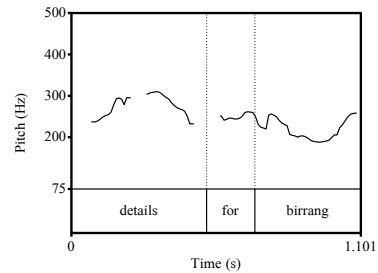


Figure 3: A low fall-rise ($H^* L-H\%$).

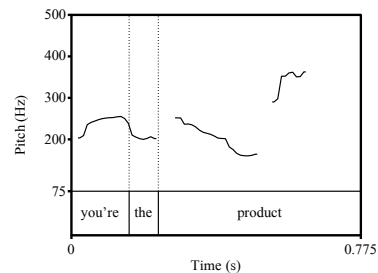


Figure 4: A high fall-rise ($H^*+L H-H\%$).

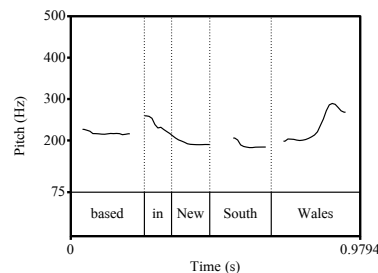


Figure 5: A high-onset high rise ($H^* H-H\%$).

Figure 6 shows the f_0 characteristics of the 5 rise types. For this graph, rises of both ethnicities were pooled, since the five rise types were distinguished from each other in similar ways with speakers of both ethnicities. The x-axis shows f_0 at the bottom elbow, or starting point, of the rise and the y-axis shows f_0 at the peak, or high end point, of the rise. The ellipses representing the low-range rises, $L^* L-H$ and $H^* L-H$, are close to overlapping, as are the ellipses for the high-range rises, $L^* H-H\%$ and $H^{*+L} H-H\%$. Note that the data points for the high-onset high rise, $H^* H-H\%$, generally display a higher elbow f_0 and lower peak f_0 than the other two high-range rises. In this way, it seems that all five rise types are uniquely characterised by their status as either a simple rise or a fall-rise, and by the characteristics of their f_0 trajectories. Jespersen [23] further suggests that the alignment of the f_0 elbow and peak of each rise type with the IP-final foot adds extra cues to the distinct nature of the rise types.

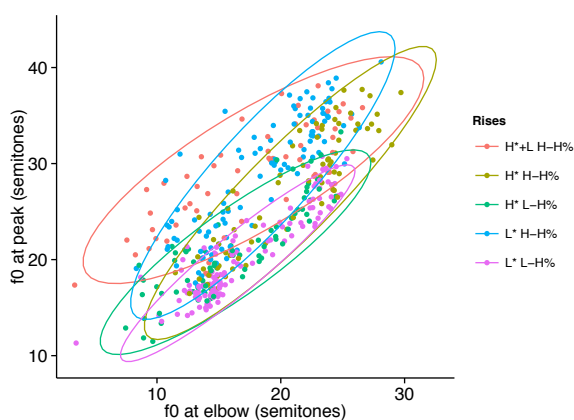


Figure 6: f_0 at elbow and peak across the 5 rise types.

2.2. Frequency of use

As mentioned in the introduction, many earlier studies of declarative rises have focussed on how frequently the rises were present in the speech of different communities (cf. [8, 12]). Frequency of use therefore constituted an obvious starting point in attempting to tease apart the production of declarative rises in the English spoken by Aboriginal and non-Aboriginal persons. However, contrary to expectations, and in contrast to findings for Maori and non-Maori New Zealand English, Aboriginal and non-Aboriginal speakers used very similar amounts of rises. Aboriginal speakers in this dataset realised 19% of declarative utterances with a final rising contour compared to 18% for the non-Aboriginal speakers. Within the context of the individual rise types, however, a different picture emerged.

Figure 7 shows the distributions of each rise type in the speech of Aboriginal and non-Aboriginal speakers. As is indicated by this graph, although the overall trend in both groups was approximately the same, the exact proportions of rise types differed to a significant extent ($\chi^2(11) = 431, p < .0001$). It must, however, be remembered that these results are tentative and based on a small dataset. In this dataset, the low continuation rise, $L^* L-H\%$, was frequent in both ethnic groups; in the Aboriginal group, these rises were the most frequently used, whereas non-Aboriginal speakers used the $L^* H-H\%$ high rise most often. $H^* H-H\%$ high rises and both fall-

rises were less frequent in this dataset. However, it is worth noting the fairly balanced distribution of rise types compared to what was reported for non-Aboriginal speakers by Fletcher and her colleagues. [20] and [21] found that approximately 80% of HRT rises used by standard Australian English speakers in their data were realised as $L^* H-H\%$ rather than $H^* H-H\%$. In this way, the present study follows McGregor and Palethorpe [29] in reporting a more balanced amount of high rises for Australian English.

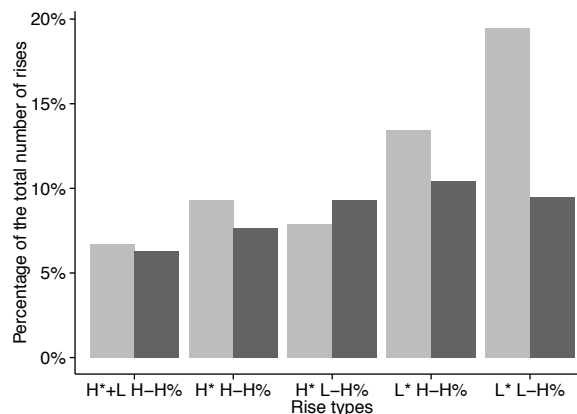


Figure 7: Percentage rise types used. Legends: Light grey = Aboriginal, dark grey = non-Aboriginal.

2.3. Phonetic realisations

The second point of investigation was to examine the relative height of the rises. In order to investigate this, the total f_0 excursions of the rises were compared across the two ethnic groups, both overall and across the five rise types. Rise height was predicted significantly not only by rise type, $\chi^2(4) = 371.8, p < .0001$, but also by ethnicity, $\chi^2(1) = 10.2, p = .001$. Non-Aboriginal speakers had rises that were on average 2.1 semitones (± 0.5 standard errors) higher than the rises produced by Aboriginal speakers. This difference holds up within all 3 high rises ($H^{*+L} H-H\%$, $H^* H-H\%$, $L^* H-H\%$), but not with the low rises. All individual speakers conformed to this pattern.

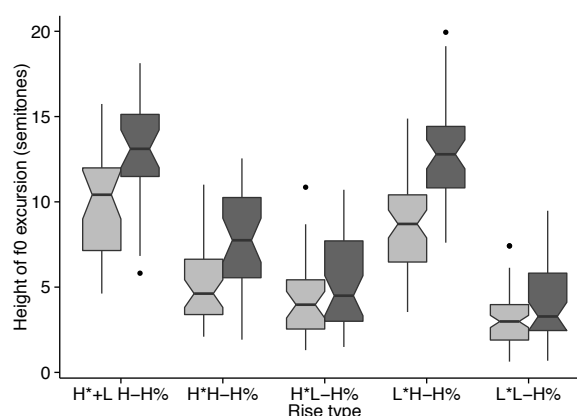


Figure 8: Height of f_0 excursion by rise type. Legends as in Fig. 7. Error bars = 95% CI.

Figure 8 illustrates the total f0 excursion by rise types. As can also be seen from this figure, the difference between the ethnic groups was greater for the high-range rises, H* +L H-H% and L* H-H%, than for the other rise types.

The speakers' age was close to significantly predicting the f0 excursion of the rises, $\chi^2(1) = 4.06$, $p = .051$. Speaker gender also came out as non-significant, $\chi^2(1) = 0.05$, $p = .81$. However, the interaction between ethnicity and gender did successfully predict f0 excursion ($\chi^2(1) = 11.5$, $p < .0001$). As seen in Figure 9, Aboriginal men had overall lower rise excursions than Aboriginal females, whereas non-Aboriginal men had slightly higher rises. However, as with all the analyses presented here, it must be remembered that these preliminary results stem from a small dataset, and that these effects may change with a larger dataset.

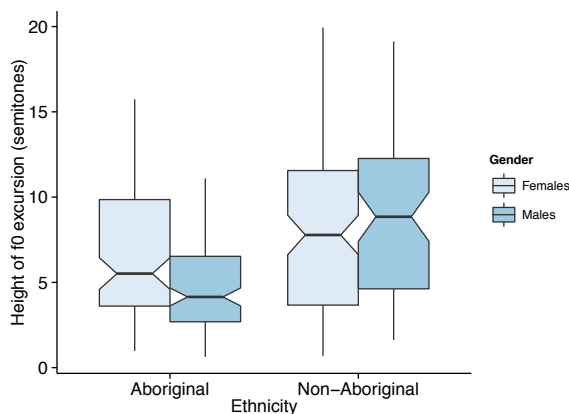


Figure 9: Gender effects in the overall rise height of males and females.

Discussion and conclusions

This study failed to find the distributional effect reported for declarative rises by other studies of ethnic minority varieties, such as Maori English [8, 12]. There are thus no indications in this study that Aboriginal Sydneysiders use more declarative rises than non-Aboriginal Sydneysiders. Furthermore, both groups were found to make use of the same 5 types of rises. However, unpacking the rises by looking at the frequency of use of the 5 rise types individually made it possible to find distributional differences between the groups. It was also found that non-Aboriginal speakers produced rises with higher f0 excursions than Aboriginal speakers, and this difference was robust both overall and within 3 of the 5 rise types. These preliminary findings point to the importance of approaching HRTs as complex, composite phenomena.

Furthermore, there was no significant effect of gender for this trend, and only a borderline significant effect of age. This finding is interesting given the reports from other varieties of English of connections between declarative rises and young females [12, 16, 19]. Moreover, it suggests that this pattern may be fairly stable in time, as younger speakers do not use significantly more rises than older speakers, and as it is generally well-established in the sociolinguistic literature that younger females tend to be at the forefront of language innovations [30]. However, the study also found an interesting interaction between ethnicity and gender. Aboriginal males

had lower rises than Aboriginal females, whereas for non-Aboriginal speakers this pattern was reversed, although not significantly so. This may potentially indicate that Aboriginal females are more sensitive than Aboriginal males to the prestige associated with the standard variety, as shown by Trudgill and others [31]. It must again be acknowledged, however, that the interaction effect is very tentative given the small number of speakers in each group. This potential pattern does, however, hint at the complexity of the interplay between intonation and sociophonetic variation in the Sydney communities, and indicates fruitful paths for future studies.

Overall, the preliminary results presented in this paper provide initial evidence of systematic phonetic differences between the declarative rises produced by Aboriginal and non-Aboriginal speakers in Sydney. Yet the patterns found were mainly on the phonetic rather than the phonological level, and to do with local rather than global distributions. This subtlety, taken together with previous reports that there is little in terms of segmentals to distinguish Aboriginal and non-Aboriginal Sydney speakers, indicates that the effects of sociolinguistic prestige may be worth looking into in future studies. Further evidence, although very tentative, is added by the hint that female Aboriginal speakers in this dataset were closer to the standard in their realization of the rises than their male peers. Aboriginal English has been reported by many studies to be viewed very negatively in institutional settings [e.g. 32, 33], and speakers are shown to be strongly self-aware about their pronunciation [33]. This makes the robustness of the difference in rise height between the two speaker groups and the consistency in the behavior of individual speakers interesting, and shows the usefulness of considering intonational variation in sociophonetic studies.

This study is small-scale and exploratory, and was always intended to raise more questions than it answered. Further work will need to be done to confirm the patterns found, and to investigate group differences along other linguistic parameters. However, this study has emphasised the need for sociophonetic studies to look beyond segmental variables, and has shown that declarative rises can constitute a useful point of entry into the social life of intonation.

Acknowledgements

Thanks to Bert Vaux and Francis Nolan, to Adrian Leemann for helpful comments on an earlier draft, and to the anonymous reviewers.

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