High rising terminals in first- and second-generation Mandarin- and Anglo-background speakers in Australia

Chengjin Liu, Ksenia Gnevsheva
Australian National University, Australia

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Abstract

This study examines High Rising Terminals (HRTs)—rising pitch on declaratives—among Anglo-Celtic, first-generation (Gen 1), and second-generation (Gen 2) Mandarin-background women in Australia. Of 7,204 intonation units, 1,724 were HRTs, with higher use in Gen 1 (26.5%) and Gen 2 (29.7%) than in Anglo speakers (19.4%), though only Gen 2 differed significantly. Acoustic analysis showed similar rise alignment across groups, with Gen 2 having smaller (3.09 ERB) and Gen 1 larger (4.53 ERB) excursions than Anglos (3.80 ERB). These results indicate that Mandarin-background speakers use the mainstream Australian English HRT patterns but at higher rates, suggesting convergence with and potential leadership in ongoing prosodic change.

Keywords: high rising terminals, prosody, ethnolinguistic variation, acoustic analysis, Australian English.

Introduction

Ethnolects, the distinct linguistic varieties emerging through contact between heritage and dominant languages (Clyne, 2000), often show generational differences: first-generation (Gen 1) speakers retain L1 features while second-generation (Gen 2) may converge toward mainstream norms. Hoffman and Walker's (2010) interpretation of ethnolectal formation predicts that Gen 2 speech can either resemble Gen 1 (Carlock & Wölck, 1981) or show convergence to mainstream norms or innovation (Gnevsheva, 2020; Hoffman & Walker, 2010). While segmental and lexical features of ethnolects are well studied, prosody remains underexplored.

This study focuses on High Rising Terminals (HRTs)—rising pitch contours on declarative utterances—as a potential marker of ethnolinguistic group membership in Australia. HRTs are common in Australian English and other English varieties and vary in pitch alignment and excursion (Guy et al., 1986; Levon, 2020; Ritchart & Arvaniti, 2014). Socially, they occur more frequently among younger speakers, women, and certain ethnic groups (Britain, 1992; Guy et al., 1986; Levon, 2016, 2020). This study compares the frequency and phonetic realisation of HRTs across different generations of Mandarin-background speakers to explore prosodic variation within multilingual Australia.

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Methodology

Data came from three corpora: the Sydney Speaks Corpus (Travis, 2024) for Anglo-Celtic speakers (born 1993–1998), the Second-Generation Chinese-Australian Corpus (Zhang, 2015) for Gen 2 Mandarin-background Australians (born 1994–1997, native-born or arrived before 5), and the AusESL Corpus (Gnevsheva & Travis, 2024) for Gen 1 Mandarin-background Australians (born 1984–1991, arrived after 17, lived in Australia for more than 5 years). The study analysed 24 female speakers (eight per group).

Declarative Intonation Units (IUs) were identified, and HRTs were coded via a two-stage auditory procedure (Levon, 2016): each IU was labelled "definitely HRT," "definitely not HRT," or "not sure," with uncertain cases re-coded by two linguists and disagreements resolved acoustically (pitch excursion (F0max – F0start) over 40% defined HRTs). HRT rates were analysed using logistic mixed-effects models, with participant group and centred year of birth as fixed effects, and speaker as a random intercept. Year of birth was not significant and was pruned from the model.

In addition, a random sample of ten HRT tokens per speaker was analysed in Praat to examine rise alignment and excursion. Rise alignment was segmented at the word-level, while excursion was presented in both Equivalent Rectangular Bandwidths (ERB) and percentage of excursion, enabling direct comparison with previous studies (Guy et al., 1986; Levon, 2020; Ritchart & Arvaniti, 2014).

Results

Across all groups, 1,724 HRTs were identified (23.93% of 7,204 declarative IUs). Anglo-Celtic speakers showed the lowest usage (19.36%, *SD = 7.16*), while Gen 2 Mandarin-background speakers showed the highest (29.66%, *SD = 12.24*), significantly higher than Anglos ($\beta = 0.557$, $SE = 0.271$, $z = 2.06$, $p = .040$). Gen 1 speakers (26.49%, *SD = 13.55*) also exceeded Anglos, but not significantly ($\beta = -0.444$, $SE = 0.235$, $z = -1.893$, $p = 0.058$) (Figure 1). The greater variability among Gen 1 speakers likely reflects differences in exposure and interactional experience. Acoustic analysis showed similar rise alignment across groups, with rises beginning on the nuclear syllable—typically the final stressed syllable—regardless of ethnicity. However, rise excursion differed: Gen 1 speakers had the largest mean excursion (4.53 ERB; 136%), followed by Anglos (3.80 ERB; 84%) and Gen 2 speakers (3.09 ERB; 82%).

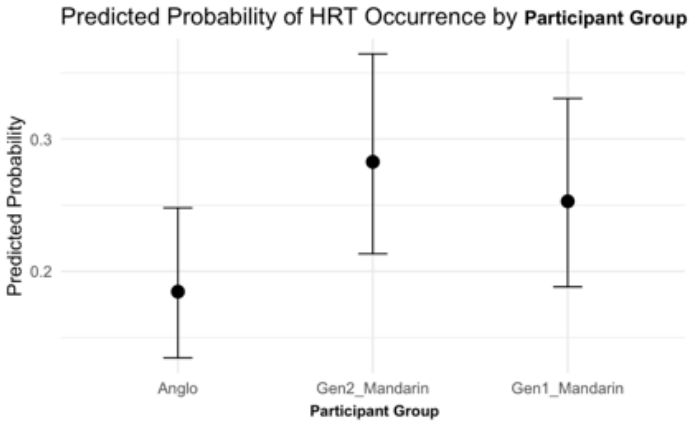

Figure 1. Predicted Probability of HRT Occurrence by Participant Group Based on a Binomial Logistic Mixed-Effects Model.

Discussion

Our findings show a rise in HRT use among Anglo-Celtic Australians compared to previous studies (19.36% vs. 1% in Guy et al., 1986), indicating ongoing language change. Anglo speakers typically anchored rises to the nuclear syllable, aligning with Guy et al. (1986), and showed larger mean excursions (3.80 ERB; 84%) than reported for other English varieties (1.25–1.57 ERB) (Levon, 2020; Ritchart & Arvaniti, 2014). Overall, results indicate increasingly dynamic and distinctive HRT patterns in contemporary Australian English.

Gen 2 speakers used HRTs significantly more than Anglos, with similar rise alignment and slightly smaller excursions (3.09 vs. 3.80 ERB), suggesting mainstream-like phonetic patterns coupled with higher rates of use (cf. Hoffman and Walker, 2010). Unlike ethnic minorities in Britain, whose HRTs remain low in frequency (Levon, 2016, 2020), Gen 2 speakers in Australia appear to adopt and extend the feature, contributing to socioprosodic innovation in Australian English. Gen 1 speakers showed comparable rates and slightly larger excursions (4.53 ERB), suggesting successful adaptation to local patterns, with limited evidence of Mandarin transfer. Overall, Gen 1 speakers have assimilated to mainstream norms, while Gen 2 speakers expand HRT use as a socially meaningful resource, illustrating that HRTs among Mandarin-background Australians reflect evolving ethnolectal variation rather than heritage transfer.

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References

Britain, D. 1992. Linguistic change in intonation: The use of high rising terminals in New Zealand English. Language Variation and Change, 4(1), 77–104.

Carlock, E., Wölck, W. 1981. A method for isolating diagnostic linguistic variables: The Buffalo ethnolects experiment. Variation Omnibus. Edmonton, Alberta: Linguistic Research (Current Inquiry Into Language, Linguistics and Human Communication, 40, 17–24.

Clyne, M. 2000. Lingua Franca and Ethnolects in Europe and Beyond. Sociolinguistica, 14(1).

Gnevsheva, K. 2020. The role of style in the ethnolect: Style-shifting in the use of ethnolectal features in first- and second-generation speakers. International Journal of Bilingualism, 24(4), 861–880.

Gnevsheva, K., Travis, C. 2024. Corpus of Australian English as a Second Language (AusESL).

Guy, G., Horvath, B., Vonwiller, J., Daisley, E., Rogers, I. 1986. An intonational change in progress in Australian English. Language in Society, 15(1), 23–51.

Hoffman, M. F., Walker, J. A. 2010. Ethnolects and the city: Ethnic orientation and linguistic variation in Toronto English. Language Variation and Change, 22(1), 37–67.

Levon, E. 2016. Gender, interaction and intonational variation: The discourse functions of High Rising Terminals in London. Journal of Sociolinguistics, 20(2), 133–163.

Levon, E. 2020. Same difference: The phonetic shape of High Rising Terminals in London. English Language & Linguistics, 24(1), 49–73.

Ritchart, A., Arvaniti, A. 2014. The use of High Rise Terminals in Southern Californian English. Proceedings of Meetings on Acoustics, 20.

Travis, C. 2024. Sydney Speaks corpus: An overview. Australian Journal of Linguistics, 0(0), 1–19.

Zhang, S. 2015. Multiple voices under one name: Ethnic Orientation and heritage language in second generation Chinese-Australians. [Master Thesis]. The Australian National University.