

## Experience with an uptalk variety and perception of high rising terminal contours

Yuki Asano<sup>1,2</sup>, Anne Cutler<sup>3</sup>, Ann-Kathrin Grohe<sup>4</sup>, Andrea Weber<sup>1</sup>

<sup>1</sup>University of Tübingen, <sup>2</sup>Kobe University, <sup>3</sup>Western Sydney University, <sup>4</sup>Nuance Communication

Prosodic differences among the varieties of a single language have only recently attracted research attention, and in particular little is yet known about their implications for perception, especially by users or learners of another variety. English varieties, for example, differ in the use and realization of uptalk (high rising terminal contours, or HRTs, in statements [1]). These have been reported more frequently for Australian than for other English varieties [1-3], and Australian English (AusEng) L1 listeners tend to interpret rapid rises from a low onset as statements [4]. Studies of the use of uptalk in conversation [5-10] have examined the roles of speaker ethnicity, age, and sex, and listener sex, but no study to date has addressed effects of variety-specific experience. Here we test perception of AusEng HRTs by L1 listeners from the same versus from a different variety, and by L2 learners with and without experience of AusEng. Note that HRTs do also occur in other languages, albeit less often [1,11].

Participants were 24 AusEng L1 users, 24 American English (AmEng) L1 users, 16 highly proficient German learners of English with at least eight month residence in Australia, and 24 highly proficient German learners of English without such experience. A female AusEng speaker recorded 19 sentences, all having the same elliptical syntactic structure ‘Got a NOUN’ (NOUN = e.g. *flower, piano*) that could be interpreted either as a statement “I’ve got a NOUN.” or as a question “Have you got a NOUN?”; a different noun occurred in each sentence. The sentences were manipulated along three binary phonetic variables: low vs. high rise onset, low vs. high rise offset and early vs. late rise onset, giving 152 trials (19 nouns x 8 contours) in total. These were presented auditorily in random order to the participants, who made a categorical judgment for each sentence as to whether it was a statement or a question.

AusEng users made 36% statement responses. With this as the intercept in a mixed effects analysis, German learners without AusEng experience produced the highest proportion of statement responses (50%,  $\beta = -0.68$ ,  $SE = 0.19$ ,  $z = -3.6$ ,  $p < .001$ ), followed by AmEng listeners (45%,  $\beta = -0.46$ ,  $SE = 0.13$ ,  $z = -2.7$ ,  $p < .001$ ) and then German learners with AusEng experience (41%,  $\beta = -0.35$ ,  $SE = 0.22$ ,  $z = -1.62$ ,  $p = .1$ ). Thus the experienced German listeners did not differ in overall proportion of statement responses from the AusEng L1 group, while the two other groups did. Nevertheless, the three non-Aus groups neither differed from one another ( $\beta = 0.33$ ,  $SE = 0.23$ ,  $z = 1.5$ ,  $p = .1$  between the German groups,  $\beta = 0.22$ ,  $SE = 0.18$ ,  $z = 1.2$ ,  $p = .2$  and  $\beta = 0.11$ ,  $SE = 0.21$ ,  $z = 0.5$ ,  $p = .6$  between AmEng and Germans without and with AusEng experience respectively). Further, the non-AusEng groups’ mean responses did not differ significantly from chance level, see Fig. 1. Analyses of phonetic factors revealed that only AusEng listeners gave more statement responses in the low-rise onset condition compared to the high one, see Fig. 2. This pattern corroborates [5] in that low-rise onsets most strongly determined the perception of HRTs. AusEng L1 differed from the three non-AusEng groups in this: vs. Germans with AusEng experience,  $\beta = 0.36$ ,  $SE = 0.11$ ,  $z = 3.2$ ,  $p < .01$ ; vs. AmEng,  $\beta = 0.58$ ,  $SE = 0.10$ ,  $z = 6.2$ ,  $p < .01$ ; vs. Germans with no AusEng experience,  $\beta = 0.29$ ,  $SE = 0.10$ ,  $z = 2.9$ ,  $p < .01$ .

Thus only the AusEng listeners were sensitive to the different phonetic forms presented in this study. Listeners with no experience of AusEng, whether listening in their L1 or L2, gave random chance-level responses. A small but statistically weak tendency was observed for L2 listeners with AusEng listening experience to converge towards the L1 pattern in that their responses were somewhat less random overall. This suggests that much more experience

(than our group's minimum of eight months) with the variety is needed before the precise phonetic realization of uptalk can be correctly identified, and even the relative (in)frequency of uptalk in daily listening can be accurately apprehended.

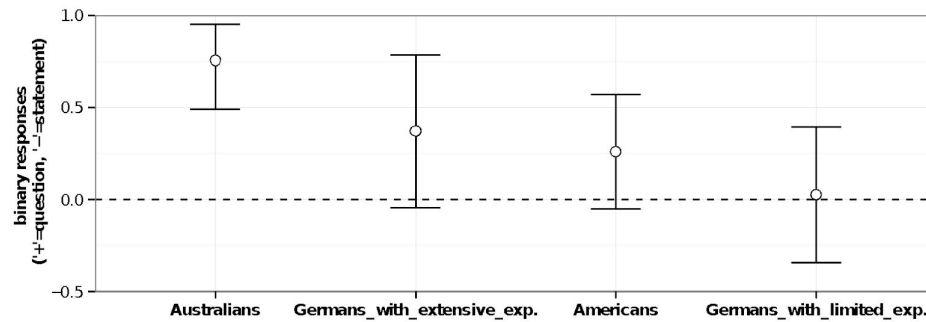


Figure 1: Mean binary responses per group (error bars: 95% CI). The higher the y-axis value is, the higher is the proportion of 'question'-responses.

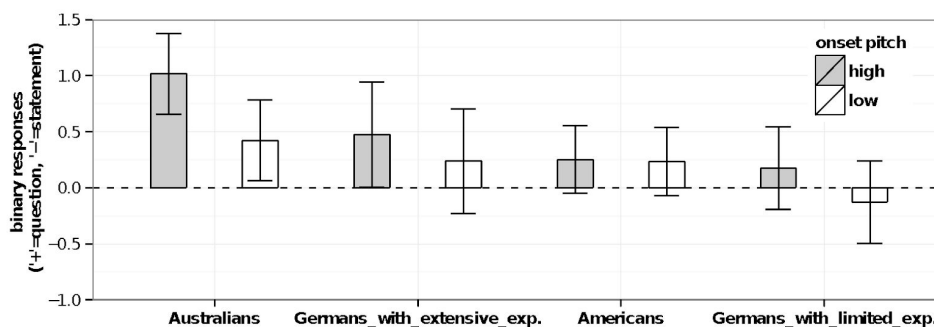


Figure 2: High vs. low onset pitch: mean binary responses per group (error bars: 95% CI).

#### References

- [1] Warren, P. 2016. *Uptalk*. Cambridge University Press, Cambridge (UK).
- [2] Fletcher, J., & Harrington, J. 2001. High-rising terminals and fall-rise tunes in Australian English. *Phonetica*, 58, 215-229.
- [3] Fletcher, J., & Loakes, D. 2006. Patterns of rising and falling in Australian English. *Proceedings of the Eleventh Australasian Conference on Speech Science and Technology*. (Canberra, Australia), 42-47.
- [4] Fletcher, J., & Loakes, D. 2010. *Interpreting rising intonation in Australian English*. *Proceedings of Speech Prosody 2010* (Chicago IL, USA).
- [5] Di Gicacchino, M., & Crook Jessop, L. 2010. Uptalk: towards a quantitative analysis. *Toronto Working Papers in Linguistics*, 33, 1-15.
- [6] Shokeir, V. 2007. *Uptalk in Southern Ontario English*. Paper presented at NWA36, University of Pennsylvania.
- [7] Szakay, A. 2007. *Identifying Maori English and Pakeha English from suprasegmental cues: A study based on speech resynthesis*. MA thesis, University of Canterbury, NZ.
- [8] Szakay, A. 2008. Suprasegmentals and ethnic stereotypes in New Zealand. In P. Warren (ed.), *Laboratory Phonology 11 Book of Abstracts*. Wellington, NZ; pp. 135-136.
- [9] Szakay, A. 2012. Voice quality as a marker of ethnicity in New Zealand: from acoustics to perception. *Journal of Sociolinguistics*, 16(3), 382-397.
- [10] Ulbrich, C. 2008. Acquisition of regional pitch patterns in L2. *Proceedings of Speech Prosody 2008*, (Campinas, Brazil), 575-578.
- [11] Flaig, S., & Zerbian, S. 2016. Rising intonation in statements of German speakers of English as a Foreign Language. Paper presented at *Tone and Intonation in Europe 2016*.