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NUCLEAR TONES IN HONG KONG AND BRITISH ENGLISH

Toby Hudson, Jane Setter, Peggy Mok

University College London, University of Reading, The Chinese University of Hong Kong
toh22@cam.ac.uk, j.e.setter@reading.ac.uk, peggymok@cuhk.edu.hk

ABSTRACT

This paper contributes data towards a phonological description of intonation in Hong Kong English (HKE), an emergent, 'nativising' but under-described variety of English spoken primarily as the second language of L1 Cantonese speakers. We demonstrate choice and realisation of nuclear tones for ten HKE-speaking and ten British English (BrE)-speaking university students. All speakers were recorded undertaking a storytelling task in which different nuclear tones are canonically associated with different types of utterance, e.g., yes/no question and sarcastic statement. New BrE data not only provide a point of comparison, but also demonstrate ways in which form and function of contemporary BrE prosody have changed since the textbook descriptions of the last century. Greatest disparity between the groups is found for 'tag' phrases such as in checking, and in the paralinguistic use of rise-fall. Production of target contours ranged from 64 to 86% for the BrE cohort, 43-71% for HKE.

Keywords: intonation, production, tones, English

1. MOTIVATION

The intonation of English (and of many languages) is notoriously difficult for the L2 speaker to acquire, and is typically neglected in the teaching of English as a foreign language. At the same time, emergent varieties of post-colonial World Englishes such as Hong Kong English (HKE) develop their own prosodic grammars, predominantly influenced, it is assumed, by features of an L1. In the case of HKE we expect to find the influence of Cantonese, along with British and North American varieties of English, in the prosody as in other areas of the grammar. Here we document aspects of HKE nucleus placement and toneme choice based on a recent set of recordings.

Such a description calls for a reference grammar of British English (BrE) intonation. While such descriptions abound ([7], [2]) they are notoriously complex: for example, a nuclear fall-rise ('the switchback') is listed in [7: 170] with a variety of paralinguistic meanings, contingent on linguistic context, such as 'grudgingly admitting' in statements, but 'greatly astonished' in echo questions. Not only does such complexity bolster sentiment that the teaching and learning of English intonation is difficult [10: 2], it would also seem likely that there would be a good deal of variation in usage in Britain. With the passing of nearly half a century since [7], we seek to describe the patterns in modern British English, which even in the South are likely to have departed somewhat from textbook 'Received Pronunciation' (RP).

We outline our methodology for obtaining production data for both accents in a highly controlled storytelling routine, and present our findings. We predict significant differences in the choice and realisation of intonational contours between HKE and BrE, and likely also between BrE and textbook RP.

2. METHOD

20 speakers aged 19-34 years were recruited, 10 from the Chinese University of Hong Kong (1 male) and 10 from the University of Reading (1 male). This group formed a subset of those who had participated in a related perception study [6]. The British students all spoke English as first language, predominantly standard Southern British English. The Hong Kong students had all learned English as L2 since childhood, but varied in their facility with L2 English, as reflected in their varied experience of living abroad and their different levels of attainment in English in the Hong Kong Diploma of Secondary Education Examination. This assessment did not necessarily reflect their competence in matters of pronunciation. The Hong Kong students were all native speakers of Cantonese; languages other than English were reported for these participants, including Mandarin and other Chinese languages. None of the informants reported speech or hearing impairment.

Each speaker was presented with a series of 28 sentences which together formed a short 'ghost story' narrative about two brothers investigating a mysterious sound in the night. The construction of each sentence promoted one position for the nucleus to be placed, e.g. 'Is it some kind of a...*monster?' (asterisk indicates the word considered to be most prominent).

The participant was able to repeat his/her rendition of the story as desired. HKE recordings were made on a Zoom H2 solid state recorder with internal microphone. BrE recordings were made on a Roland Edirol R-09 solid state recorder using a Rode

Lavalier lapel microphone. All recordings were sampled at 44.1 kHz with a 16 bit rate.

For each sentence, a particular nuclear tone or set of alternatives was considered to be canonical, following a reading of the passage by the third author, and standard descriptions of British English ([3], [6]). The task sought to elicit level tones (for continuation) and moving tones (for different communicative interactions) including the rarer, pragmatically-nuanced *rise-fall*. Some nuclear syllables were sentence-final; mostly there was a tail. Table 1 shows the number of sentences for each type, and the expected tone or alternatives. It will be apparent that there are fine-grained distinctions, such as 'statement question / echo' which is at the same time a syntactically unmarked question and an echo of a statement, 'statement question' which is not echoing, and 'echo' which stands for a phrase (not a full sentence) such as 'A *monster?'. Two kinds of sarcasm are differentiated; a fall, whilst acceptable in the first, would not have communicated the sentiment in the second, where the nucleus comes early in the sentence. 'Checking' refers to semantic context ("I *hope it will"), while 'checking tag' is a final "*do you?". Thus each utterance type can represent a combination of syntactic, discoursal and pragmatic functions. For simplicity we focus on the shape of the tonemes, not distinguishing e.g. high fall and low fall. As a first step we make the assumption that one (and only one) syllable is identifiable as nuclear in each utterance, for HKE just as we might expect for BrE. We start from an agnostic position with regard to variation in the HKE productions and their deviation from BrE; thus we refer to 'target forms' irrespective of their status as targets.

Table 1: Structure of storytelling task.

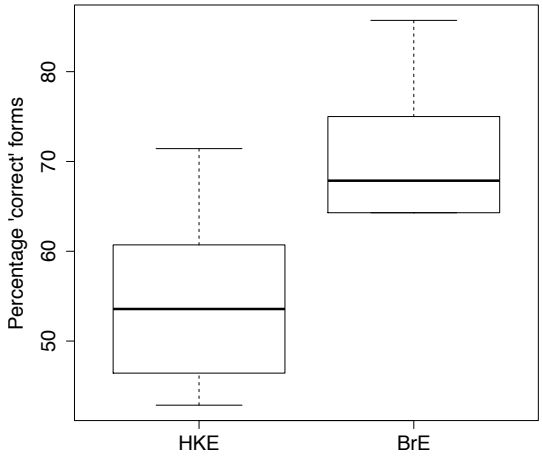
Utterance type	Tokens	Expected tone(s)
statement	3	fall
continuation	3	level
statement question	2	rise
statement question/echo	1	fall-rise / rise
echo	3	fall-rise / rise
yes/no question	3	rise
wh-question	3	fall
closed tag	3	fall
open tag	2	rise
checking tag	1	rise
sarcasm 1	2	rise-fall / fall
sarcasm 2	1	rise-fall
checking	1	fall-rise / rise

An f0 trace can be sketchy and misleading for our purposes due to e.g. aperiodic segments, varying modality, octave jumps and other technical errors. Therefore recordings were analysed by ear by the first author (native speaker of British English), and only scrutinised acoustically, in Praat [1], to provide objectivity in cases of uncertainty. Fall-to-mid was categorised as *fall-rise*; creaky voice was taken to imply a *rise*: thus fall-to-creak also stood for *fall-rise*. A high degree of agreement was found with the second author's independent analysis when such cue trading was accepted, and full agreement was reached when the most problematic examples had been jointly reconsidered. Data were tabulated for numerical analysis.

3. RESULTS

Taking the grammar-book tones to be the gold standard, we see a clear, predicable disparity between the two cohorts (Fig. 1). The BrE speakers did not always produce the target forms: 'success' of individual speakers ranged from 64 to 86% (mean 71%); for HKE this range was 43 to 71% (mean 55%).

Figure 1: Production of target forms.



The overlap shows that the 'best' of the L2 speakers has outperformed the 'worst' of the L1 speakers. We cannot rule out the possibility that this reflects, in some measure, the limitations of experimental design, i.e., that in a reading task some L1 speakers may be more constrained in their intonational expressions than in spontaneous discourse. Additionally, participants may be misled by their reading; for example, the sentence "Would you, now?" with comma by orthographic convention, elicited two intonation phrases in HKE.

However, such a design makes it relatively easy to control and predict intonation patterns; and had the elicited speech been less formalised, we might not have expected to find the 'textbook' tones of e.g. [7] and [12] at all. For example, statements in dialogue are now regularly produced with a high rising terminal, a phenomenon which originated outside the British Isles and which is found in many varieties of World Englishes [11] including HKE [9], but was not in evidence in either of our datasets.

Table 2 summarises the choice of tones, with mean values for all speakers within each language group. We discuss the most apparent departures from the (shaded) canonical forms. Frequencies are

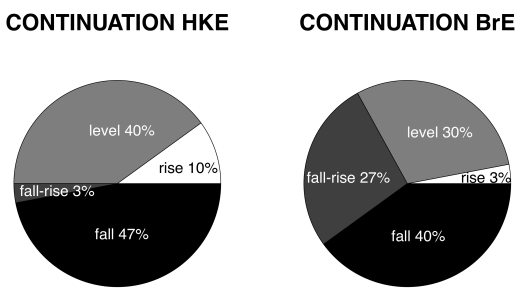
averages, given in percentage form for ease of comparison with other studies.

A *level* tone is canonical for continuation, but here we find that we are as likely to encounter a *fall* both in HKE and BRE. As such, we cannot claim that HKE speakers are falling short of a target if our BrE speakers are representative (Fig. 2). We see no clear single preference between *level*, *fall* and *fall-rise* for BrE here.

Table 2: Nuclear tones for all speakers (%). Shaded cells indicate canonical target(s).

		fall	rise	fall-rise	rise-fall	level	other
statement	HKE	97			3		
	BRE	93		3		3	
continuation	HKE	47	10	3		40	
	BRE	40	3	27		30	
st. question	HKE	10	70	15		5	
	BRE	5	15	80			
st.ques. / echo	HKE	20	30	50			
	BRE	10	10	80			
echo	HKE	13	47	27		13	
	BRE	3	37	57		3	
y/n question	HKE	20	50	23		7	
	BRE	13	23	64			
wh-question	HKE	77	13	3		7	
	BRE	93		3	3		
closed tag	HKE	37	40	10		7	7
	BRE	90	3	3		3	
open tag	HKE	65	10	15	5	5	
	BRE	5	95				
checking tag	HKE	30	70				
	BRE		100				
sarcasm 1	HKE	10	35	15	40		
	BRE	60		5	35		
sarcasm 2	HKE	90			10		
	BRE	60		20	20		
checking	HKE	80	10	10			
	BRE	10		90			

Figure 2: Tone choice in continuation.

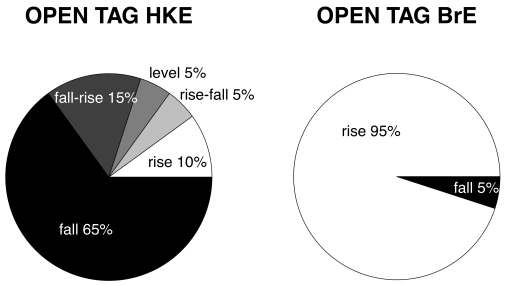


It is most noteworthy that HKE unambiguously chooses the canonical *rise* for a statement question, for which BrE shows no less a preference for *fall-rise*, also where statement question doubles as echo and *rise* might canonically have been chosen. Our preliminary conclusion is that HKE has retained this aspect of colonial English, and that BrE has subsequently innovated. It may be that the additional turning point in *fall-rise* is a powerful cue to a question in BrE. In our experiment we only observe *rise* as the popular choice for BrE in the open and checking tags.

Typologically, Cantonese is a language with lexical tone. Whilst it has intonation, this is considered less central to attitudinal and discourse meaning, for which it makes use of a rich inventory of sentence-final particles [5]. We would therefore predict that the target *rise-fall* to indicate sarcasm would not be used by the HKE speakers. In general this was what was found, except for one sentence ("Of *course it is") where 7 out of 10 HKE (only 4/10 BrE) produced a *rise-fall*. Since we also find an HKE speaker producing *rise-fall* for a simple statement it could be that this arises where peak alignment is late. More likely is that this is a strategy for indicating an extra degree of stress. This finding tallies with previous examination of HKE [9], and possibly also with Singapore English [4]. While this contour is laden with paralinguistic implications in BrE, it stands to reason that it might be reassigned in World Englishes.

On the same grounds, we do not expect to find open or closed tag to be in evidence in HKE, and this is borne out by the failure of a larger group of HKE speakers, including those in this study, in a perception experiment, to select the appropriate nuclear tone for tags [6]: 90% BrE listeners selected the expected *rise* for open tag, versus only 14% HKE listeners, while the majority of the HKE listeners selected either *fall* or *level*. Indeed, in the present study the BRE speakers hardly failed to produce the expected *rise* in open tags, whereas we find a full range of tone choices for HKE (Fig. 3). Similarly, there is no clear preference for the production of a closed tag in HKE: for these speakers it appears not to be a distinct category. The 7% 'other' contours took the form of *rise-fall-rise* with two turning points. It would be interesting to further investigate the use of this contour.

Figure 3: Tone choice in open tag.



Production of a *rise* for a checking tag was evidently unproblematic for HKE; while this is a tag, it is clearly a question expecting a yes/no response, so it has probably been interpreted as such. One assumes that utterances which BrE would label 'questioning tags' are subsumed under 'question' in

HKE. Both cohorts produce the canonical tones for echo.

The nuclear tone was not always realised in the prescribed location, but misplacements by BrE speakers were not likely to have altered tone choice. On the other hand, all HKE placed the stress on the final word of "I *hope it will", where the target *fall-rise* for checking would not then be expected. Experiments of this type are prone to such a sequential problem, which resurfaced in almost all HKE in "of *course it is", where the second verb was again given the prominence, and hardly likely to then bear a sarcastic *rise-fall*. An alternative analysis would omit misplaced tones and boost scores for HKE, but these examples represent British idioms for which there is only one place to align the tone. It is possible that the HKE speakers default to placing the nucleus as late as possible and minimising/removing a tail.

HKE and BrE alike used creak in the latter part of *fall-rise* – unsurprisingly perhaps, since we know about such cue trading in e.g. Mandarin third tone. However, we find the realisation of *fall-rise* in HKE to be somewhat distinct from BrE, as confirmed by analysis of the f0 trace in Praat. For the BrE speakers, the pitch peak aligns early with the start of the vowel, or not later than half-way through; by contrast, in the examples of HKE *fall-rise* in "It's the *robot?" we find that f0 climbs throughout the nuclear vowel. Thus the same form may be heard with a distinctive Hong Kong flavour. It would be interesting to revisit this with respect to patterns of peak alignment in Cantonese.

4. CONCLUSIONS

Our findings show some departures from the textbook nuclear tones in read speech in BrE. On the basis of our results we suggest and seek further confirmation for the following in BrE: the grammar for continuation might now include *fall*; for both statement questions and yes/no questions we might add *fall-rise*, and recognise that *rise* might now be dispreferred.

From a pedagogical perspective, we observe that all the BrE contour types are in evidence, even if the phonetics are distinct. In Hong Kong, free distribution with the *rise* in questions mirrors what is found in Britain. We identify open tag and sarcasm as the greater challenges for L2 speakers wishing to acquire the BrE phonology.

As an emergent variety, HKE is said to be 'nativising', the third of five distinct phases according to Schneider's Dynamic Model [8]. One aspect of this is the stabilisation of prosody, however distinct from the original colonial superstratum. We have found evidence of systematic differences between the two systems. On the one hand we see a lack of distinct forms for the tags, which suggests that the tags are not categories in the grammar of these speakers; on the other, HKE may be making innovative use of *rise-fall* in 'emphatic statements'. We have also seen greater use of the *rise* in questions in HKE than in BrE.

The present study can naturally be expanded with the analysis of the larger cohorts' data, which are available to us, and which would level out any bias due to individuals' pronunciations. The dataset presented here is too small for us to make the kind of strong statements that depend on statistically confident results, but we expect that further research will enable us to draw more robust conclusions. Beyond this, the same methodology might be implemented with speakers of other ages, from other demographics, and with more male speakers represented, to compensate for variation along sociolinguistic lines.

5. ACKNOWLEDGEMENT

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