



Assessing knowledge of English intonation patterns by L2 speakers

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Abstract

English intonation can be difficult for L2 speakers to learn, particularly for those whose L1 intonation system works differently from English. This study investigates whether Hong Kong English (HKE) speakers whose L1 is Cantonese have knowledge of the appropriate English intonation patterns in specific contexts. Results from an intonation pattern selection tasks indicate that HKE speakers ($n = 40$) performed worse than British English speakers ($n = 25$) in general. For some sentence types, selection patterns of HKE speakers and native English speakers were quite similar, while HKE speakers had particular difficulty with tag questions. The lack of equivalent structures in L1 may explain their difficulties. Interestingly, native English speakers also showed much variation in their intonation selection for some sentence types. The results suggest that HKE speakers have partial knowledge of English intonation patterns. The lack of sufficient knowledge, in addition to L1 influence, can explain the differences between native and L2 English intonation choices.

Index Terms: intonation, English, L2 acquisition, Cantonese

1. Introduction

Intonation, acquired very early by first language (L1) speakers [1], is thought to be one of the most difficult aspects of a second language (L2) to learn. Chun [2] claimed that it is 'seemingly impossible' to learn English intonation, and Taylor [3] claimed that teachers believe it is 'not teachable, and not learnable either'. While there are published works which indicate intonation patterns for English, e.g., on British English, [4, 5, 6], it can be difficult to pin down the meaning of certain contours in use. One only has to compare the descriptions of the ten tunes given in [5] to realise it is a rather complex area.

There is ample evidence that the intonation patterns of L2 speakers differ substantially from those of native speakers. As intonation carries different functions (e.g., attitudinal, grammatical, discursive and focusing), and in that intonation is highly contextual, it can be particularly difficult for L2 speakers to master. Previous studies on L2 English intonation usually focus on production differences or meaning interpretation by L2 speakers [e.g., 7, 8]. However, a fundamental question remains largely unanswered: do L2 speakers actually know what the appropriate intonation patterns should be in particular contexts? Are the different intonation patterns produced by L2 speakers simply due to L1 influence, or does the lack of understanding of appropriate English patterns also have a role to play?

This study investigates Hong Kong English (HKE) speaking listeners' ability to select a suitable intonation pattern

in a given narrative context. HKE speakers were chosen for this study for several reasons. First, HKE is an emergent variety of English [9, 10], but not much research has been done on the intonation of HKE. Second, speakers of HKE start to learn English from an early age, but the curriculum has little emphasis on English prosody. There are native English teachers from, e.g., Britain, the United States and Australia in many schools and kindergartens, so some learners have exposure to different English intonation patterns in actual use, but little formal instruction means they may not develop knowledge of how they are used in various contexts. Third, the intonation system works very differently in the first language (Cantonese) of HKE speakers. There is intonation in Cantonese, but intonational pitch variation is constrained to preserve lexical tones. Instead, attitudinal and discursive meanings are conveyed using a rich inventory of sentence-final particles [11]. It is, therefore, of interest to see if Cantonese speakers notice which English intonation patterns are appropriate in different sentential contexts.

Previous studies have observed that there is an over-generalization of nuclear tone in HKE. Bolton and Kwok [12] reported that HKE speakers would apply the falling tone to all statements. However, Setter et al. [10] observed that there was an increase in the use of the rising tone in statements (uptalk). Bolton and Kwok [12] also suggested that all questions in HKE have a rising tone, regardless of question types. Cheng et al. [13] and Lin [14] instead argued that while most questions have a rising tone in HKE, wh-questions are produced with a falling tone.

The frequency of use of different tone types in HKE is different from native English speakers as well. In British English, the falling tone is the most common tone (50%), followed by Rise and Fall-Rise (40%) [4]. [15] also reported 75% of Fall, 13% of Rise and 2% of Fall-Rise nuclear tones in British TV commercials. In HKE, both [10, 13] found that the Level tone was the most common tone instead (49.3% and 43.3% respectively). [13] reported that the second and third most common tones are Fall [37.1%] and Rise [5.7%], whereas [10] found that the second and third most common tones are Rise (24.4%) and Fall (23.0%) with very similar occurrence.

Although the Rise-Fall tone is also uncommon in British English (3% in [15]), it is hardly ever used in HKE: only 0.016% and 0.59% as reported by [13] and [10] respectively. Setter et al. [10] noted that, unlike British English, the use of Rise-Fall in HKE has nothing to do with indignation, sarcasm, being surprised or impressed, so it may mean that HKE speakers simply have no knowledge of the functions of such a tone at all. The lack of knowledge of intonation functions may also partly explain other differences between the HKE and native speakers mentioned above, but so far, few studies have

investigated whether L2 learners actually know what the appropriate intonation patterns are.

In order to investigate HKE speakers' understanding of the use of English intonation patterns in a narrative context, we followed He et al. [16] in conducting an intonation patterns forced-choice selection task. A selection task allows us to assess directly whether HKE speakers have knowledge of the appropriate intonation patterns. As native speakers may also vary in their choice of intonation contour, we also included a group of native British English speakers for comparison.

2. Method

2.1. Participants

40 native speakers of Hong Kong Cantonese participated in the experiment for course credits (5 male, 35 female). They were all university students in Hong Kong, aged 17 to 25 years old (mean age: 19.25 years; SD: ± 1.72 years). Nine of them have experience of living aboard (1 month to 12 months). None reported speech or hearing problems. They all learned English as a second language since childhood. 30 of them had the highest grades (5**/5*) in their English subject in the Hong Kong Diploma of Secondary Education Examination (the public entrance exam for university).

25 native speakers of British English were recruited for comparison (3 males, 22 females). They were all students between 19 and 34 years old (mean age: 19.25 years; SD: ± 1.72 years). Three of them have experience of living aboard (3 months to 12 months). None of them reported speech or hearing problems.

2.2. Materials

A short story was created and used in the experiment. The story is 523 words long and contains different types of sentences (e.g., questions; statements). 28 sentences in the passage were selected as test items. The sentence types used as test items and the numbers of each sentence type and their nuclear tones are shown in Table 1.

Table 1. Number of items of each sentence type.

Sentence Type	Nuclear tone	Number of Items
Statement	fall	3
Continuation	level / rise	3
Statement question	rise	3
Echo question	rise / fall-rise	3
Yes/no question	rise	3
Wh- question	fall	3
Closed tag	fall	3
Open tag	rise	2
Checking tag	rise	1
Sarcasm	rise-fall / fall	3
Checking	fall-rise / rise	1

The Cantonese participants were recorded reading the story before they did the intonation selection task. As their

production data is still being analysed, they will not be reported here.

Five possible English nuclear tones were examined in this experiment: Fall, Rise, Fall-Rise, Rise-Fall, and Level. Recordings used in the experiment were produced by a female native speaker of British English (the third author), who read the entire passage in a narrative style to ascertain which were the likely tones on the test items, and then again, with each of the target sentences recorded with each of the five tonal patterns. The nucleus was on the same syllable in each tonal pattern. The assigned 'correct' nuclear tones for each sentence type are based on the third author's performance in the initial reading and standard descriptions of British English [4, 6].

2.3. Procedure

The experiment was conducted using PowerPoint. There were 44 slides in the presentation. 42 slides contained the experimental passage, 28 of these with test items. Each non-experimental slide shows one or more sentences from the story together with a recording which started automatically. Subjects were notified if the next sentence was a test item, which was shown in a separate slide. The five possible answers were played, each containing one of the five nuclear tones and labelled A, B, C, D, and E. The sequence of five nuclear tones was presented in random order for each sentence. Subjects were asked to choose the most appropriate answer and write down the corresponding letter on an answer sheet. A printed version of the story was provided. Subjects could re-play any part of the passage including the possible answers during the experiment.

3. Results

The overall accuracy of each subject was calculated. Accuracy was based on the assigned nuclear tones for each sentence type in Table 1. The English group has a higher averaged overall accuracy (72.57%) than the Cantonese group has (42.94%).

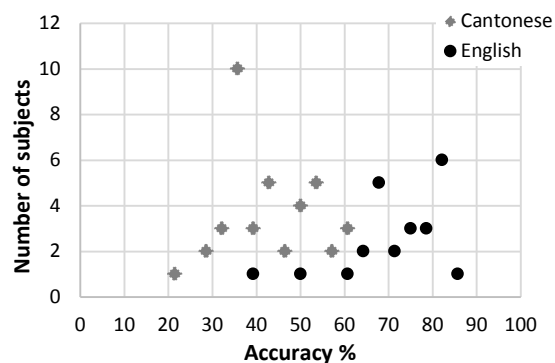


Figure 1: Overall accuracy of English and Cantonese speakers.

Figure 1 shows the detailed results. The highest accuracy for the English subjects was 85.71% (only one subject). Most English subjects were around 70% – 80% accurate and only three were 60% or below. In contrast, only three Cantonese subjects reached 60%. Most were between 30% and 60%, and three of them were below 30%.

Figure 2 shows the averaged accuracy for each sentence type in Cantonese and English groups. The English group had a higher averaged accuracy than the Cantonese group for all

types of test items except for ‘Continuation’. Compared with native English speakers, Cantonese speakers showed particular difficulty in selecting suitable intonation patterns in wh-questions and some tag questions.

The detailed choices for each sentence type are shown in Table 2. In general, the responses of Cantonese speakers are more widely distributed. For ‘Statement’, the standard intonation pattern is ‘Fall’. Both English (96%) and Cantonese (72%) speakers tended to choose ‘Fall’ as the most appropriate answer. For ‘Continuation’, their responses are more mixed. It is interesting to note that ‘Fall’ is the predominant choice, while the presumed correct answers ‘Level’ and ‘Rise’ are not often selected by either group.

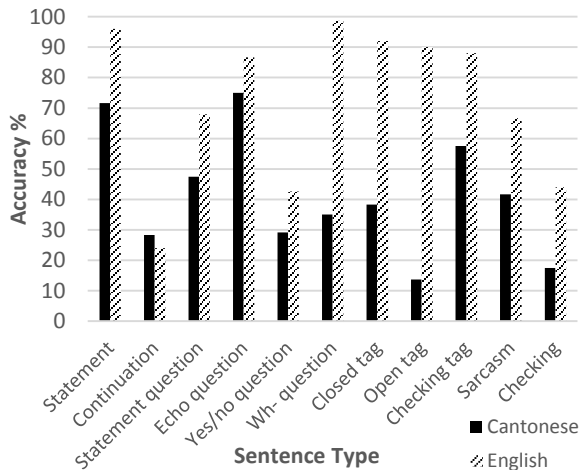


Figure 2: Averaged accuracy for each sentence type.

‘Rise’ is considered to be the correct choice for ‘Statement question’, while both ‘Rise’ and ‘Fall-rise’ are acceptable for ‘Echo question’. As one of our test items can be a statement question and an echo question at the same time, it was treated as statement question when calculating averaged accuracy for sentence type. The distribution of five choices for this item is given separately in Table 2. ‘Rise’ and ‘Fall-rise’ are the main choices for both ‘Statement question’ and ‘Echo question’. Cantonese speakers showed no preference for ‘Rise’ or ‘Fall-rise’ when identifying ‘Statement question’, but showed clear preference for ‘Fall-rise’ when identifying ‘Echo question’. The pattern is contrary to English speakers.

Cantonese speakers tended to choose ‘Fall’ for ‘Yes/no’ question (46%). The percentage of the correct answer ‘Rise’ in their responses is the second highest (29%). For English speakers, ‘Fall’ and ‘Rise’ are also the main choices. The percentage of ‘Rise’ is a little higher (43%) than that of ‘Fall’ (36%).

English speakers show a high consistency in choosing ‘Fall’ for ‘Wh- question’ (99%). It is not surprising that the responses of Cantonese speakers are much more scattered, but the percentage of the correct answer ‘Fall’ remains the highest (35%).

While English speakers show no difficulty in distinguishing ‘Closed tag’, ‘Open tag’ and ‘Checking tag’, Cantonese speakers seem to have problem in distinguishing ‘Closed tag’ and ‘Open tag’. They tended to choose ‘Fall’ for both ‘Closed tag’ (38%) and ‘Open tag’ (43%). The correct answer for ‘Open tag’, however, is ‘Rise’. They performed

better in ‘Checking tag’. The main choice ‘Rise’ is correct (58%).

There are two types of ‘Sarcasm’ sentences in our test items. The standard pitch pattern for ‘Sarcasm (1)’ is ‘Fall’ or ‘Rise-fall’. For ‘Sarcasm (2)’ it is ‘Rise-fall’. Native speakers mainly chose the correct answers ‘Fall’ (68%) and ‘Rise-fall’ (28%) for Sarcasm (1). The pattern is similar in Cantonese subjects but they also chose other pitch patterns. For ‘Sarcasm (2)’, most subjects chose ‘Fall-rise’ (Cantonese: 50%; English: 84%) instead of the correct ‘Rise-fall’.

As for ‘Checking’, both English (56%) and Cantonese (63%) speakers show a tendency to choose ‘Fall’, while the expected answer is ‘Fall-rise’ which was chosen by 44% of English speakers.

Table 2. Distribution of choices for each sentence type (The numbers are rounded percentages and the highlighted cells are the presumed correct answers). C = Cantonese speakers; E = English speakers

Type	Group	Fall	Rise	Fall-rise	Rise-fall	Level
Statement	C	72	0	13	12	3
	E	96	0	1	1	1
Continuation	C	49	14	18	4	14
	E	57	20	17	0	5
Statement question	C	16	35	35	5	9
	E	6	66	26	0	2
Statement question/echo	C	18	70	3	8	0
	E	24	52	20	4	0
Echo question	C	12	13	62	11	3
	E	9	45	41	1	1
Yes/no question	C	46	29	18	2	6
	E	36	43	20	1	0
Wh- question	C	35	14	18	24	9
	E	99	0	0	1	0
Closed tag	C	38	33	18	3	7
	E	92	1	1	4	1
Open tag	C	43	14	11	4	29
	E	6	90	0	0	4
Checking tag	C	30	58	8	3	3
	E	4	88	0	4	4
Sarcasm (1)	C	31	16	19	20	13
	E	68	0	2	28	2
Sarcasm (2)	C	13	10	50	23	5
	E	4	0	84	8	0
Checking	C	63	20	18	0	0
	E	56	0	44	0	0

4. Discussion

The results show that the answer to our research question – i.e., whether HKE speakers have knowledge of which English intonation patterns are appropriate in narrative contexts – is not straightforward. It is true that the average accuracy of HKE speakers is much lower than that of native English speakers, but it is not surprising given that they are second language users. It is interesting to note, however, that for some sentence types, patterns of HKE speakers and native English speakers are quite similar, i.e., statement, continuation, statement question, echo question and yes/no question (those in the left of Figure 2). Based on these findings, we may say that HKE speakers have some knowledge or have learned the

use of these intonation patterns. This may be because they have more exposure to them in the classroom, and that there are similar constructions in their native language Cantonese.

HKE speakers had particular difficulty with tag questions and wh-questions, while native English speakers were much more consistent in their choices for these questions. We may explain the difficulty with tag questions with the fact that there is no such equivalent grammatical structure in Cantonese. Cantonese can use short A-not-A questions at the end of statements as tags to turn statements into questions, but the forms and functions are quite different from the tag questions in English [11]. Sentence final particles cannot perform the functions of tag questions as well. The results are in line with the observation in [17] that question tags are rarely used in HKE. In addition, the fine distinctions of various types of tag questions (e.g. open vs. close) may be too subtle for HKE speakers who use English as a second language mainly in formal settings (e.g. schools). Based on these findings, we may say that HKE speakers do not have knowledge or have not learned the use of these intonation patterns.

Nevertheless, such explanation cannot fully account for the large difference between HKE speakers and native English speakers for wh-questions, as there are wh-questions in Cantonese. Moreover, wh-questions in Cantonese are often produced with a falling-intonation (except the second half of the final syllable for wh-questions without sentence-final particles, [18]), similar to English. Native English speakers have a unanimous choice (99%) for 'Fall'. Although the choices of HKE speakers were more scattered, 'Fall' was still the dominant choice (35%), followed by 'Rise-Fall' (24%). The large difference between the two groups is mainly caused by the high consistency of the choice by native speakers.

It should also be noted that, although the native British speakers' performance was more accurate overall, they did not perform at ceiling on this task. There was almost unanimous choice for some sentence types – e.g., statements, wh-questions and closed tags – while the choices were more widely distributed for other types – e.g., yes/no questions and checking – similar to HKE speakers. The results show the inherent difficulty of judging the appropriate intonation patterns in particular contexts, even for native speakers. It cannot, therefore, be assumed that any speakers of a language have the kind of explicit knowledge about intonation that allows them to select a suitable pattern when faced with a choice of several. It also calls into question the notion that any one intonation pattern is 'correct' in certain situations.

It is interesting to note the low accuracy for 'Continuation' for both groups. 'Fall' is the prevalent choice for British and HKE speakers. This may be an artefact of the experiment; the 'Continuation' items were presented on separate slides, not indicating what came next, which may have biased listeners to interpret them as finished statements, although the listeners were familiar with the story during their production and had the whole story with them during the selection task. A refined experimental design can help clarify this possibility.

At the same time as conducting this perception/selection study, we also collected production data in which the participants read the same story used here as materials. We are particularly interested to see how their production and perception/selection data correlate. Investigation of the patterns in production will enable us to ascertain whether the differences observed in perception/selection persevere in the spoken language of the participants. We anticipate that, if

speakers are not able to select a suitable pattern in a listening exercise, they will not be able to produce it reliably. For those who are able to select suitable patterns, they may not necessarily be able to produce them. We look forward to comparing the production results in comparison with the data presented in the current study to see whether this is the case.

Comparing our selection data with findings in previous production studies indicates that we are likely to find some discrepancy between perception and production patterns. Both [10, 13] found that the Level tone was the most common tone used in HKE, but the Level tone was not a common choice at all for all sentence types in our data (Table 2). We have similar findings of HKE speakers demonstrating good perception of narrow focus in English but having poor production and using different cues to signal narrow focus, if any [19]. Interesting research questions arise: what causes the discrepancy in production if they know what the appropriate patterns should be in perception? Is such discrepancy common in other non-native varieties of English as well? Further studies can shed more lights on these questions in L2 prosody acquisition.

5. Acknowledgements

The authors would like to thank Mr. Roderick Chung Yan Li for his contribution to the early stages of the project.

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