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WHEN FRENCH BECOMES TONAL:
PROSODIC TRANSFER FROM L1 CANTONESE AND L2 ENGLISH

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What happens when native speakers of a tone language learn a non-tone language? This paper describes and accounts for L3 French prosody by L1 Hong Kong Cantonese speakers competent in English as L2. The general observed pattern in L3 French prosody is that syllables of French content words (nouns, verbs, adjectives, and so forth) all bear the Cantonese high level tone, whereas syllables of French function words (prepositions, determiners, etc.) have the Cantonese low level tone. This is analyzed as a case of interlanguage transfer, where L1 Cantonese contributes to the observed prosodic features in L3 French via L2 English interlanguage. Beyond the empirical contribution, this paper remarks on pedagogical aspects of second and third language acquisition.

INTRODUCTION

This paper reports observations regarding the prosody of non-native French spoken by native speakers of Hong Kong Cantonese competent in English as a second language, and provides an account for where the observed patterns came from. The overall observed non-native French prosodic pattern is fairly simple in descriptive terms: syllables of French content words (nouns, verbs, adjectives, and so forth) all bear the Cantonese high level tone, whereas syllables of French function words (prepositions, determiners, etc.) have the Cantonese low level tone. Such a prosodic pattern, with a binary tone system consistently differentiating function and content words, is not found in French, Cantonese, or English. We show that such a peculiar non-native French prosody results from language transfer effects. Specifically, our analysis is in terms of interlanguage transfer (Cenoz et al. 2001, Leung 2007), from L2 English interlanguage (English influenced by L1 Cantonese) to L3 French in our case.

In the following, we first explain the importance of documenting such observations in terms of research on prosody and third language acquisition. The necessary linguistic background on Cantonese and French is then provided, in preparation for the description of the non-native French prosodic patterns. We account for the observed patterns in terms of language transfer. The paper concludes with pedagogical remarks.

This paper contributes what would otherwise be hardly known to our empirical database of linguistic varieties. Specifically, we study a form of interlanguage with French being the target language strongly influenced by the learners' native Cantonese and non-native English, and we focus on prosody in the sense of tone and intonation. Beyond the specific languages in question, our case study fills gaps in two research areas: prosody in non-native varieties and third language acquisition, both of which are to be elaborated below. We also discuss the relevant linguistic and prosodic features of Cantonese and French as the necessary background for the description and explanation of the observed prosodic patterns in non-native French.

Prosody in Non-native Varieties

In the literature on second and foreign language acquisition, it is well recognized that prosody, viz. tone and intonation, is among the hardest things to teach and to master well; see Levis (1999) for a review. Paradoxically, this has not quite generated a lot of research on prosody in non-native varieties, in contrasts with the relative abundance of work on morphosyntax and segmental phonology. This can reasonably be attributed to the highly gradient nature of tone and intonation, which makes description and analysis much less straightforward than the much more categorical concepts in such linguistic entities as tense/aspect markers as well as consonants and vowels.

Around half of the world's languages are tone languages (Yip 2002, Maddieson 2013). What happens prosodically (in terms of tone and intonation) when a tone language speaker learns a non-tone language? While we expect effects of language transfer, what factors contribute to the prosodic grammar of the target non-native language? By studying the prosodic features of the non-native French by Cantonese speakers, this paper represents an attempt to contribute to the under-researched area of prosody in non-native varieties.

Third Language Acquisition

Given that there are more non-native speakers of English than native speakers worldwide (Crystal 2010), and that many people who speak English as an L2 learn yet another language -- the third language, there is a growing literature on third language acquisition (Cenoz et al. 2001, Leung 2007). Learning French in Hong Kong constitutes a case of third language acquisition given the socio-historical background of Hong Kong, cf. Yip and Matthews (2012). While the vast majority of individuals born and raised in Hong Kong speak Cantonese as their first language (L1), English is their second language (L2) taught at school since early childhood.[1]

There are notable linguistic similarities and differences between French, English, and Cantonese. French is much more similar to English than to Cantonese, in terms of the writing system, vocabulary, morphosyntax, and so forth. Therefore, for L3 French learners with a good command of English in Hong Kong (particularly when language classes are taught with English as the medium of instruction – as was the case for the speakers in our data), it appears intuitively tempting to take advantage of knowledge about English to aid French learning, cf. Kellerman's (1979) psychotypology on learners' perception of similarity among languages). Given such background settings, it is reasonable to consider the possibility that L2 English plays an important role in shaping the prosodic features of L3 French.

Cantonese

[1] Mandarin Chinese is another L2 for the majority of contemporary Hong Kong locals. It is not clear how this might influence non-native French prosody.

Cantonese is a tone language where every syllable has one of the six tones (see Matthews and Yip 2011 for more details):[2]

The six tones in Cantonese:

Level – high, mid, low

Contour – high rising, low rising, low falling

It has been reported that there is transfer of tonal features from L1 Cantonese to L2 English (Luke 2000, Cheung 2008, Gussenhoven 2012, Yiu 2014). The three level tones in Cantonese are of particular interest here, because they appear to be what is often transferred to the target language by L1 Cantonese learners.

French

In contrast to Cantonese, French is not a tone language. Moreover, unlike languages such as English and Spanish, French has no word stress. The prosody of French, therefore, centers on phrasal and sentential intonation; see Di Cristo (1998), Post (2000), and Gussenhoven (2004) for more detailed descriptions together with analyses in various theoretical frameworks.

For the purposes of this paper, it is sufficient to familiarize ourselves with the intonation pattern of a canonical statement in French. In general, the way French intonation works is that an utterance is syntactically parsed into its constituents (noun phrases, verb phrases, etc). Each constituent then has its own intonational pattern. Typically, it is an overall rising pitch pattern for a non-sentence-final constituent and a falling pattern for a sentence-final constituent. In other words, a common intonation pattern for a statement uttered in a neutral and canonical way has a succession of rising pitch contours, each spanning across a syntactic constituent, until the end of the statement where the pitch contour falls.

Another characteristic of French important for understanding L3 French prosody described in this paper is word order. French is head-initial, similar to English. This means that a phrase which is a syntactic constituent has its head on the left and its complement on the right; for instance, a prepositional phrase has the preposition on the left and its complement noun phrase on the right. It will be shown below that these facts about French are important for accounting for the L3 French prosody by L1 Cantonese speakers.

Data

We recorded classroom spontaneous French as spoken by undergraduates presenting coursework in French language classes at the University of Hong Kong, where the medium of instruction is English. All the undergraduates were native speakers of Hong Kong Cantonese with a good command of English as their L2. They were all third-year undergraduates at the time of being recorded, having taken French language classes at the university for almost 400 class contact hours and having been to France for a summer intensive language program. The data were class presentations where each student spoke for about three minutes. In this preliminary study, we report the most salient L3 French prosodic features by two students, a female and a male. The data were coded in terms of high or low pitch for each syllable. While a more detailed

[2] Audio demonstrations for Cantonese tones are available on the book website of Matthews and Yip (2011): http://www.cuhk.edu.hk/lin/cbrc/CantoneseGrammar/

examination of our dataset is in order, the L3 French prosodic patterns described in this paper appear to be common among the students in our corpus.

L3 FRENCH AS A TONE LANGUAGE

Descriptively, the prosody of L3 French spoken by L1 Cantonese learners follows a simple pattern: all syllables of content words (nouns, verbs, adjectives, etc.) bear the Cantonese high level tone (one of the six tones of Cantonese; see above), whereas syllables of function words (prepositions, determiners, etc.) have the Cantonese low level tone. This effectively makes L3 French a tone language, albeit in a rather unusual sense. There are tone languages such as Cantonese for which the tone of a particular word or syllable is usually unpredictable, as well as others such as Bantu languages for which tone may mark grammatical information such as tense and aspect. However, neither is the case for the L3 French prosody described here: the status of a word as a content or function word correlates with which tone is used.

Using the formalism from autosegmental phonology (Goldsmith 1976, 1990) in the examples below (Figures 1 and 2), we indicate the pitch level of each syllable by using H for high pitch and L for low pitch, with each H or L linked to the respective syllable by a vertical line. The pitch tracks from Praat (Boersma and Weenink 2008) for both examples are also provided. Figure 1 comes from a male speaker, and Figure 2 from a female speaker.

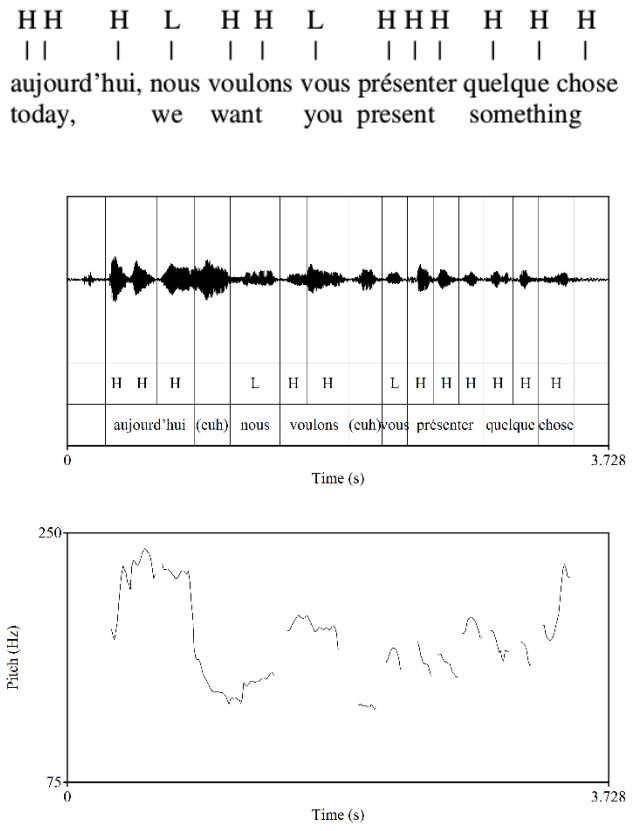

Figure 1. Example of L3 French prosody by a male speaker

H H L L H H H H H H L H
Paris est la capitale touristique du monde.
Paris is the capital touristy of-the world

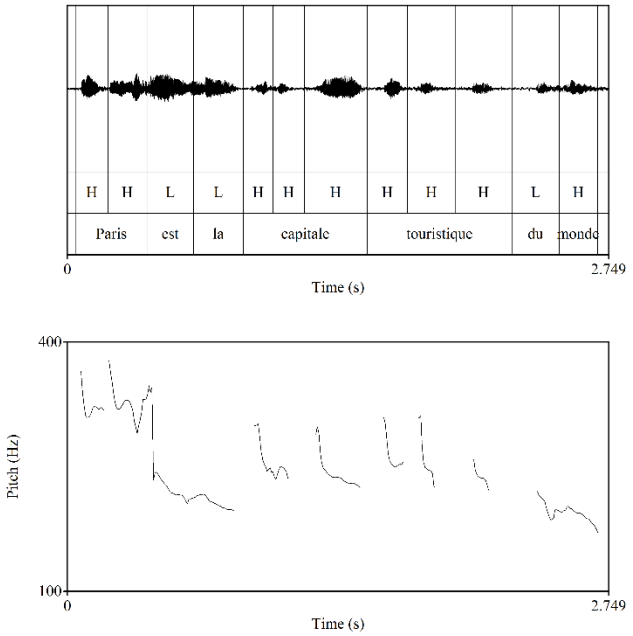

Figure 2. Example of L3 French prosody by a female speaker

The pitch tracks in Figures 1 and 2 appear to suggest that the intonation in both cases is falling in pitch in general, which might cast doubt on whether there are only two discrete level tones being used. To the extent that the pitch patterns are *acoustically* falling, it is well recognized that this phenomenon, known as declination, is universal and physiologically based, due to the fact that pulmonic pressure decreases across an utterance. This means that, for tone languages where pitch is crucial for tone identification, there is presumably a perceptual mechanism that compensates declination across an utterance so that, for example, phonologically identical high tones at two different positions within an utterance are perceived as the same entity despite their acoustic pitch difference. Such a mechanism has been confirmed to exist for Cantonese (Yuen 2007).

There are undoubtedly other prosodic patterns in L3 French by L1 Cantonese speakers that are worth further investigation, e.g., boundary tones as evidenced by the rising pitch contour towards the end in Figure 1 for upcoming new information in the discourse and a falling one in Figure 2 to indicate the end of a statement. Nonetheless, these do not mask the most striking and consistent patterns of Cantonese high level tone used for French content words and Cantonese low level tone for French function words.

ANALYSIS

Where did the L3 French prosodic features reported in the previous section come from? The goal of this section is to provide an account, particularly in terms of interlanguage transfer (Cenoz et

al. 2001, Leung 2007). While French (the target language) is clearly relevant in shaping the learners' French, L2 English (influenced by their L1 Cantonese) plays an indispensable role as well.

Both the intonation and syntax of French contribute to the observed L3 French prosody by Hong Kong Cantonese speakers. As described above, French has no word stress and relies entirely on phrasal and sentential intonation for its prosodic grammar. Non-sentence-final phrases typically have a rising pitch contour. In terms of word order, French is head-initial, which makes a phrase usually begin with a function word and end with a lexical content word.

These facts about the intonation and syntax of French serendipitously produce the following configuration: function words coincide with low pitch, whereas the final syllables of content words bear higher pitch. Despite this, native French prosody does not exhibit what appears in L3 French prosody to be plateaux of high pitch spanning over the entire durations of polysyllabic content words.

Abstracting from important details, such a crude mapping between high/low pitch and content/function words respectively in L1 French matches the observed L3 French prosody by L1 Cantonese speakers where high level tone is used for content words and low level tone for function words. This is by no means the whole story, however. In particular, what is left to be explained is the use of *discrete* tone levels in the described L3 French prosody, as French intonation is much more gradient in nature. While the missing piece of the story certainly has to do with Cantonese, it is insightful to discuss it in terms of L2 English with highly relevant L1 Cantonese features, rather than just Cantonese alone. It must be noted, however, that our current data are also compatible with a view that it is only L1 Cantonese which is responsible for the observed non-native French prosody; further research will provide more clues about the extent to which L2 English plays the role of a proxy in language transfer.

L2 English prosody by L1 Hong Kong Cantonese speakers has been analyzed in terms of tonal transfer from Cantonese to English (Luke 2000, Cheung 2008, Gussenhoven 2012, Yiu 2014). Crucially, the patterns of tone assignment depend on word stress in English. The following two examples are from Luke (2000):

English word	Tonal pattern using Cantonese tones
examination	M-H-H-H-L
encyclopedia	M-M-M-H-L

Luke (2000) describes the use of the general tonal template of Mid-High-Low (from Cantonese mid level, high level, and low level tones, respectively). There appears to be an algorithm that could account for tone assignment. Give an English word, the syllable with the primary stress is assigned H (for a high level tone): *examin**a**tion, encyclop**e**dia*. The syllable with the secondary stress may or may not bear H: *ex**a**mination* with H*, enc**y**clopedia* without H. Then, all syllables sandwiched between two H's are assigned H's: *exam**i**nation* with H; see Cheung (2008) and Yiu (2014) on high tone spans in Hong Kong English. After all H's are assigned, L (for a low level tone) and M (for a mid level tone) are assigned. All unassigned syllables to the left of the first H bear M's (***e**xamination, **e**ncy**c**l**o**pedia* with M), and all unassigned syllables to the right of the rightmost H bear L's (*examinati**o**n, encyclopedi**a*** with L).

The use of Cantonese tones in L2 English has important ramifications for our understanding of the L3 French prosody. First, the tonal patterns in L2 English demonstrate the tendency that L1 Cantonese speakers use Cantonese tones in their non-native languages. Second, the precise patterns of which Cantonese tones are used at which syllables or words in the target language depend on prosodic properties of the target language, particularly in terms of pitch. Third, no syllables in the target language are toneless; this conforms to the property of L1 Cantonese that all syllables bear a tone. In the target language, if a syllable is not assigned a tone, it is assigned one by a certain tone-spreading mechanism.

We are now at a position to provide an analysis of L3 French prosody by Hong Kong speakers. The analysis is in terms of language transfer, drawing features from both L1 French and L2 English discussed above. The two major components of the analysis are the assignment of H and L tones, and high tone spanning.

Let us consider the French phrase *la capitale touristique* "the touristic capital" used in Figure 2. First, function words (most of which are monosyllables) are assigned L. As for H, because most (non-sentence-final) phrases in L1 French have a rising pitch contour, and because the phrases usually end with a content word, it is reasonable to assume that all content words in L3 French have their final syllable assigned with H (recall that L2 English assigns H to stressed syllables, but French has no word stress). In other words:

L H H

| | |

la capitale touristique

Our view that it is the final syllable of a content word which bears H is paralleled by the analysis of Central African French (Bordal 2015). This variety of French has been in close contact with Sango, a tone language. The tonal pattern for content words in Central African French is (L+)H – with H on the final syllable and L on all preceding syllables in the case of a polysyllabic word, or just H for a monosyllabic word. The case of Central African French provides support to the idea that there is a tendency for non-native French influenced by a tone language to have final syllables of content words bear some sort of a high tone.

Since no syllables can be toneless in our case of L3 French, high tone spreading---similar to L2 English---assigns H to toneless syllables in content words, formally by spreading from the final-syllable H:

L H H

| | |

la capitale touristique

The word is the domain of high tone spreading. This results in exactly what is observed as reported in Figure 2 above:

L H H H H H H

| | | | | | |

la capitale touristique

Finally, the fact that L3 French assigns tones by the division of function and content words may possibly coincide with a presumably universal tendency for content words being uttered at a higher pitch (and therefore more loudly, due to the close correlation between pitch and loudness in human speech) because of their higher importance for discourse information load, in contrast with function words uttered at lower pitch and more softly. Functional factors may therefore also be at work in shaping L3 French prosody.

CONCLUSION AND IMPLICATIONS

This paper has provided a description of the non-native French prosody by native speakers of Hong Kong Cantonese. Given the socio-historical background of Hong Kong, the speakers are also competent in English as a second language, and French can be considered a third language. The striking prosodic pattern in L3 French by Hong Kong speakers is that the Cantonese high level tone is used for syllables of French content words, and the Cantonese low level tone for syllables of French function words. Such a pattern has been accounted for in terms of interlanguage transfer, from L1 Cantonese to L3 French via L2 English interlanguage.

In terms of language learning and teaching, by studying a target language other than English, this paper demonstrates the general strong tendency for tone language speakers to employ tone in learning non-native languages. Anecdotal comments suggest that the speakers themselves are in general unaware of the specific prosodic patterns in their target language. Therefore, making learners aware appears to be important so that they can more actively attempt to achieve more target language-like prosody. To this end, visualization techniques, discussed by Levis and Pickering (2004) and others, are appropriate for precisely the dual purposes of raising learners' awareness, on the one hand, and providing visual and instant feedback for improvement, on the other. Visualization of prosody has been shown to be helpful for non-tone language speakers learning a tone language (e.g., Chun et al. 2013 with native English speakers learning Mandarin Chinese). For the opposite situation of tone language speakers learning a non-tone language---a case of which is reported in the present paper, it is expected that visualization techniques for prosody will help learners steer away from the use of discrete tone levels and imitate the much more gradient prosodic features in the target non-tone language.

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