Revisiting phonotactic repairs in Cantonese loanword phonology: It's all about sC

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Background: Compared to other obstruent+sonorant (OR) onset clusters in English, s+consonant (sC) onset clusters are marked in several ways: e.g. s+obstruent (SO) violates the sonority sequencing hierarchy which prefers onset clusters with rising sonority (*REVERSAL), s+nasal (SN) violates the minimal sonority distance exhibited in OR clusters, which is two steps away apart on the sonority scale (MSD=2), and [s]+[l], both coronal, violates OCP(PLACE) (Goad, 2011). One area of interest in loanword phonology is how these clusters are adapted to languages where onset clusters are absent. Three major patterns and one unattested pattern are found in various studies (e.g. Broselow, 2015; Fleischhacker, 2005):

1. sC and OR are repaired the same (e.g. Korean);
2. sC and OR are repaired differently (e.g. Farsi);
3. s+sonorant (SR) and OR are repaired the same while SO is repaired differently (e.g. Delu).
4. (unattested) SO and OR are repaired the same while SR is repaired differently.

The existence of Patterns 2 and 3 and the unattested Pattern 4 suggest that these speakers, despite the absence of onset clusters in their native language, are aware that 1) sC is different (marked) from other onset clusters, and 2) SR and OR are more similar than SO and OR.

While Cantonese, like Farsi and Delu, does not allow consonant clusters at word edges, previous studies on Cantonese loanword adaptation claimed that repairs of sC English words are due to other factors such as the perceptual salience of [s], word-minimality (Yip, 1993; Silverman, 1992), and word-class effects (Luke and Lau, 2008). In this talk, I begin with experimental results showing that repairing sC in Cantonese loanword phonology is not due to these previously claimed factors. Instead, similar to the languages mentioned above, Cantonese speakers treat sC differently. In the second part of my talk, I propose that the different repair strategies between sC and OR are due to the Syllable Mapping Grammar (SMG), the syllable structure mapping component of the perception grammar: Cantonese speakers assign different phonological representations based on cluster well-formedness. When they perceive words with an sC cluster, their SMG assigns [s] as syllabic. In other words, it is the different phonological representations between sC and OR that motivate different repairs.

Experiment 1: Onset cluster repairs: obstruent+[l] vs. [sl]

This experiment was designed to investigate whether repairs of onset clusters were sensitive to word-class effect and cluster type in Cantonese loanword phonology. 24 target stimuli were monosyllabic English words with either an obstruent+[l] onset cluster (e.g. flow) or an [sl] cluster (e.g. sleep) that can be either a verb or a noun. 48 native Cantonese speakers were asked to listen to sentences where each stimulus was used in two different contexts (as a verb vs. as a noun) and choose between the two repaired forms, the deleted form (monosyllabic) and the epenthetic form (disyllabic), of each stimulus in each context. Results show that their choice of repairs is entirely cluster type driven: the deleted form was preferred for obstruent+[l] cluster, including [fl], while the epenthetic form was preferred for [sl] and the difference was significant ($p<.0001$, generalized linear mixed effect regression, Bates, Maechler, Bolker & Walker, 2015). Word class does not play a role in their choice of repairs ($p=.64$). This suggests that despite the rising sonority profile of obstruent+[l] and [s]+[l] clusters, participants treat [sl] clusters differently.

Experiment 2: sC repairs

This experiment seeks to answer if Cantonese speakers repair different sC clusters differently. 14 target stimuli were monosyllabic English words with an sC cluster, where the second member of the cluster was a stop (e.g. stay), nasal (e.g. smoke), liquid (e.g. sleep), or glide (e.g. sweat). 21 participants were asked to listen to a carrier sentence and rank the three forms, the epenthetic form, the faithful form and the deleted form, from the most preferred to the least preferred. Results shows that, in all sC types, participants preferred the epenthetic form than the other two forms and the difference was significant ($p<.0001$). This suggests that Cantonese speakers are similar to Farsi speakers in the sense that they use the same repair for all sC clusters, regardless of the sonority profile.

Experiment 3: Fricative coda repairs: [s]-coda vs. [f]-coda

It was shown in experiment 1 that [fl] is repaired differently from [sl], even though they are both fricative+liquid onset clusters. It is still unclear as to whether it is the perceptual salience of [s] that makes [sl] different from [fl] or whether it is the sC that motivates the difference. This experiment aims to answer this question by looking at the coda position and see if there is any difference between repair of [s] (e.g. pass) and [f]-coda (e.g. beef) English words, both of which are not allowed in Cantonese. 18 target stimuli were monosyllabic or disyllabic English words that ends in either an [s] or [f]. 51 participants were asked to listen to a carrier sentence and decide if each of the three forms, the epenthetic form (e.g. passi), the faithful form (e.g. pass) and the deleted form (e.g. pa), was a possible form. Results show that for both [s] and [f]-coda words, the epenthetic form was significantly more possible than the other forms ($p<.0001$ in both groups). In other words, [s] is treated the same as [f] in the coda position.

Based on the results from the previous experiments, it suggests that Cantonese speakers treat sC differently from other onset clusters not because of the [s] alone, but because of the special status of sC. I argue that this difference is the result of different phonological representations between sC and OR clusters.

Syllable Mapping Grammar

I propose that when Cantonese speakers perceive words with an OR cluster, the syllable structure mapping component of the perception grammar (SMG) assigns a syllabic representation in which the OR sequence is part of the syllable onset, the same representation that English speakers assign to this input. On the other hand, when Cantonese speakers encounter words with an sC cluster, the marked status (*REVERSAL, MSD=2, OCP(PLACE)) of this cluster motivates a different phonological representation for this sequence: their SMG assigns a representation where the [s] is syllabic, at the expense of violating the syllabic consonant constraint (*PEAK/C). In their production grammar, Cantonese speakers resolve a true onset cluster (OR) by deletion of the second member, while the syllabic [s] is resolved by vowel epenthesis. Extending this to the three cross-linguistic patterns, I argue that the typological difference is the result of different rankings in the SMG.

Selected References

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