

MAILE AND THE CENTER FOR CHINESE
LINGUISTICS PRESENTS:

COMPUTATIONAL MODELING OF SECOND LANGUAGE ACQUISITION OF TONES AND TONE SANDHI

Dr. CHEN Si Sarah

Assistant professor at the Hong Kong Polytechnic University



Abstract

This talk covers a series of experiments on modelling acquisition of tones and allophonic tones. There is a debate about abstract and episodic phonological representation. It remains to be tested how phonetic details impact phonological representations in native and non-native speakers. In the first experiment, we designed experiments using real and manipulated stimuli to test whether speakers may form parametric representations of phonetic distributions. The results offer useful insights about how parametric representations of phonetic distributions is used in tone identification. In the second experiment, we further tested whether listeners make use of parametric representations of phonetic distributions when contextual information is present. The results showed an interaction between the two competing forces for both native and non-native speakers. In the third experiment, we examined the acquisition of Mandarin allophonic tones by both tonal (Cantonese) and non-tonal (American English) speakers using a Wug Test.

Participants were asked to form disyllables from two monosyllabic morphemes. Functional data analysis revealed that Cantonese and American speakers apply the two rules similarly on both real words and wug words, suggesting that the sandhi forms are stored as part of the representation of the abstract Tone 3 (T3) category, and computation of allophonic variants is likely to be involved during production. However, in their computation of tone sandhi rules, L2 learners showed less detailed and less accurate production of tonal contours compared to native speakers, due, perhaps, to less detailed phonological representations of allophonic variants.

Si Chen received her PhD in linguistics and her MS in statistics from the University of Florida in 2014. Her specialization lies in phonetics, phonology and computational modeling. She is able to utilize an inter-disciplinary approach in her research to address issues in language evolution, language typology, the relationship between speech perception and production, and applications of acoustic techniques in second language acquisition and treatment of speech disorder. Si Chen has published 18 papers and book chapters and received grants supported by PolyU the Hong Kong Government, and the Advanced Research Projects Agency. Si Chen is the Academic editor of the Journal PLOS ONE, a reviewer editor of Frontiers in Psychology and a reviewer for many high-impact journals, grants and conferences. She also served as an executive committee member of the Linguistic Society of Hong Kong and the Chinese Language Interface Advisory Committee.

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4:00 - 5:15PM

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Hosted by:
Prof. Zhen Qin
Associate Director of the
Center for Chinese Linguistics

