

The acquisition of Cantonese vowel length contrast by Urdu and Punjabi speakers

Peggy Mok¹, Crystal Lee¹, Holly Fung¹, Alan C.Y. Yu²

¹The Chinese University of Hong Kong, ²University of Chicago

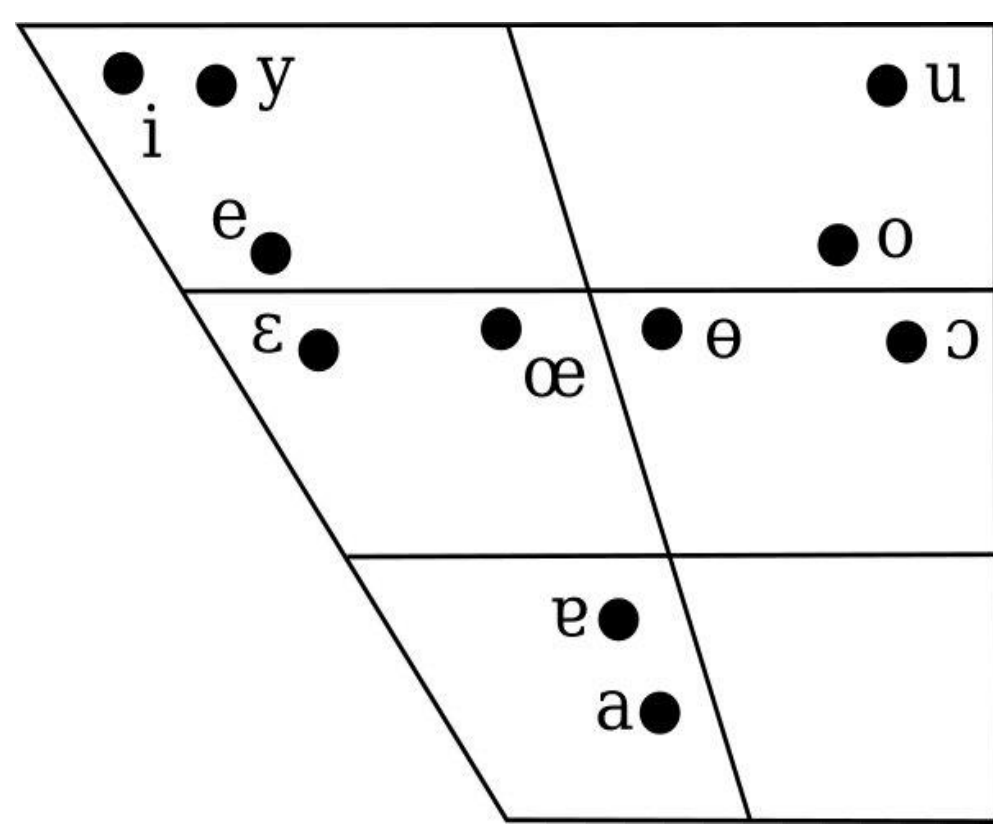
peggymok@cuhk.edu.hk, lwt1011@gmail.com, hollyfung@link.cuhk.edu.hk, aclyu@uchicago.edu

Background

- Ethnic minority in Hong Kong (HK), who are mainly of South Asian (SA) origins, account for ~1% of population^[1]
- Most are fluent in both English and a mother tongue (Hindi, Urdu, Punjabi, Gujarati, Sindhi, Nepali, etc.)
- Around 50% do not speak Cantonese^[2]
- South Asians are constructed as non-locals and non-elites, who are expected not to know Cantonese but said to need it^[3]
- Local schools fail to provide a tailored 'Chinese as a second language' curriculum for SA students
- More government resources in recent years

The Phenomenon

- Cantonese: only *aa* [a] and *a* [e] uncontroversially contrast in length in all phonological environments^[4,5,6]
- *aa* and *a* differ not only in vowel duration, but also in vowel quality



- *aa/a* contrast appears in a wide variety of phonological environments and has high functional load
- For example:

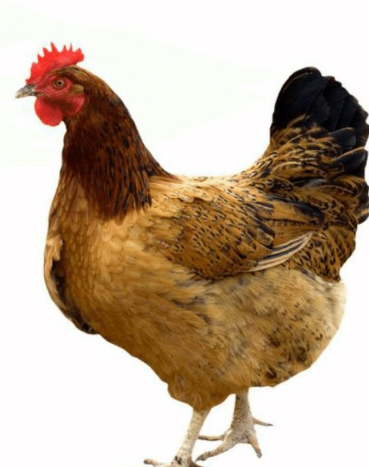
Environment	Final	Example	Meaning
Diphthong	<i>aai</i>	<i>gaa1</i>	street
	<i>ai</i>	<i>gai1</i>	chicken
Nasal Coda	<i>aam</i>	<i>laam4</i>	blue
	<i>am</i>	<i>lam4</i>	forest
Stop Coda	<i>aat</i>	<i>daat6</i>	arrive
	<i>at</i>	<i>dat6</i>	sudden

- Urdu: the length contrast is restricted to high and middle vowels, but not among low vowels^[7,8]
- Punjabi: no length contrast^[9]
- The research questions:
 - What are the Cantonese speech patterns of SA students in Hong Kong?
 - How are their speech patterns different from the Cantonese of Hong Kong Chinese students?

Method

- Participants:
 - 54 students who are native speakers of Urdu or Punjabi in a government-aided secondary school in HK (25 females, aged from 12 to 18)
 - 26 native Cantonese speakers in a government-aided secondary school in HK (15 females, aged from 15 to 18)
- Perception experiment:
 - AX discrimination task: 200 monosyllabic word pairs (20 for *aa/a*)
 - Generalised mixed-effects analyses with binary distribution were conducted on SA participants' discrimination accuracy data
- Production experiment:
 - Picture-naming task: 84 stimuli (14 for *aa/a*)

雞 chicken



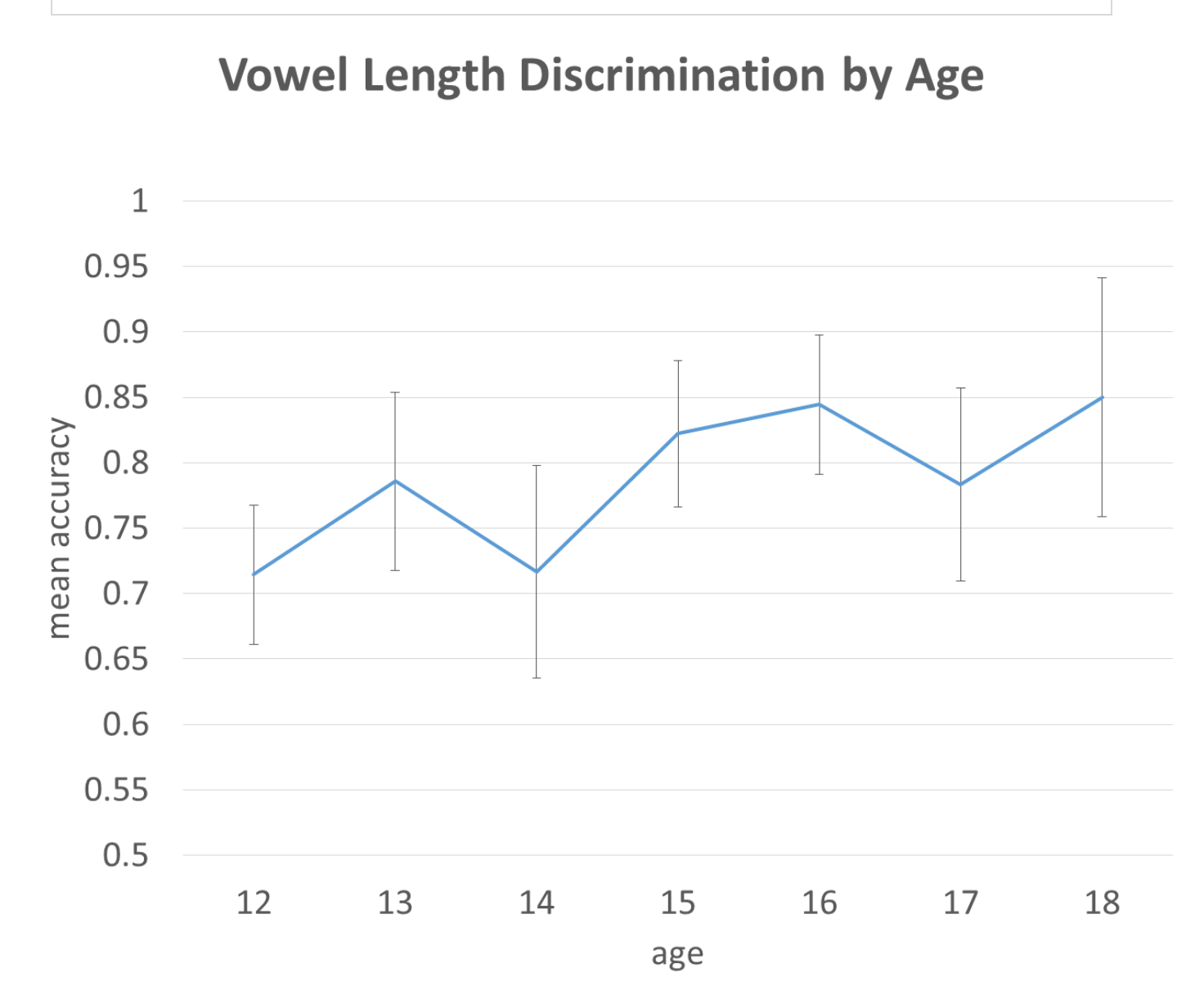
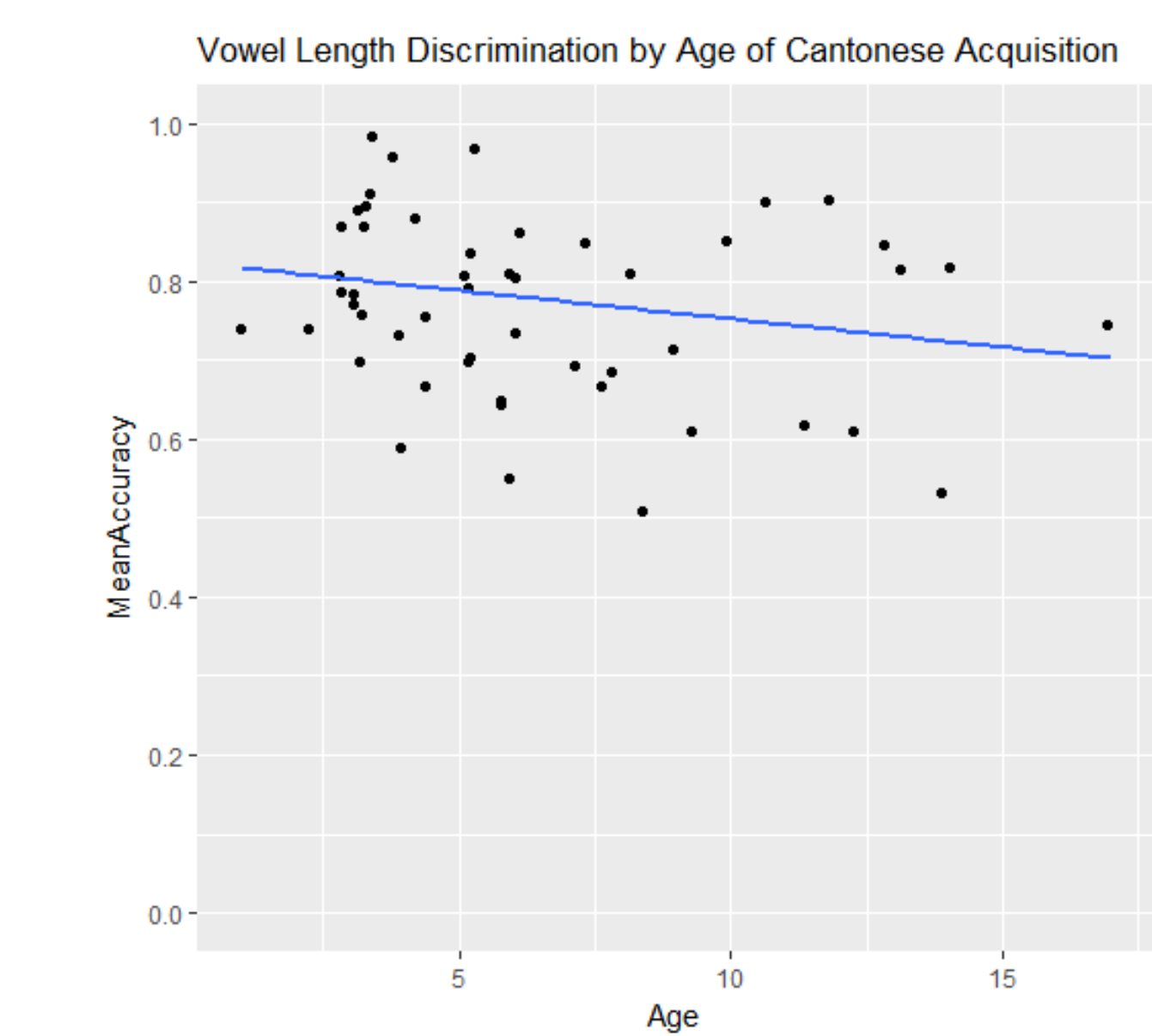
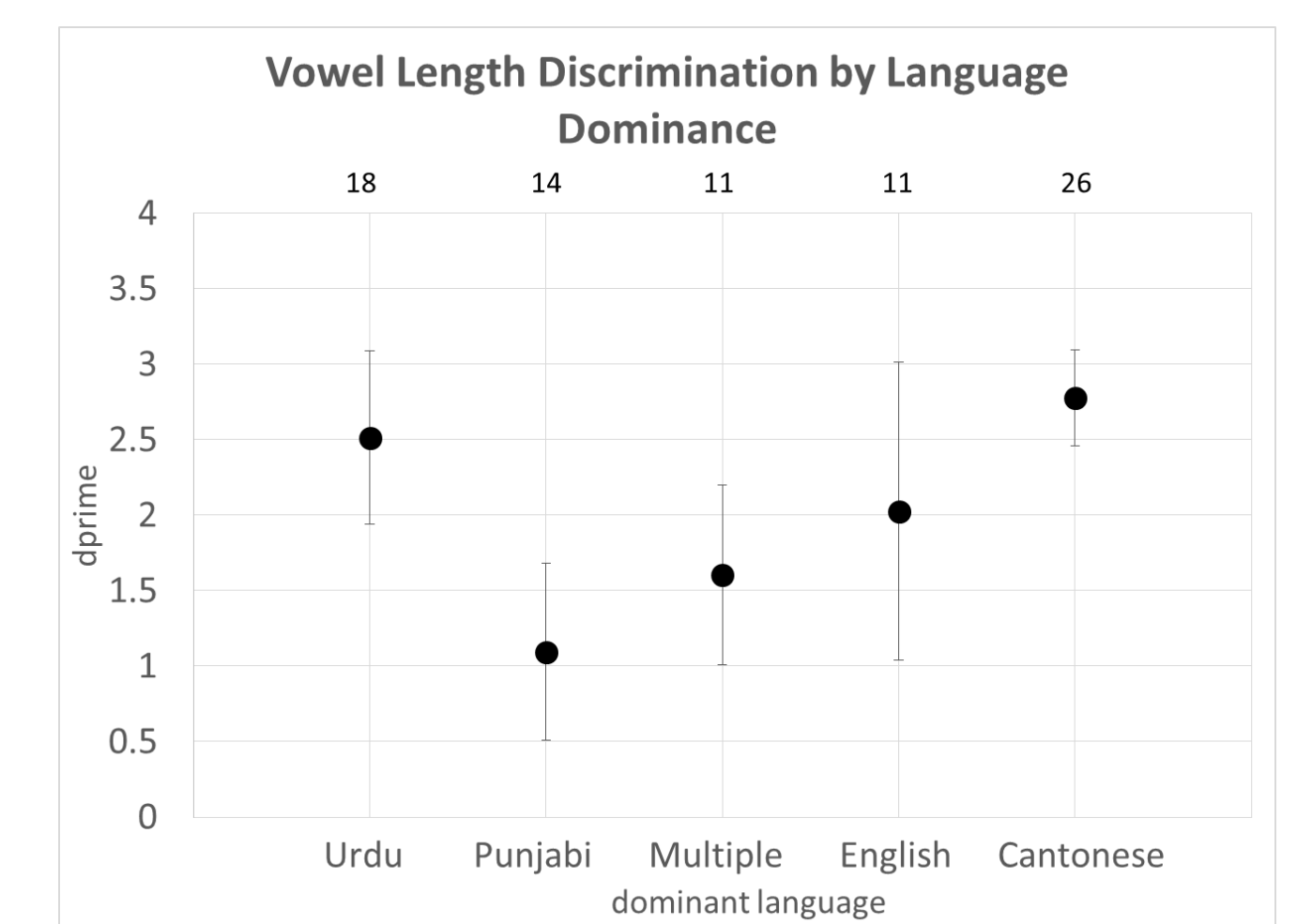
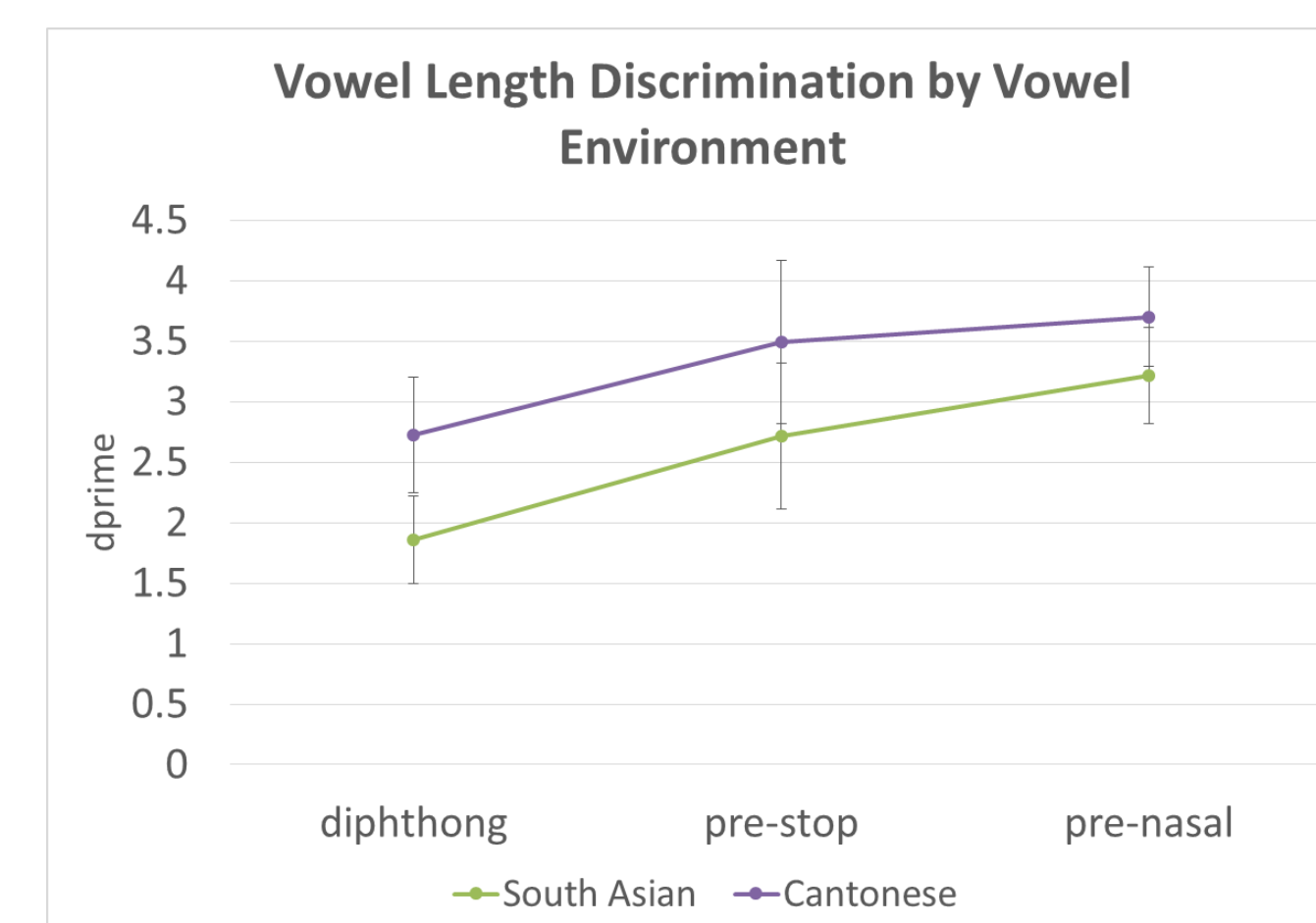
- If a student knew a word, they pronounced the word by themselves (attempted). If they did not know, they were prompted to repeat after the experimenters (shadowed).
- Vowel duration, F1 and F2 are extracted for acoustic analysis.

Results

- Perception Data:
 - SA subjects performed significantly worse than native Cantonese speakers ($p = 0.014$)

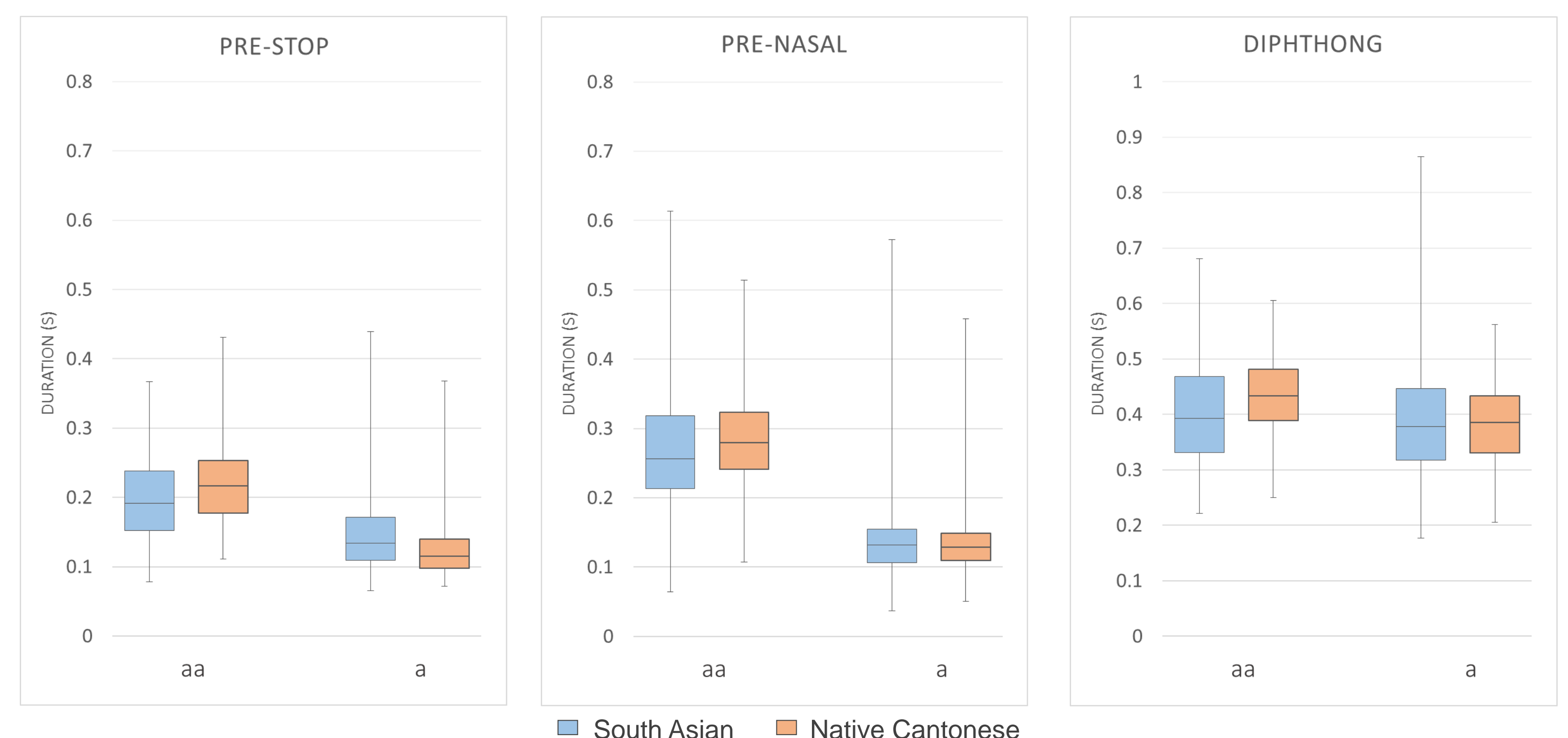
Main effects	<i>p</i>
Vowel environment (reference level: diphthong)	.047
Contrast (same or different sounds)	< .001
Age	.010
Age of Cantonese acquisition	.007

- Lowest accuracy in diphthong, followed by pre-stop and pre-nasal environments

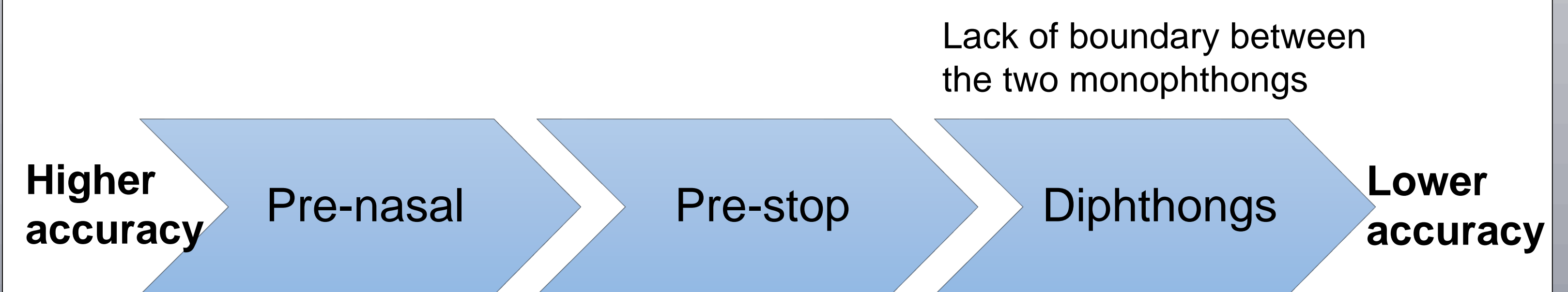


- Production Data:
 - Durational increase from *a* to *aa*:

Vowel environment	SA students	Native Cantonese students
Pre-stop	0.053s	0.093s
Pre-nasal	0.13s	0.15s
Diphthong	0.014s	0.048s



Discussion



Vowel duration difference more significant than in pre-stop position^[4,10]

Small number of diphthongs in Urdu and Punjabi (2/3 vs 11) and the lack of vowel length distinction

- Mixed and complex acquisition patterns of vowel length contrast among linguistic minority students
- Troubles in distinguishing vowel length contrast
- Various factors affecting perception and production accuracies
- Formant frequency data will be compared for further analysis

Reference

[1] Census and Statistics Department, Hong Kong Special Administrative Region (2017). 2016 Population By-census – Summary Results. Retrieved from <http://www.by-census2016.gov.hk/data/16bc-summary-results.pdf>. [2] Census and Statistics Department, Hong Kong Special Administrative Region (2012). 2011 Population Census - Thematic Report Ethnic Minorities. Retrieved from <http://www.census2011.gov.hk/pdf/EM.pdf>. [3] Fleming, K. K. (2015). Ideology, identity, and linguistic repertoires among South Asian students in Hong Kong. Phd dissertation, The University of Hong Kong. [4] Bauer, R. S., Benedict, P. K. (1997). *Modern Cantonese Phonology*. New York: Mouton de Gruyter. [5] Zhang, L. (2010). *Guangzhouhua Changduanyuanynide Yuyinshiyuan Xintan* [New explorations in the phonetic experiments on long and short vowels in Cantonese]. *Fangyan*, 2, 134-144. [6] Zee, E. (1999). An acoustical analysis of the diphthongs in Cantonese. *Proceedings of ICPhS 99, San Francisco*. [7] Saleem, A. M., Kabir, H. A. S. A. N., Riaz, M. K., Rafique, M. M., Khalid, N. A. U. M. A. N., & Shahid, S. R. (2002). Urdu consonantal and vocalic sounds. *CRULP Annual Student Report*. [8] Schmidt, R. L. (2003). *Urdu. In The Indo-Aryan languages* (pp. 288-350). London: Routledge. [9] Bowden, A. L. (2012). *Punjabi Tonemics and the Gurmukhi script: A preliminary study*. All Theses and Dissertations, Paper 2983. [10] Jin, J., Zhang, M. (2013). *Guangzhoufangyan Changduanyuanynin Tongjifenxi* [A statistical analysis of long and short vowels in Cantonese]. *Yuyanyanjiu Jikan*, 10, 79-98

Acknowledgment

We are grateful for the generous support from Della Memorial School (Glee path) and FDBWA Szeto Ho Secondary School for providing experiment subjects, and the Standing Committee on Language Education and Research (SCOLAR) for the funding.