

Information about Cantonese speech

1. A comparison between Cantonese and English phonology

Aspect	Language	Number	Details	Source
Syllable-initial consonants	Cantonese	19 initial consonants	/p, p ^h , t, t ^h , k, k ^h , k ^w , k ^{wh} , m, n, ŋ, f, s, h, ts, ts ^h , ʃ, w, l/	So (2007) Zee (1999)
	English	23 initial consonants	/p, b, t, d, k, g, m, n, θ, ð, f, v, s, z, ʃ, ʒ, h, tʃ, ʤ, j, w, ɹ, l/	Smit (2004)
Syllable- final consonants	Cantonese	6 final consonants	/p, t, k, m, n, ŋ/	So (2007)
	English (General American, Scottish, Irish)	21 final consonants	/p, b, t, d, k, g, m, n, ŋ, θ, ð, f, v, s, z, ʃ, ʒ, tʃ, ʤ, l, ɹ/	Smit (2004)
	English (UK, Australian, New Zealand)	20 final consonants	/p, b, t, d, k, g, m, n, ŋ, θ, ð, f, v, s, z, ʃ, ʒ, tʃ, ʤ, l/ (does not have syllable final /ɹ/)	Howard (2007) McLeod (2007)
Consonant clusters	Cantonese	nil	(/k ^w , k ^{wh} / are coarticulated; some authors label them as consonant clusters)	To, Cheung & McLeod (in press)
	English	Approx. 29 syllable-initial and many syllable-final consonant clusters	Many 2 and 3 element consonant clusters in initial position including /pl, bl, kl, gl, fl, sl, pɹ, bɹ, tɹ, dɹ, kɹ, gɹ, θɹ, fɹ, ʃɹ, pj, tj, fj, mj, nj, sm, sn, sp, st, sk, spl, spɹ, stɹ, skw/ and many 2 to 4 element consonant clusters in final position	McLeod (2007) Smit (2004)
Vowels and diphthongs	Cantonese	8 vowels + 11 diphthongs	Vowels: /i, y, ε, œ, a, ɔ, u, ɐ/ + /ɪ, ʊ, ʊ/ (allophones of /i, œ, u/ respectively) Diphthongs: /ai, ei, ɛi, ui, ɔi, au, ɐu, iu, ou, ɔy/ + /ɛu/ (in colloquial Cantonese)	To et al. (in press)
		11 vowels + 7 displaying lengthening contrasts + 11 diphthongs	Vowels: /i, i:, y, y:, ε, ɛ:, œ, œ:, a, a:, ɔ, ɔ:, u, u:, ɐ, ɪ, ʊ, ʊ/ Diphthongs: /ai, ei, ɛi, ui, ɔi, au, ɐu, iu, ou, ɔy, ɛu/	Zee (1999)
	English (US-General American)	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ɛ, æ, ə, ɜ, ɝ, u, ʊ, o, ʌ, ɔ, ɑ/ Diphthongs: /aɪ, aʊ, ɔɪ/ (Smit also lists 5 'r'-colored diphthongs)	Smit (2007)
	English (Canadian)	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ɛ, æ, ə, ɜ, ɝ, ʌ, ʊ, o, ʌ, ɔ, ɑ/ Diphthongs: /aɪ, ʌʊ, ɔɪ/	Bernhardt, & Deby (2007)
	English	12 vowels +	Vowels: /i, ɪ, ε, æ, a, ə, ɜ, u, ʊ, ʌ, ɔ, ɒ/	Howard (2007)

	(UK-Received Pronunciation)	8 diphthongs	Diphthongs: /aɪ, aʊ, ɔɪ, eɪ, oʊ, iə, ɛə, ʊə/	
	English (Australian)	12 vowels + 8 diphthongs	Vowels: /i:, ɪ, e, æ, ɐ:, ɐ, ɔ:, ʊ, ʊ:, ɜ:, ə/ ⁱ OR /i, ɪ, ɛ, æ, a, ʌ, ɒ, ɔ, ʊ, u, ɜ, ə/ ⁱⁱ Diphthongs: /æɪ, aɛ, əɐ, ɛɔ, ɔɪ, iə, eɪ, ʊə/ ⁱ OR /eɪ, aɪ, oʊ, aʊ, ɔɪ, iə, ɛə, ʊə/ ⁱⁱ	ⁱ Harrington, Cox, & Evans, (1997) ⁱⁱ Mitchell (1946)
	English (New Zealand)	12 vowels + 8 diphthongs	Vowels: /i:, ɪ, ɛ, æ, ə, ɜ, u, ʊ, ʌ, ɔ, ɒ, ɑ/ ⁱ OR /i, ɪ, e, æ, a, ə, ɜ, ʊ, ʌ, ɔ, ɒ/ ⁱⁱ Diphthongs: /aɪ, aʊ, ɔɪ, eɪ, oʊ, iə, eə, ʊə/ ⁱ OR /aɪ, aʊ, ɔɪ, eɪ, oʊ, iə, eə, ʊə/ ⁱⁱ	ⁱ Bauer & Warren (2004) ⁱⁱ MacLagan (2009)
Tones	Cantonese	9 tones	Tones T1 to T6 end with a vowel, diphthong or nasal. T7 to T9 end with a plosive.	To et al. (in press)
	English	0 tones	-	
Syllable shape	Cantonese	C ₍₀₋₁₎ V ₍₀₋₁₎ C ₍₀₋₁₎	The 6 possible syllables are: C, V, CV, VC, CVV, and CVC. The words containing only one consonant (C) (and no vowel) are /m/ = 唔 <i>not</i> and /ŋ/ = 5, <i>five</i>	So (2007)
	English	C ₍₀₋₃₎ VC ₍₀₋₄₎	The smallest syllable is V and the largest is CCCVCCCC <i>strengths</i> .	Smit (2004) McLeod (2007)
Stress-timed or syllable-timed?	Cantonese	Syllable-timed	Syllables are equally stressed, and each syllable carries a tone.	So (2007)
	English	Stress-timed	Syllables can be strong or weak. Stress also is used for emphasis.	
Varieties	Cantonese	Cantonese is a Yue dialect	Cantonese is spoken by 96.5% of people in Hong Kong. Standard Cantonese is based on the Cantonese of Guangzhou, the capital city of Guangdong Province.	So (2007)
	English	Many dialects	Many dialects including General American English, Received Pronunciation (England), Scottish English, Irish English, Australian English, New Zealand English, South African English etc.	
Writing system	Cantonese	Chinese (Traditional)	Chinese is non-alphabetic and consists of characters that represent lexical morphemes (words). Each syllable has a corresponding standard Chinese character.	So (2007)
	English	Latin alphabet	Roman script loosely related to phonetic realizations of the consonants and vowels.	

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- So, L. K. H. (2007). Cantonese speech acquisition. In S. McLeod (Ed.), *The international guide to speech acquisition* (pp. 313-326). Clifton Park, NY: Thomson Delmar Learning.
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Comparative studies

- Chan, A. Y. W., & Li, D. C. S. (2001). English and Cantonese phonology in contrast: Explaining Cantonese ESL learners' English pronunciation problems. *Language, Culture and Curriculum*, 13(1), 67-85.
- Chang, J. (2001). Chinese speakers. In M. Swan & B. Smith (Eds.), *Learner English* (2nd ed., pp. 310-324). Cambridge: Cambridge University Press.

2. Cantonese speech assessments

For a list of speech assessments in Cantonese see: www.csu.edu.au/research/multilingual-speech/speech-assessments
Intelligibility in Context Scale: Chinese (Traditional) www.csu.edu.au/research/multilingual-speech/ics

- To, C. K. S., & Cheung, P. S. P. (2012). Translation to practice: Assessment of children's speech sound production in Hong Kong. In S. McLeod & B. A. Goldstein (Eds.), *Multilingual aspects of speech sound disorders in children* (pp. 165-169). Bristol, UK: Multilingual Matters.

3. Monolingual speech acquisition (summaries and studies written in English)

- So, L. K. H. (2006). Cantonese phonological development: Normal and disordered. In Zhu Hua & B. Dodd (Eds.), *Phonological development and disorders in children: A multilingual perspective* (pp. 109-134). Cleavdon, UK: Multilingual Matters.
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4. Multilingual speech acquisition (summaries and studies written in English)

General summaries

- Goldstein, B. A., & McLeod, S. (2012). Typical and atypical multilingual speech acquisition. In S. McLeod & B. A. Goldstein (Eds.), *Multilingual aspects of speech sound disorders in children* (pp. 84-100). Bristol, UK: Multilingual Matters.
- Grech, H., & McLeod, S. (2012). Multilingual speech and language development and disorders. In D. Battle (Ed.), *Communication disorders in multicultural and international populations* (4th ed., pp. 120-147). St Louis, MO: Elsevier.
- Zhu Hua & Dodd, B. (Eds.). (2006). *Phonological development and disorders in children: A multilingual perspective*. Cleavdon, UK: Multilingual Matters.
- Yavaş, M. (2007). Multilingual speech acquisition. In S. McLeod (Ed.), *The international guide to speech acquisition* (pp. 96-100). Clifton Park, NY: Thomson Delmar Learning.

Summaries of multilingual Cantonese speech acquisition

- Holm, A. (2007). Cantonese-influenced English speech acquisition. In S. McLeod (Ed.), *The international guide to speech acquisition* (pp. 269-276). Clifton Park, NY: Thomson Delmar Learning.
- Holm, A., & Dodd, B. (2006). Phonological development and disorder of bilingual children acquiring Cantonese and English. In B. Dodd & Zhu Hua (Eds.), *Phonological development and disorders in children: A multilingual perspective* (pp. 286-325). Cleavdon, UK: Multilingual Matters.
- So, L. K. H., & Leung, C. S. S. (2006). Phonological development of Cantonese–Putonghua bilingual children. In Zhu Hua & B. Dodd (Eds.), *Phonological development and disorders in children: A multilingual perspective* (pp. 413-430). Cleavdon, UK: Multilingual Matters.

Studies of multilingual Cantonese speech acquisition

Languages	Country	Study	Age of children	Total number of children (no. of multilingual children)**	Typically/atypically developing children	Speech /language	Production/perception
Cantonese-English	UK	Dodd, B., So, L. & Li, W. (1996). Symptoms of disorder without impairment: The written and spoken errors of bilinguals. In B. Dodd, R. Campbell & L. Worrall (Eds.), <i>Evaluating theories of language</i> . London: Whurr.	3 – 5 years	16 (16)	typical	speech	production
	UK?	Dodd, B., Holm, A., & Li, W. (1997). Speech disorder in preschool children exposed to Cantonese and English. <i>Clinical Linguistics and Phonetics</i> , 11, 229-243.	5;2 and 3;7	2 (2)	atypical	speech	production

	Australia	Holm, A. & Dodd, B. (1999a). A longitudinal study of the phonological development of two Cantonese-English bilingual children. <i>Applied Psycholinguistics</i> , 20, 349-376.	2;3 – 3;1 and 2;9 – 3;5 years (longitudinal)	2 (2)	typical	speech	production
	Australia and UK	Holm, A., & Dodd, B. (2006). Phonological development and disorder of bilingual children acquiring Cantonese and English. In Z. Hua & B. Dodd (Eds.), <i>Phonological development and disorders in children: A multilingual perspective</i> (pp. 286-325). Clevedon, UK: Multilingual Matters.	2 – 5 years	56 (56)	typical	speech	production
	Canada	Ng, M., Hsueh, G., & Leung, C. S. (2010). Voice pitch characteristics of Cantonese and English produced by Cantonese-English bilingual children. <i>International Journal of Speech-Language Pathology</i> , 12(3), 230-236.	5 – 15 years	86 (86)	typical	speech	production
Cantonese-Putonghua	Hong Kong and Shenzhen, China	Law, N. C. W., & So, L. K. H. (2006). The relationship of phonological development and language dominance in bilingual Cantonese-Putonghua children. <i>International Journal of Bilingualism</i> , 10(4), 405-427.	2;6 – 4;11	100 (100)	typical	speech	production

Note. * Studies of typically and atypically developing multilingual children published in English were included; however, studies that only included monolingual children were excluded.

**The total number of children may have included both multilingual and monolingual children, so the number in brackets provides the total number of multilingual children.