Information about Vietnamese speech

1. A comparison between Vietnamese and English phonology

Aspect	Language	Number	Details	Source
Consonants	**Vietnamese**	24 consonants	/p, b, t̪, t̪˞, d, ʈ, c, k, g, ʔ, m, n, ɲ, ŋ, r, ɾ, β, f, v, s, z ʃ˞ ʒ, z̪, x, ɣ, h, ʋ, ɹ, jˑl, w, tʃ, ʤ/	Hwa-Froelich (2007)
Consonants	**Vietnamese**	24 consonants	Ho Chi Minh City: /p˞, b, t̪, t̪ʰ, t˞, d, ʈ, c, k, k˞, m, n, ɲ, ŋ, f, v, s, z, ʂ, z̪, ɣ, χ, h, (w), l /	Ly Kha Nguyễn (2011)
Consonants	**Vietnamese**	24 consonants	Southern Vietnamese: /p˞, b, t̪, t̪˞, d, ʈ, c, k, k˞, m, n, ɲ, ŋ, f, s, (ʂ), z̪, x, ɣ, h, w, l, j/	Tang & Barlow (2006)
	English	24 consonants	/p, b, t, d, k, g, m, n, ŋ, θ, ð, f, v, s, z, ʃ, ʒ, h, tʃ, ʤ, j, w, ɹ, l/	Smit (2004)
Consonant clusters	**Vietnamese**	None		
	English	23 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	Smit (2004)
Vowels and diphthongs	**Vietnamese**	11 vowels + 28 diphthongs + 12 triphthongs	Vowels: /æ, ɛ, e, i, ɪ, ʌ, ɒ, u, ɯ, o, ɤ/ Diphthongs: /ɑɪ, ai, aʊ, ɒo, ɒʊ, ei, ɛɪ, ɛo, ɛʊ, ɛu, iʌ, iə, io, iʊ, iɛ, iu, ɪi, ɪə, oɑ, oʊ, ʊɛ, ʊi, ʊə, ʊɑ, ʊɛ, ʊi, ui, uə/ Triphthongs: /ɛʊi, ɪɛʊ, oɑi, uiə, uei, ʊɑi, ʊia, ʊɪʊ, ʊeə, ʔʊi, ʊɪə, ʊɪʔ/	Hwa-Froelich et al. (2002) Hwa-Froelich (2007)
		11 vowels + 3 diphthongs + semivowels	Vowels: /i, e, ɛ, ɯ, ɤ, ɤ̆, a, ʌ, u, o, ɔ/ Diphthongs: /ie, ɯɤ, uo/ + semivowels in word final position /-u/, /-i/	Tang & Barlow (2006)
	English (US-General American)	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ɛ, æ, ə, ɚ, ɝ, u, ʊ, o, ʌ, ɔ, ɑ/ Diphthongs: /ɑɪ, aʊ, ɔɪ/ (Smit also lists 5 'r'-colored diphthongs)	Smit (2007)
	English (Canadian)	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ɛ, æ, ə, ɚ, ɝ, ʉ, ʊ, o, ʌ, ɔ, ɑ/ Diphthongs: /ʌɪ, ʌʊ, ɔɪ/	Bernhardt, & Deby (2007)
	English (UK-Received Pronunciation)	12 vowels + 8 diphthongs	Vowels: /i, ɪ, ɛ, æ, a, ə, ɜ, u, ʊ, ʌ, ɔ, ɒ/ Diphthongs: /aɪ, aʊ, ɔɪ, eɪ, oʊ, ɪə, ɛə, ʊə/	Howard (2007)
	English (Australian)	12 vowels + 8 diphthongs	Vowels: /iː, ɪ, e, æ, ɐː, ɐ, ɔ, oː, ʊ, ʉː, ɜː, ə/[i] OR /i, ɪ, ɛ, æ, a, ʌ, ɒ, ɔ, ʊ, u, ɜ, ə/[ii] Diphthongs: /æɪ, ɑe, əʉ, æɔ, ɔɪ, ɪə, eː, ʊə/[i] OR /eɪ,	[i] Harrington, Cox, & Evans, (1997) [ii] Mitchell

			aɪ, oʊ, aʊ, ɔɪ, ɪə, ɛə, ʊə/[ii]	(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, ɔi, eɪ, oʊ, iə, eə, ʊə/[i] OR /ai, aʊ, ɔi, ei, oʊ, iə, eə, ʊə/[ii]	[i] Bauer & Warren (2004) [ii] Maclagan (2009)
Tones	**Vietnamese**	6 + 2 tones	6 tones are used in Vietnam + 2 derivative tones with plosives -p, -t, -k. There are two words for tones in Vietnamese Dâú = writing accent Thanh = oral tone	Ly Kha Nguyễn (2011)
	English	0 tones	-	
Syllable shape	**Vietnamese**	$C_{(0-1)}w_{(0-1)}V_{(1-2)}C_{(0-1)}$	Allowed syllable shapes: V, VV, CV, CVV, CVC, CVVC, VC, VVC, wV, wVV, wVC, wVVC, CwV, CwVV, CwVC, CwVVC, where w is a semi-vowel	
	English	$C_{(0-3)}VC_{(0-4)}$	The smallest syllable is V and the largest is CCCVCCCC *strengths.*	Smit (2004) McLeod (2007)
Stress-timed or syllable-timed?	**Vietnamese**	Syllable-timed	Three stress levels: loud, medium, and weak.	Hwa-Froelich (2007)
	English	Stress-timed	Syllables can be strong or weak. Stress also is used for emphasis.	
Varieties	**Vietnamese**	Many	Many "pronunciations" (Vietnamese people do not use the word dialect)	
	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	**Vietnamese**	Latin alphabet	Based on Latin alphabet: Chu Quốc ngữ. Tonal markings are added.	Hwa-Froelich (2007)
	English	Latin alphabet	Latin alphabet loosely related to phonetic realizations of the consonants and vowels.	

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2. Vietnamese speech assessments

For a list of speech assessments in Vietnamese see: www.csu.edu.au/research/multilingual-speech/speech-assessments
Intelligibility in Context Scale: Vietnamese www.csu.edu.au/research/multilingual-speech/ics

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

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4. Multilingual speech acquisition (summaries and studies written in English)

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Studies of multilingual Vietnamese speech acquisition

Languages	Country	Study	Age of children	Total number of children (no. of multilingual children)**	Typically/ atypically developing children	Speech /language	Production/ perception
Vietnamese-English	Australia	Hemsley, G., Holm, A., & Dodd, B. (2006). Diverse but not different: The lexical skills of two primary age bilingual groups in comparison to monolingual peers. *International Journal of Bilingualism, 10*(4), 453-476.	Mean = 11;5	101 (62) (34 = Vietnamese-English)	typical	language	production perception

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.