Information about German speech

1. A comparison between German and English phonology

Aspect	Language	Number	Details	Source
Consonants	**German**	22-23 consonants	/p, b, t, d, k, g, ʔ, m, n, ŋ, r, f, v, s, z, ʃ, ç, x, ʁ, j, l, pf, ʦ/[i] /p, b, t, d, k, g, ʔ, m, n, ŋ, f, v, s, z, ʃ, ʒ, ç, χ, ʁ, h, j, l/[ii]	[i]Fox (2007) [ii]Kohler (1999)
	English	24 consonants	/p, b, t, d, k, g, m, n, θ, ð, f, v, s, z, ʃ, ʒ, h, ʧ, ʤ, j, w, ɹ, l/	Smit (2004)
Consonant clusters	**German**	Syllable-initial and syllable-final	22 two-element consonant clusters, two three-element consonant clusters, and many within word and word-final consonant clusters	Fox (2007)
	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	**German**	13 vowels + 2 displaying lengthening contrasts + 3 diphthongs	Vowels: /i, ɪ, e, ɛ, ɛː, y, ʏ, ø, a, aː, ə, u, ʊ, o, ɔ/ Diphthongs: /aɪ, ɔɪ, aʊ/	Kohler (1999)
	English (US-General American)	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ɛ, æ, ə, ɚ, 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, ɚ, ɝ, ɐ̟, 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, aɪ, oʊ, aʊ, ɔɪ, ɪə, 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, 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	**German**	0 tones	-	
	English	0 tones	-	
Syllable shape	**German**	$C_{(0-3)}VC_{(0-3)}$		
	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?	**German**	Stress-timed language	Stress-timed language. Similar to English with some modifications.	
	English	Stress-timed	Syllables can be strong or weak. Stress also is used for emphasis.	
Varieties	**German**	Many dialects	Hochdeutsch is the official language. Estimates of 50-250 dialects.	Fox (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	**German**	Latin alphabet	Latin alphabet with one-to-one correspondence between sounds and letters.	
	English	Latin alphabet	Roman script loosely related to phonetic realizations of the consonants and vowels.	

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Swan, M. (2001). German speakers. In M. Swan & B. Smith (Eds.), *Learner English: A teacher's guide to interference and other problems* (pp. 37-51). Cambridge: Cambridge University Press.

2. German speech assessments

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

Languages	Country	Study	Age of children	Total number of children (no. of multilingual children)**	Typically/ atypically developing children	Speech /language	Production/ perception
Spanish-German	Germany	Lleó, C., Kuchenbrandt, I., Kehoe, M., & Trujillo, C. (2003). Syllable final consonants in Spanish and German monolingual and bilingual acquisition. In N. Müller (Ed.), *(In)vulnerable domains in multilingualism* (pp. 191-220). Amsterdam: John Benjamins.	1;0 – 3;0	11 (5)	typical	speech	production
Turkish-German; Turkish-Norwegian	Germany, Austria, Norway, Turkey	Yazıcı, Z., İlter, B. G., & Glover, P. (2010). How bilingual is bilingual? Mother-tongue proficiency and learning through a second language. *International Journal of Early Years Education, 18*(3), 259-268.	5- to 6-years	120 (90)	typical	language	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.