

Information about Welsh speech

1. A comparison between Welsh and English phonology

Aspect	Language	Number	Details	Source
Consonants	Welsh	25 consonants	/p, b, t, d, k, g, m, n, ŋ, r, r ^h , f, v, θ, ð, s, ʃ, x, h, ʎ, j, l, w, tʃ, ɟ/	Munro, Ball, & Müller (2007)
	English	24 consonants	/p, b, t, d, k, g, m, n, ŋ, θ, ð, f, v, s, z, ʃ, ʒ, h, tʃ, ɟ, j, w, ɹ, l/	Smit (2004)
Consonant clusters	Welsh	Syllable-initial and syllable-final consonant clusters	Two and three element word-initial consonant clusters (e.g., /sb, kn, sdr, sgl/). Two element word-final consonant clusters (e.g., /sg, rn/).	Munro et al. (2007)
	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	Welsh	North: 13 vowels + 13 diphthongs South: 11 vowels + 8 diphthongs	Northern vowels: /i, ɪ, e, ε, a, ɑ, u, ʊ, o, ɔ, ɨ, ɛ, ə/ Southern vowels: /i, ɪ, e, ε, a, ɑ, u, ʊ, o, ɔ, ə/ Northern diphthongs: /aɪ, ɔɪ, əɪ, ɪʊ, εʊ, aʊ, əʊ, ɨʊ, aɪ̯, ɑɪ̯, ɔɪ̯, ʊɪ̯, əɪ̯/ Southern diphthongs: /aɪ, ɔɪ, əɪ, ɪʊ, εʊ, aʊ, əʊ, ʊɪ/	Munro et al. (2007)
	English (US-General American)	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ε, æ, ə, ɜ̃, 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, ε, æ, ə, ɜ̃, ɝ, ʌ, ʊ, o, ʌ, ɔ, ɑ/ Diphthongs: /ʌɪ, ʌʊ, ɔɪ/	Bernhardt, & Deby (2007)	
English (UK-Received Pronunciation)	12 vowels + 8 diphthongs	Vowels: /i, ɪ, e, ε, æ, ə, ɜ, u, ʊ, ʌ, ɔ, ɒ/ Diphthongs: /aɪ, aʊ, ɔɪ, eɪ, ɔʊ, ɪə, eə, ʊə/	Howard (2007)	
English (Australian)	12 vowels + 8 diphthongs	Vowels: /i:, ɪ, e, æ, ɛ:, ɐ, ɔ:, ɒ:, ʊ, ʌ:, ɜ:, ə/ ⁱ OR /i, ɪ, e, æ, a, ʌ, ɒ, ɔ, ʊ, u, ɜ, ə/ ⁱⁱ Diphthongs: /æɪ, ae, əɐ, əɔ, ɔɪ, ɪə, eɪ, ʊə/ ⁱ OR /eɪ, aɪ, ɔʊ, aʊ, ɔɪ, ɪə, eə, ʊə/ ⁱⁱ	ⁱ Harrington, Cox, & Evans, (1997) ⁱⁱ Mitchell (1946)	
English (New Zealand)	12 vowels + 8 diphthongs	Vowels: /i, ɪ, e, 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, ɔʊ, ɪə, eə, ʊə/ ⁱ OR /aɪ, aʊ, ɔɪ, eɪ, ɔʊ, ɪə, eə, ʊə/ ⁱⁱ	ⁱ Bauer & Warren (2004) ⁱⁱ Maclagan (2009)	
Tones	Welsh	0 tones	-	

	English	0 tones	-	
Syllable shape	Welsh	C ₍₀₋₃₎ VC ₍₀₋₂₎		Munro et al. (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	Welsh		Word stress is regularly on the penult.	Munro et al. (2007)
	English	Stress-timed	Syllables can be strong or weak. Stress also is used for emphasis.	
Varieties	Welsh	Southern and northern dialects	Southern and northern dialects. Four traditional dialects: Venedotian, Powysian, Demetian, and Swentian.	
	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	Welsh	Latin alphabet	Latin alphabet with close correspondence between sounds and letters.	Munro et al. (2007)
	English	Latin alphabet	Latin alphabet loosely related to phonetic realizations of the consonants and vowels.	

References

Welsh studies

Munro, S. M., Ball, M. J., & Müller, N. (2007). Welsh speech acquisition. In S. McLeod (Ed.), *The international guide to speech acquisition* (pp. 592-607). Clifton Park, NY: Thomson Delmar Learning.

English studies

- Bauer, L., & Warren, P. (2004). New Zealand English: Phonology. In E. Schneider, K. Burrige, B. Kortmann, R. Mesthrie & C. Upton (Eds.). *A handbook of varieties of English: Vol. 1. Phonology* (pp. 580-602). Berlin, Germany: Mouton de Gruyter.
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- Smit, A. B. (2007). General American English speech acquisition. In S. McLeod (Ed.), *The international guide to speech acquisition* (pp. 128-147). Clifton Park, NY: Thomson Delmar Learning.

2. Welsh speech assessments

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

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

Munro, S. M., Ball, M. J., & Müller, N. (2007). Welsh speech acquisition. In S. McLeod (Ed.), *The international guide to speech acquisition* (pp. 592-607). Clifton Park, NY: Thomson Delmar Learning.

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 Welsh speech acquisition

Ball, M. J., Muller, N., & Munro, S. (2006). Phonological development and disorder of bilingual children acquiring Welsh and English. In Zhu Hua & B. Dodd (Eds.), *Phonological development and disorders in children: A multilingual perspective* (pp. 346-382). Cleavdon, UK: Multilingual Matters.

Holm, A., & Dodd, B. (2006). Phonological development and disorder of bilingual children acquiring Welsh and English. In B. Dodd & Z. Hua (Eds.), *Phonological development and disorders in children: A multilingual perspective* (pp. 286-325). Cleavdon, UK: Multilingual Matters.

Munro, S., Ball, M. J., Müller, N., Duckworth, M., & Lyddy, F. (2005). The acquisition of Welsh and English phonology in bilingual Welsh-English children. *Journal of Multilingual Communication Disorders*, 3, 24-49.

Studies of multilingual Welsh speech acquisition

Languages	Country	Study	Age of children	Total (no. of multilingual children)**	Typically/atypically developing children	Speech /language	Production/perception
Welsh-English	Wales	Munro, S., Ball, M. J., Müller, N., Duckworth, M., & Lyddy, F. (2005). Phonological acquisition in Welsh-English bilingual children. <i>Journal of Multilingual Communication Disorders</i> , 3, 24-49.	2;6 – 5;0	83 (83)	typical	speech	production
	Wales	Ball, M. J., Müller, N., & Munro, S. (2001). The acquisition of rhotic consonants by Welsh-English bilingual children. <i>International Journal of Bilingualism</i> , 5, 71-86.	2;6 – 5;0	83 (83)	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.