

# Information about Arabic speech

## 1. A comparison between Arabic and English phonology

Aspect	Language	Number	Details	Source
<b>Consonants</b>	<b>Arabic - Jordanian</b>	28/29 consonants	/b, t, ʈ, d, d̥, k, q, ʔ, m, n, r, f, θ, ð, ð̥, s, s̥, z, ʒ, ʁ, ʕ, ħ, ʕ, h, j, l, w, tʃ, ʤ/ with six additional consonants used by some speakers /g, ɟ, v, v̥, ʒ, ʒ̥/	Dyson & Amayreh (2007)
	<b>Arabic - Lebanese</b>	27 consonants	/(p), b, t, tʰ, d, dʰ, (k), g, (q), ʔ, m, n, r, r, f, (v), (θ), (ð), s, sʰ, z, zʰ, ʃ, ʒ, x, ɣ, (χ), (ʁ), ħ, ʕ, h, j, lʰ, w/	Khattab (2007)
	<b>English</b>	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)
<b>Consonant clusters</b>	<b>Arabic - Jordanian</b>	Mainly syllable-final		Dyson & Amayreh (2007)
	<b>Arabic - Lebanese</b>	Syllable-initial and syllable-final	“consonant clusters are phonetically common in dialectal varieties [of Standard Arabic], including Lebanese Arabic ... often the result of vowel reduction”	Khattab (2007, p. 304)
	<b>English</b>	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)
<b>Vowels and diphthongs</b>	<b>Arabic - Jordanian</b>	6 vowels + 2 diphthongs	Vowels: /i, iː, u, uː, a, aː/ Diphthongs: /aj, aw/ (or /eː, oː/)	Dyson & Amayreh (2007)
	<b>Arabic - Lebanese</b>	13 vowels + 4 diphthongs	Vowels: /iː, ɪ, e, eː, u, æ, æː, aː, ɑ, ɑː, uː, o, oː/ Diphthongs: /aɪ/ɑɪ, aʊ, æɪ, æɪ /	Khattab (2007)
	<b>English (US-General American)</b>	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ε, æ, ə, ɛ̃, ɜ̃, u, ʊ, o, ʌ, ɔ, ɑ/ Diphthongs: /aɪ, aʊ, ɔɪ/ (Smit also lists 5 ‘r’-colored diphthongs)	Smit (2007)
<b>English (Canadian)</b>	14 vowels + 3 diphthongs	Vowels: /i, ɪ, e, ε, æ, ə, ɛ̃, ɜ̃, ʌ, ʊ, o, ʌ, ɔ, ɑ/ Diphthongs: /ʌɪ, ʌʊ, ɔɪ/	Bernhardt, & Deby (2007)	
<b>English (UK-Received Pronunciation)</b>	12 vowels + 8 diphthongs	Vowels: /i, ɪ, ε, æ, a, ə, ɜ, u, ʊ, ʌ, ɔ, ɒ/ Diphthongs: /aɪ, aʊ, ɔɪ, eɪ, oʊ, ɪə, eə, uə/	Howard (2007)	
<b>English (Australian)</b>	12 vowels + 8 diphthongs	Vowels: /iː, ɪ, e, æ, ɛː, ɛ, ɔ, oː, ʊ, ʉ, ɜː, ɜː, ə/ <sup>i</sup> OR /i, ɪ, ε, æ, a, ʌ, ɒ, ɔ, ʊ, u, ɜ, ə/ <sup>ii</sup> Diphthongs: /æɪ, ɔɪ, əɪ, æɔ, ɔɪ, ɪə, eɪ, uə/ <sup>i</sup> OR	<sup>i</sup> Harrington, Cox, & Evans, (1997) <sup>ii</sup> Mitchell	

			/eɪ, aɪ, oʊ, aʊ, ɔɪ, iə, eə, uə/ <sup>ii</sup>	(1946)
	<b>English</b> (New Zealand)	12 vowels + 8 diphthongs	Vowels: /i, ɪ, e, æ, ə, ɜ, u, ʊ, ʌ, ɔ, ɒ, ɑ/ <sup>i</sup> OR /i, ɪ, e, æ, a, ə, ɜ, ʊ, ʌ, ɔ, ɒ/ <sup>ii</sup> Diphthongs: /aɪ, aʊ, ɔɪ, eɪ, oʊ, iə, eə, uə/ <sup>i</sup> OR /aɪ, aʊ, ɔɪ, eɪ, oʊ, iə, eə, uə/ <sup>ii</sup>	<sup>i</sup> Bauer & Warren (2004) <sup>ii</sup> Maclagan (2009)
<b>Tones</b>	<b>Arabic</b>	0 tones	-	
	<b>English</b>	0 tones	-	
<b>Syllable shape</b>	<b>Arabic</b>	C <sub>(1-2)</sub> V <sub>(1-2)</sub> C <sub>(0-2)</sub>		Dyson & Amayreh (2007) Khattab (2007)
	<b>English</b>	C <sub>(0-3)</sub> VC <sub>(0-4)</sub>	The smallest syllable is V and the largest is CCCVCCCC <i>strengths</i> .	Smit (2004) McLeod (2007)
<b>Stress-timed or syllable- timed?</b>	<b>Arabic - Jordanian</b>	Stress-timed	Syllables are light or heavy	Dyson & Amayreh (2007)
	<b>Arabic - Lebanese</b>	Stress-timed	Trochaic word stress pattern	Khattab (2007)
	<b>English</b>	Stress-timed	Syllables can be strong or weak. Stress also is used for emphasis.	
<b>Varieties</b>	<b>Arabic</b>	Many dialects	Many dialects including Egyptian, Jordanian, Kuwaiti, Lebanese	
	<b>English</b>	Many dialects	Many dialects including General American English, Received Pronunciation (England), Scottish English, Irish English, Australian English, New Zealand English, South African English etc.	
<b>Writing system</b>	<b>Arabic</b>	Arabic (Semitic) script	Arabic (Semitic) script with 28 letters (right to left). 1:1 phoneme to grapheme correspondence	Dyson & Amayreh (2007) Khattab (2007)
	<b>English</b>	Latin alphabet	Roman script loosely related to phonetic realizations of the consonants and vowels.	

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## Comparative summaries

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## 2. Arabic speech assessments

For a list of speech assessments in Arabic see: [www.csu.edu.au/research/multilingual-speech/speech-assessments](http://www.csu.edu.au/research/multilingual-speech/speech-assessments)  
Intelligibility in Context Scale: Arabic [www.csu.edu.au/research/multilingual-speech/ics](http://www.csu.edu.au/research/multilingual-speech/ics)

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

### Summaries of monolingual Arabic speech acquisition

- Ammar, W., & Morsi, R. (2006). Phonological development and disorders: Colloquial Egyptian Arabic. In Zhu Hua & B. Dodd (Eds.), *Phonological development and disorders in children: A multilingual perspective* (pp. 204-232). 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.

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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 Arabic speech acquisition

Khattab, G. (2006). Phonological acquisition by Arabic-English bilingual children. In Zhu Hua & B. Dodd (Eds.), *Phonological development and disorders in children: A multilingual perspective* (pp. 383-412). Cleavdon, UK: Multilingual Matters.

##### Studies of multilingual Arabic speech acquisition

Languages	Country	Study	Age of children	Total number of children (no. of multilingual children)**	Typically/atypically developing children	Speech /language	Production/perception
Arabic-Swedish	Sweden	Salameh, E.-K., Nettleblatt, U., & Norlin, K. (2003). Assessing phonologies in bilingual Swedish-Arabic children with and without language impairment. <i>Child Language Teaching and Therapy</i> , 19, 338-364.	3;10 – 6;7	20 (20)	typical atypical	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.