

## Voice feature correlates of emphatic /t̤/ and /s̤/ in Jeddah Arabic

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An interesting issue in Arabic phonology and dialectology concerns the voicing characteristics of the coronal emphatic consonants. While they all originate from ejectives in Proto-Semitic voiceless–voiced–ejective (emphatic) triads (Kogan 2011), they have not all undergone the same changes. Emphatic /ð̤/ (/d̤/ in some varieties) is voiced but emphatic /s̤/ is voiceless, and emphatic /t̤/ varies cross-dialectally being contextually voiced in Yemeni (Watson 2002: 14), voiceless unaspirated in Iraqi (Al-Ani 1979: 53–4), and voiceless aspirated in Egyptian (Rifaat 2003: 792). Our research question is whether emphatic /t̤/ and /s̤/, both voiceless in Jeddah Arabic, show in their other voice feature correlates values that differentiate them from voiceless /t s/ and from voiced /d z/. We collected a data set of a total of 600 words (10 speakers x 6 test words of the form /CVC(C)V:C/ (e.g. /χaṭṭa:t̤/ ‘calligrapher’, /χaṣa:ša/ ‘gap, crevice’) x 10 repetitions) recorded by ten adult female native speakers of Jeddah Arabic aged 40–49. The correlates measured were: 1) VOT—Arabic varieties are reported to differ in whether VOT distinguishes /t̤/ from /t/ or not (Khattab et al. 2006: 134–5); 2) duration of intervocalic geminate stops /tt dd t̤t̤/ and singleton fricatives /s z s̤/; 3) duration of the long vowel /a:/ before /t d t̤/, and before /s z s̤/; and 4) F0 at the onset of /a:/ after /tt dd t̤t̤/, and /s z s̤/. Results in summary are as follows. 1) VOT values show that both /tt/ (mean=17ms) and /t̤t̤/ (mean=14ms) fall well within the short lag category as opposed to /dd/ which is prevoiced, indicating that Jeddah Arabic does not use VOT to distinguish the voiceless stop from the emphatic stop, at least in geminate contexts. 2) and 3) Consonant and vowel durations indicate that, as in Jordanian Arabic (Al-Masri & Jongman 2004: 101), duration does not distinguish emphatic from voiceless consonants. They also show that, like many languages, the voiced consonants tend to be shorter than the voiceless ones and vowels tend to be longer before them (Chen 1970). 4) All speakers have higher F0 values after /tt/ than after /t̤t̤/ and /dd/, indicating that in this parameter Jeddah Arabic /t̤/ retains some evidence of its historical non-voicelessness; for seven speakers the same is true of /s/ compared to /s̤/ and /z/ but to a lesser extent. In the other correlates measured /t̤/ and /s̤/ behave as do their voiceless counterparts. We interpret the results to the effect that /t̤/ and /s̤/ are well on the way to completing a historical change from ejectives to fully voiceless consonants.

### References

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