

## Variation in the Acoustic Correlates of Pharyngealization in Jordanian Arabic: Gender and Social Class

The production of pharyngealization/emphasis in Arabic has recently received a great deal of attention in the sociophonetic literature. A few studies have investigated the potential effect of extra-linguistic factors, such as gender, region, and social class, on the production of emphasis in Arabic (Royal 1985, Al-Masri and Jongman 2004, Khattab et al. 2006, Almbark 2008, Abudaljuh 2010). However, these studies have revealed disagreements with respect to the influence of gender on emphasis production. In the context of Jordanian Arabic (JA), Al-Masri and Jongman (2004) reported that emphasis production was more evident in females' speech than in the males'. By contrast, Abudaljuh (2010) finds out that cues of emphasis in JA are more evident in males' speech than in the females'. Interestingly, Khattab et al. (2006) noted that the hypothesis that the male speakers of JA produce 'stronger' emphasis than the females is valid only when controlling for gender per se. After filtering out their sample to include only speakers from Irbid (5 males; 2 females), they found no significant differences in emphasis production between the males and females. Furthermore, they noted that even the female speakers from the same city (Amman) showed significant differences in their production of emphasis, with one speaker, who associated herself with upper class, showing the least emphasis cues. In fact, the data sample in Khattab's study were too small to confirm these observations. Thus, to better understand the effect of gender on emphasis production in JA, one needs to examine gender in a narrower social stratification. This study aims to fill in this gap in the literature by finding out whether the influence of gender on emphasis production in JA, if any, may intersect with the effect of social class.

To achieve this goal, 22 young speakers of JA from two different socioeconomic groups were recorded. They were asked to read a list of monosyllabic minimal pairs containing the plain coronals [t, s, ð] and their emphatic counterparts [t<sup>ʕ</sup>, s<sup>ʕ</sup>, ð<sup>ʕ</sup>] in prevocalic position. The first group of speakers consisted of 10 speakers aged 16-18 (4 males; 6 females) who go to a prestigious high school in Amman, The Islamic Educational College (Arabic Program). The other group of speakers consisted of 12 speakers aged 18-21 (6 male; 6 females) who come from rural areas in the north of Jordan. They were individually recorded in a quiet room using the built-in x/y microphones of ZOOM H4n recorder at a sampling rate of 44,100 Hz at a resolution of 16 bits. The acoustic measurements taken were VOT, friction duration, vowel duration, and vowels' formant frequencies (F1-F3) at the onset and midpoint positions. F1 and F2 values were then normalized using The Vowel Normalization and Plotting Suite web-based interface (Kendall et al. 2010) to reduce the effect of anatomical differences between males and females. The results of the acoustic analyses revealed that the VOT of the voiceless emphatic stop (/t<sup>ʕ</sup>/) was significantly shorter than that of /t/. However, the difference in friction duration between the emphatic fricatives /ð<sup>ʕ</sup>/ and /s<sup>ʕ</sup>/ and their plain counterparts was not statistically significant. In addition, vowels preceded by an emphatic consonant were found significantly longer in duration than those preceded by a plain consonant, and the emphatic vowels had a significantly higher F1 (at the onset), a significantly lower F2 (at onset & midpoint), and a significantly higher F3 (at onset & midpoint) value.

The analysis of the normalized F1 and F2 values showed that gender and social class affect the production of emphasis in two different directions. Male speakers tended to produce more prominent emphasis cues than the females, as they showed a significantly greater degree of F2 lowering and F1 raising than the females. With regards to social class, lower class speakers showed more cues of emphasis than the upper class speakers only in the F1 context. Their F1 value at vowels' onset position in the emphatic context was significantly higher than that of the upper class speakers. The pattern was reversed in the context of F2, however. Upper class speakers showed more prominent emphasis production than the lower class speakers, as evidenced from a greater degree of F2 lowering at the midpoint position than the lower class speakers. Gender × social class interaction for the production of emphasis as manifested in the F1 and F2 values was near significant, indicating that the pattern of gender variation for the production of emphasis was slightly affected by speakers' social class.

## References

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