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Perceptual Deafness as a Consequence of Nonconcatenativeness

A distinguishing feature of Semitic languages such as Arabic and Hebrew is a nonconcatenative morphological system in which consonants and vowels each have a distinct status (Holes 2002, McCarthy 1981, Watson 2007). The root, which consists of consonants such as /k,t,b/ "writing", signals the semantic information, whereas vowels get intercalated to signal affix-like morphosyntactic information, such as voice as in /k**a**t**a**b "wrote" vs. /k**u**t**i**b/ "was written", and agentivization as in /k**aa**t**i**b/ "writer".

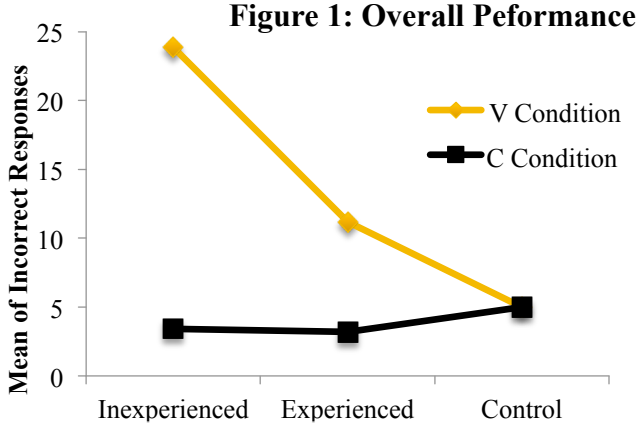
Many researchers (cf. Berent & Shimron, 2002; Bick, Goelman & Frost, 2011; Boudelaa & Marslen-Wilson, 2000 & 2001; Ravid, 2002, among others) have argued that the root is the fundamental unit of the mental lexicon, and that listeners give priority to roots over affixes when processing auditory and written words. Arabic presents an interesting example in which roots and affixes are confounded with consonants and vowels, respectively. Accordingly, I hypothesize that Arabic speakers, especially those who have limited or no exposure to foreign languages, will accurately perceive consonants in foreign or nonsense words, but remain insensitive or "deaf" to vowels.

This hypothesis was examined by testing three types of participants: inexperienced Arabic speakers who have limited exposure to English, experienced Arabic speakers who have learned English for over one year, and control English speakers who speak no Semitic languages. The participants were presented with nonsense words that differed in either a single consonant (jabirfugas – zabirfugas) or a single vowel (jabirfugas – jibirfugas), and their task was to judge whether the words were the same or different. The location of the consonant or vowel difference was varied across four possible word positions. An identity-distractor condition was included as a baseline, as was an unrelated-distractor condition. All of the segments used to construct stimuli occur in the inventories of both English and Arabic. The stimuli were recorded by an English-Arabic bilingual talker.

The findings show that Arabic speakers successfully detected consonant change but were deaf to vowel change, regardless of the vowel or consonant position. This effect was greatest for inexperienced participants, $F(18, 1) = 145.86$, $p < 0.001$, $\eta^2 = 0.89$ (89%), and

contrasted with results for the English native speakers, who showed balanced performance in both conditions, $F(6,1) = 00$, $p > 1$, $\eta^2 = 0.00$ (0%), (see Figure 1). That is, the Arabic speakers reported more *Same* responses in the vowel condition while the English speakers reported almost an equal number of *Same* vs. *Different* in both conditions. This is taken as evidence that the Arabic speakers give perceptual priority to consonants over vowels, and this observation is believed to be a consequence of the nonconcatenative system of Arabic.

Figure 1: Overall Peformance



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