

Maltese root priming is morphological, not phonological

Adam Ussishkin (University of Arizona, USA)

Previous work in Semitic word recognition in (e.g., Boudelaa and Marslen-Wilson 2001, 2004, et seq. for Arabic; Frost et al. 1997, 1998, 2000 for Hebrew, and Twist 2006 for Maltese) addressed the psycholinguistic reality of the consonantal root using visual masked priming to explore the extent to which lexical access involves morphological decomposition into roots and patterns. Such research consistently shows that the discontinuous consonantal root facilitates reaction times in a lexical decision task. Recently, work in the auditory modality (Ussishkin et al. 2015) has confirmed that the same holds for spoken word recognition in Maltese, showing speeded lexical retrieval for Maltese auditory target items when they are auditorily primed by semantically-related items sharing the same consonantal root, regardless of whether the prime is audible or masked.

However, prior work on Maltese priming leaves open the question of whether the priming effects were due solely to overlap in morphological structure or whether they were in part due to phonological and/or semantic relatedness. For Arabic (Boudelaa and Marslen-Wilson 2004) and Hebrew (Frost et al. 1997), phonological overlap was ruled out as a potential source for priming effects but since that work was limited to the visual modality it remains unclear how those results extend to word recognition in the auditory modality. The question is of particular interest in auditory word recognition because of the well known inconsistent effects found for form overlap in languages like English, French, and Dutch, which include both facilitation and inhibition. Here, we address the possible contributions of phonological and semantic relatedness to lexical retrieval in Maltese by taking advantage of an unusual aspect Maltese: half of its lexicon is Semitic, while the other half is non-Semitic. To address phonological overlap in the absence of morphological and semantic relatedness, we tested for priming effects between primes and targets drawn from each half of the lexicon. This enabled us to tease apart potential form-based phonological effects from morphological effects thanks to word pairs with shared consonants. For instance, in the pair *kiber* 'to grow' (Semitic) - *kobra* 'cobra' (non-Semitic) both words contain the consonants *kbr* in the absence of any morphological or semantic relationship. To address semantic relatedness, we also tested prime-target pairs that share consonants yet have no morphological or semantic relationship. In these pairs, both words came from either the Semitic portion of the lexicon (e.g., *sammar* 'to hammer' – *smar* 'to get a tan') or the non-Semitic portion of the lexicon (e.g. *karrotta* 'carrot' – *korrott* 'corrupt').

We used lexical decision with auditory masked priming (Kouider and Dupoux 2005) to test whether prime-target pairs sharing consonants facilitate lexical access. All real word and nonword primes and targets were recorded by a native speaker of Maltese for use as experimental stimuli. 79 native speakers of Maltese participated in the experiment, which tested 96 real word target items counterbalanced among three priming conditions: repetition (prime and target are identical), related (prime and target share all consonants) and a phonological control (prime and target share two of three consonants). In addition, we tested 96 nonword target items and 192 lexically incongruent prime-target pairs as filler items. For real word targets in the related priming condition, we also varied the etymological source of primes and targets (Semitic vs. non-Semitic).

Our results, based on measuring reaction time to each target item, showed an expected facilitation for prime-target pairs in the repetition priming condition. However, no facilitation was found in the related priming condition, where prime-target pairs have a solely phonological relationship. These results indicate that Maltese spoken word recognition is not facilitated by mere phonological overlap; rather, a morphological relationship is required, as is semantic relatedness.