"Cross-linguistic phonetic similarity and lexical co-activation"

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Can L2 learners perceive fine phonetic differences between homophonic words in their L1 and L2 and how does this ability affect cross-linguistic co-activation? Previous research has shown parallel activation of L1 and L2 phonological representations of cognates and similar-sounding words during L2 lexical access (Blumenfeld & Marian, 2007; Marian et al., 2008). Cross-linguistic co-activation seems to depend partly on how well the input matches the representation in fine phonetic detail (Ju & Luce, 2004; Wu et al., 2019).

This study investigates the significance of phonetic similarity between phonemically identical words (cognates, e.g. German/English /fɪlm/, and inter-lingual homophones, ILH, e.g. German–English /fiːl/ 'much'/'feel') for their distinguishability and co-activation during L2 listening. Phonetic similarity between homophonic words was calculated across the whole lexeme based on 37 distinctive articulatory features (Moran & McCloy, 2019).

Advanced L1-German learners of English (n = 58) performed an auditory classification task on language membership and a lexical decision task (LD) with cross-linguistic priming. In the classification task, they heard pairs of cross-linguistically homophonic words and indicated whether they were English, German, or mixed. Distinguishability was hypothesised to decrease with increasing phonetic similarity. In LD, participants heard an English prime word followed by a written German target. Stimuli varied in phonological (Identical vs. Similar vs. Unrelated prime-target), phonetic (continuous: similarity score), and semantic (Cognate vs. ILH) overlap. Identical primes were hypothesised to facilitate cognate recognition and inhibit ILH recognition. Both effects were predicted to increase with phonetic similarity between prime and target.

In classification, learners' accuracy in identifying mixed-language pairs decreased with phonetic similarity (β = -0.06, SE = 0.04, p = 0.08). In LD, recognition of cognates/ILHs was slowed relative to language-specific targets, even in the Unrelated prime condition (β = 22.27, SE = 8.78, p = 0.01). This inhibition effect increased with Similar primes (β = 22.83, SE = 9.02, p = 0.01) but decreased again with (phonemically) Identical primes (β = -15.47, SE = 8.83, p = 0.09; Fig. 1). At the phonetic level, higher similarity attenuated the inhibition effect (β = -135.83, SE = 70.89, p = 0.06) - for cognates irrespective of priming, for ILHs in the Related prime condition (Fig. 2), although the three-way interaction between similarity, priming condition, and word type failed to reach significance (β = -117.72, SE = 82.47, p > 0.1).

These results suggest that phonetic similarity modulates phoneme-level effects in cross-linguistic lexical co-activation in complex ways.

Figure 1: Similarity effect at the phoneme level

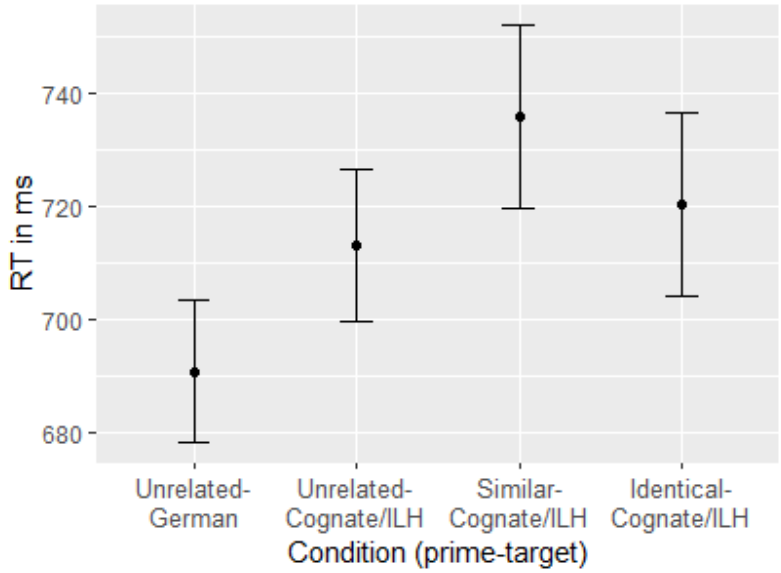
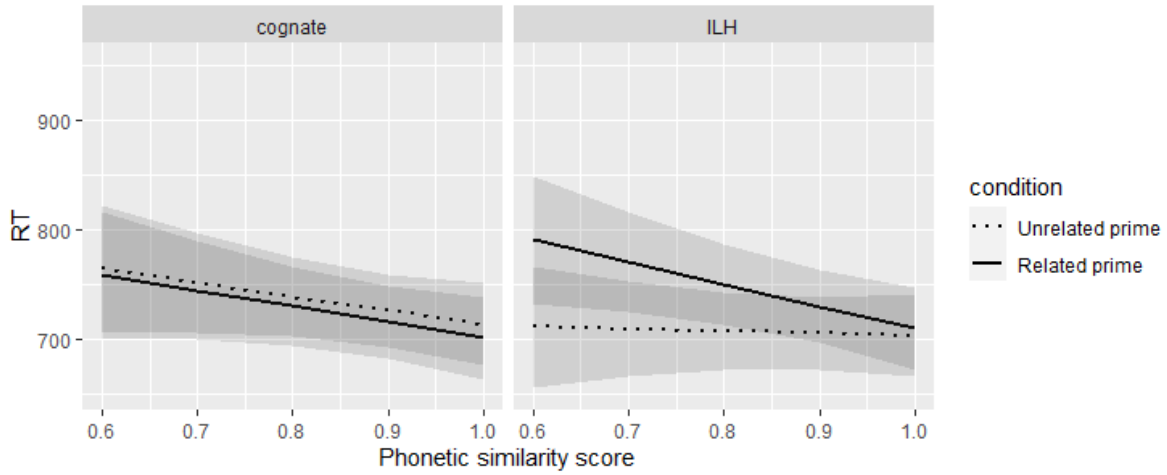


Figure 2: Effect of phonetic similarity (higher similarity to the right)



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