

Abstract for 15th Annual Meeting of the Slavic Linguistics Society

Phonetic distance in cross-lingual priming: Evidence from Bulgarian, Czech, Polish and Russian

Background. The perceptual priming effect is dependent on lexical, syntactic, morphological and phonetic relations between primes and targets. In a cross-linguistic perspective, the size of the effect also corresponds with typological relatedness between languages of primes and targets (Joordens & Becker, 1997; Nicol, 1996; Luce et al., 2000). Studies on priming in the auditory modality showed that correspondence between stimuli is exceptionally significant on the phonetic and phonological levels of speech processing (Slowiaczek & Pisoni, 1986); however, most investigations so far have been conducted on within-language datasets, rarely taking a cross-lingual perspective (Sereno & Jongman, 1992; Lalor & Kirsner 2000; Duyck, 2005; Dijkstra, Hilberink-Schulpen & Van Heuven, 2010).

Aims and Preconditions. This study reveals the relation between phonetic distance and latency based on a cross-lingual, short-time priming framework. Four Slavic languages, i.e. Bulgarian, Czech, Polish and Russian, are investigated. The research outlines the influence of phonetic distance between cognate and non-cognate pairs of primes and targets on response times in a lexical decision task. The primary goal of this work is to calculate the thresholds of phonetic distance causing the *cognate facilitation effect* and the *interlingual inhibition effect* (Costa, Caramazza, & Sebastian-Galles, 2000; Peeters, Dijkstra & Grainger, 2013) for each language pair. The secondary aim is to correlate the subject's proficiency in Slavic languages with test performance. Two hypotheses are tested in the current study: (1) facilitation and inhibition are driven by exposure to primes in related Slavic languages; (2) cross-lingual phonetic distance between prime and target is positively correlated with latency in an auditory lexical decision task.

Material and Method. The stimuli consisted of read-speech samples of true cognates and phonetically-related false cognates. The tokens, controlled for frequency, were obtained from recordings of female native speakers in self-paced reading sessions. The cross-lingual phonetic distance between primes and targets was calculated as the weighted sum of four component scores: similarity of consonantal segments (0.68), similarity of vocalic segments (0.25), syllable structure (0.05), and synchronous and asynchronous nasality (0.02). The consonant similarity score was obtained by taking the mean cosine similarity of pairs of feature vectors representing distinctive features of related consonant segments between primes and targets, offset by the difference in position of the paired consonants within their respective words. The vowel similarity score was calculated by collapsing the distinctive features of the vocalic segments of target and prime into single feature vectors and taking the cosine similarity of these. Native speakers of the target languages were binaurally presented with randomized pairs of primes and targets. Given that a subject's mother tongue is Polish, he/she will be presented with primes in Bulgarian, Czech and Russian preceding Polish targets. The lexical decision task was conducted using the auditory channel exclusively, to avoid cross-modal inferences (Bijeljac-Babic, Biarreau & Grainger, 1997; Allem & Badecker, 2002).

Results. The test performances will be correlated with calculated phonetic distances and the subject's dominant Slavic language. The priming effect will be discussed on a set of true cognates for each language pair as well as on phonetically-close, but semantically-unrelated pairs of Slavic tokens. Finally, in a broader perspective, the outcomes will be introduced via a prism of typological division of the Slavic languages (Sawicka & Holvoet, 1991; Sawicka, 2001) and will be related to the field of Slavic intercomprehension. The final remarks will be presented in the light of language-independent activation of phonological representations among speakers of Bulgarian, Czech, Polish and Russian.

References

- Allen, M., & Badecker, W. (2002). Inflectional regularity: Probing the nature of lexical representation in a cross-modal priming task. *Journal of Memory and Language*, 46(4), 705–722.
- Bijeljac-Babic, R., Biardeau, A., & Grainger, J. (1997). Masked orthographic priming in bilingual word recognition. *Memory & Cognition*, 25(4), 447–457.
- Costa, A., Caramazza, A., & Sebastian-Galles, N. (2000). The cognate facilitation effect: implications for models of lexical access. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26(5), 1283.
- Dijkstra, T., Hilberink-Schulpen, B., & Van Heuven, W. J. (2010). Repetition and masked form priming within and between languages using word and nonword neighbors. *Bilingualism: Language and Cognition*, 13(3), 341–357.
- Duyck, W. (2005). Translation and Associative Priming With Cross-Lingual Pseudohomophones: Evidence for Nonselective Phonological Activation in Bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 31(6), 1340–1359.
- Joordens, S., & Becker, S. (1997). The long and short of semantic priming effects in lexical decision. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 23(5), 1083.
- Lalor, E., & Kirsner, K. (2000). Cross-lingual transfer effects between English and Italian cognates and noncognates. *International Journal of Bilingualism*, 4(3), 385–398.
- Luce, P. A., Goldinger, S. D., Auer, E. T., & Vitevitch, M. S. (2000). Phonetic priming, neighborhood activation, and PARSYN. *Perception & psychophysics*, 62(3), 615–625.
- Nicol, J. L. (1996). Syntactic priming. *Language and cognitive processes*, 11(6), 675–680.
- Sawicka, I., & Holvoet, A. (1991). *Studies in the phonetic typology of the Slavic languages*, Warszawa, Slawistyczny Ośrodek Wydawniczy.
- Sawicka, I. (2001). *An outline of the phonetic typology of the Slavic languages*. Wydawnictwo Uniwersytetu Mikołaja Kopernika.
- Sereno, J., & Jongman, A. (1992). Phonetic priming effects in auditory word recognition. *Working Papers of the Cornell Phonetics Laboratory*, 7, 151–177.
- Slowiaczek, L. M., & Pisoni, D. B. (1986). Effects of phonological similarity on priming in auditory lexical decision. *Memory & Cognition*, 14(3), 230–237.