Morphological Priming of Dutch Complex Verbs is Independent of Semantic Transparency

This paper provides novel psycholinguistic evidence that morphological structure is explicitly represented in memory (cf., Stockall and Marantz 2006; Taft 2004), contra previous claims that morphology should be attributed to mere interactions between form and meaning (e.g., Baayen et al. 2011; Gonnerman et al. 2007). The extent to which morphemes are semantically compositional has been shown to influence morphological decomposition in French and English (Feldman et al. 2004; Longtin et al. 2003; Marslen–Wilson et al. 1994; Rastle et al. 2000), but not in German (Smolka et al. 2014). This paper investigates the role of semantic transparency in the lexical representation of morphologically complex verbs in Dutch, while teasing apart semantic and morphological effects. We show that morphological priming is independent of semantic transparency in Dutch complex verbs, similar to the German results.

Method 32 adult native speakers of Dutch took part in an auditory primed lexical decision experiment which manipulates prime–target pairs with respect to their morphological, semantic, and phonological relatedness. Simplex stems (e.g., *bieden*, 'offer') function as targets, and are primed by prefixed and particle verbs that are either both semantically and morphologically related (MS: *aan-bieden*, 'offer'), only morphologically related (M: *ver-bieden*, 'forbid'), phonologically related (Ph, *be-spieden*, 'spy'), or unrelated (C: *op-jagen*, 'hurry, rush'). Critical items were distributed over 4 lists according to a Latin Square Design, so that participants saw each target word only once.

Table 1: Conditions and example critical items in Experiment 1, for the stem (i.e. the target) and the primes in the both Morphologically and Semantically related (MS), purely Morphologically related (M), Phonological (Ph) related, and Control conditions.

Stem	MS	M	Ph	Control
bieden 'offer'	*aanbieden* 'offer'	*verbieden* 'forbid'	*bespieden* 'spy'	*opjagen* 'hurry, rush'
werpen 'throw'	*afwerpen* 'throw off'	*ontwerpen* 'design'	*aanscherpen* 'sharpen'	*uitdraaien* 'print out'
houden 'hold, keep'	*behouden* 'retain, keep'	*ophouden* 'stop'	*aanschouwen* 'see'	*vermijden* 'avoid'

Results Mixed effects models were used to analyze inverse-transformed response times, which indicated that both morphologically and semantically related (MS), and only morphologically related (M) complex verbs significantly facilitate lexical decision of their stem compared to the control condition (C) ($p<0.05$), while the phonological condition did not ($p=0.109$) (Figure 1). In line with the aforementioned German results, Dutch complex verbs semantic relatedness is not a precondition for the occurrence of morphological priming, suggesting that morphological identity is distinct from mere semantic and phonological similarity.

We will also report on follow-up studies that are currently being conducted, which include primes that are semantically but not morphologically related (e.g., *ver-lenen*, 'offer, grant'), and manipulate the number of intervening items between prime and target to further disentangle semantic and morphological effects (cf., Kouider and Dupoux 2009).

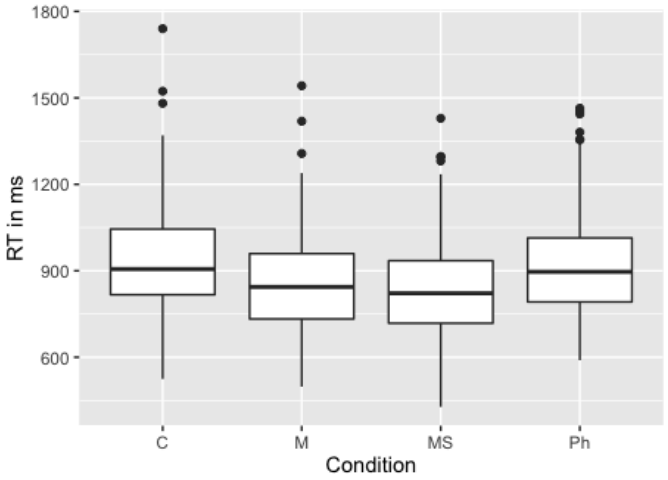

Figure 1: Reaction times in Experiment 1 for the Control (C) condition, the purely Morphologically related (M), both Morphologically and Semantically related (MS), and Phonologically related (Ph) conditions.

References

Baayen, R. H., Milin, P., Đurđević, D. F., Hendrix, P., & Marelli, M. (2011). An amorphous model for morphological processing in visual comprehension based on naive discriminative learning. *Psychological Review*, *118*(3), 438–481.

Feldman, L., Soltano, E., Pastizzo, M., & Francis, S. (2004). What do graded effects of semantic transparency reveal about morphological processing? *Brain and Language*, *90*(1), 17–30.

Gonnerman, L. M., Seidenberg, M. S., & Andersen, E. S. (2007). Graded semantic and phonological similarity effects in priming: Evidence for a distributed connectionist approach to morphology. *Journal of Experimental Psychology: General*, *136*(2), 323–345.

Kouider, S. & Dupoux, E. (2009). Episodic accessibility and morphological processing: Evidence from long-term auditory priming. *Acta Psychologica*, *130*(1), 38–47.

Longtin, C.-M., Segui, J., & Halle, P. A. (2003). Morphological priming without morphological relationship. *Language and Cognitive Processes*, *18*(3), 313–334.

Marslen–Wilson, W. D., Tyler, L. K., Waksler, R., & Older, L. (1994). Morphology and meaning in the English mental lexicon. *Psychological Review*, *101*(1), 3–33.

Rastle, K., Davis, M. H., Marslen-Wilson, W. D., & Tyler, L. K. (2000). Morphological and semantic effects in visual word recognition: A time-course study. *Language and Cognitive Processes*, *15*(4-5), 507–537.

Smolka, E., Preller, K. H., & Eulitz, C. (2014). 'Verstehen' ('understand') primes 'stehen' ('stand'): Morphological structure overrides semantic compositionality in the lexical representation of German complex verbs. *Journal of Memory and Language*, *72*, 16–36.

Stockall, L. & Marantz, A. (2006). A single route, full decomposition model of morphological complexity: MEG evidence. *The Mental Lexicon*, *1*(1), 85–123.

Taft, M. (2004). Morphological decomposition and the reverse base frequency effect. *Quarterly Journal of Experimental Psychology Section A*, *57*(4), 745–765.