

Do syntactic factors influence processing of single verbs?

Two syntactic factors, the number of complements and the number of complementation frames (i.e. syntactic frames), were extracted from the CELEX database (Baayen, Pipenbrock and Van Rijn, 1993) and their influence on processing of single verbs was examined in three lexical decision tasks. Experiment 1 showed the number of complements has an inhibitory influence on the processing of transitive verbs: verbs with a higher number of complements were processed slower. Experiment 2, in which the number of complementation frames was varied, indicated that opposite to the number of complements, this factor facilitated verb processing: verbs with higher number of complements were processed faster. To compare the influence of the number of complements and the number of complementation frames in Experiment 3 neither factor was systematically varied. The results revealed the number of complementation frames as of principal influence on verb processing. The influence of the number of complementation frames was best captured by the entropy of the syntactic paradigm. This suggest that all complementation frames compatible with a verb combine to form its syntactic paradigm and that verb processing is influenced by the number of and by the characteristics of all compatible complementation frames. Also, processing of one frame will be influenced by the characteristics of all other frames compatible with that verb. The complexity of paradigmatic structure has already been identified as a genuine independent factor in lexical processing (Baayen, 2007). In addition to a significant contribution of the number of complementation frames stepwise regression analysis showed a significant contribution of the number of complements, indicating that both factors influence processing of single verbs. The influence of the number of complements, the number of complementation frames and verb lemma frequency were encompassed in a single measure of the informational complexity of verbs: the information residual (IR).

Difference in the direction of the effects of the number of complements and the number of complementation frames supports the dichotomy of verb meaning proposed by Goldberg (1995; 2006) and Rappaport Hovav and Levin (Rappaport Hovav and Levin, 1998; Levin and Rappaport Hovav, 2005). Both approaches suggest that the overall meaning of a verb is determined compositionally by its core meaning and the meaning of syntactic structure. Being necessary to define the minimal meaning of verbs (Levin and Rappaport Hovav, 2005) we can assume that the number of complements refers to the idiosyncratic aspects while the number of complementation frames refers to the structural aspects of verb meaning. In addition, it is important to note that the way complementation frames were defined in the CELEX database, aside from denotation of distinct syntactic structures, also refers to the specific meanings of verbs. Assuming that complements and complementation frames refer to different aspects of verb meaning we can propose that they are represented and processed in a different way and therefore have different influence on processing of single verbs.

References

- Baayen, R. H. (2007). "Storage and computation in the mental lexicon," in Jarema, G., and Libben, G., eds., *The Mental Lexicon: Core Perspectives*. Oxford: Elsevier.
- Baayen, R.H., Piepenbrock, R., & Van Rijn, H. (1993). *The CELEX lexical database* (CD-ROM). Philadelphia, PA: Linguistic Data Consortium, University of Pennsylvania.
- Goldberg, A. E. (1995). *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago: University of Chicago Press.
- Goldberg, A. E. (2006). *Constructions at Work: The Nature of Generalization in Language*. New York: Oxford University Press Inc.
- Levin, B., & Rappaport Hovav, M. (2005). *Argument Realization*. Cambridge: Cambridge University Press.
- Rappaport Hovav, M., and Levin, B. (1998). "Building Verb Meanings," in Butt, M. , and Geuder, W., eds., *The Projection of Arguments: Lexical and Compositional Factors*, CSLI Publications, Stanford, CA, 97-134.