

## Parsing is not weaknessless: suffix ordering revisited

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There is a long-standing debate about the principles and mechanisms that constrain the combinatorial properties of affixes, in particular of English suffixes. Most recently, Hay (2002) and Hay and Plag (2004) have proposed a psycholinguistically plausible and empirically adequate model of Complexity-Based Ordering, which combines processing constraints and selectional, i.e. grammatical, restrictions to predict possible and impossible suffix combinations. According to this model affixes can be approximately ordered along a hierarchy of complexity, with more separable affixes at one end, and less separable affixes at the other end. More separable affixes can attach outside less separable affixes, but not vice-versa. Only well parsable combinations are possible combinations, and this range of possible combinations is then further curtailed by selectional restrictions.

The present paper extends Hay and Plag's research program in three important ways. First, the model is submitted to even more serious empirical challenges by doubling the set of English suffix combinations under investigation from 210 (15 suffixes) to 870 (30 suffixes). Second, the ranking of the set of 30 suffixes is tested against experimental data on processing complexity as gauged by latencies in word naming and visual lexical decision tasks. This is especially interesting, because Hay and Plag's model was founded mainly on frequency-based evidence for processing complexity (hapax legomena, type and token frequencies, automatic parsing models). We now investigate whether the model survives the test of more direct behavioral evidence. Third, the paper tests the theory of Complexity-Based Ordering on a different language, Dutch.

The overall results strongly support the Complexity-based Ordering hypothesis for English. As predicted, the extended set of suffixes forms a clear hierarchy. Furthermore, independent experimental psycholinguistic evidence supports the claim that a higher rank in the ordering correlates with increased parsability. Statistical modeling shows, however, that there is a second principle at work in word naming that is opposite to the principle of parsing complexity: Affixes with greater facilitation from base-driven processing suffer from greater baseline processing complexity, with baseline processing complexity entering into a positive correlation with the complexity-based rank of a given suffix in the hierarchy. Based on these findings we argue that the theory of Complexity-Based Ordering has been one-sided in its exclusive focus on the role of rules, and that it requires supplementation by a second and equally important focus on the role of memory.

For Dutch, no correlations of hierarchical rank with measures of parsability were present. This shows that tightly constrained suffix orders as observed for English are not a morphological universal, and it remains to be shown how different patternings in the derivational morphology of different languages can be explained.

## **Reference**

- Hay, Jennifer. 2002. From Speech Perception to Morphology: Affix-ordering Revisited. *Language* 78.3, 527-555.
- Hay, Jennifer & Ingo Plag. 2004. What constrains possible suffix combinations? On the interaction of grammatical and processing restrictions in derivational morphology. *Natural Language and Linguistic Theory* 22, 565-596.