

“Phonological Theory and Phonological Processing”

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Phonological grammar influences phonological processing *inter alia* as follows:

- (i) *Word-likeness*. When listeners have to rate non-words for their word-likeness, they assign lower ratings to non-words that are less well-formed according to the grammar.
- (ii) *Lexical decision*. In lexical decision tasks, listeners are quicker to reject non-words that are less well-formed.

Under this assumption, we can use data from phonological processing to inform and/or test the formal analyses that we develop for the phonology of some language. I illustrate this with an example from the phonology of English.

English allows words of the form [sTvT] (*state, stout*, etc.), but not of the form [sPvP] or [sKvK] (**spape, *skake*). We can account for this in Optimality Theory with the ranking $\ll\{*\text{sPvP}, *\text{sKvK}\} \gg \text{Faithfulness} \gg *\text{sTvT}\ll$. But what about the ranking between $*\text{sPvP}$ and $*\text{sKvK}$? In general, English restricts the co-occurrence of labials more severely than the co-occurrence of dorsals – [sKvCK] is allowed (*skunk, skulk*) while [sPvCP] is not allowed (**spump, *spulp*). Although neither [sPvP] nor [sKvK] is allowed in English, I therefore hypothesize that [sPvP] is less well-formed than [sKvK], implying the ranking $\ll*\text{sPvP} \gg *\text{sKvK}\ll$.

The complete ranking is then: $\ll*\text{sPvP} \gg *\text{sKvK} \gg \text{Faithfulness} \gg *\text{sTvT}\ll$. This analysis implies the following well-formedness relation: $\ll\text{sTvT} \sqsupset \text{sKvK} \sqsupset \text{sPvP}\ll$. Based on the assumption that phonological grammar does influence processing, we can hypothesize that this well-formedness relation will be reflected in word-likeness ratings and in lexical decision reaction times.

I will discuss the results of two sets of experiments that confirm this hypothesis. In particular: (i) *Word-likeness*. In a word-likeness experiment, English listeners rated [sTvT] non-words the best, [sKvK] non-words received intermediate ratings, and [sPvP] non-words received the lowest ratings. (ii) *Lexical decision*. In a lexical decision experiment, listeners were slowest to detect [sTvT] non-words, and fastest to detect [sPvP] non-words. [sKvK] non-words occupied an intermediate position.

Both of these two sets of results are consistent with the well-formedness relation $\ll\text{sTvT} \sqsupset \text{sKvK} \sqsupset \text{sPvP}\ll$ implied by the ranking $\ll*\text{sPvP} \gg *\text{sKvK} \gg \text{Faithfulness} \gg *\text{sTvT}\ll$.