Aggregate and Positional Effects on Sound-Symbolic Semantic Inference

We report on a study into the semantic inferences supported by the phonological properties of novel words. Kohler (1947) was one of the first to demonstrate sound symbolic effects, showing a strong tendency to associate the words "takete" and "maluma" with an angular and a rounded shape, respectively. These findings link sonorant consonants with attributes connoting smoothness and roundness, and obstruents with attributes connoting sharpness (see also Nielsen & Rendall 2011). Beyond properties of size and shape, sound symbolic effects also support inferences about more abstract properties such as speed and reliability (e.g. Kelly, Leben, & Cohen 2003). However, despite a sizeable body of work, the majority of recent sound symbolism research has been restricted to minimal pairs, differing in initial sound, or has not been experimental in nature (e.g. Abel & Glinert 2008). We extend previous findings by examining sound symbolic distinctions at multiple locations within a word, their aggregate effects, and differences at the natural class level.

We created 42 unique pairs of novel words; all words had a CVCVC structure and identical vowel sounds. Participants (n=300) were presented with pairs of these words (e.g. KOSSEM and TOFFET), and asked to choose which of the two words better captured a given property. To ground the task and facilitate a wider range of inferences, the words were presented as the names of new products. Six product contexts were chosen: three with an expected sonorant bias (e.g. *Which new dishwasher would you expect to be quieter?*), and three with an expected obstruent bias (e.g. *Which new cleaner would you expect to be tougher on stains?*). Across participants each word pair appeared in one sonorant-favoring and one obstruent-favoring context.

Data were analyzed via a series of mixed-effects logistic regression models. A model incorporating a three-way interaction between the two words' initial sounds and the class of contexts (sonorant-favoring or obstruent-favoring) fits the data significantly better than an intercept-only baseline model ($\chi^2(7) = 286.48$, $p < .00001$). The greatest single effect was that of the total number of sonorants vs. obstruents in each word, again in a three-way interaction with context class and compared to an intercept-only baseline ($\chi^2(7) = 792.52$, $p < .00001$). However, a model combining initial sound information with total sound count performed better still ($\chi^2(6) = 65.553$, $p < .00001$).

Based on our analysis, our study makes several contributions to research on sound symbolic inference. First, sound symbolic effects appear to aggregate: for example, TOFFET (three obstruents) was favored over KOSSEM (two obstruents) as the name of a tough-on-stains cleaner (64%-36%), and conversely KOSSEM was favored as the name of a quiet-running dishwasher (68%-32%). This shift in preference indicates that participants were performing different semantic inferences in different contexts, suggesting sound symbolism at the natural class level may be abstractly represented. We also show that the first sound has the greatest symbolic impact: MOGGET was favored over TOGGEM as the name of a mellow whiskey (58%-42%), though the two words are composed of the same sounds.

References

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