Quantifying *cronuts*: Predicting the quality of blends

Overview: The properties of lexical blends are of interest in the study of word formation and have recently attracted public attention thanks to high-profile blends like *cronut* and *sharknado* (Zimmer et al. 2014). Previous studies examining the phonological structure of blends have proposed criteria for formation, such as maximizing the number of source-word phonemes preserved (Gries 2004) and requiring formation along major phonological boundaries (Kelly 1998). Following from evidence that hearers' predictions from partial-word input arise from statistical properties of the lexicon (e.g., Allopenna et al. 1998), we develop quantitative measures of the ease of identifying the source words of a blend and use them to predict the blend's human-rated quality.

Design: We examined 63 blends observed in common usage, all linear blends of two English words (e.g., *sext*, *mansplain*, *frenemy*), neither of which was a proper noun. For both words in each blend, we computed an *identification probability* (p_{id}), the probability of recognizing that word given the portion of it contained in the blend. For *chillax* ([tʃɪlæks], *chill* + *relax*), the first-word p_{id} is the ratio of *chill*'s frequency to the total frequency of all words beginning with [tʃɪl] (*chill*, *chili,* etc.). Equivalently, the second-word p_{id} is computed using the frequencies of *relax* and all words ending in [læks] (*relax, flax,* etc.). We also computed the *content ratio* (r_c), the proportion of the full phonological content of each word that is retained, 1.0 for *chill* and 4/6 for *relax* in *chillax*. CMUdict pronunciations and SUBTLEXus frequency estimates were used; transparently inflected/derived words were excluded. Participants rated the quality of each blend on a 1-5 scale and noted whether they understood its decomposition without explanation. Quality ratings were analyzed using maximal mixed-effects probit-link regression; statistical significance was assessed by chi-square log-likelihood ratio.

Results: Modeling of ratings using p_{id} and r_c for both words showed a significant effect of first-word p_{id} ($\chi^2(1) = 11.7$, $p < 0.001$); raters preferred high first-word p_{id} blends (Figure 1) but were not sensitive to other metrics (all $p > 0.05$). Failing to find a significant effect of second-word p_{id} may be attributed to its generally high value (Figure 2). This model predicts that small changes in the number of segments preserved may cause large rating differences stemming from swings in p_{id}; *frenemy* preserves only one more first-word segment than *framily*, but its first-word p_{id} is 6.8 times greater and it is rated 2.8 points higher. We conclude that blend quality is best predicted not by the number of segments retained, but by their usefulness in predicting source words.

Extensions: We will use the obtained ratings to enable generation of optimal blends based on a weighted combination of phonological well-formedness and identification probability. Further extensions to these metrics might address name blends (*Kimye*) and blends relying on semantic domain restrictions (*craisin*).

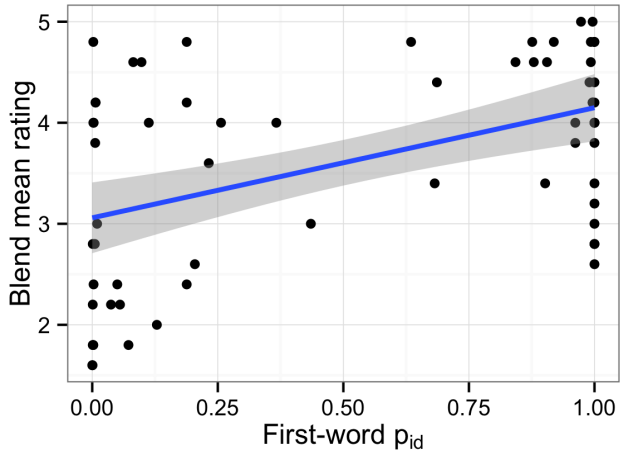

Figure 1: Blend ratings and first-word p_{id}, with linear fit.

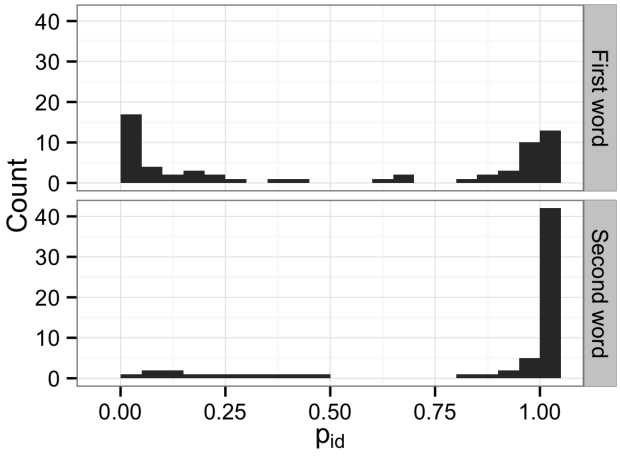

Figure 2: Histogram of p_{id} values for first and second words.

Word count: 493

References:

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