1 The Exemplar Copy-And-Tweak Model

This model assumes that people represent categories as a collection of stored observations. When prompted to generate new examples, they copy and randomly tweak one of the stored examples. Thus, the model's generation is a two-part process:

1. Select a source example from memory.
2. Generate an example that is similar-but-not-too-similar to the source.

More formally, let x be a j-exemplar by k-feature matrix, corresponding to the stored exemplars associated with the target category. The probability that a source example z is selected is uniform across all exemplars. After a source exemplar z is selected, similarity between candidate generation options y is computed:

$$s(y, z) = exp(-c \sum_k |y_k - z_k| w_k) \tag{1}$$

Where c and w_k are the standard specificity and attention weights discussed elsewhere. The goal of the model is to generate an item that is similar but sufficiently tweaked from the source. Thus, probability a candidate stimulus will be generated is given by:

$$p(y|z) = \frac{\exp\{\theta \cdot s(y, z)\} I(s(y, z) \leq \tau)}{\sum_i \exp\{\theta \cdot s(y_i, z)\} I(s(y_i, z) \leq \tau)} \tag{2}$$

where θ is a response determinism parameter, τ is the similarity threshold, and $I(\cdot)$ is the indicator function, which returns 1 when it is passed a true expression and 0 otherwise. So, $I(s(y, z) \leq \tau)$ is 1 when the candidate exemplar y is tweaked enough. When $\tau = 1$, the threshold has no effect.

To obtain predictions not depending on a given source example, the model's predictions can be aggregated over all possible sources:

$$p(y) = \sum_z p(z)p(y|z) \tag{3}$$