
Balancing habit and control in language production

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Sentence production requires a balance between creativity and routine. On the one hand, lexical selection needs to match the listener's expectations and be consistent with previous contexts where similar meanings have been expressed. On the other hand, to express new information, the sentence must be somewhat novel, requiring creativity. We introduce a model of language production that addresses how speakers balance novelty and consistency (Harmon & Kapatsinski, 2021). In the model, the selection of a word depends on both the sentential context and top-down cues from the intended message. We discuss how reliance on these cues account for two types of errors in sentence production: habit slips, and over-extensions. We further extend the model by discussing how it can be combined with a novel inhibitory mechanism, the Negative Feedback Cycle (Kapatsinski, 2022).

The model suggests that production errors can arise either from a misleading influence of the preceding context, or from misleading top-down input from the production plan. When the speaker relies too much on the preceding context, they can produce a habit slip. Habit slips favor words that are predictable from context and rare in other contexts. For example, Benjamin Netanyahu once referred to Boris Johnson as Boris Yeltzin. Boris is expected to be an exceptionally good cue to Yeltzin in Netanyahu's experience, because Boris frequently co-occurred with Yeltzin, and because Yeltzin rarely occurred in any other context. Habit slips provide crucial evidence for contextual cueing of upcoming words. The second type of error that the model accounts for is errors involving overextension. These errors arise from the fact that semantic representations are distributed. Therefore, any intended message activates unintended words whose meanings overlap with the intended meaning. When the intended word is infrequent and shares much of its meaning with a frequent word, the shared semantic cues can activate the frequent competitor more than the intended word, leading to its production.

Still, in the absence of impairment, most of the time the intended message is produced in a conventional way. We describe an activation-based mechanism which suppresses the production of forms that would strongly activate unintended semantics (Kapatsinski, 2022). Applications of this Negative Feedback Cycle mechanism are illustrated.

References: • Harmon, Z., & Kapatsinski, V. (2021). A theory of repetition and retrieval in language production. *Psychological Review* 128(6), 1112-1144. • Kapatsinski, V. (2022). Morphology in a parallel, distributed, interactive architecture of language production. *Frontiers in Artificial Intelligence* 5.