Production predictions: Word duration under two theories

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INTRODUCTION

Word durations and reaction times are sensitive to many cognitive and linguistic factors, but different stages of the production process seem to be sensitive to different aspects of planning.

Prevailing theories do not outline what levels of the production system relate to timing measures (e.g., Kahn & Arnold, 2012; 2015)
Semantic relatedness affects reaction times (e.g., Chen & Mirman, 2012; Wheeldon & Monsell, 1994)
Phonological overlap affects durations of targets (e.g., Sevald & Dell, 1994; Watson, Buxó-Lugo, & Simmons, 2015)
Lexical planning can impact both measures (see Fink, Oppenheim, and Goldrick, 2018)

Research question: How do onsets and durations reflect the word production process (e.g. Levelt, Roelofs, & Meyer, 1999)?

METHODS

We manipulated the semantic and phonological relatedness between words across utterances and assessed the effects on timing measures.

Participants: 61 native English speakers recruited through Vanderbilt’s subject pool completed both Experiments 1 and 2 (order of experiments randomly assigned)

Design: Participants saw sets of four objects in a display. They described two discrete events (a prime that shrinks, and a target that flashes) from the same display.

Dependent variables: Onsets to target word (including article) and target word durations.

CONCLUSIONS

We demonstrate that different levels of linguistic representation differentially affect phonetic duration:

1. A word’s semantic representation primarily affects speech timing before a word is articulated
2. Phonetic and articulatory processes primarily affect durations within a word

Our results suggest that there are at least two domains over which production planning influences speech timing.

We propose that:

• Interference at one level does not necessarily affect fluency across the board.
• Interference from one level should only affect production fluency if that level is currently engaged.

REFERENCES


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