

Differences between sequential ordering in speech and typing

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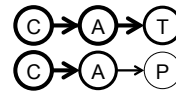
When and where do we slow down when producing similar sequences?

- When typists and speakers produce two overlapping words (e.g. CAT-CAP) they slow down (Snyder & Logan, 2014; Yiu & Watson, 2015)
- Response competition is common to both typing and speaking.
 - Typing – slowdowns **at the divergent key**
 - Speech – slowdowns **throughout the word** (Sevold & Dell, 1994)
- Goals:**
 - Understand response competition differences between speaking and typing.
 - Is typing most consistent with **chaining** or **lexical** theories?

Chaining theories versus lexical theories

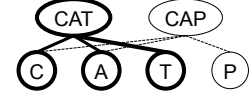
Repetition priming in a chaining theory

- “cat” → “cat” = facilitation on transitions **and** keys or phonemes
- “cat” → “cap” = interference at the connection between “a” and “p”



Repetition priming in a lexicalized theory

- “cat” → “cap” = facilitation on retrieval of first sound (“c”)
- Interference throughout the word
- “cap” competes with “cat” (Yiu & Watson, 2015)



Exp. 1: Visual cues prime production

Goals:

- Replicate Snyder and Logan (2014)

Task:

- 4 letter sequence presented on the screen (e.g. HAIR)
- Typists either produce prime from memory (GO) or they are given a different TARGET (another 4 letter sequence) to type
 - Targets overlap completely (HAIR) OR share the first 3 (HAIL), 2 (HAND), 1 (HOME), or none (BLUE)
- Chaining theories predict slowdown only at the first divergent letter

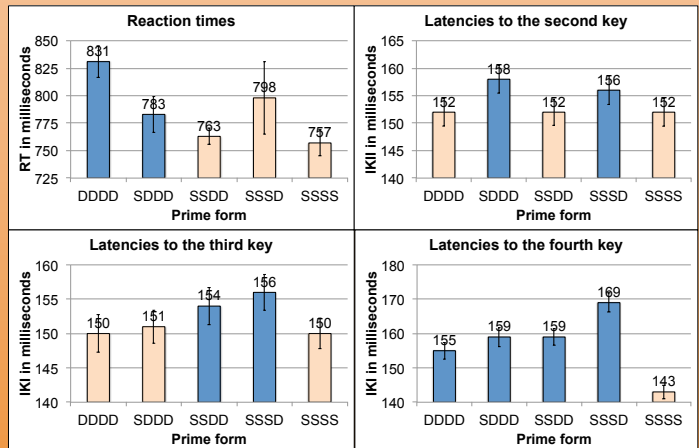
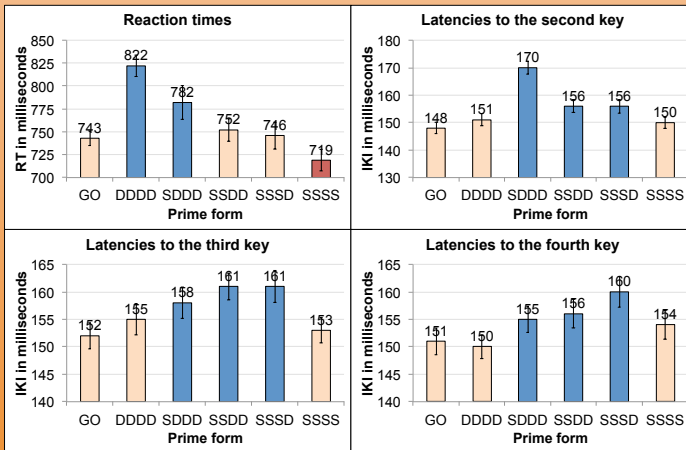
Exp. 2: Primes produced prior to production

Goals:

- Identify whether task demands contributed to this distributed slowdown
- See if results replicate using a task more analogous to speech production experiments (e.g. Yiu & Watson, 2015)

Task:

- Participants type the prime instead of using it as a cue to production.



References

- Sevold, C. A., & Dell, G. S. (1994). The sequential cuing effect in speech production. *Cognition*, *53*, 91–127.
- Snyder, K. M., & Logan, G. D. (2014). The problem of serial order in skilled typing. *Journal of Experimental Psychology: Human Perception and Performance*, *40*, 1697–1717.
- Yiu, L. K., & Watson, D. G. (2015). When overlap leads to competition: Effects of phonological encoding on word duration. *Psychonomic Bulletin & Review*, *22*, 1701–1708.

Conclusions

- Sequencing problems of speech production and typing are similar
- Typists slow down throughout the word when a prior motor plan differs from the current one,
- Typing slowdowns analogous to speech production
- The data are most consistent with a lexicalized theory of typing
- Less consistent with chaining theories