

Theoretical motivation

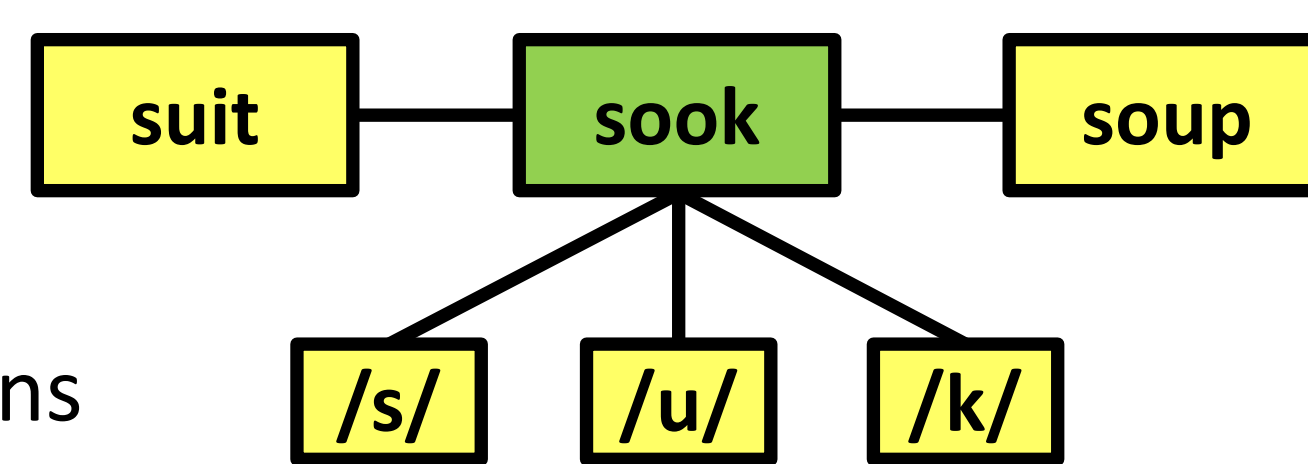
What does it take for a novel word-form to become lexically integrated?

- What kind of information is required?
- What kind of training is required?

By examining these factors we get closer to understanding the process of novel word learning.

Background

- Words have the property of interacting with other words and with phonological representations.
- Learning a novel word entails the development of such properties.
- Specifically, learning a novel word entails linking its phonological word-form with:
 - Its sub-lexical features
 - Other lexical representations
- Once learned, these “linkages” allow the newly learned word to interact with its features and with other words (e.g. inter-lexical inhibition).



Question:

- What does it take for these links to form?
- Gaskell & Dumay (2003): **meaning is not necessary** for a newly learned word (e.g. *cathedruke*) to inhibit a similar known word (e.g. *cathedral*).
 - effect only showed up 2 days after the first exposure.
- Lindsay & Gaskell (2012): **sleep is not necessary**.
 - But *interleaved* exposure to *neighboring known* words is.

Remaining questions:

- Can competition effects arise immediately after training?
- Is interleaved exposure to neighboring words necessary?

Method

Subjects: 36 undergraduate students

Materials: 20 monosyllable non-words (e.g. *sook*)

- Each has two real words differing only in the place of articulation of the final stop consonant.
- 20 triplets in total

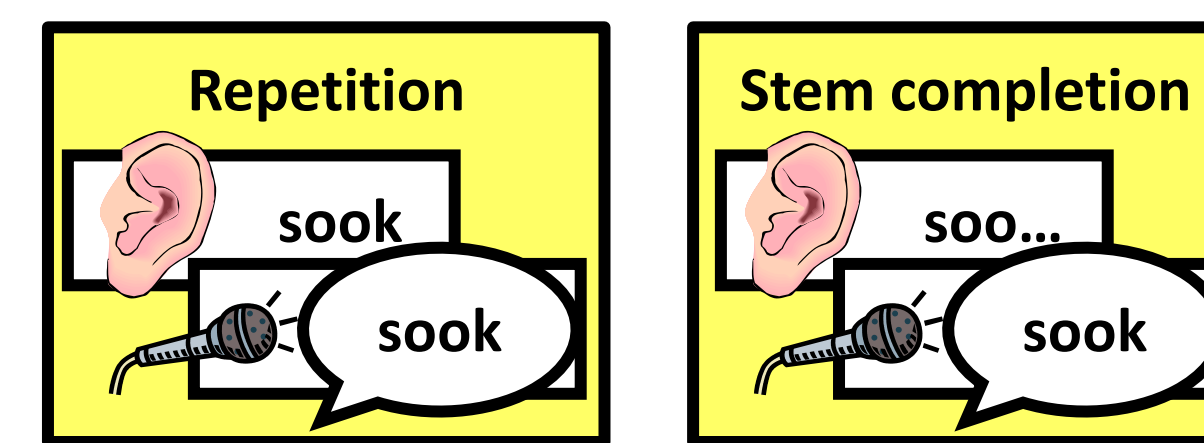


Method (continued)

Procedure:

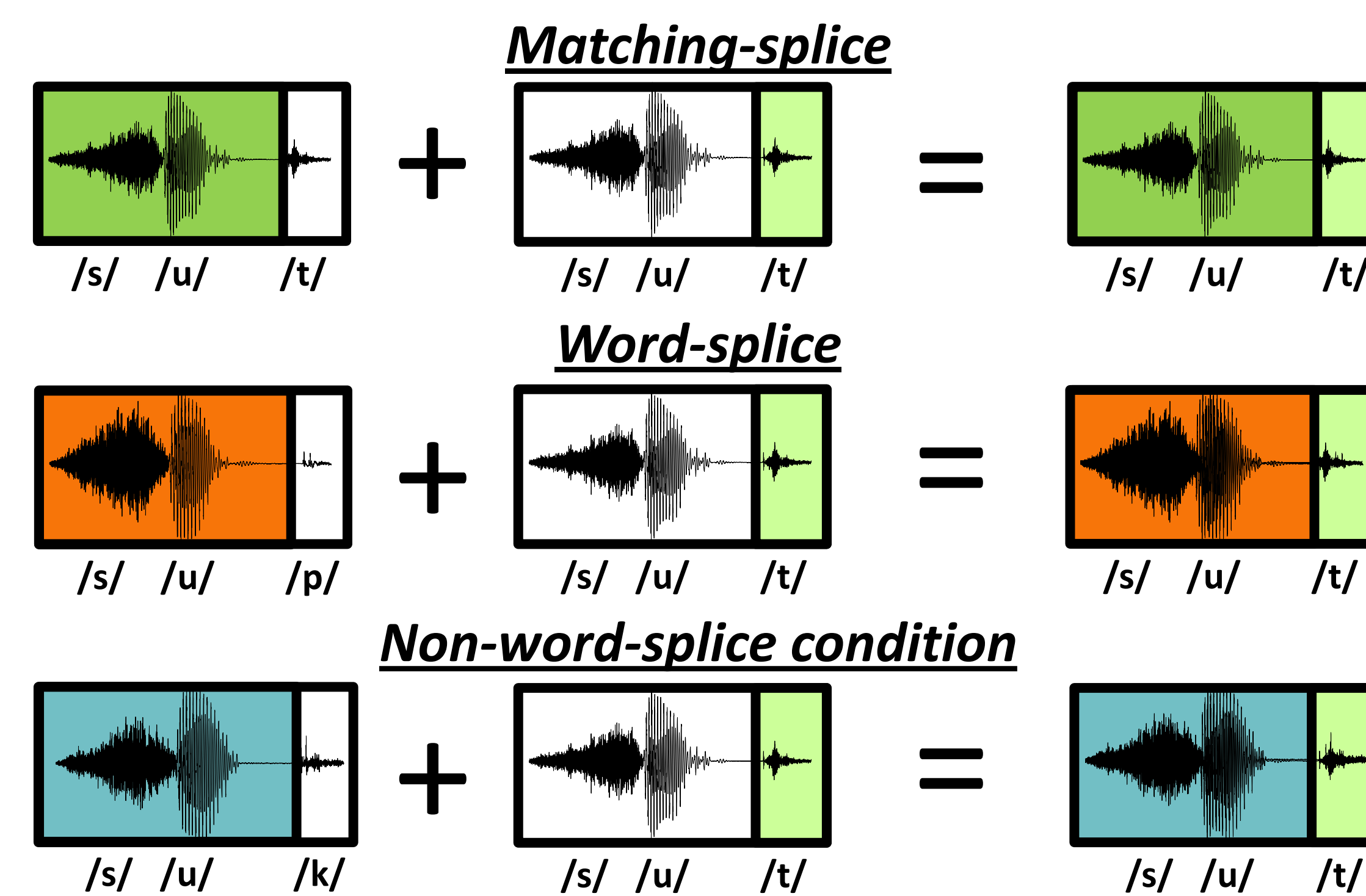
Training:

- 10 were left **untrained**
- 10 (of the 20) non-words were **trained**
- Which 10 counterbalanced across participants
- Alternating repetition and stem completion blocks (x11)
- Each non-word was presented once in every block.



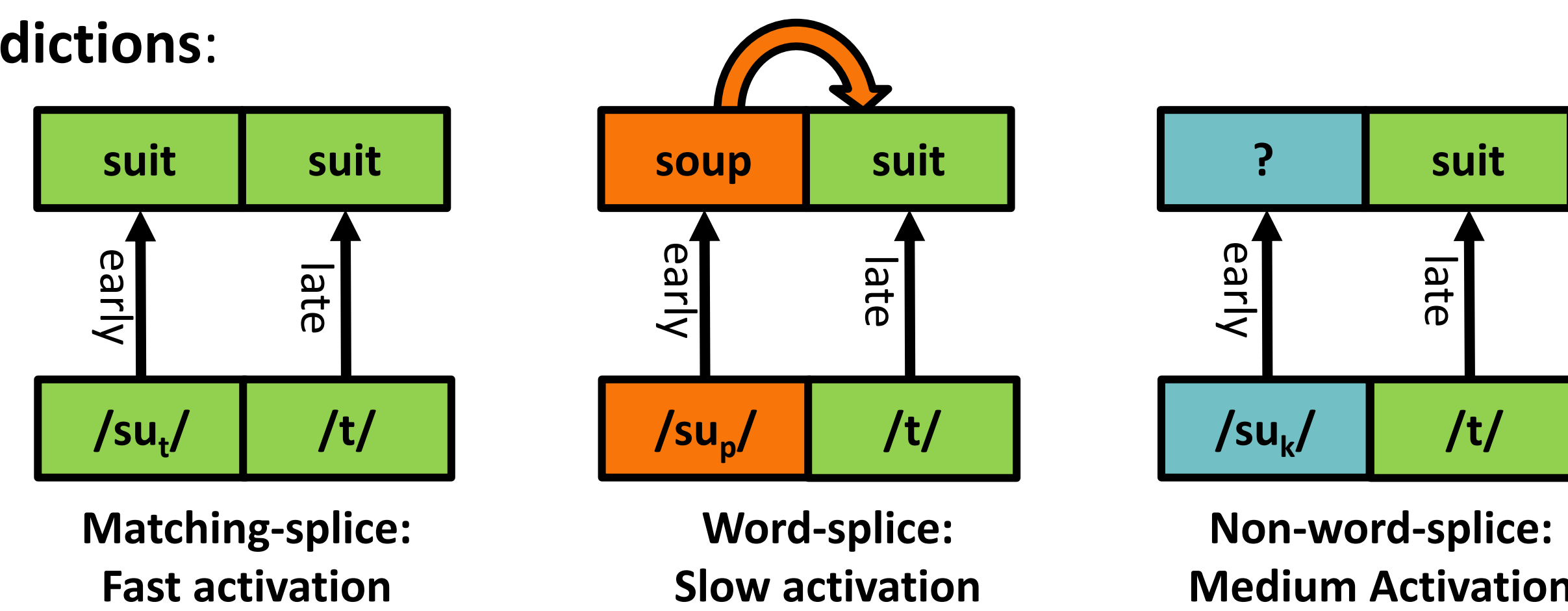
Testing:

- Visual World Paradigm: measure of real time activation
- Following the Dahan, Magnuson & Tanenhaus (2001) paradigm, the **target word** was presented in *three different splicing conditions*:



- The splicing creates a co-articulatory mismatch (CAM) between the vowel and the final consonant.

Predictions:

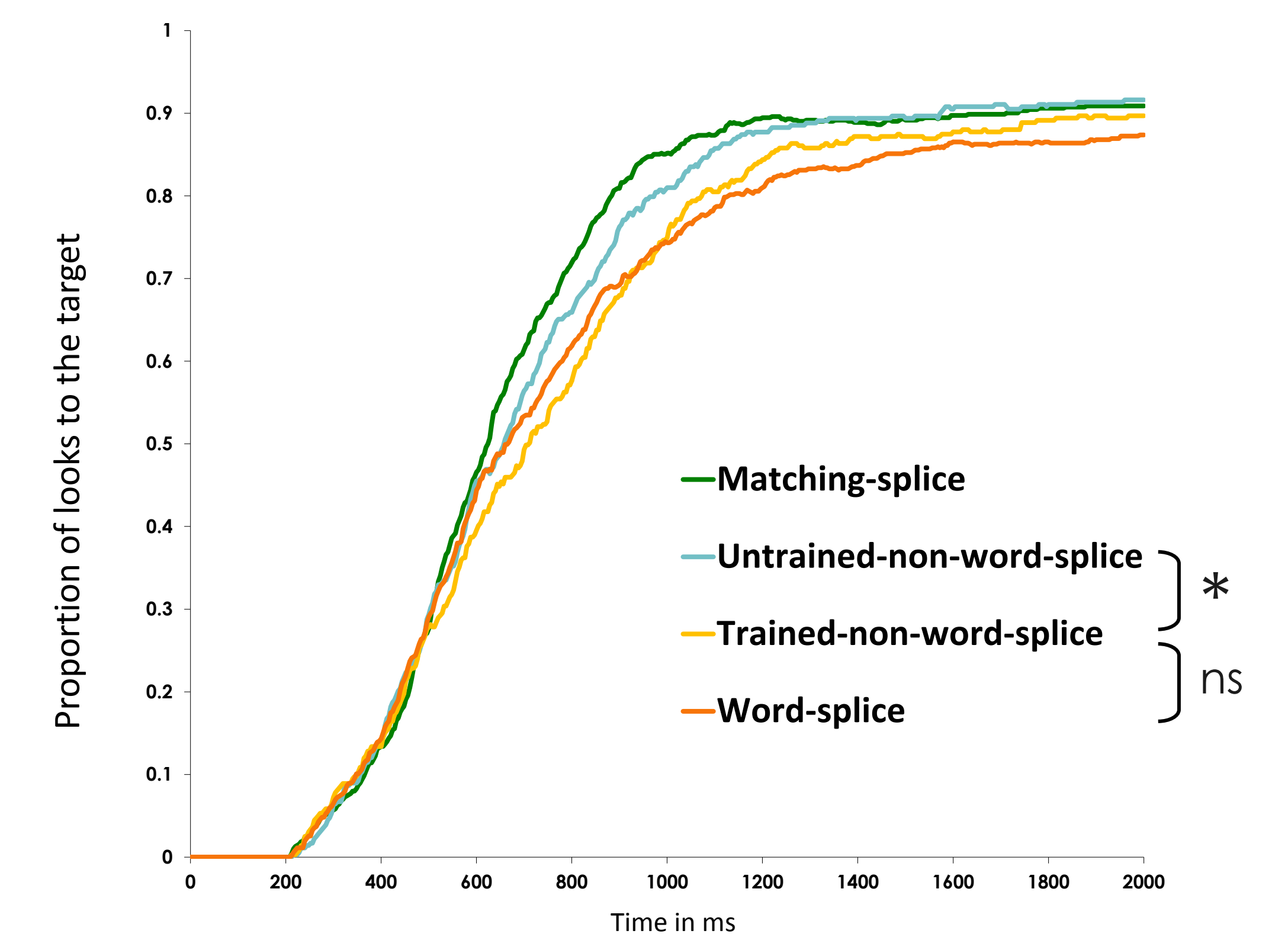


- When the target is *spliced with another word*, CAM partially activates the competitor, inhibiting the target.
- When the target word is spliced with a *non-word* we expect minimal: CAM does not cue another word

Question:

- Will **trained non-words** create inhibition (like known words), or not (like non-words)?

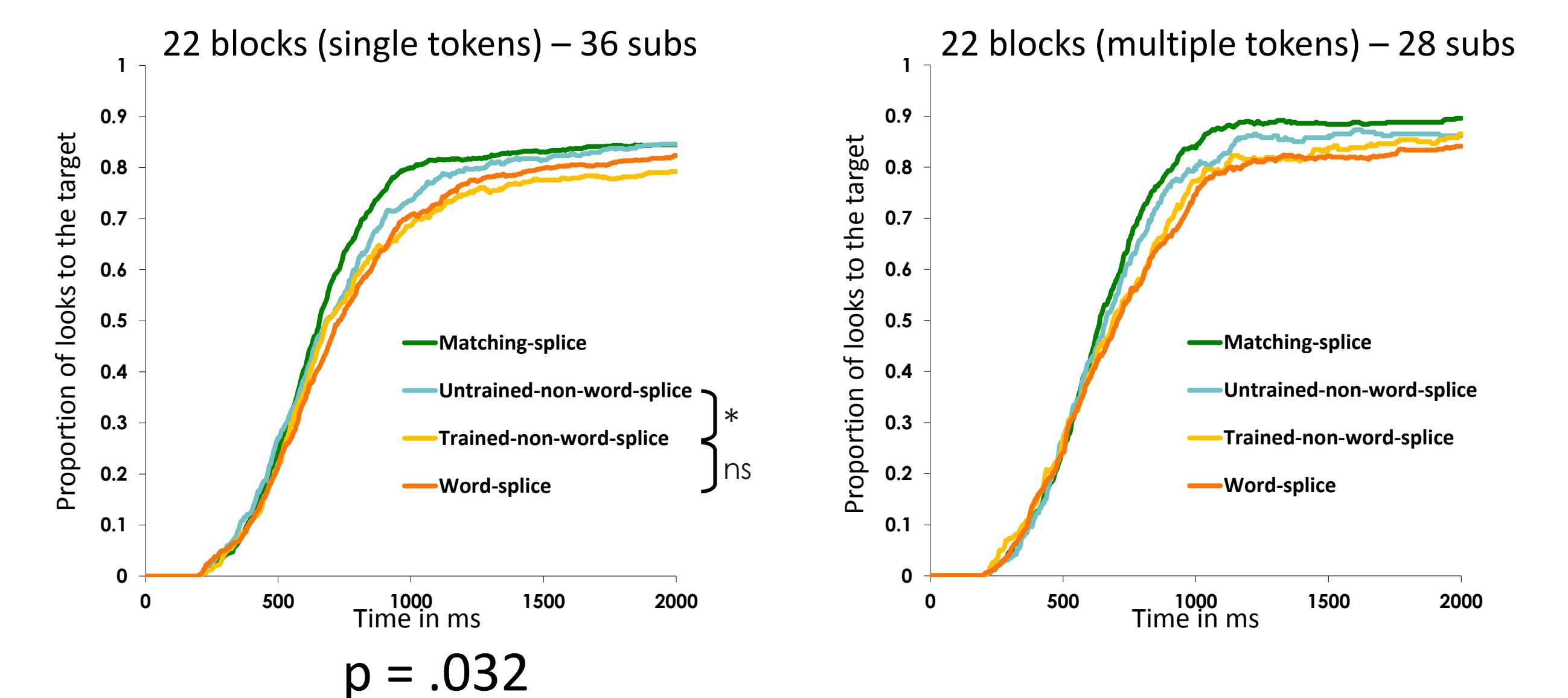
Results



- Looks to the target were significantly slower in the *trained*- compared to the *untrained-non-word-splice* condition ($p = .014$).
- Trained-non-word-splice was not significantly different from word-splice ($p = .695$).

Work in progress:

- Only phoneme-monitoring in training (no production)



- But not significant difference when training is longer (33 blocks)

Conclusions

- CAM cuing a trained novel word slowed down activation of the target word, whereas the exact same physical stimulus did not have the same effect when the CAM cued an untrained non-word.
- This indicates that lexical engagement *does not require*:
 - Meaning.
 - Time-consuming lexical consolidation (with or without sleep).
 - Interleaved exposure to old and new words.
- Lexical competition is a form of lexical engagement that plays a critical role in resolving acoustic ambiguity (McMurray, Tanenhaus & Aslin, 2009; McMurray et al, 2009). Our results indicate that this competition can stem from a minimally experienced phonological sequence that is not semantically integrated.

References

- Dahan, D., Magnuson, J.S., Tanenhaus, M.K., & Hogan, E. (2001). Subcategorical mismatches and the time course of lexical access: Evidence for lexical competition. *Language and Cognitive Processes*, 16(5/6), 507-534.
- Gaskell, M. G., & Dumay, N. (2003). Lexical competition and the acquisition of novel words. *Cognition*, 89, 105-132.
- Lindsay, S. & Gaskell, M. G. (2012). Lexical integration of novel words without sleep. *Journal of Experimental Psychology: Learning, Memory & Cognition*, X(X), XXX-XXX.
- McMurray, B., Clayards, M. A., Tanenhaus, M. K., & Aslin, R. N. (2008). Tracking the time course of phonetic cue integration during spoken word recognition. *Psychonomic Bulletin and Review*, 15, 1064-1071.
- McMurray, B., Tanenhaus, M. K., & Aslin, R. N. (2009). Within-category VOT affects recovery from "lexical" garden paths: Evidence against phoneme-level inhibition. *Journal of Memory and Language*, 60, 65-91.