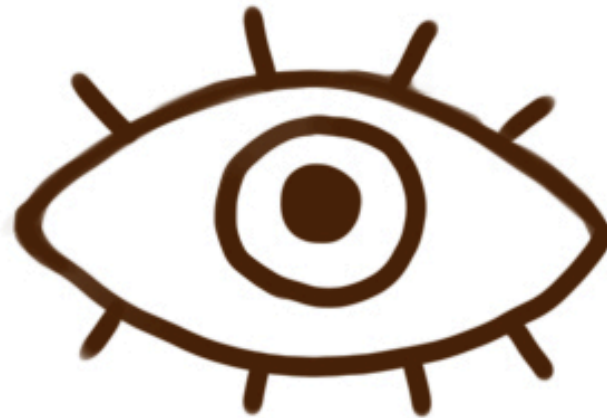


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# BRAINS SPOTTING MORPHEMES



## Late decomposition

- ① Perception of whole word form
  - ② Search for meaning for the form
  - ③ If you don't find the meaning, **decompose** the word form into morphemes
  - ④ Search for meanings for the morpheme forms
  - ⑤ Access morpheme meanings
  - ⑥ Combine morphemes into a complex meaning
- Works well for monomorphemic words like TABLE. You are done on Step 2.

## Early decomposition

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  - ④ Combine morpheme meanings into a complex meaning
- Works well for morphologically complex words like TEACHER.
  - Terrible for words that look morphologically complex but aren't: CORNER, BROTHER

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## Early decomposition

### ① Perception of morpheme forms

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④ THIS IS WHAT OUR BRAINS SEEM TO DO

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# EVIDENCE FROM MASKED PRIMING

mask	prime	target
#####	teacher	TEACH

# EVIDENCE FROM MASKED PRIMING

## TEACH

- Prime flickers so quickly (~40ms) that you're not conscious of it.
- But your visual system does see the prime and the form of the prime affects target processing.
- Specifically.....

# EVIDENCE FROM MASKED PRIMING

*Rastle, Davis & New, 2004*

- **cleaner – CLEAN**

- morphologically related

- **corner – CORN**

- fake morphological relationship

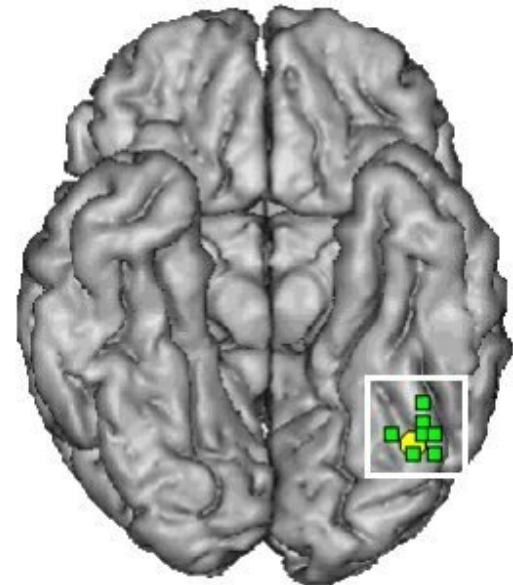
Equivalent positive priming for both cases.  
→ Seeing the same *possible* morpheme form twice speeds you up.

- **brothel – BROTH**

- **not** morphologically related
- -el is not an English suffix

No priming.  
→ To obtain the priming effect above, the visual percept must exhaustively decompose into possible morphemes.

- **Early decomposition:** Our brains decompose word forms into possible morphemes in a semantically blind way
- **Exactly when and where does this happen?**
- In reading, we have a good candidate region for this process: the Visual Word Form Area

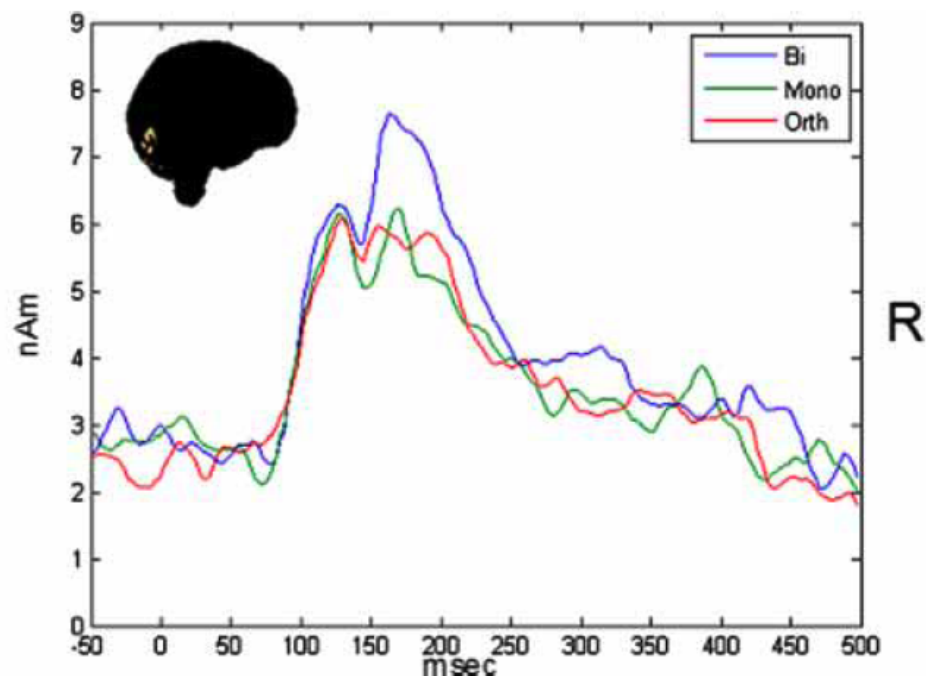
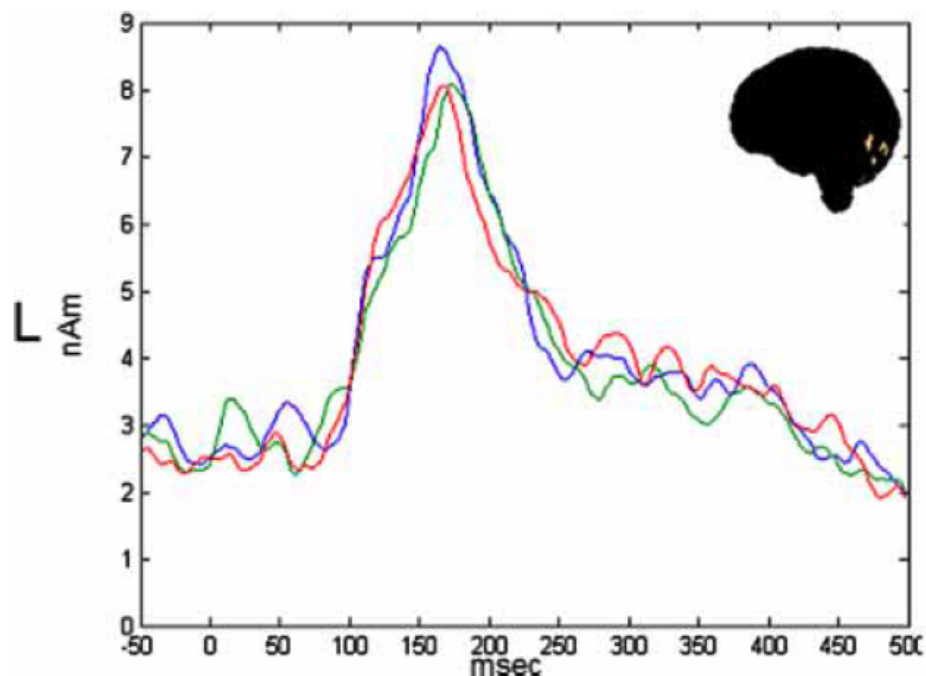


# MEG evidence (Zweig & Pylkkänen, 2008, *LCP*)

- Lexical decisions on
  - teacher** (bimorphemic)
  - switch** (monomorphemic)
  - winter** (orthographic control)

Bilateral result. Follow-up research has focused mostly on the left hemisphere response

- Larger M170 amplitudes for bimorphemic words:





# **Spotting visual forms of morphemes (and pseudomorphemes)**

# Spotting visual forms of morphemes (and pseudomorphemes)

**teacher**

# Spotting visual forms of morphemes (and pseudomorphemes)

**teacher**

**corner**

# Spotting visual forms of morphemes (and pseudomorphemes)

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