

## The challenge of word recognition

- Ambiguous, sometimes conflicting information
- Information available at different times
- Potentially tens of thousands of options

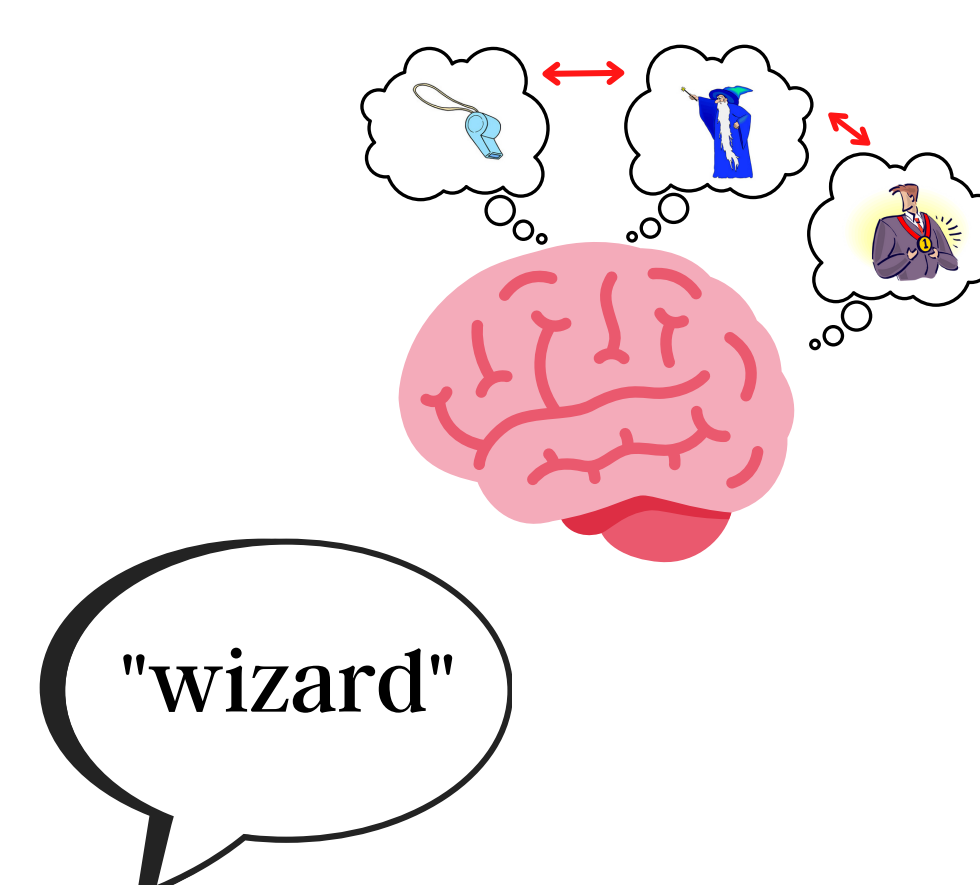
### Competition:

- Listeners activate an array of candidates from the earliest moment
- Compete over time until only one is left

Lexical inhibition, might serve to make word recognition more efficient

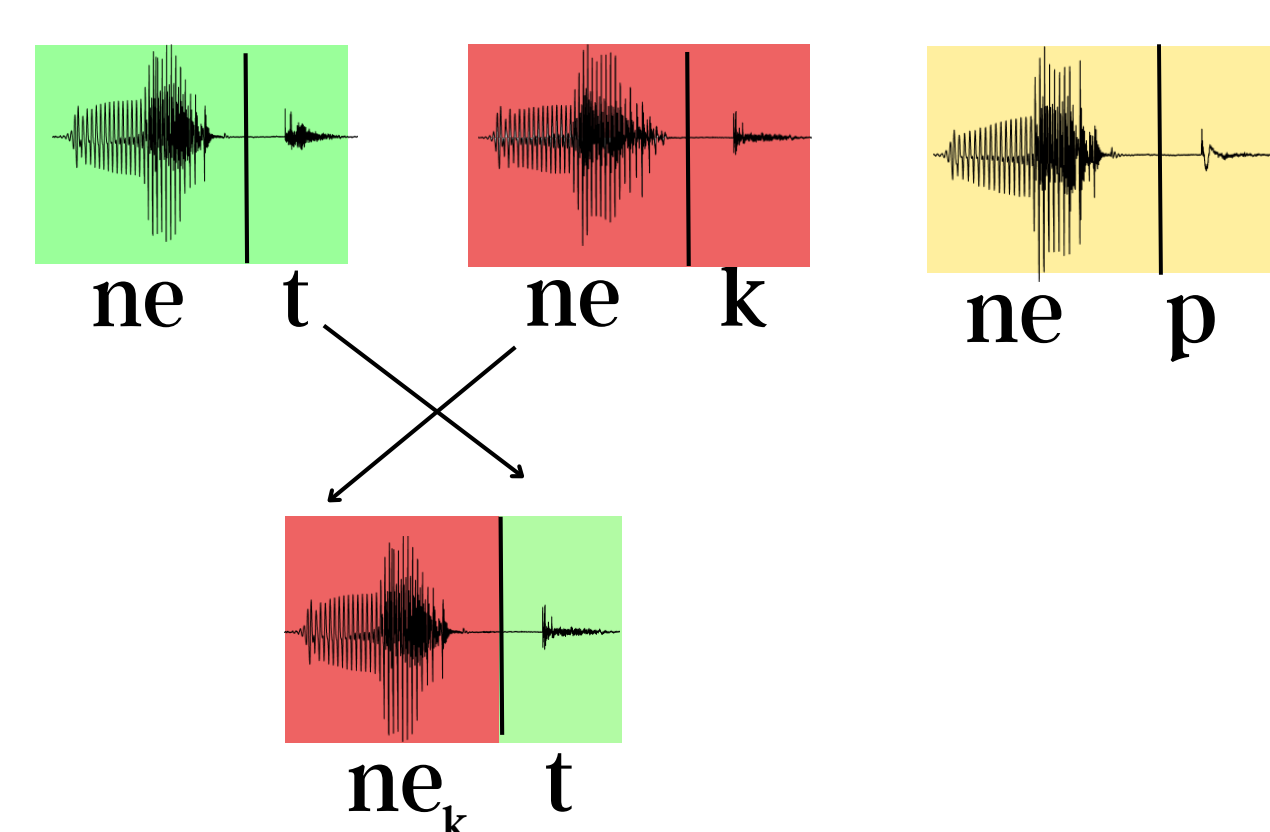
## What is lexical inhibition?

A process by which competing words directly suppress each other's activation to allow the system to recognize words more efficiently

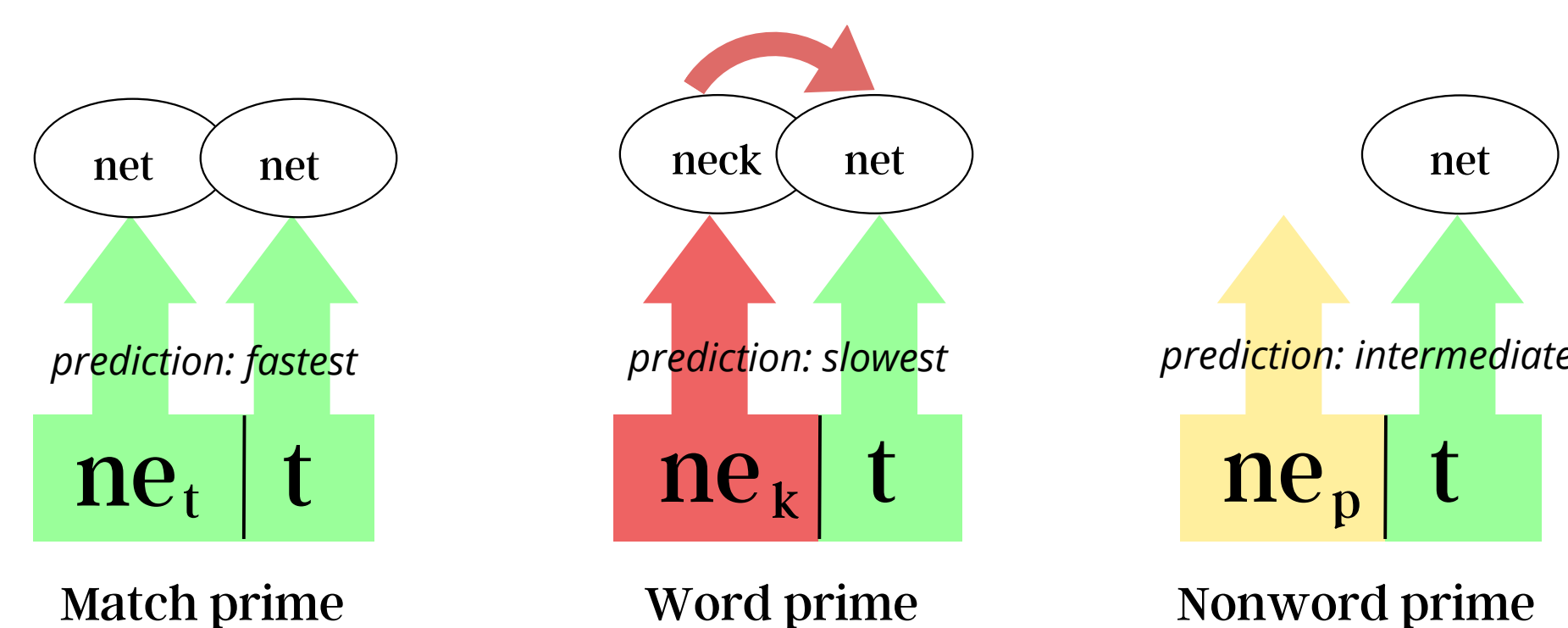


## Subphonemic mismatch paradigm

- Beginning of one word spliced with end of another word
- Coarticulation leads the first word to be highly active
- Slowed recognition of the target means the first word inhibited the second

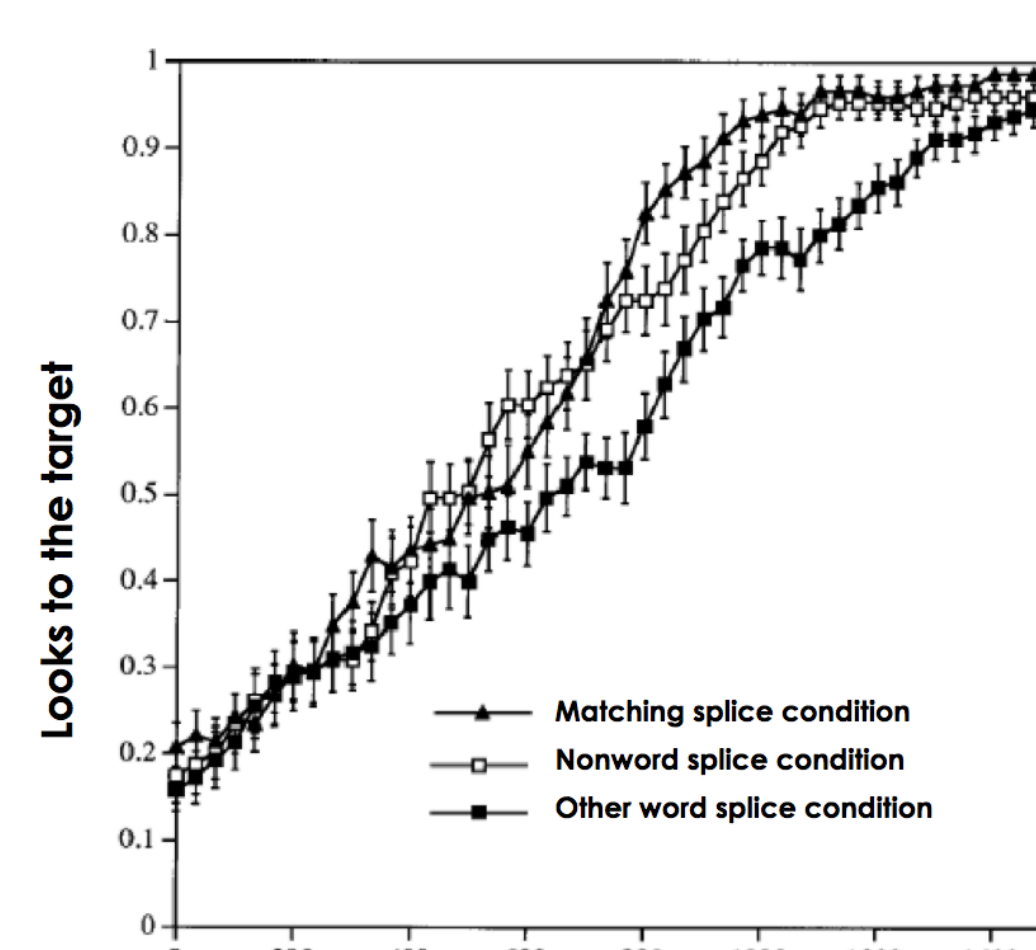


### Predictions



## Background

- Adults show slower looks to target for word primes compared to nonword primes (Dahan et al., 2001; Kapnoula et al., 2015)
- Children show less lexical inhibition than adults (Blomquist & McMurray, submitted)
  - 7 years: no inhibition, 12 years: weak inhibition
- Perhaps children aren't activating the competitor



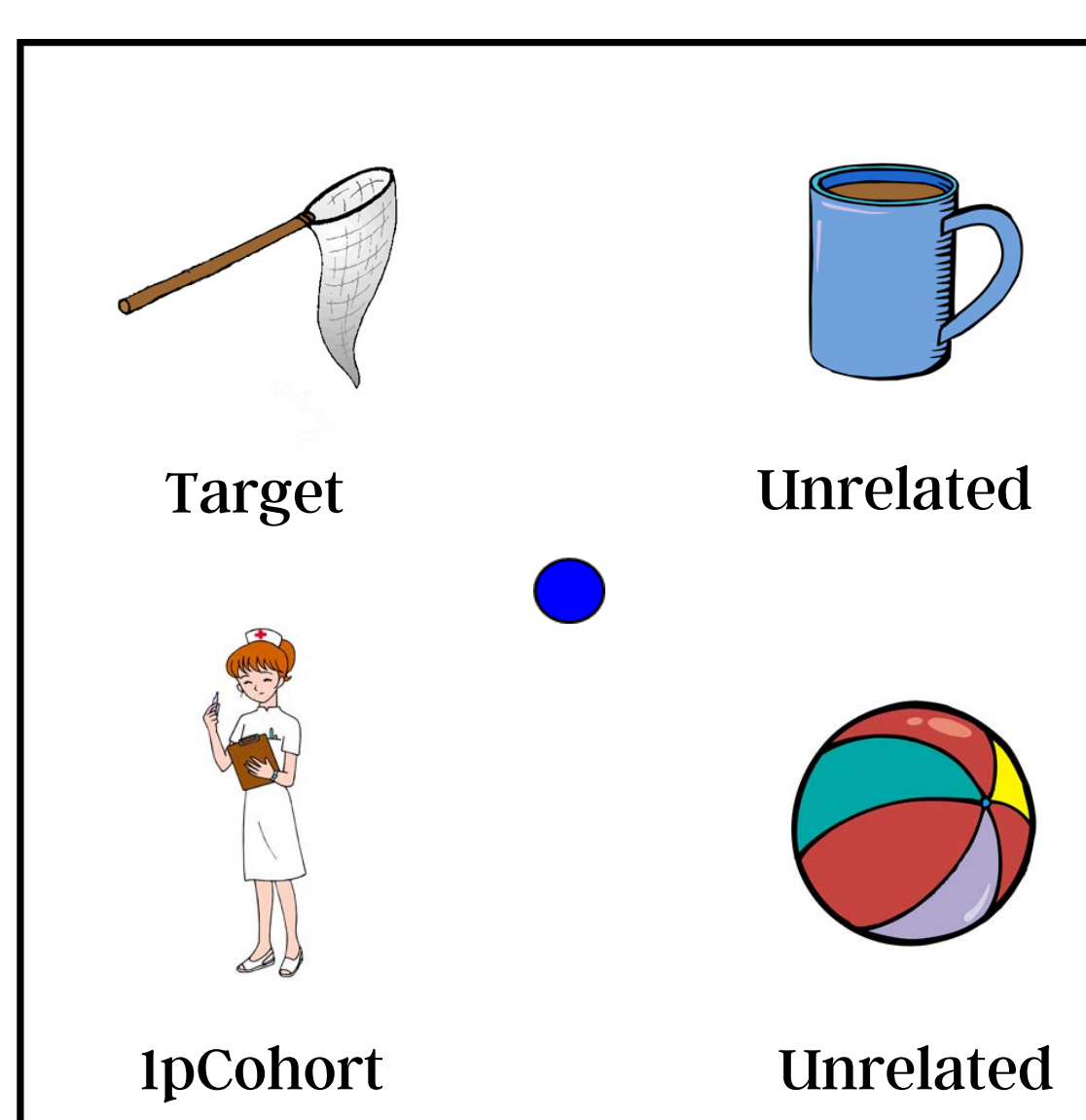
## Research Question

Can reduced competitor activation explain weak lexical inhibition in children? Do young children show *any* evidence for inhibition?

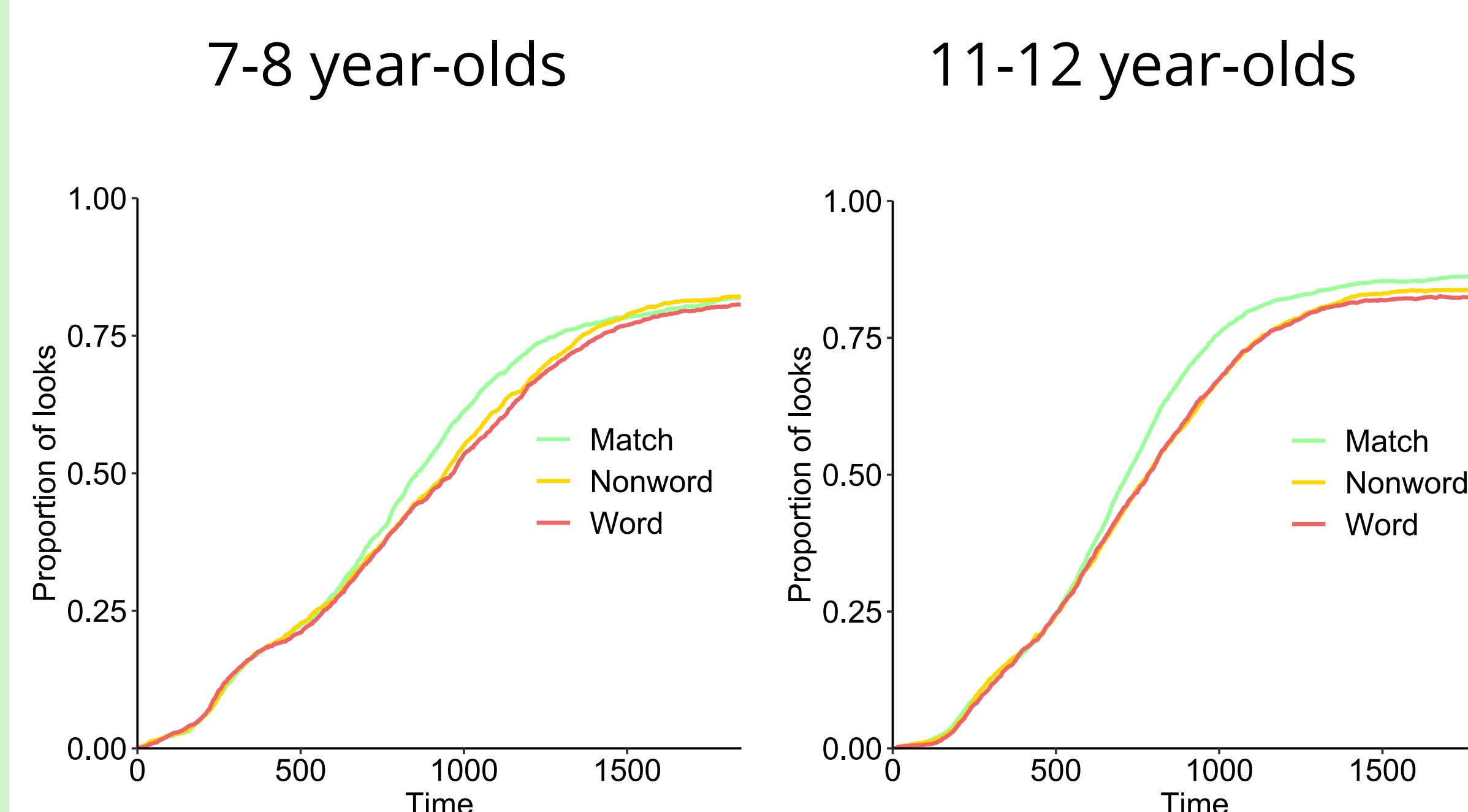
## Experiment 1

### Replication with larger sample

- 46 7-8 y/os, 46 11-12 y/os monolingual, English-speaking
- Tracked eye-movements in the visual world paradigm
- Words were spliced from the same word (match prime), another word (word prime), or a nonword (nonword prime)
- Each trial consisted of a target (ex. net), single phoneme cohort (ex. nurse), and two unrelateds (ex. mug, ball)



## Results

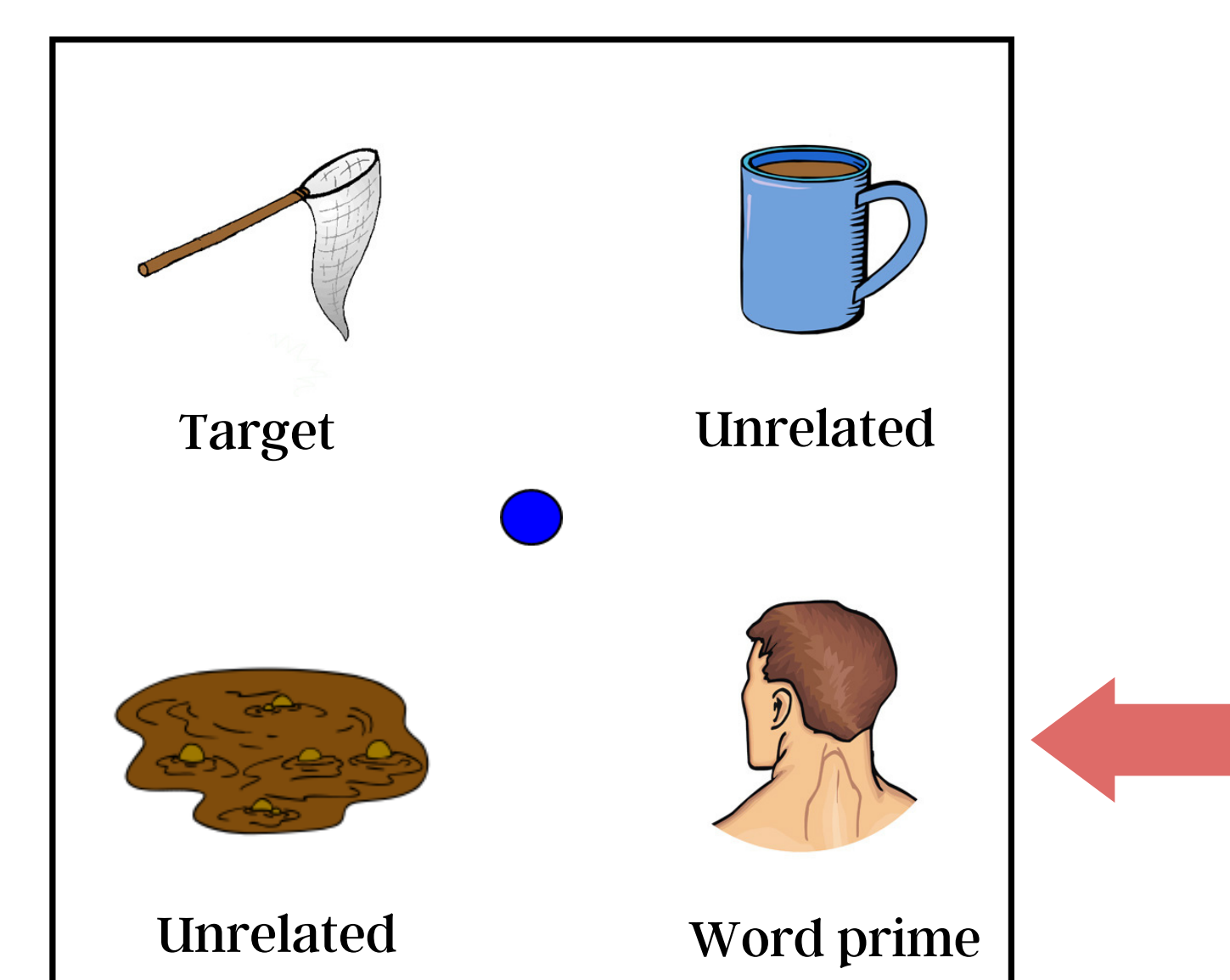


- In both age-groups:
  - match > nonword (7-8:  $p < 0.001$ , 11-12:  $p < 0.001$ )
  - match > word (7-8:  $p < 0.001$ , 11-12:  $p < 0.001$ )
  - nonword *not different* from word (7-8:  $p = 0.783$ , 11-12:  $p = 0.726$ )
- Sensitive to acoustic mismatch but not lexical status
- **No evidence for lexical inhibition** (even in older children, unlike previous work)

## Experiment 2

### Do children activate the competitor?

- Maybe children are not activating the competitor quickly enough for it to inhibit the target
- Control study with same stimuli as before but word prime on the screen
- 43 monolingual, English-speaking 7-8 y/os

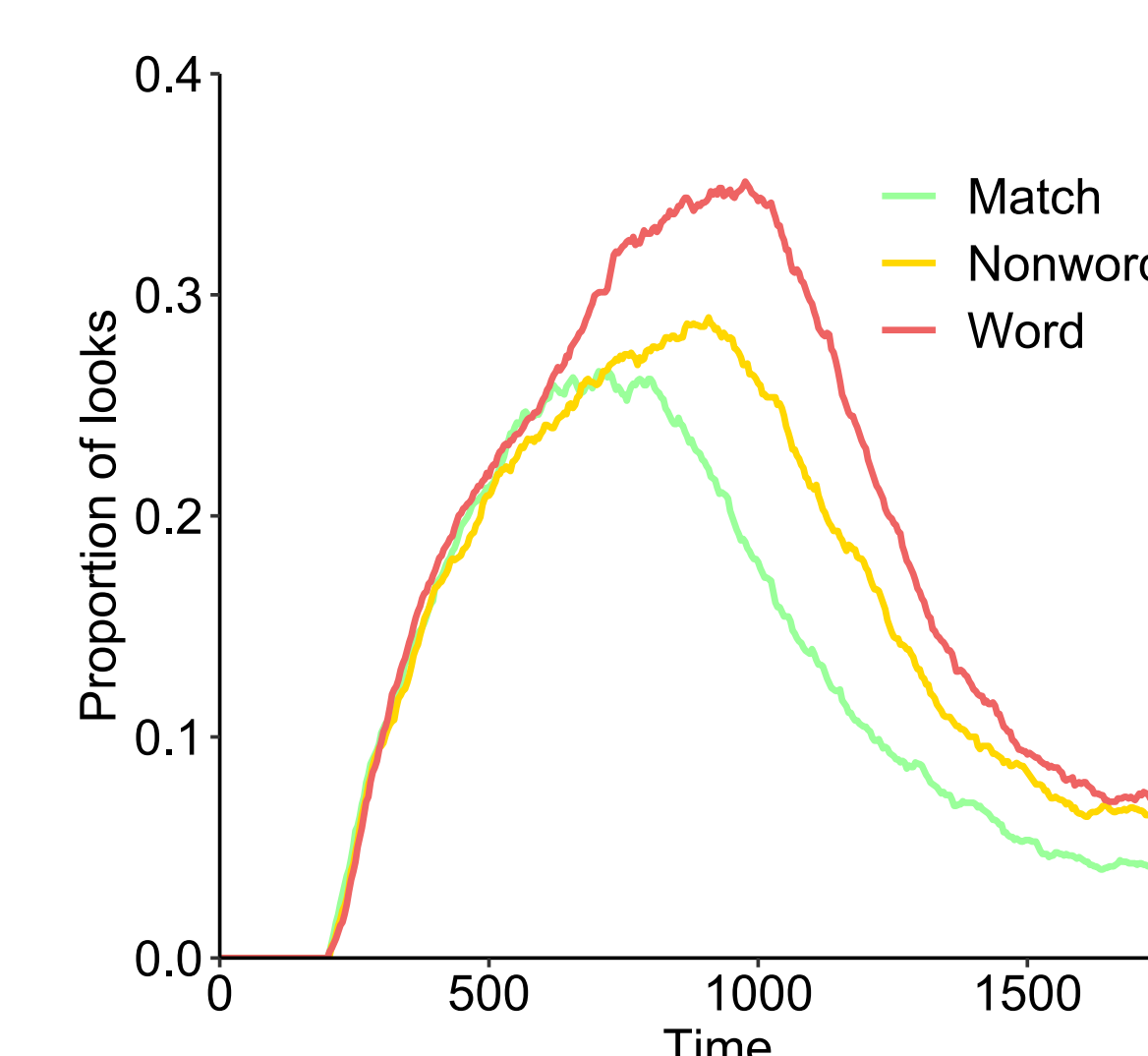


### Predictions

- Looks to word prime due to phonological overlap
- Elevated looks to word prime with word prime splice = activating competitor
- Similar looks to word prime across splice types = not activating competitor

## Results

### Looks to word prime



- **word > nonword > match** ( $p < 0.001$ )
- Participants are activating the competitor
- **Lack of competitor activation cannot explain lack of lexical inhibition** in previous experiment

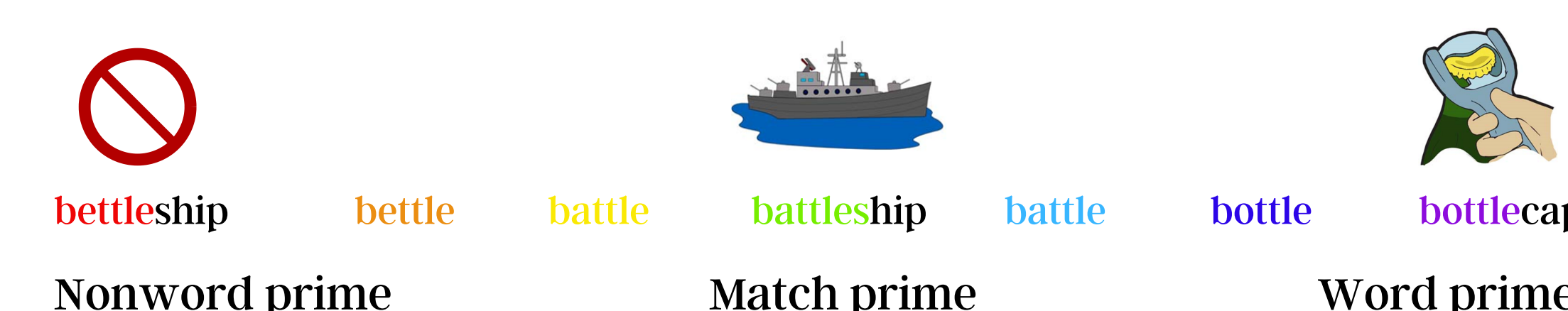
## Acknowledgements

We would like to thank our participants and families. Special thank you to the Growing Words Team with their help in data collection.  
NIH # R01DC008089

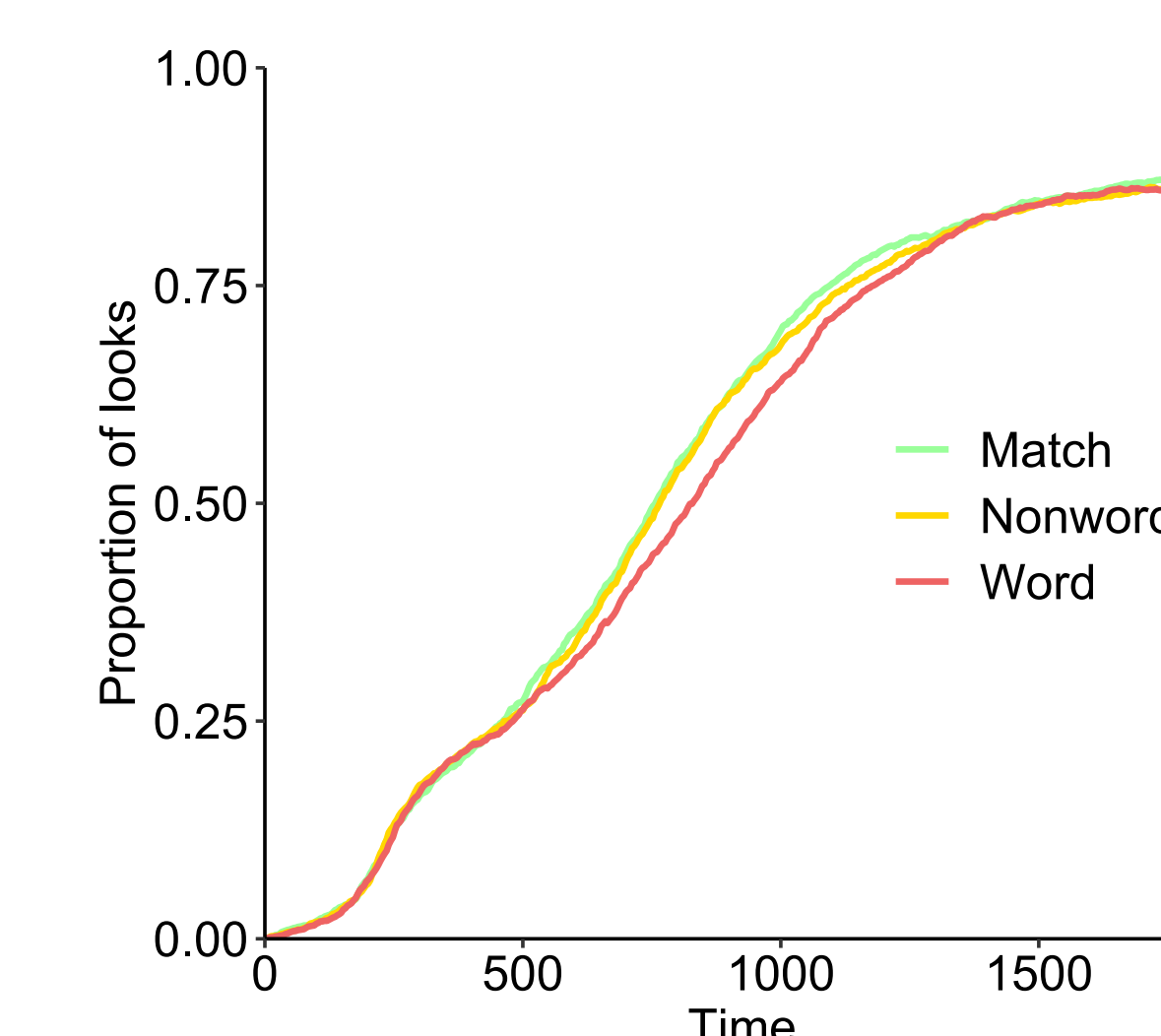
## Experiment 3

### Do children show *any* lexical inhibition?

- Previous experiments used CVC words with little overlap
- Perhaps if we increase competitor activation and time before disambiguation, children will show lexical inhibition
- Follow-up study with increased overlap between words
- Acoustically manipulated vowels to be partially ambiguous with words or nonwords
- 39 monolingual, English-speaking 7-8 y/os



## Results



- match > word ( $p < 0.001$ )
- **nonword > word** ( $p = 0.013$ )
- nonword *not different* from match ( $p = .99$ )
- Children show **lexical inhibition when competitor activation is heightened**

## Conclusion

- Exp1: 7-12 y/os did not show lexical inhibition
- Exp2: Lack of competitor activation cannot explain lack of inhibition
- Exp3: Children show lexical inhibition when competitor activation is heightened
- We know from other work that as children get older they are quicker to recognize targets
  - Meaning that they use subphonemic information sooner which in turn might allow for stronger lexical inhibition
- Lexical inhibition develops slowly during childhood

read about the  
Growing Words Project

