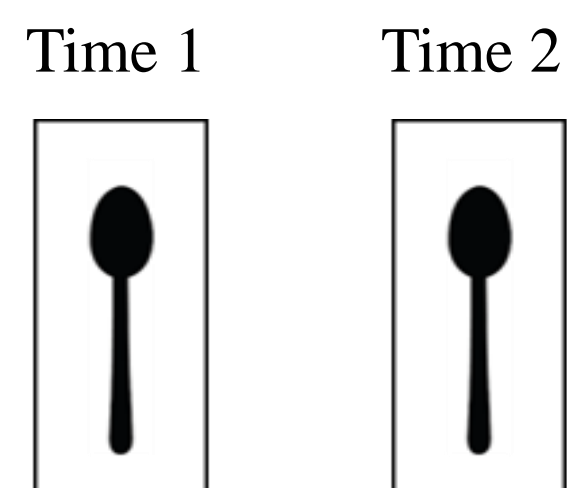
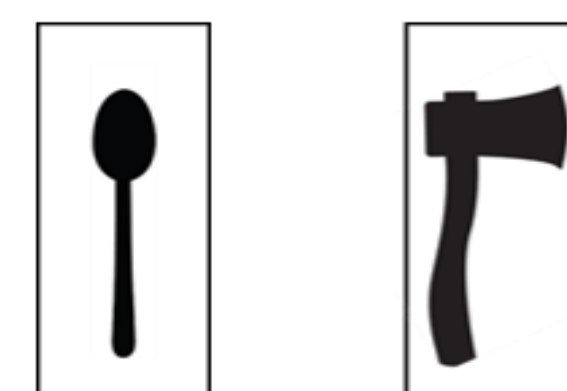


## Introduction

### Visual Priming and Antipriming



**Priming** refers to facilitated processing of an object due to previous processing of that object.



**Antipriming** refers to impaired processing of an object due to previous processing of a different object.

- Antipriming typically co-occurs with priming in visual object recognition (Marsolek et al., 2006, 2010).

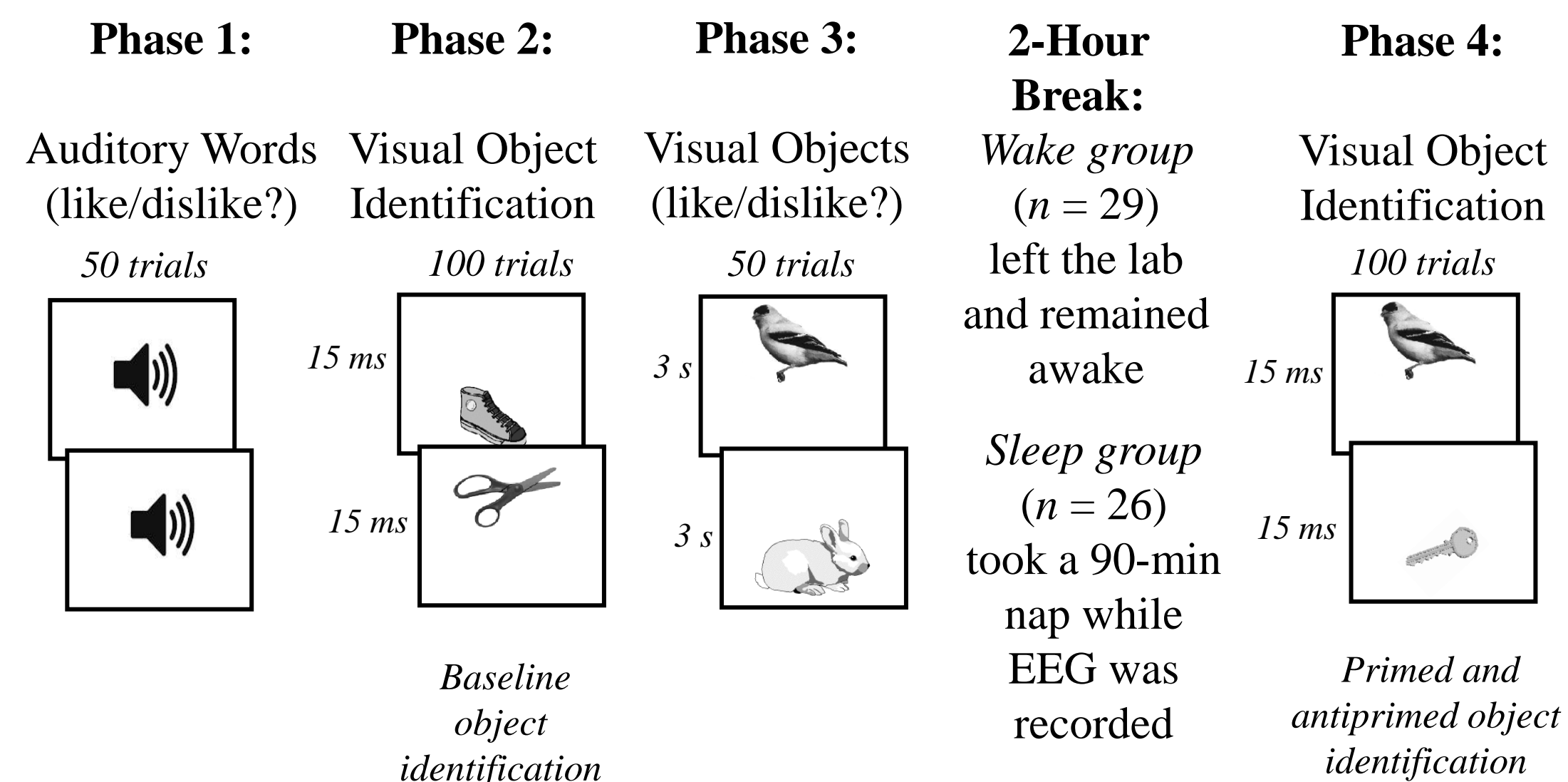
### Sleep-Dependent Memory Consolidation

- Recently encoded information is stabilized and strengthened for long-term storage during sleep.
  - This can include the re-organization of information across widespread brain areas (systems-level) and synaptic strengthening within circumscribed areas (synaptic-level).
- Priming and antipriming may especially benefit from synaptic consolidation during REM sleep.
  - Previous experiments show enhanced priming after REM-rich sleep periods (Plihal & Born, 1999; Wagner et al., 2002).
  - Neural events during REM may support synaptic-level consolidation (Diekelmann & Born, 2010).
  - The influence of sleep on antipriming has not been previously assessed.

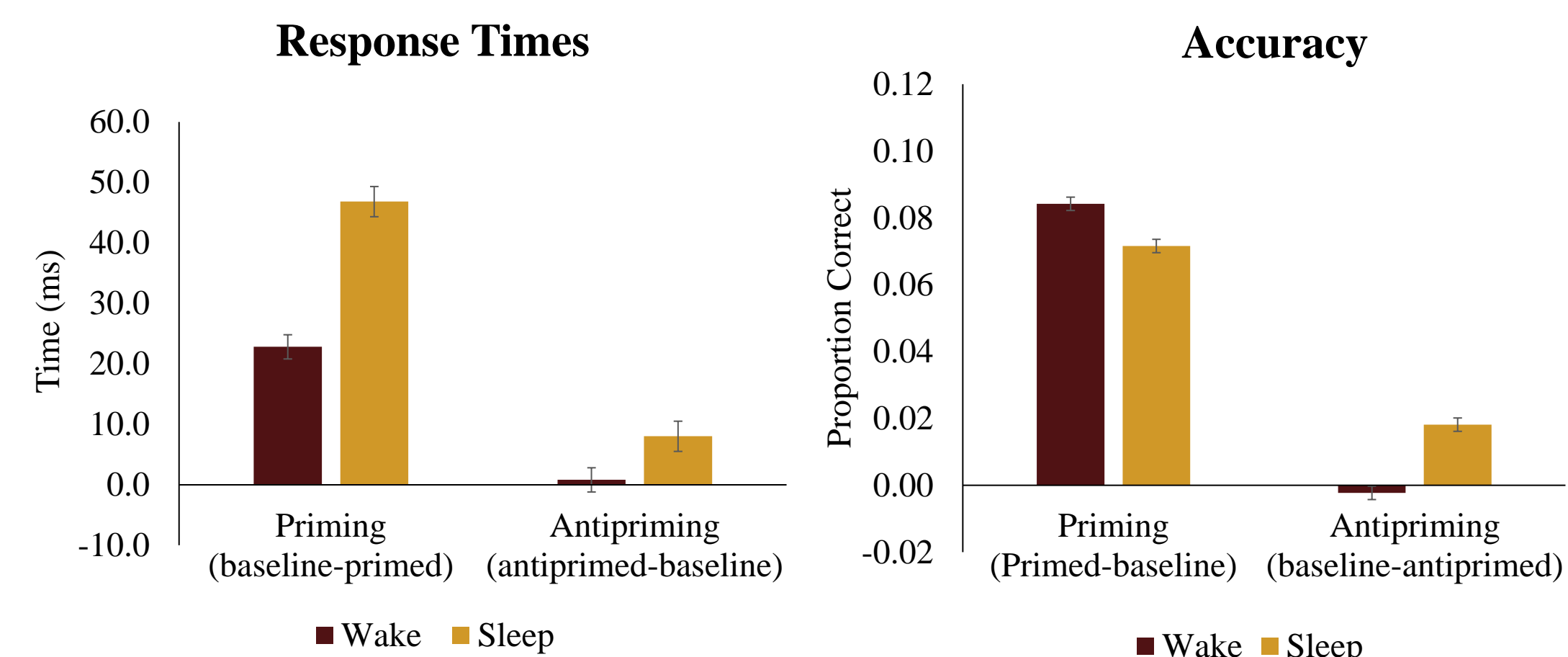
## Question

*How does sleep during an afternoon nap influence priming and antipriming?*

## Method

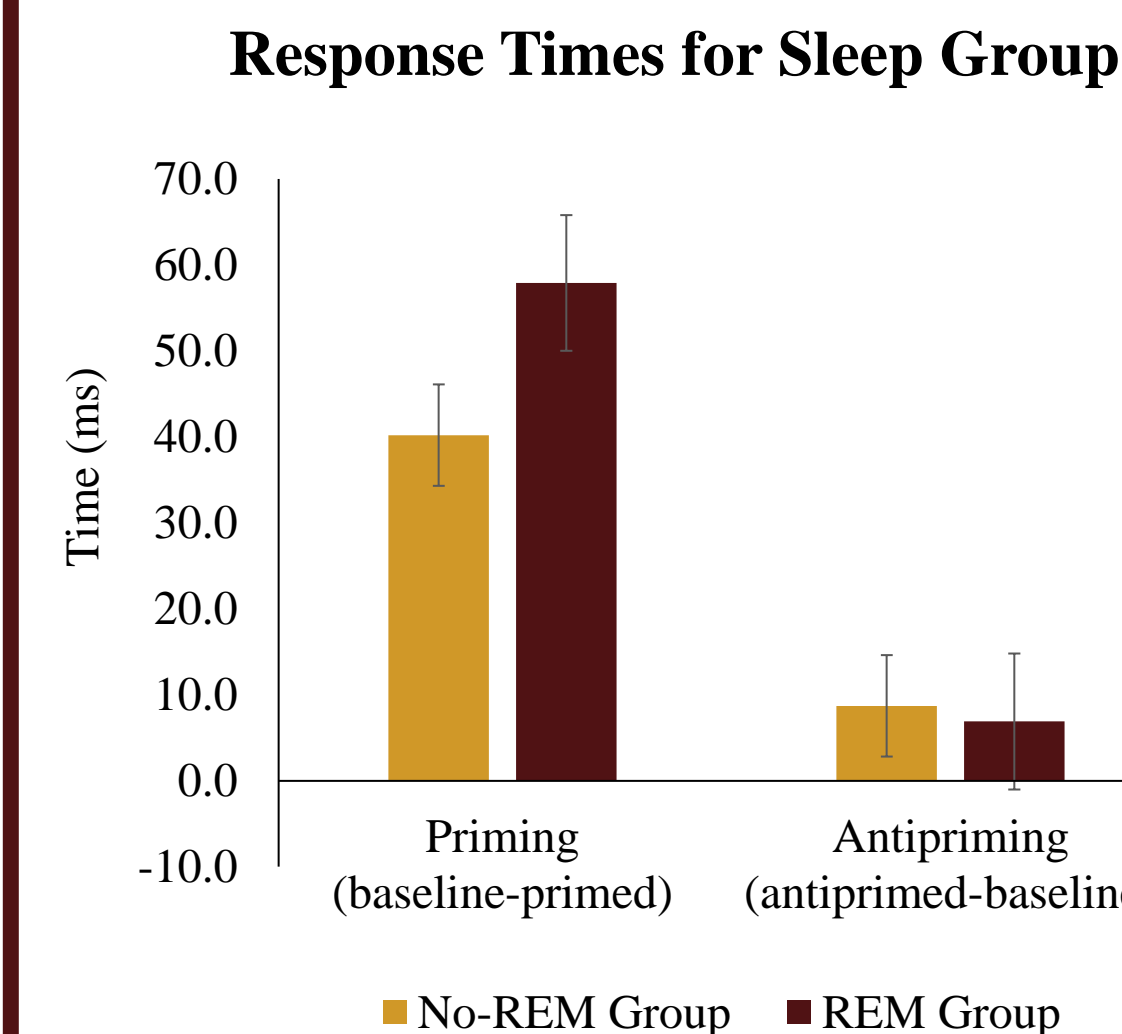


## Results



- Priming and antipriming were larger in the sleep group compared with the wake group.  
 $F(1, 47) = 5.72, p = 0.02$
- Replicating previous experiments (Marsolek et al., 2006, 2010), priming was larger than antipriming.  
 $F(1, 53) = 24.77, p = 0.000$
- No accuracy group difference.  
 $F(1, 53) = 0.11, p = 0.75$

## Results



- Priming and antipriming did not differ between participants who achieved REM sleep during the nap (REM group,  $n = 9$ ) and those who did not (No-REM group,  $n = 15$ ).
- Total sleep time, time spent in non-REM sleep, and time spent in REM sleep did not predict the size of priming or antipriming effects (all  $r$  values  $< 0.4$ )

## Conclusions

- Sleep during an afternoon nap enhances priming and antipriming.
  - These results extend previous findings of priming enhancements after nocturnal sleep (Plihal & Born, 1999; Wagner et al., 2002).
- The presence of REM sleep during an afternoon nap did not mediate the sleep-related enhancements in priming and antipriming.
  - Daytime and nocturnal sleep may contribute to memory consolidation in different ways (Alger, Kensinger, & Payne, 2018).

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