

THE FUNCTION OF MID-DAY NAPS ON PRIOR DECLARATIVE LEARNING FOR PRESCHOOL CHILDREN

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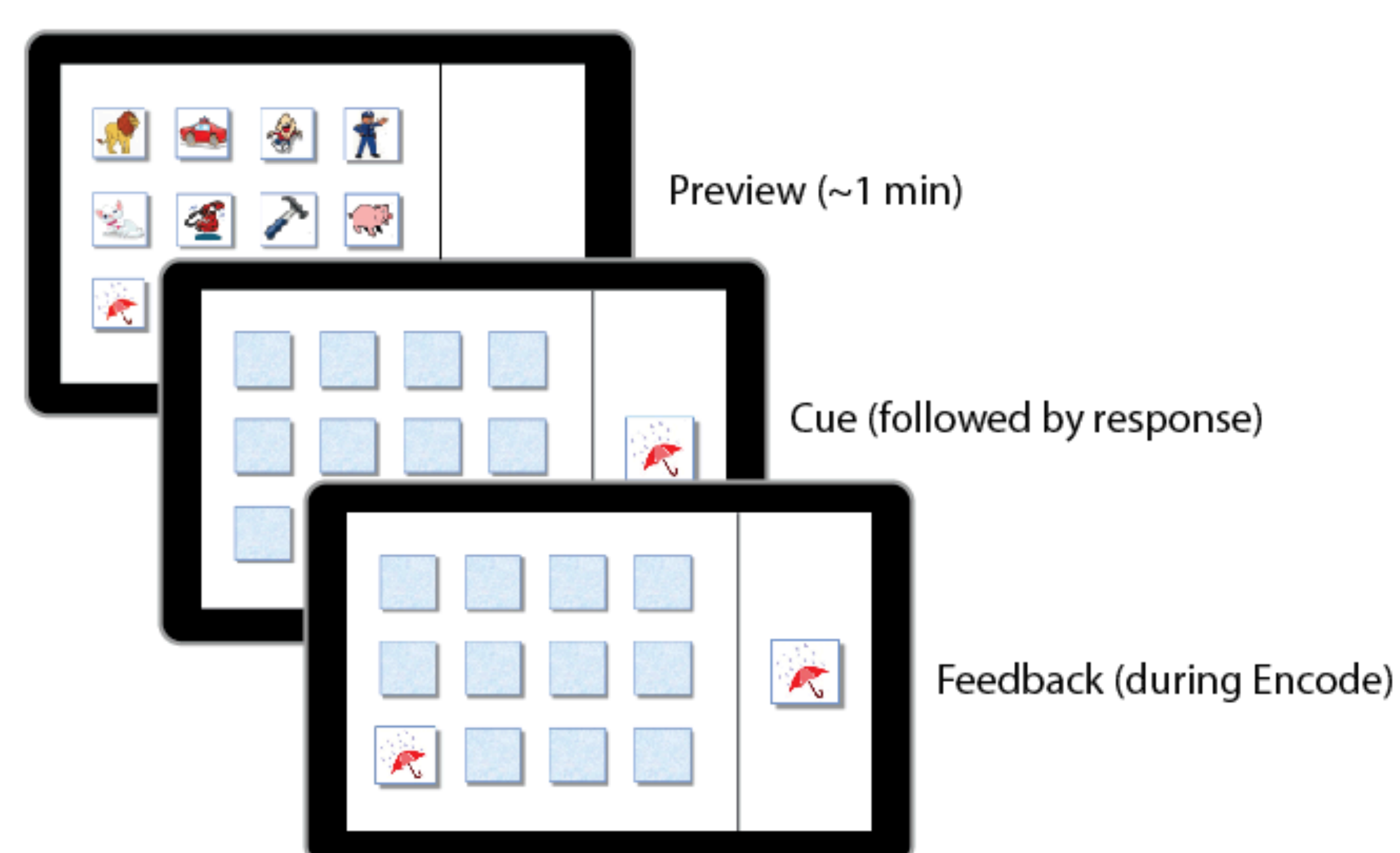
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INTRODUCTION

Naps in preschoolers have been found to benefit declarative learning. Interestingly, these data also suggest that naps may recover memories that may have decayed over waking hours. That is, following an interval with >1hr awake followed by 2 hrs of sleep, performance was unchanged while accuracy declined if the 3hrs were spent awake (1). This study tested the hypothesis that memories decay over wake following learning and are then recovered by a delayed nap.

METHODS

Forty-seven preschool-aged children (M age = 51.9 mo, 54.5% female) learned a visuo-spatial memory task in the morning on two separate occasions separated one week apart, where on one occasion they napped and the other they did not.



Recall was tested immediately after encoding, and after the afternoon nap/wake interval. Additionally, performance was probed either 1hr (pre-test A) or 2hrs (pre-test B) after immediate recall.

Initial Learning	Immediate Recall	Pre-test A	Pre-test B	Nap/Wake	Delayed Recall	24-hour Recall
9:30-10am	10am	~11am	~12:30pm	1-3pm	3:30pm	9:30am

Does sleep-dependent memory consolidation rescue memories from decay in early childhood?

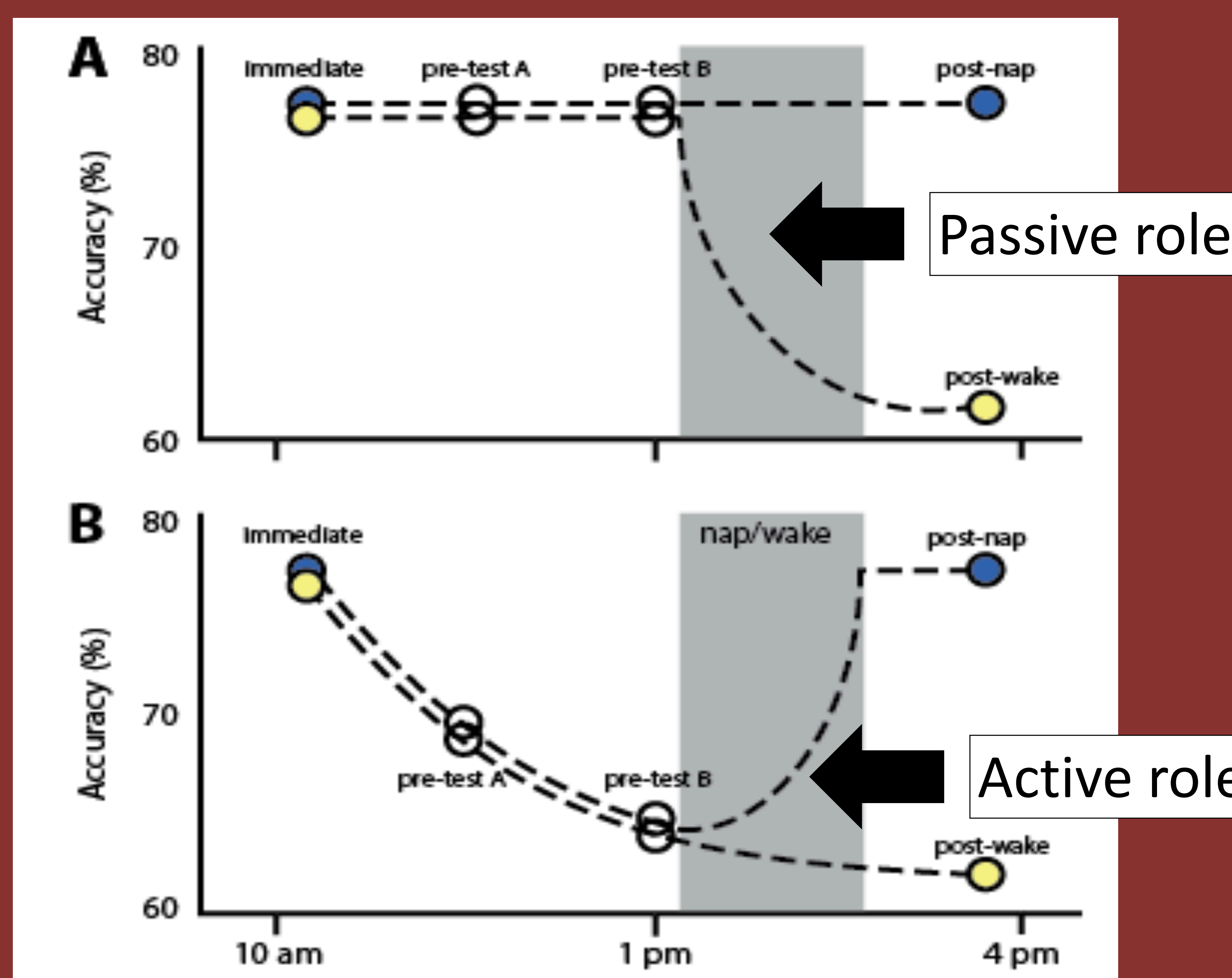
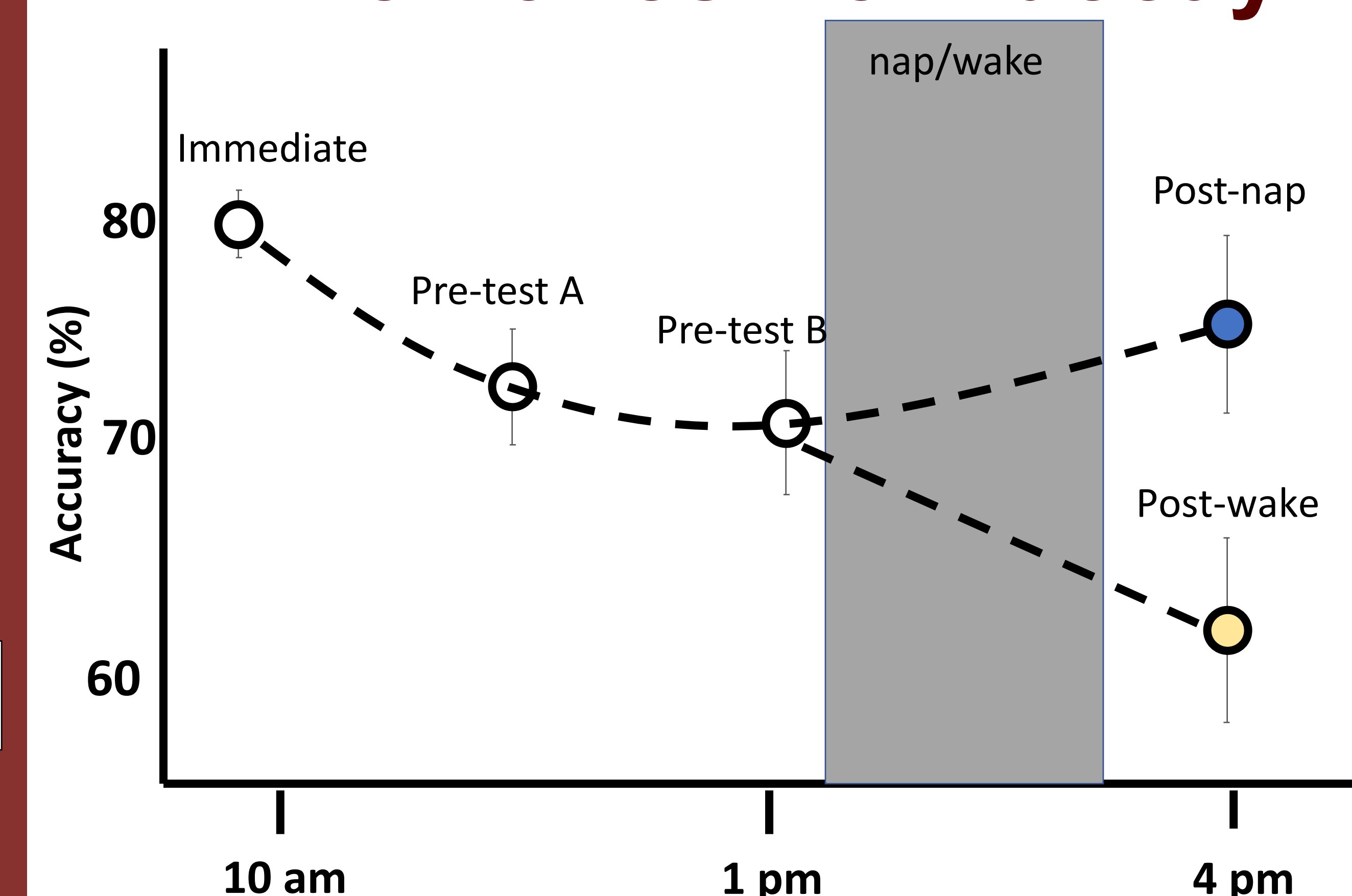


Figure A is depicting the hypothesis that the nap plays a passive role
Figure B is depicting that the nap is playing an active role in consolidation.



RESULTS

Naps may recover memories from decay



- Accuracy decayed between immediate recall and pre-test A ($p=0.010$; $n=27$)
- Between immediate recall and pre-test B ($p=0.005$; $n=20$).
- An additional 6 participants replicated previous findings that learning was protected following the nap and decayed following wake ($p=0.038$).

DISCUSSION

Sleep-dependent memory consolidation is thought to reflect the transfer of memories from short-term hippocampal stores to long-term cortical storage (3). Thus, naps may play a crucial role to benefit learning and enhance retention, leading to improved school readiness. Our data support the hypothesis that naps may actively recover memory from decay, consistent with classic memory decay curves illustrating rapid initial forgetting (2). Future analysis will include more participants to further explore the role of mid-day naps in preschool aged children.

REFERENCES

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