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## Introduction

Can infants hold and update information in a dynamic VWM task?

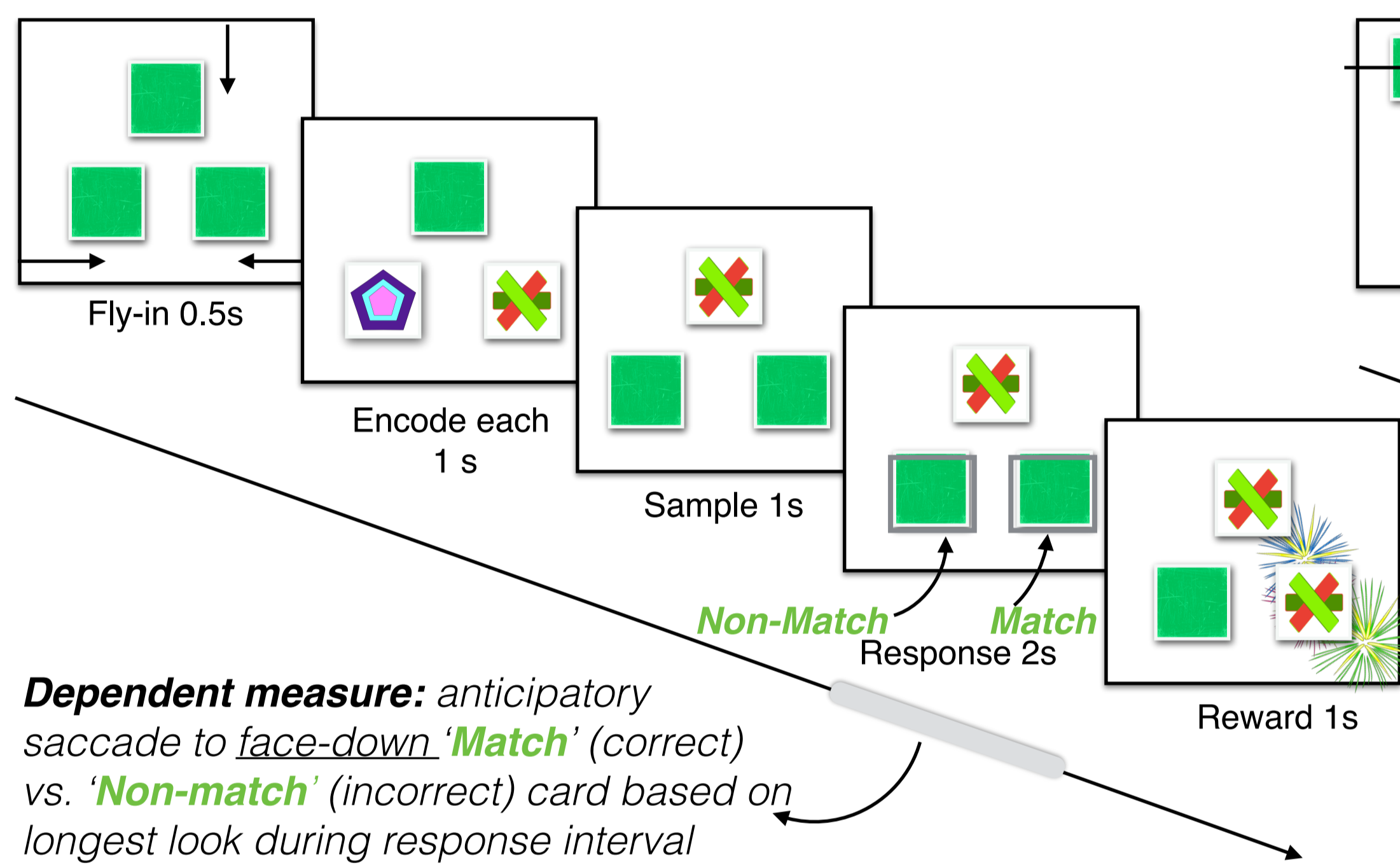
In the real world, infants must engage with dynamic events that require the updating of information in Visual Working Memory (VWM).

While traditional VWM research has focused on storage limitations, we aim to explore how well infants *manipulate* stored information, i.e. updating.

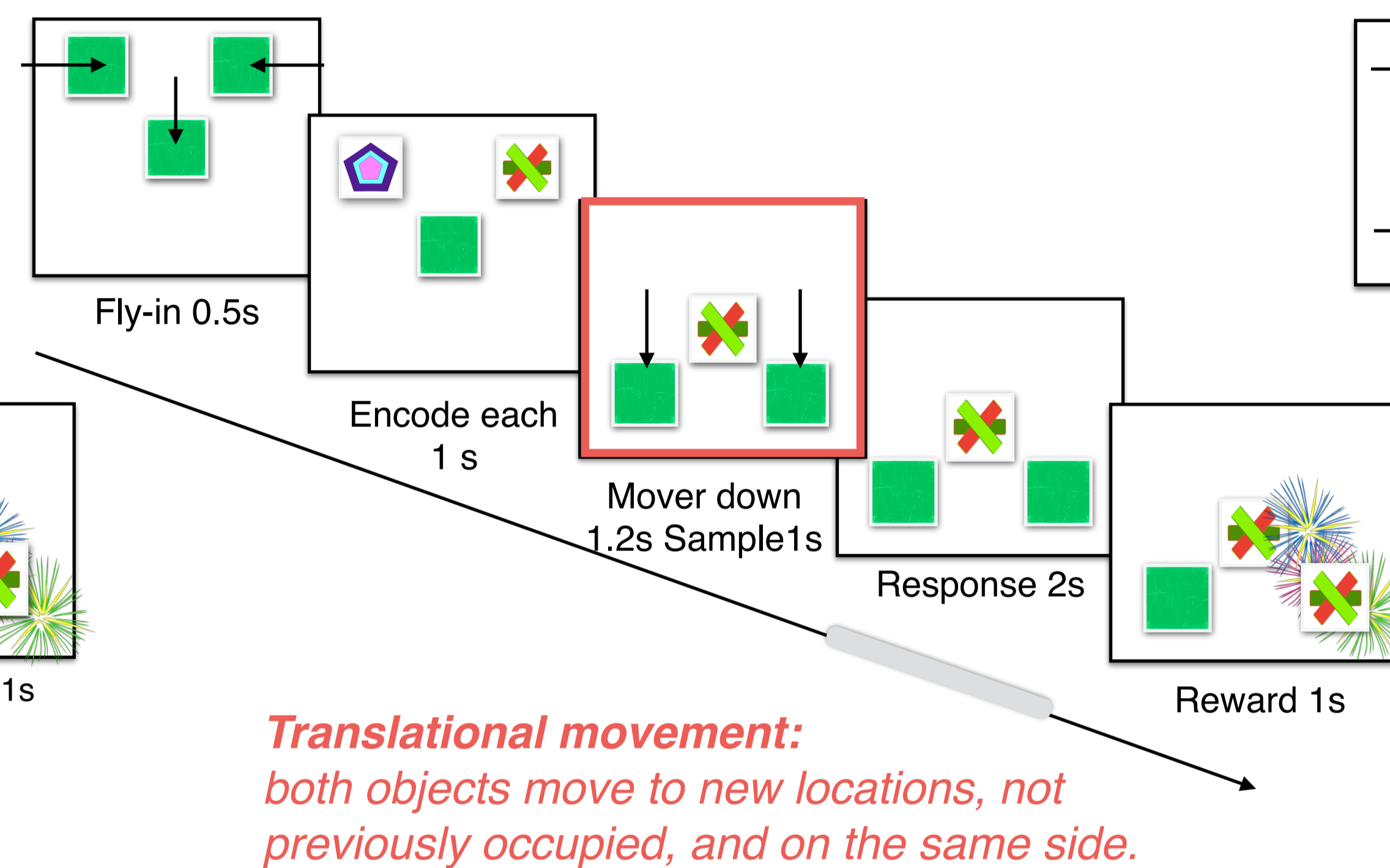
Piaget (1969) initiated the study of object transferral in the A-not-B task; later, studies found that 6-month olds were able to update information with respect to multimodal events (Richardson et al., 2004); then, at 30-month of age, children could pass invisible displacement (Barth et al., 2006).

## Methods

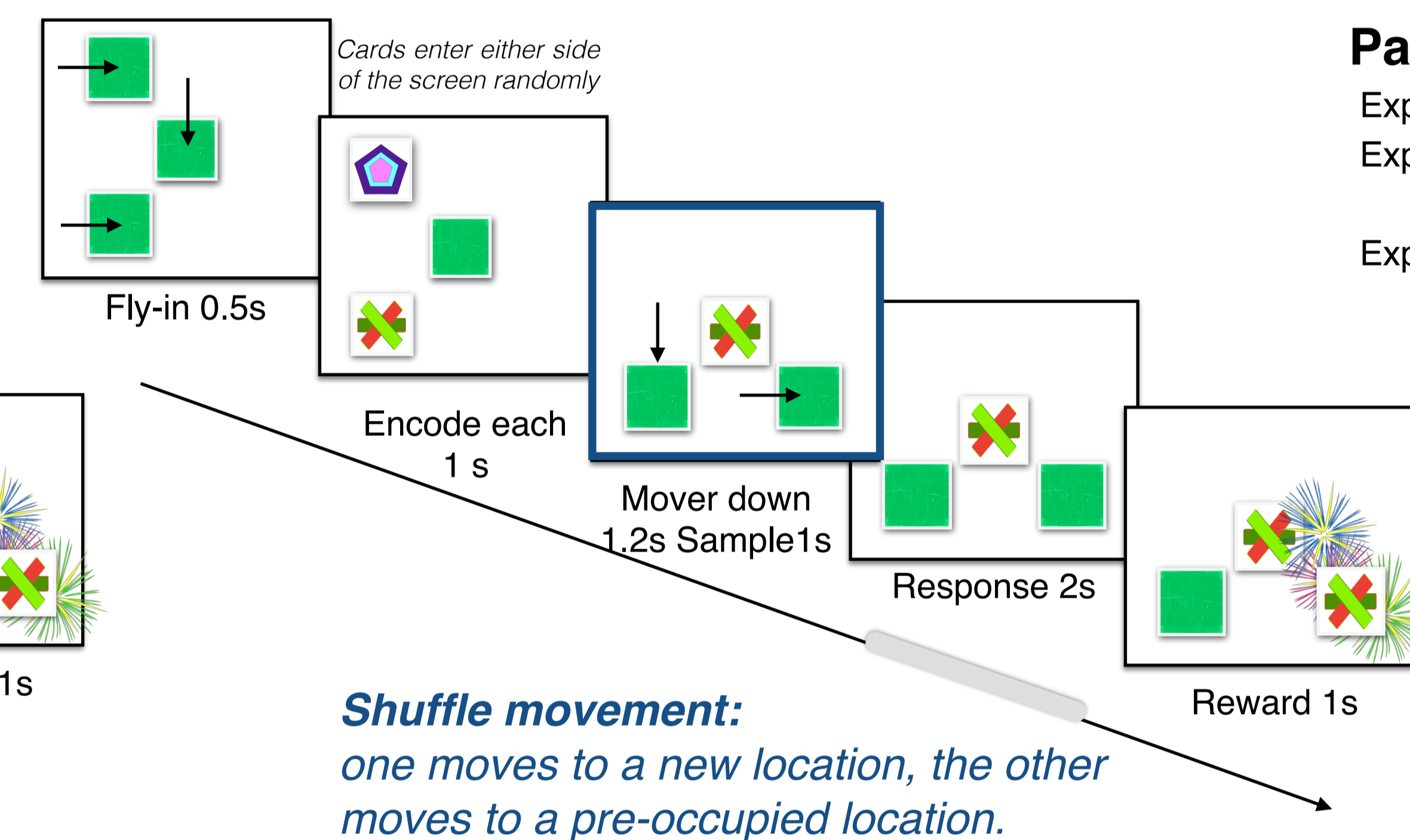
### No movement (Exp. 1)



### Translational movement (Exp. 2)



### Shuffle movement (Exp. 3)



Delayed Match Retrieval  
(Kaldy, Guillory, & Blaser, 2016)

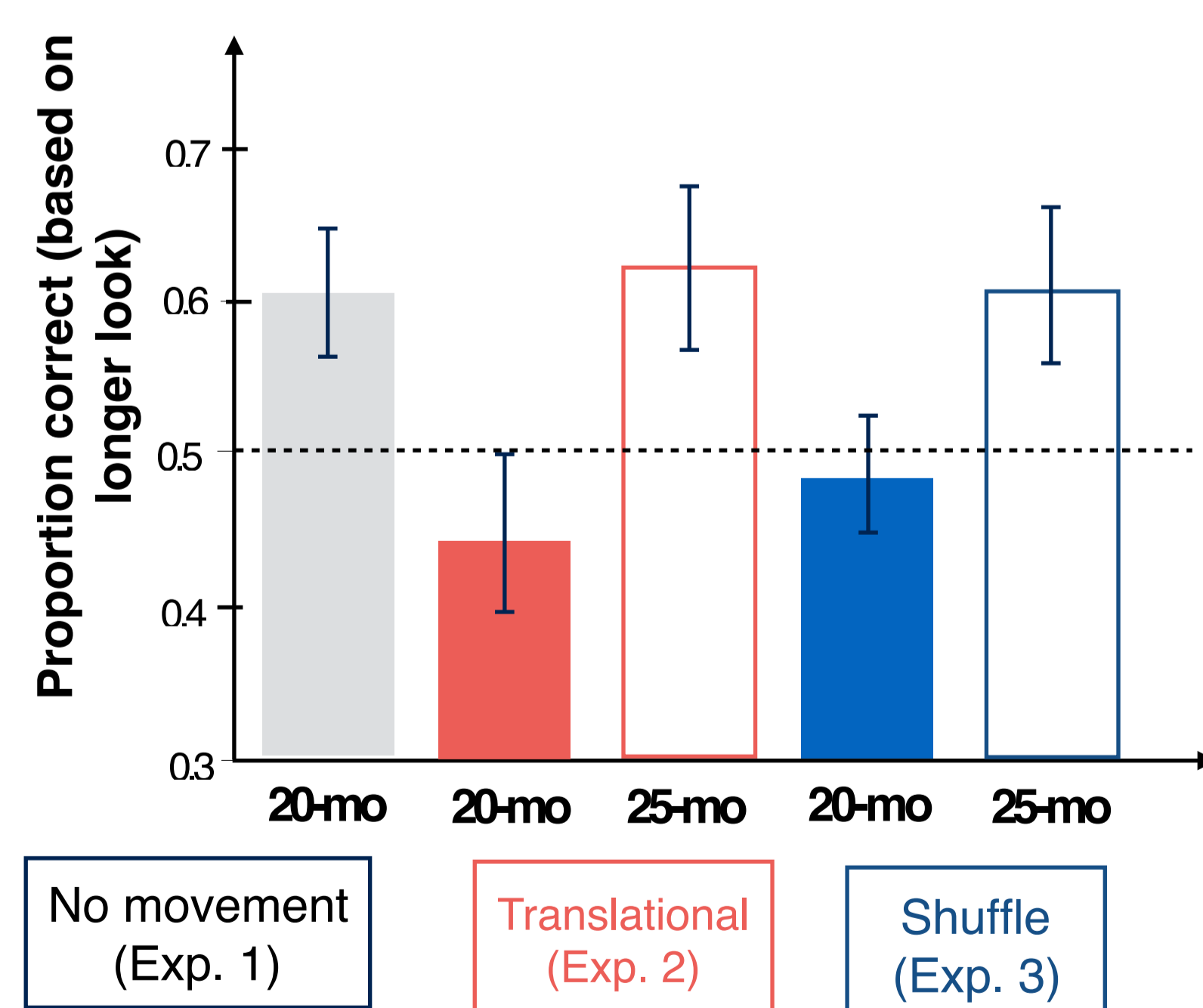
### Participants

Exp 1: N = 21, M\_age = 20.2 (18-22 mo)  
Exp 2: N = 21, M\_age = 20.0 (18-22 mo)  
N = 21, M\_age = 24.7 (22-26 mo)  
Exp 3: N = 21, M\_age = 19.3 (18-22 mo)  
N = 21, M\_age = 24.9 (22-26 mo)

- 12 trials total
- Only infants who completed 3+ trials were included
- First three trials were discarded.

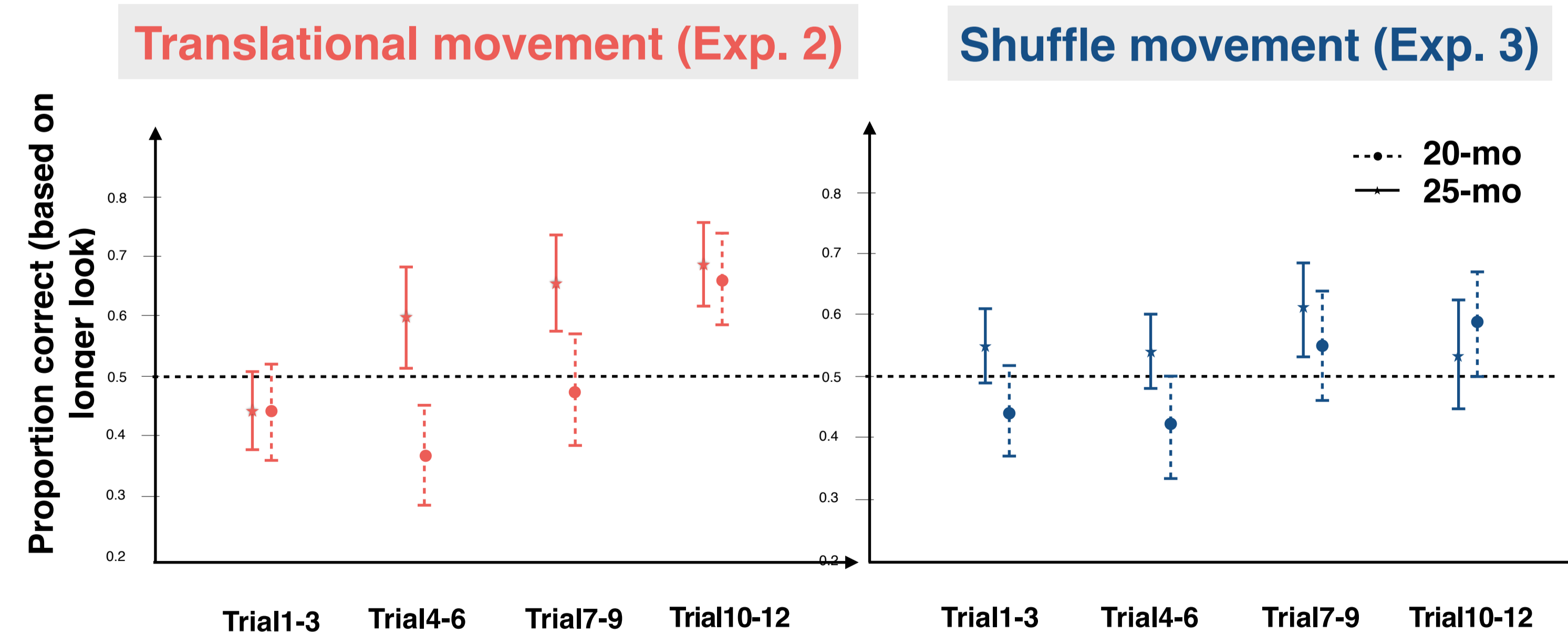
## Results

### VWM performance



20-month olds could remember object-location bindings only when objects did not move (Exp1); But older (25-month) infants could track object-location bindings with *translational* (Exp 2) or *shuffle* movement (Exp 3) of cards.

### Learning effect?



- In both *translational* (Exp 2) and *shuffle* (Exp 3) movement, performance at both ages was better at the end of the task, suggesting individuals may be learning the task over time.

### Gender difference?

Collapsing two updating movements together, we found an interaction effect between age group and gender: girls performed better than boys at 25-month old, but worse at 20-month old ( $p < 0.005$ ).

## Discussion

- 25-month olds could dynamically update a VWM representation in response to both a *translational* and *shuffle* movement of to-be-remembered items.
- Though overall performance showed 20-month olds failed to perform the updating tasks, they showed a (weak) learning trend, suggesting further training and practice may be beneficial; further study is needed.
- A suggestive developmental gender difference was found: girls out performed boys.

## Acknowledgement & Refs

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