

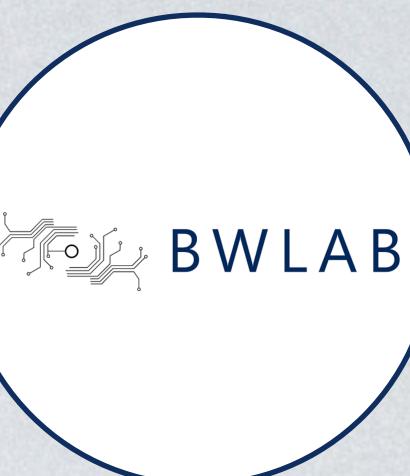
# Dynamic Representations in Visual Working Memory?

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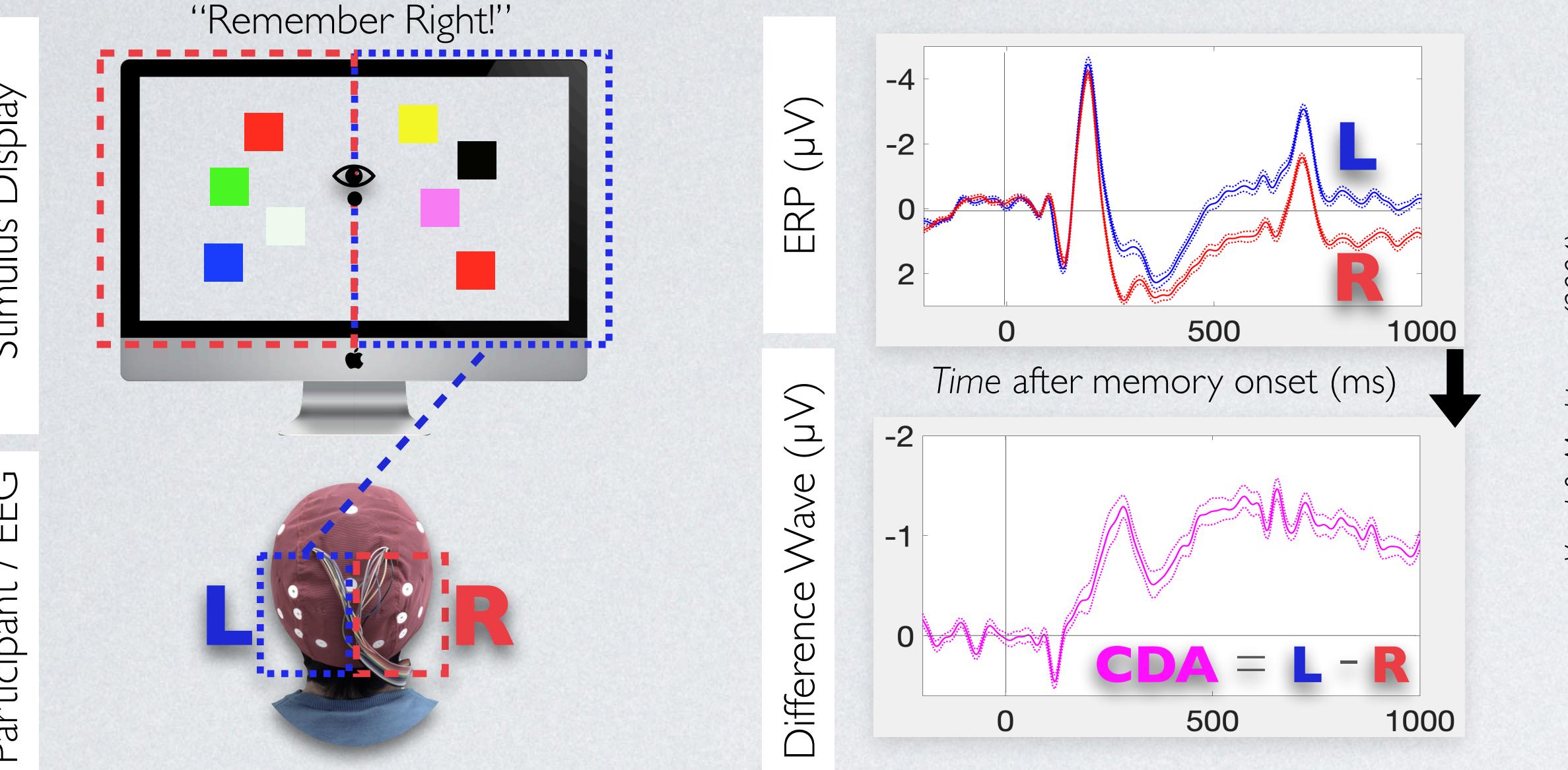
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## How do we keep track of visual information as it changes across time?

► **Visual Working Memory (VWM)** is a theoretical mental workspace where we represent a limited amount of visual information in an active state for a current task.

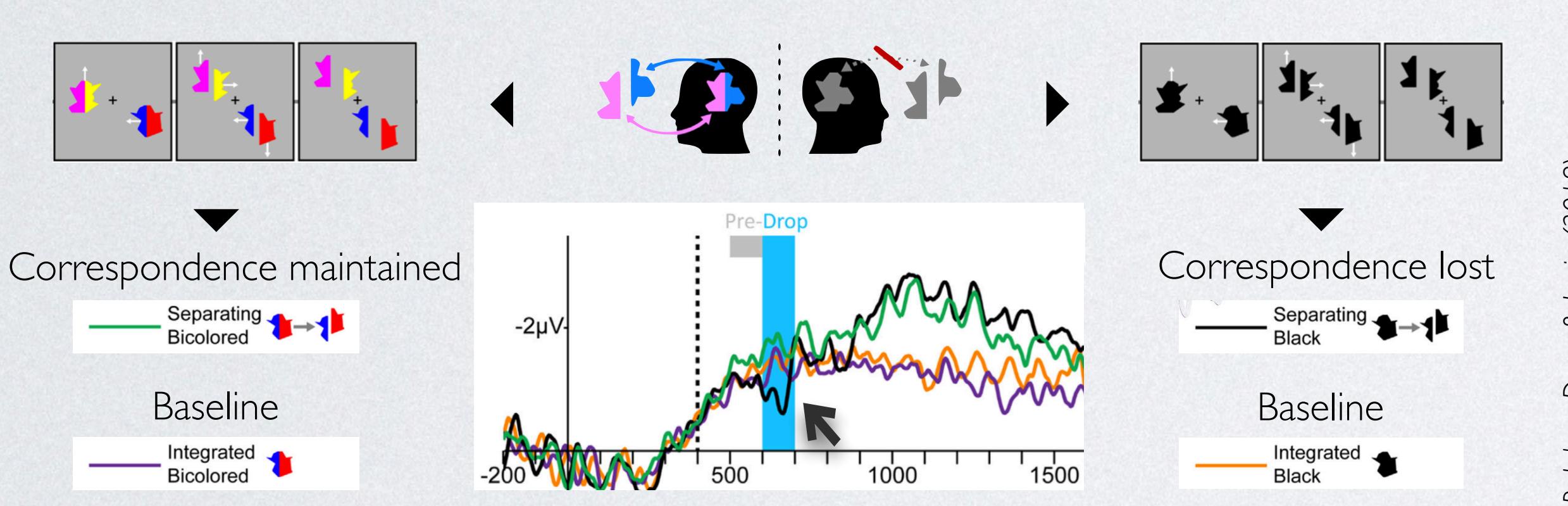
► **Contralateral Delay Activity (CDA)** is an event-related potential whose amplitude tracks the active capacity of VWM.



## How are VWM representations modified?

### Updating

Following stimulus change, VWM **amends** its existing representation of that stimulus to maintain correspondence.

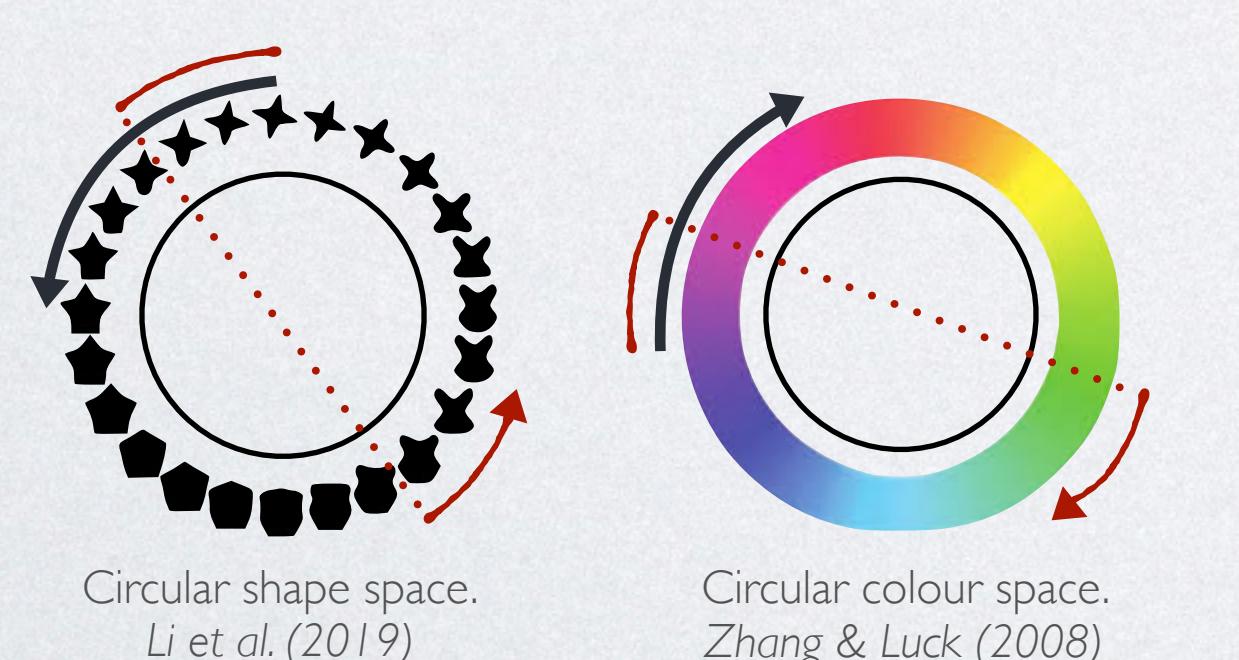


► But previous demonstrations (polygon separation) of loss of stimulus-to-representation correspondence are confounded by change in # of stimuli & change in movement direction.

Discerning a loss of stimulus-to-representation correspondence using 2 types of change

### Continuous Change:

► Gradual change of a stimulus along a circular stimulus space (correspondence maintained).

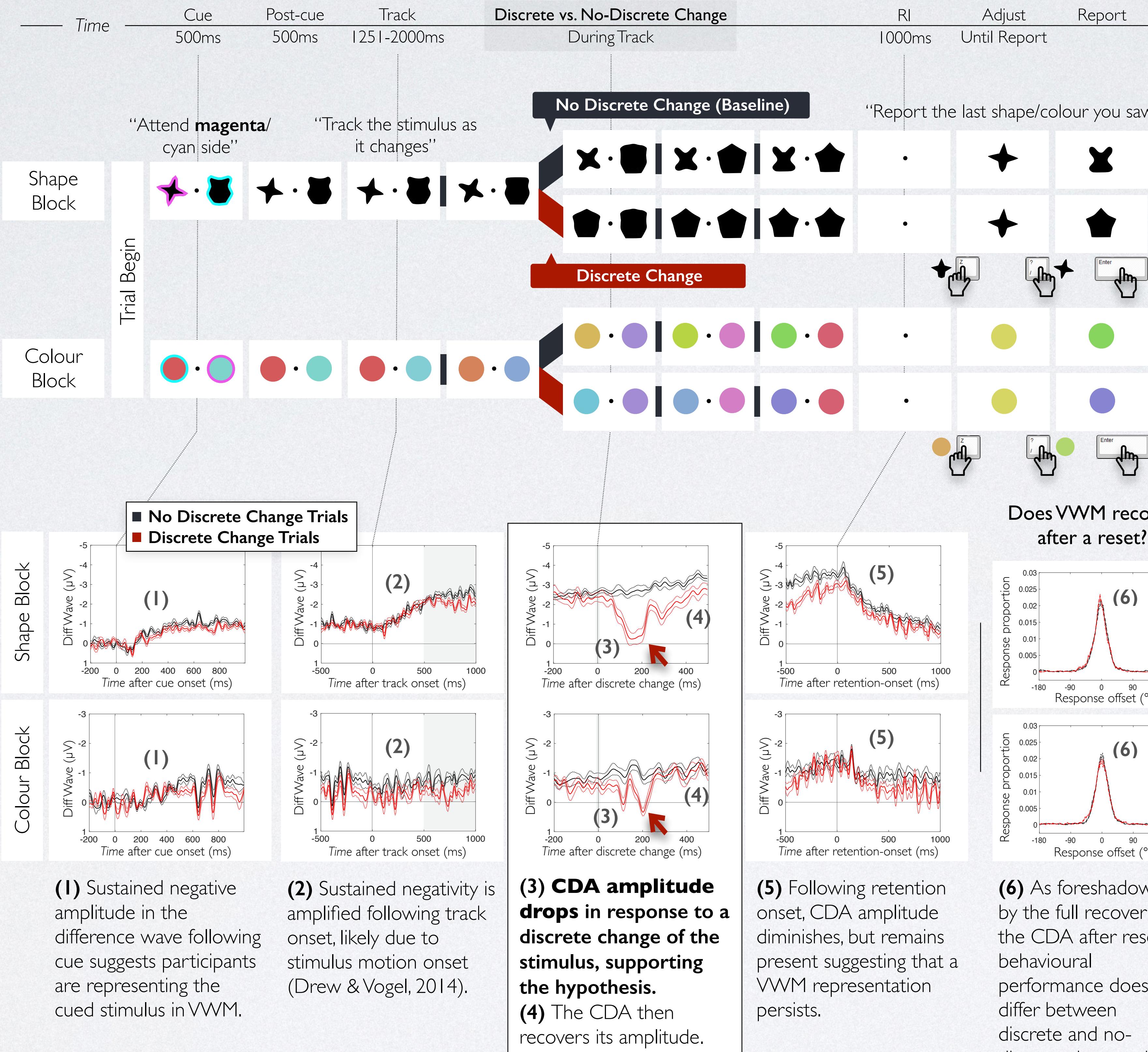


### Discrete Change:

► Non-gradual change of a stimulus along a circular stimulus space (correspondence lost).

## Exp 1 - Is a loss of stimulus-to-representation correspondence sufficient for VWM representations to reset?

► If VWM representations reset to a loss in stimulus-to-representation correspondence, then we should observe a **drop in CDA amplitude** [→] to a discrete change of a stimulus.

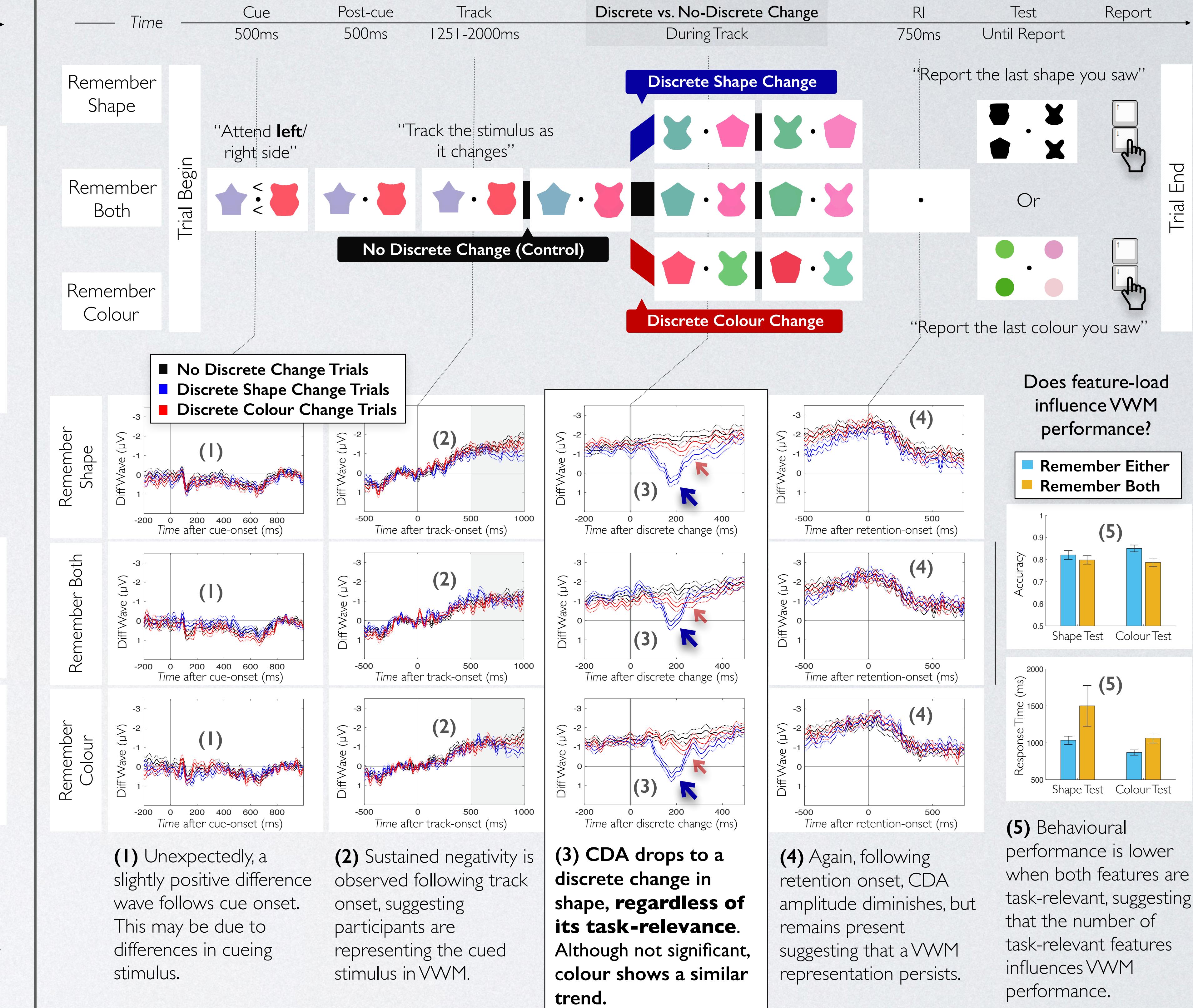


## Exp 1 Discussion

► A loss of stimulus-to-representation correspondence alone is sufficient for VWM representations to reset.  
 ► Maintained correspondence results in no resetting.  
 ► **Overall, whether VWM updates or resets depends on stimulus-to-representation correspondence.**

## Exp 2 - Is resetting caused by a lost correspondence in object-based representations?

► If VWM resetting reflects a lost correspondence in object-based representations, then we should observe a drop in CDA amplitude [→] to a discrete change in a feature of a stimulus, **regardless of its task-relevance**.



## Exp 2 Discussion

► VWM resets following a discrete change in shape, irrespective of its task-relevance.  
 ► Although not significant, a similar trend is observed following a discrete change in colour.  
 ► **Overall, the CDA's sensitivity to task-irrelevant change in a stimulus suggests that the CDA codes for object-based representations.**

## References

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