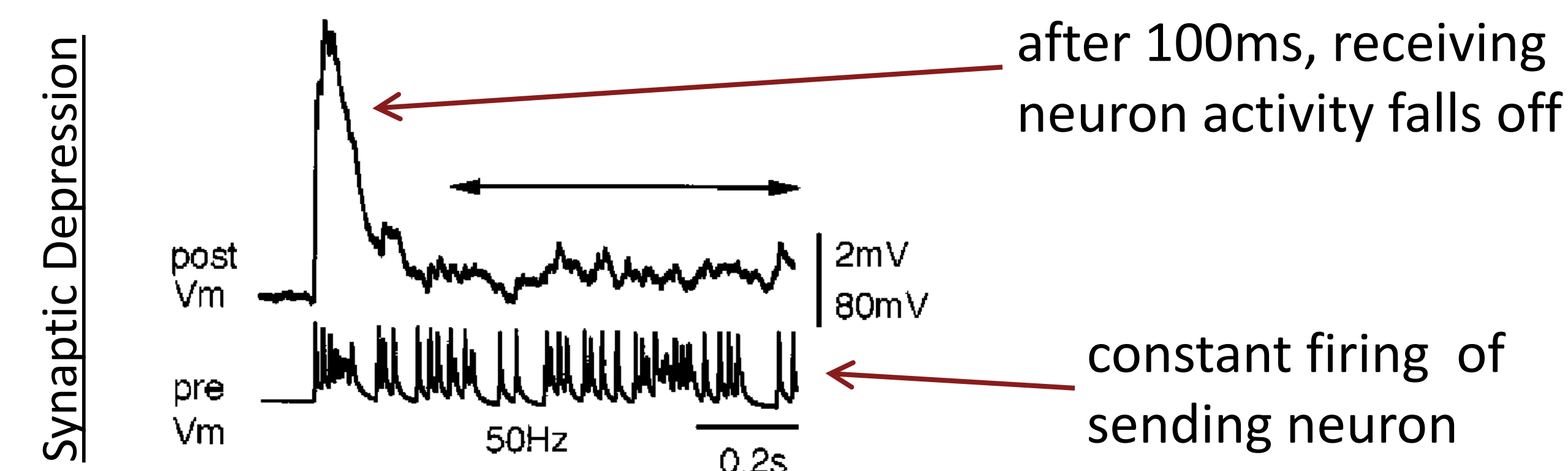


## Temporal Parsing w/ Neural Habituation

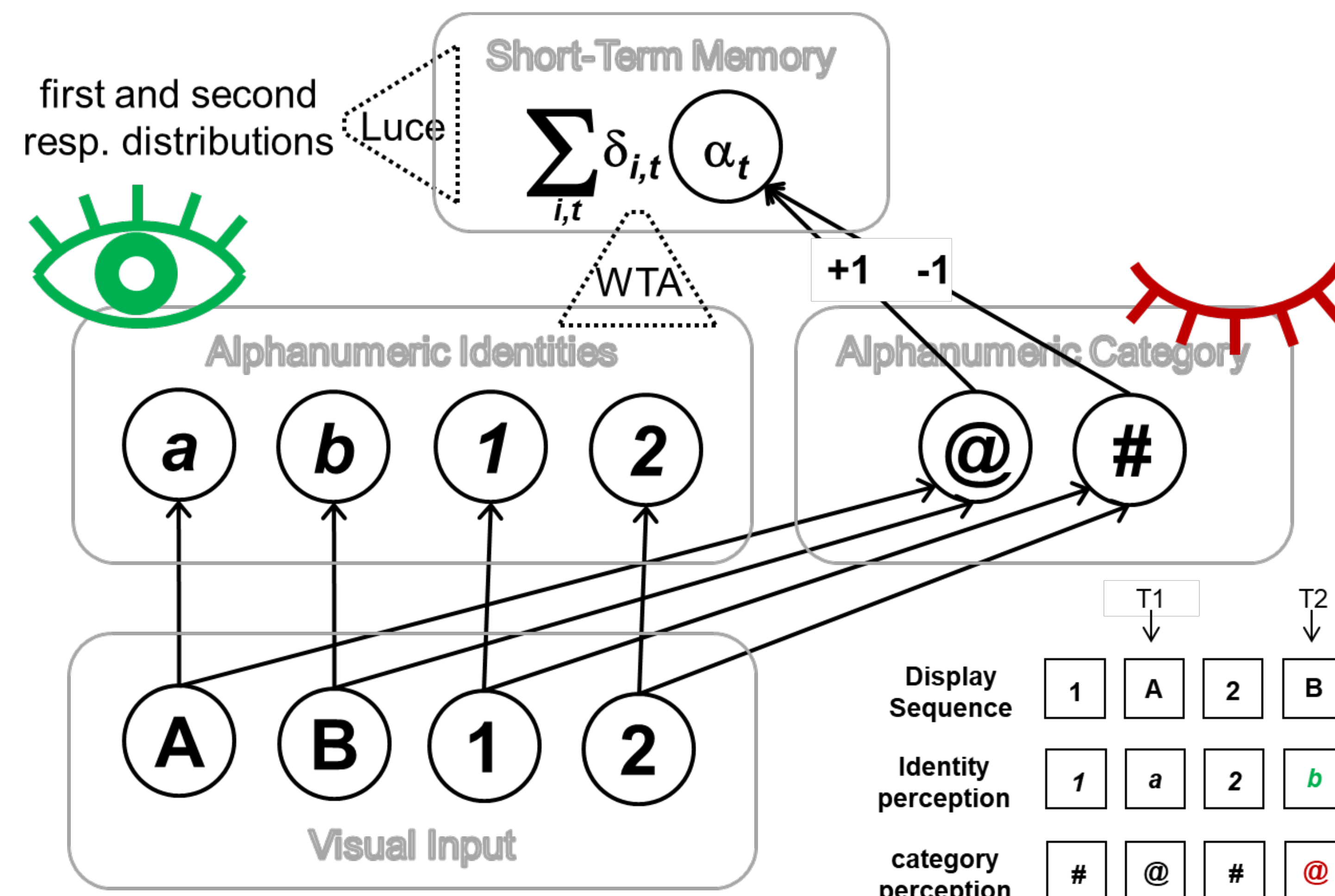
- Many RSVP tasks produce a transient deficit for a second stimulus following a related or identical first stimulus
- Huber and O'Reilly (2003) proposed that neural habituation ('synaptic depression') parses the sequence, reducing interference from recent presentations



- However, this parsing comes at a cost, producing repetition deficits if the second stimulus is a repeat

## A Perceptual Account of the Attentional Blink (AB)

- Rusconi and Huber (2018) developed the 'Perceptual Wink' model by applying neural habituation to the AB task
- For many AB tasks, both targets belong to the same class of stimuli
  - letters/numbers, upper/lower-case, color, circles, etc.
- Perception of target-defining attribute (e.g. letter detector)
  - lag 1 sparing: letter detector is primed
  - lags 2-4: letter detector is habituated and number detector active
    - repetition blindness for letter detector

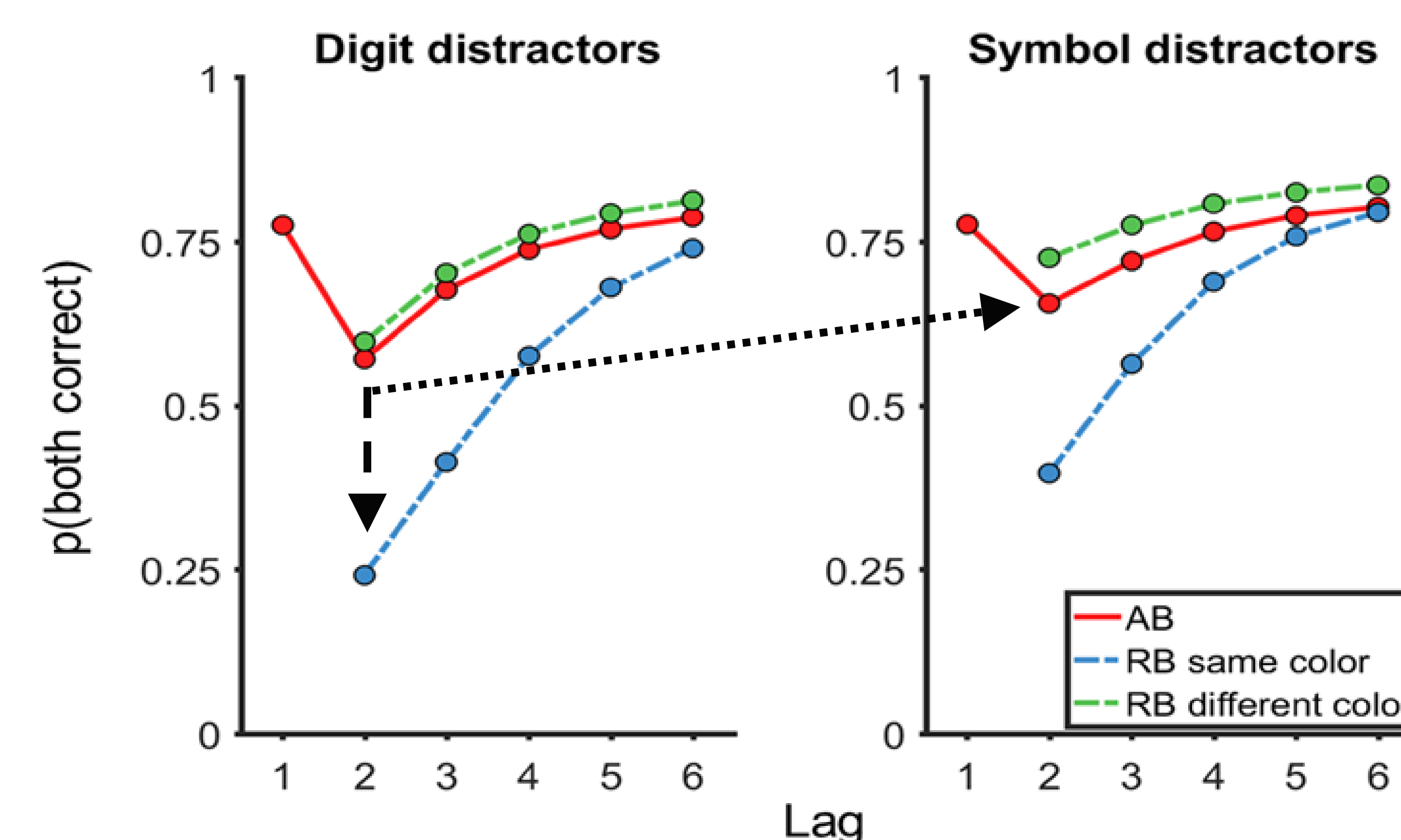


## References

- Huber, D. E., O'Reilly, R. C. (2003). Persistence and accommodation in short-term priming and other perceptual paradigms: temporal segregation through synaptic depression. *Cognitive Science*, 27(3), 403-430.
- Rusconi, P. & Huber, D. E. (2018). The perceptual wink model of non-switching attentional blink tasks. *Psychonomic Bulletin & Review*, 25, 1717-1739.

## Repetition Blindness and the AB

- According to the perceptual wink model, the AB is repetition blindness (RB) for the target-defining attribute
- However, Chun (1997) reported a double dissociation between RB and the AB
  - symbols as distractors weakens AB
  - different colors for repeats eliminates RB
- The wink model can explain this double dissociation (visual RB vs categorical RB)

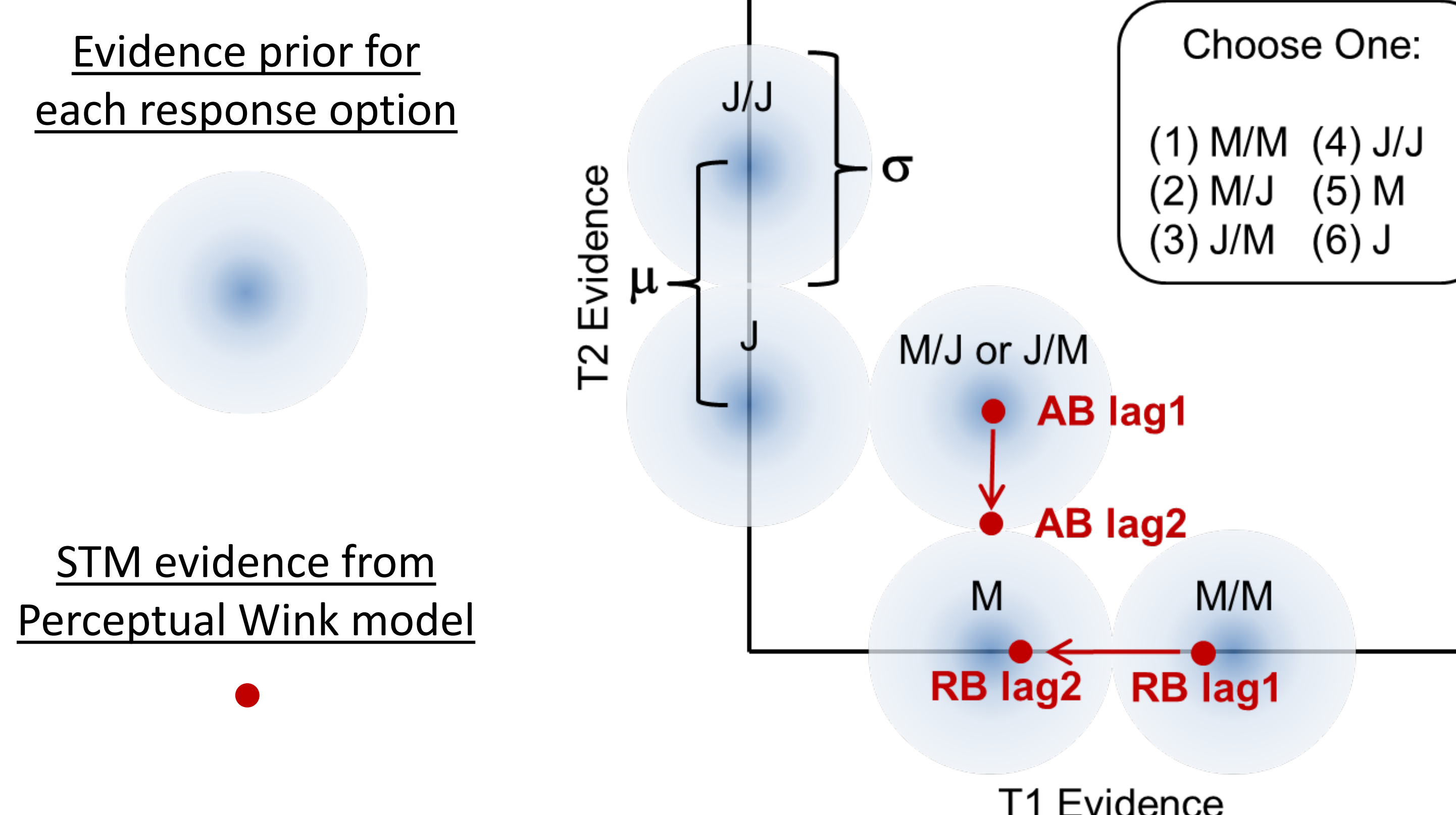


Extra RB deficit if the second target is the same color (habituated visual input)

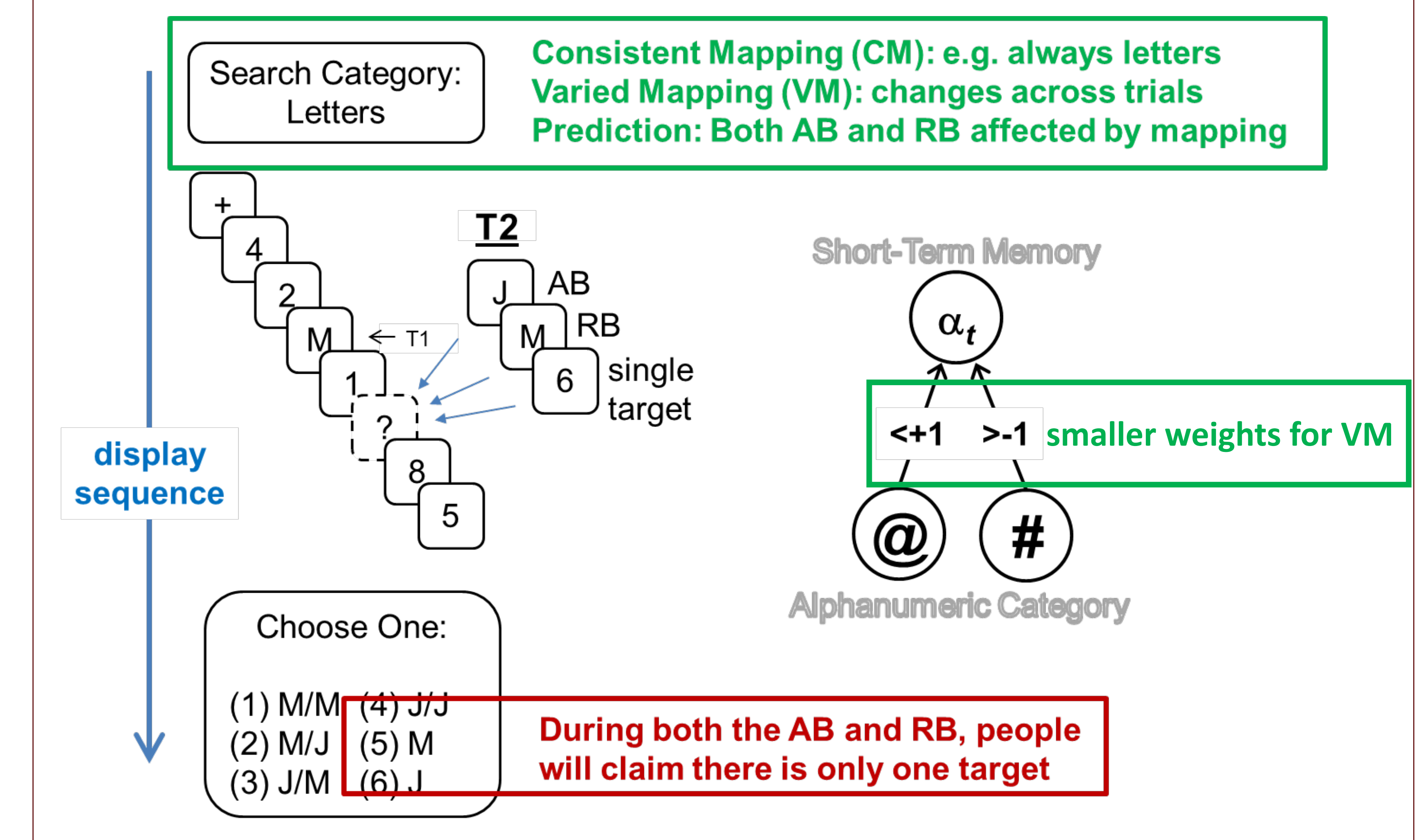
Weaker AB with symbol distractors (no need for distractor detector)

## Bayesian Decision Process for # of Repetitions

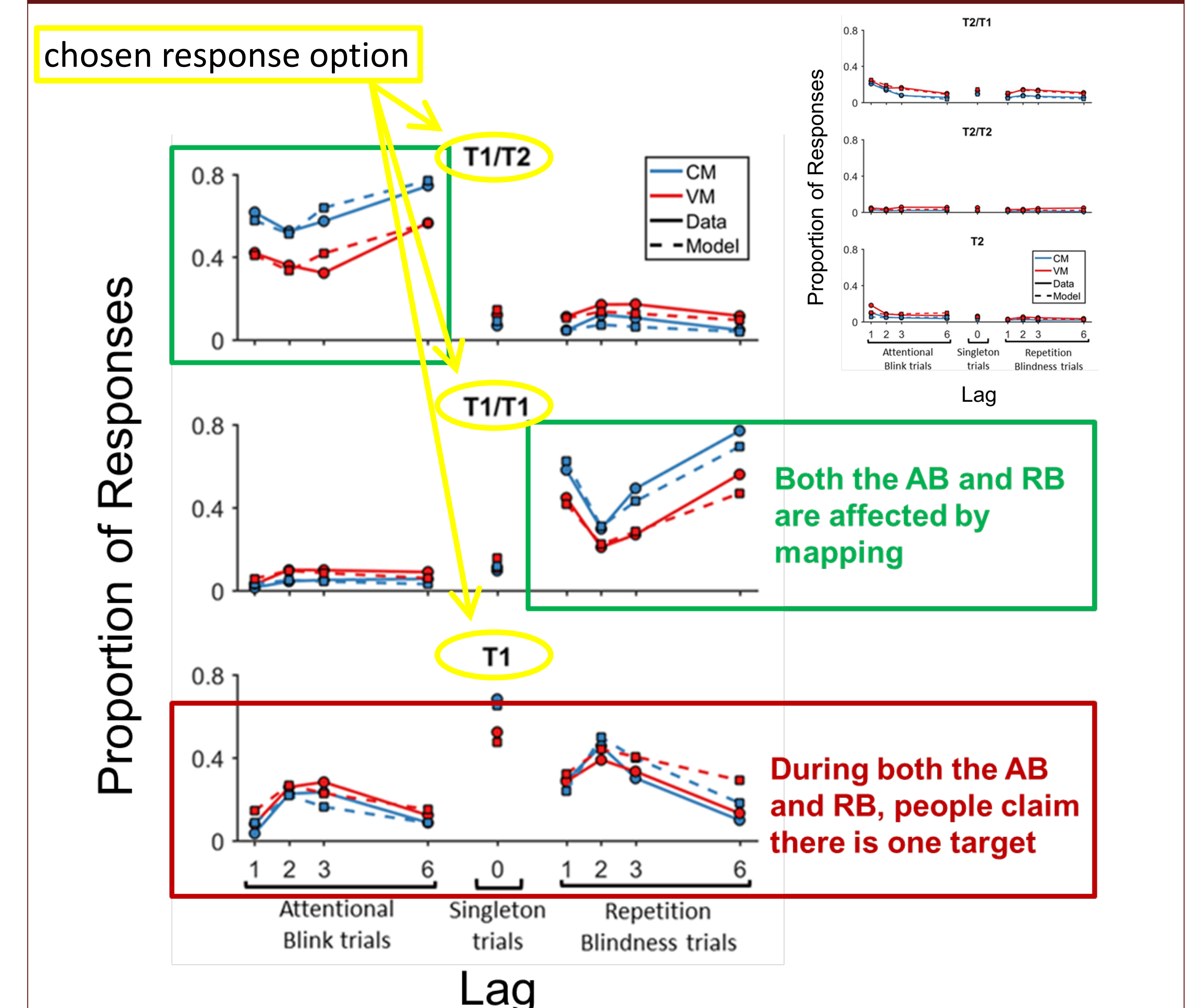
- The perceptual wink model is a 'type' model and has no knowledge of 'tokens'
- Solution: Infer # of repeats from STM evidence priors
  - decision process makes specific predictions for patterns of errors
  - these are tested with 6 response options at the end of each trial



## Two Novel Predictions



## Experimental Results



## Conclusions

- The perceptual wink model was augmented with a Bayesian decision process to infer # of repetitions
- Unified model explained dissociations between AB and RB
- Novel predictions confirmed
  - Both AB and RB vary with mapping consistency
  - In midst of AB and RB, people claim there is only one target