Bistable perception alternates between internal and external modes of sensory processing

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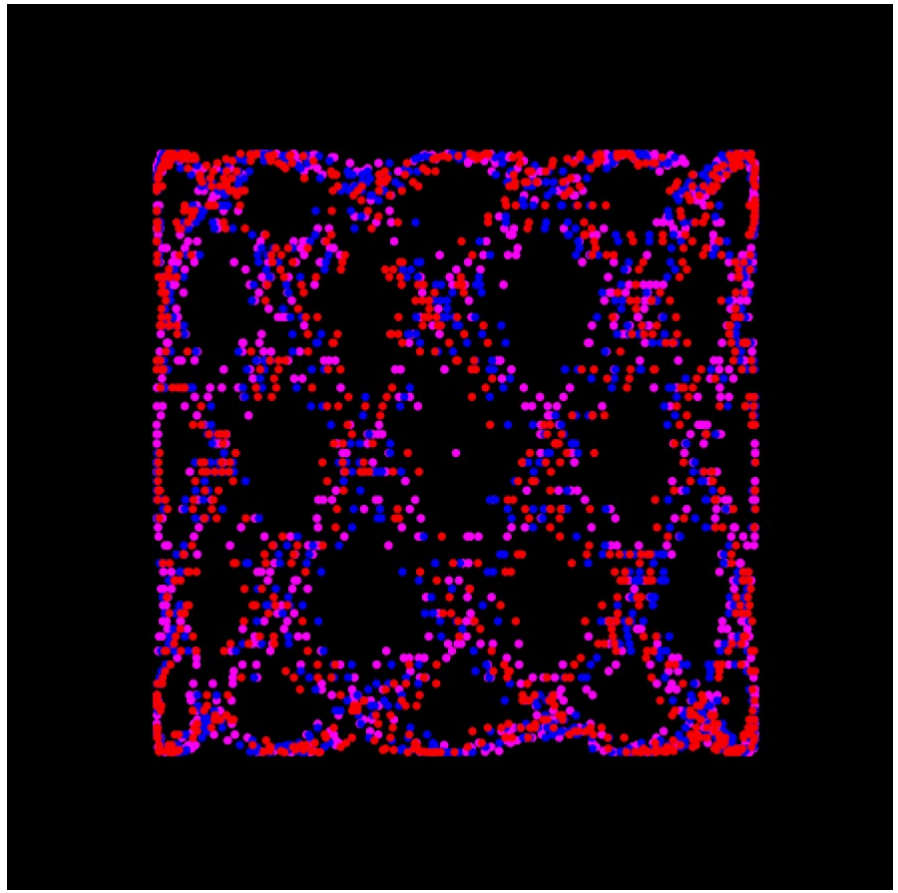
Bistable Perception



Bistable perception:

Spontaneous transitions between to mutually exclusive perceptual states (Leopold et al. 2002).

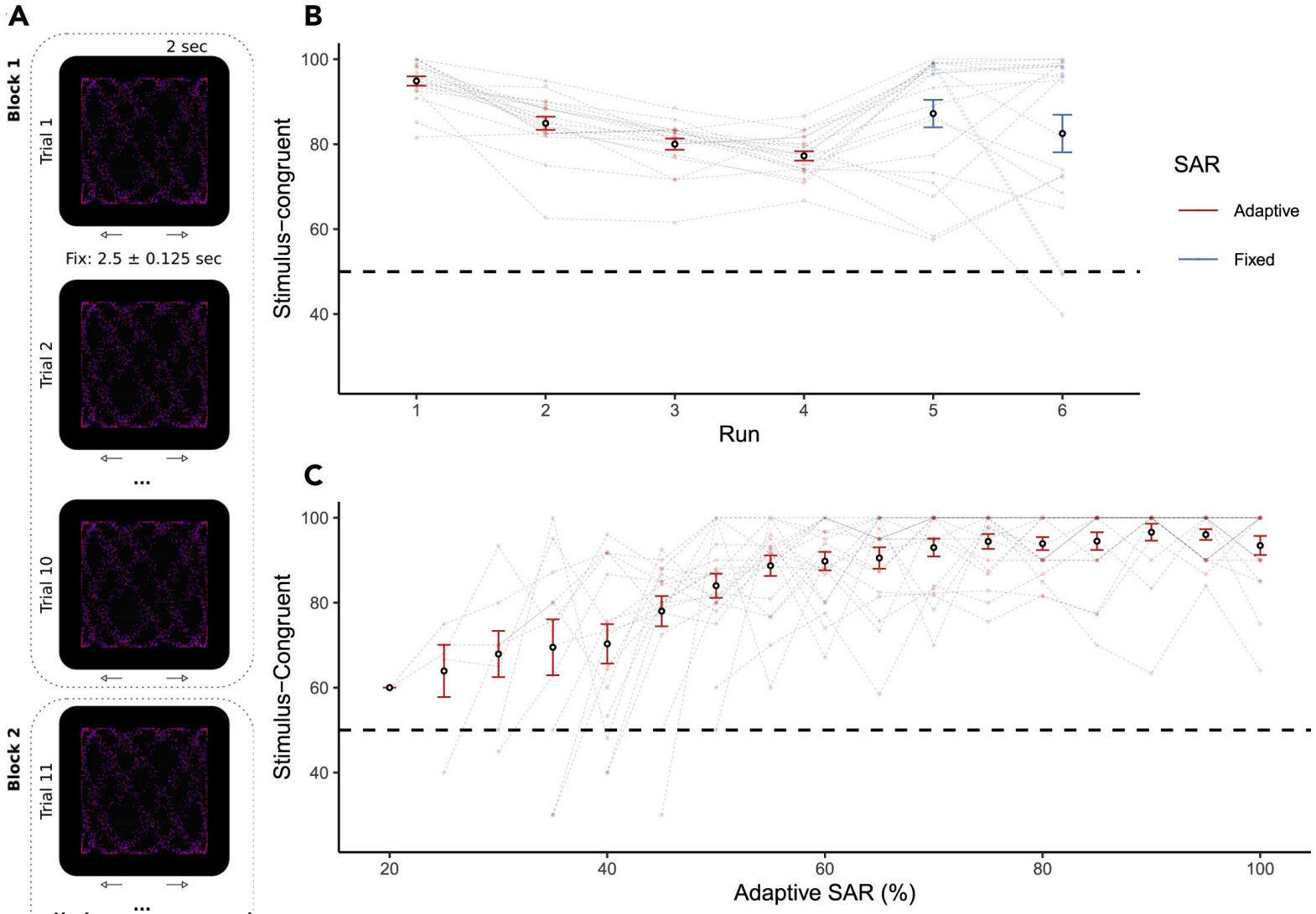
Intermittend presentation:

Conscious experience is stabilized by perceptual history (Maloney et al. 2005, Pearson & Brascamp 2008).

Graded ambiguity:

How strong is perceptual history relative to the stimulus' signal-to-ambiguity ratio?

Perceptual History vs. Signal-to-Ambiguity



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Stimulus-congruence:

Perceptual state matches stimulus information.

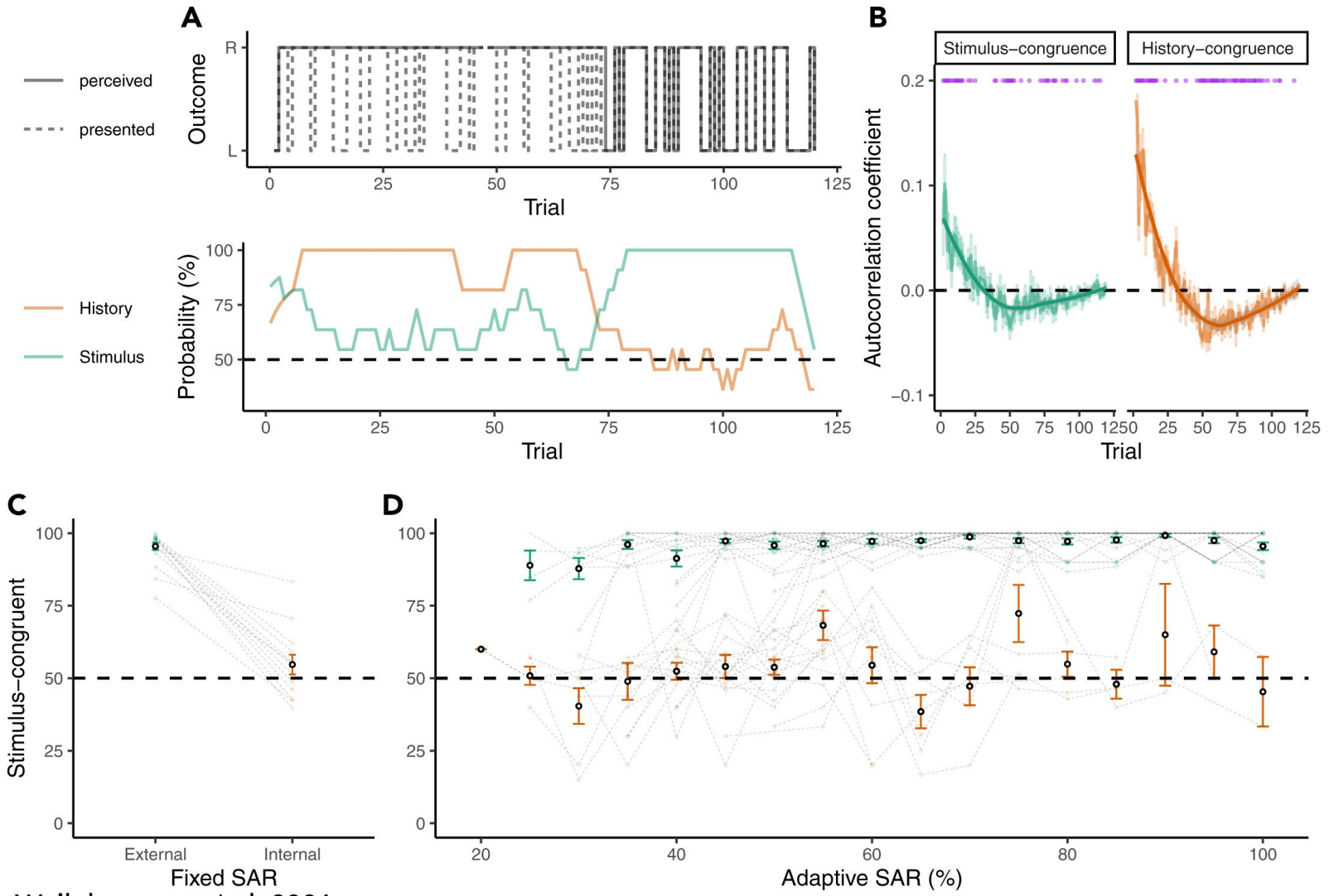
History-congruence:

Perceptual state matches preceding perceptual state

Psychophysical staircase:

SAR adjust the balance between stimulus- and history-congruence

Internal and External Mode



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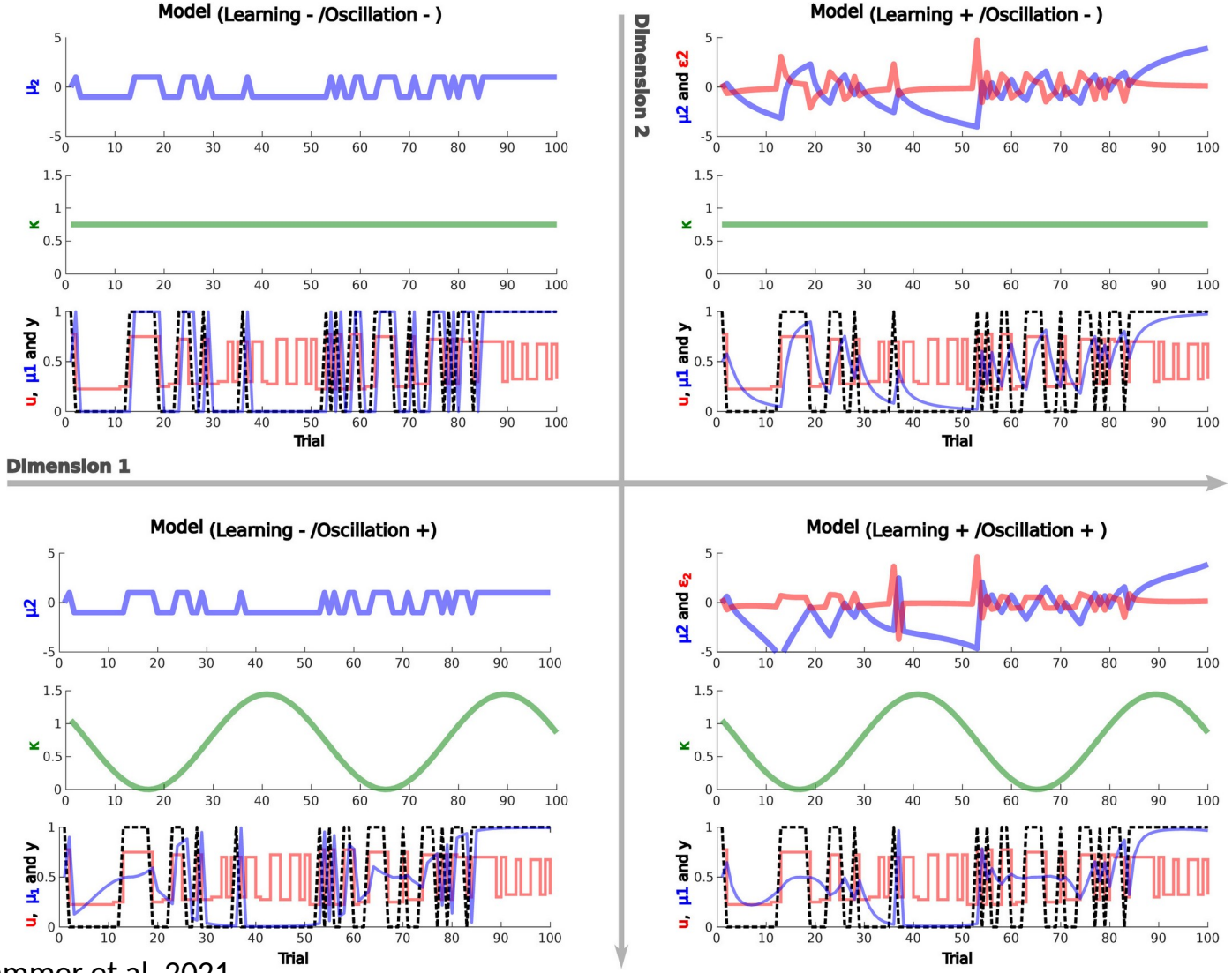
Fixed SAR:

Bistable perception oscillates between internally- and externally-biased modes.

Duration: ~ 40 trials / ~ 3 min

Computational Mechanisms



Dimension 1:

Are transitions to internal mode driven by accumulating effects of perceptual history?

Dimension 2:

Are transitions between modes caused by sytematic fluctuations in the effect of perceptual history on conscious experience?

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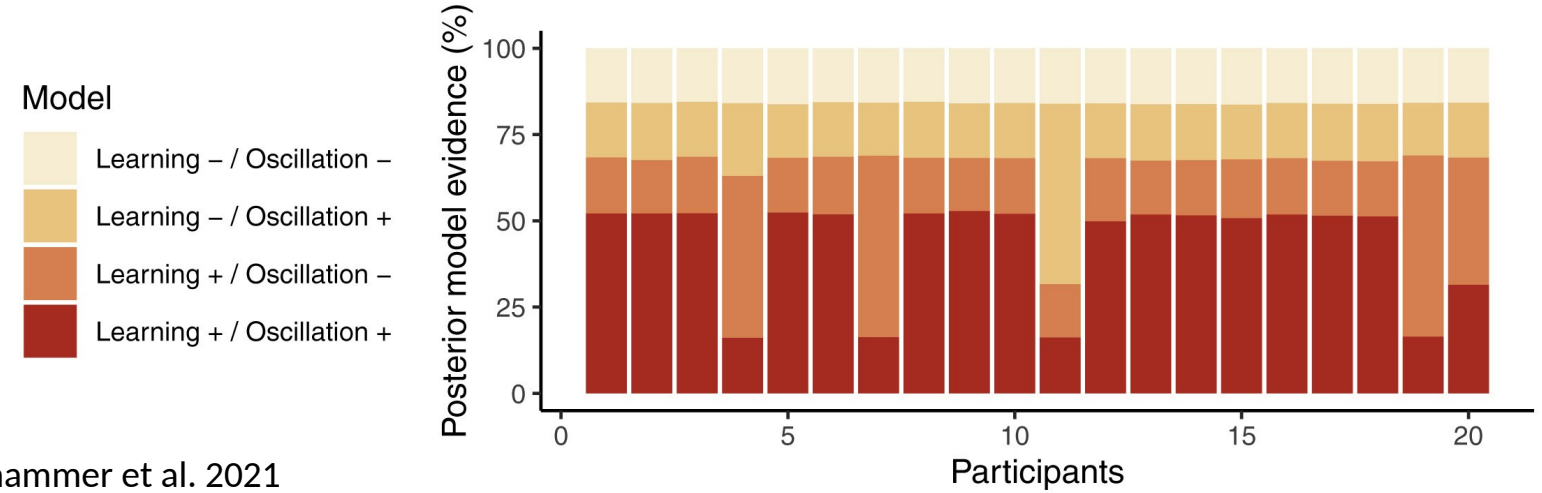
Computational Mechanisms



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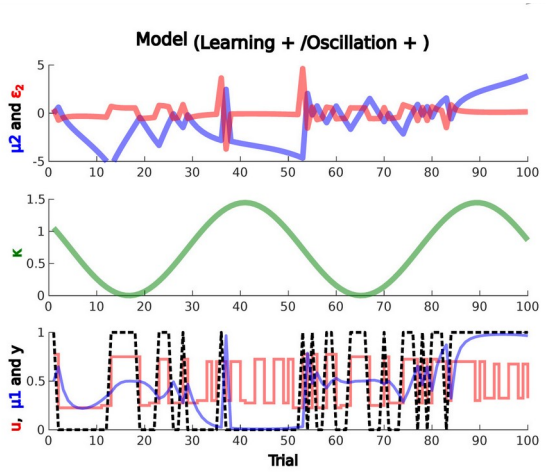

Two factors: Between-mode transitions are governed by systematic fluctuations in the impact of accumulating perceptual history.

Credit assignment: Learning stable internal representations despite ongoing sensory inputs (Honey et al. 2017).

Thanks!

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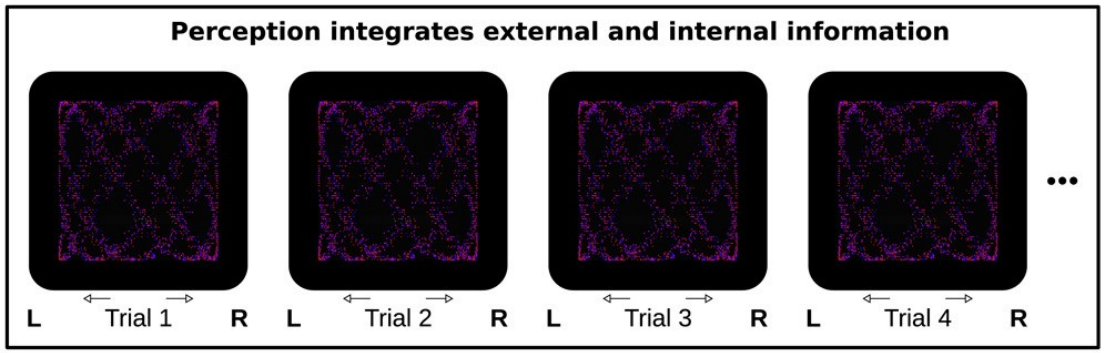

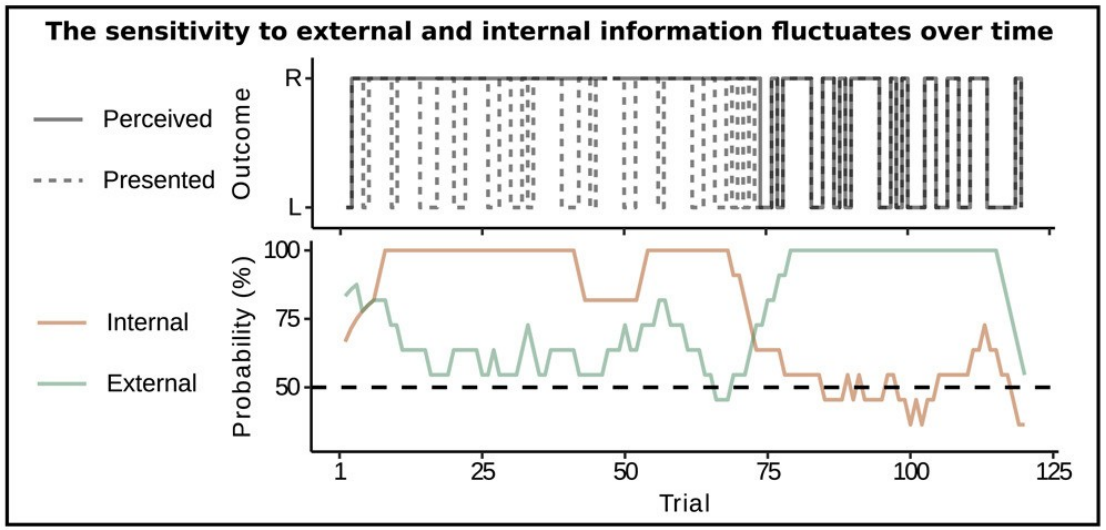

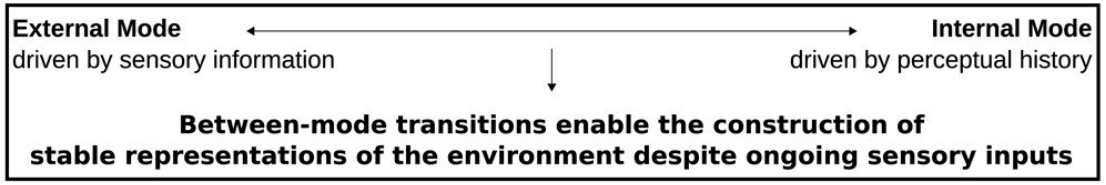

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THANKS A LOT FOR YOUR ATTENTION

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