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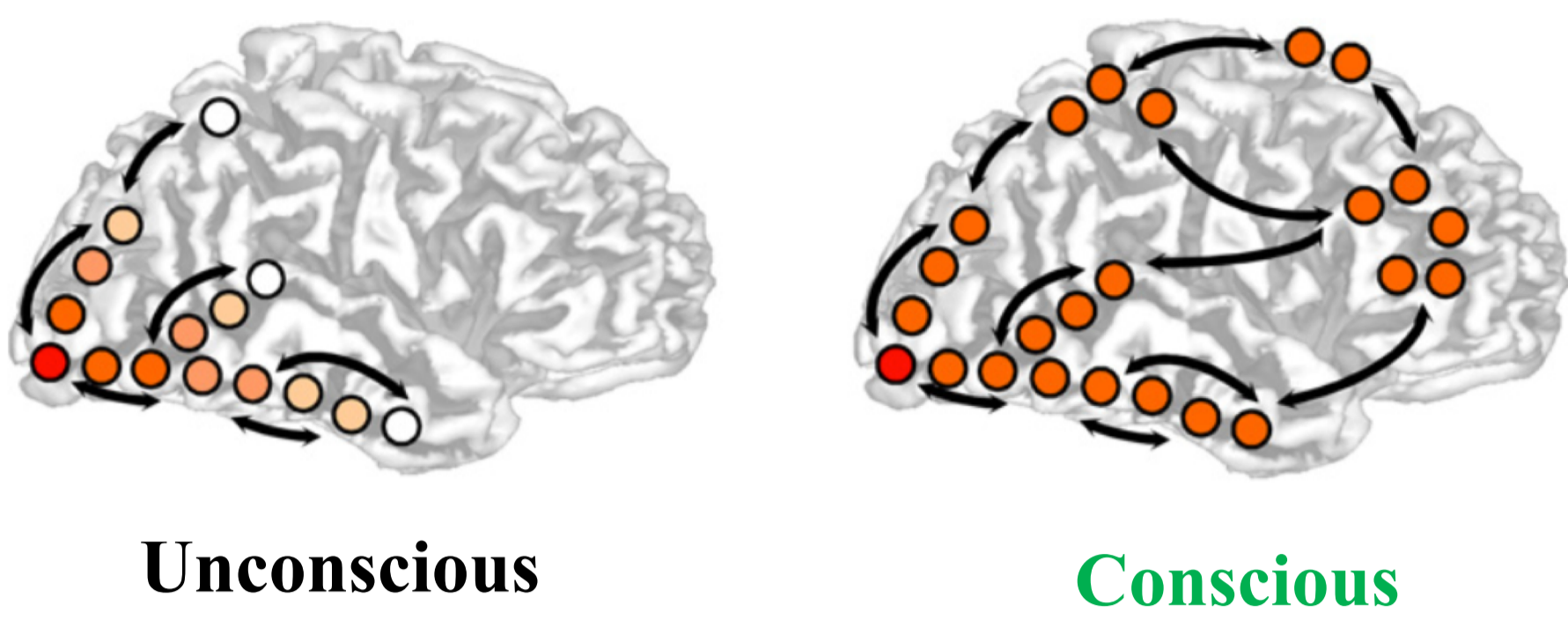
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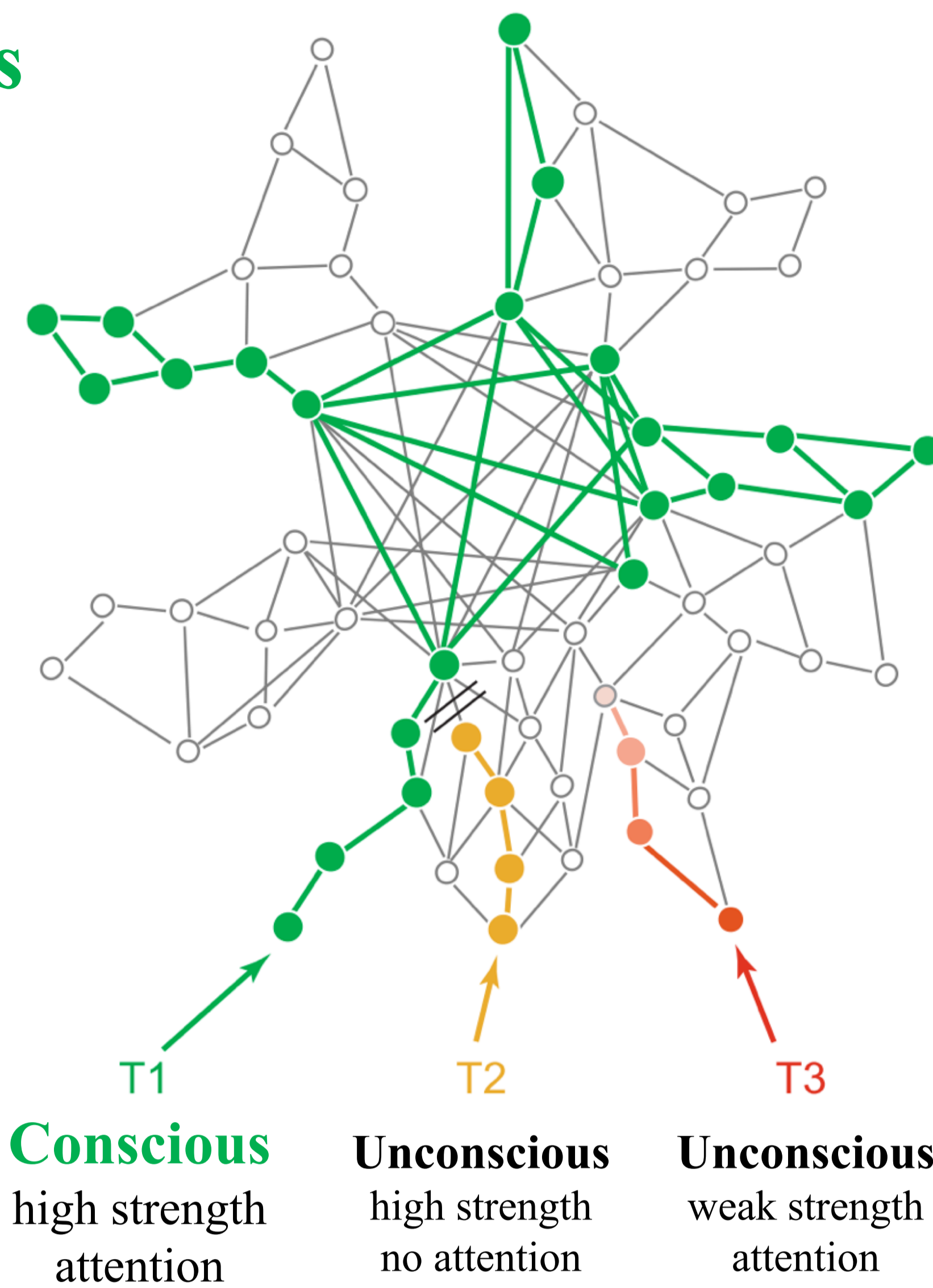
# Inhalation boosts perceptual awareness and decision speed

L. Molle<sup>1,2\*</sup>, A. Coste<sup>1</sup>, C-E Benoit<sup>3</sup>, G. Derosiere<sup>4,5</sup>, S. Janaqi<sup>1</sup>, S. Perrey<sup>1</sup>, A. Dupeyron<sup>1,6</sup>

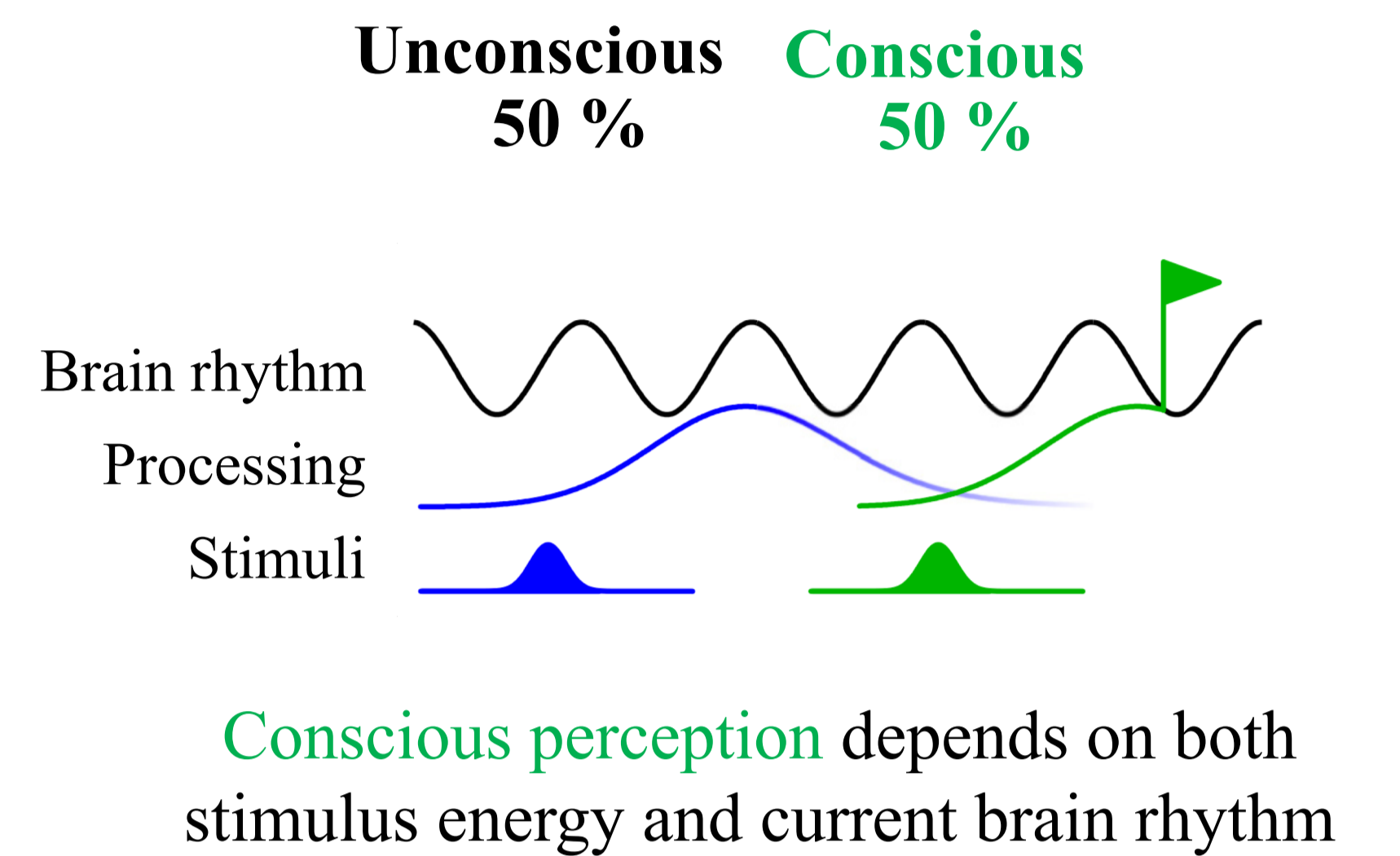
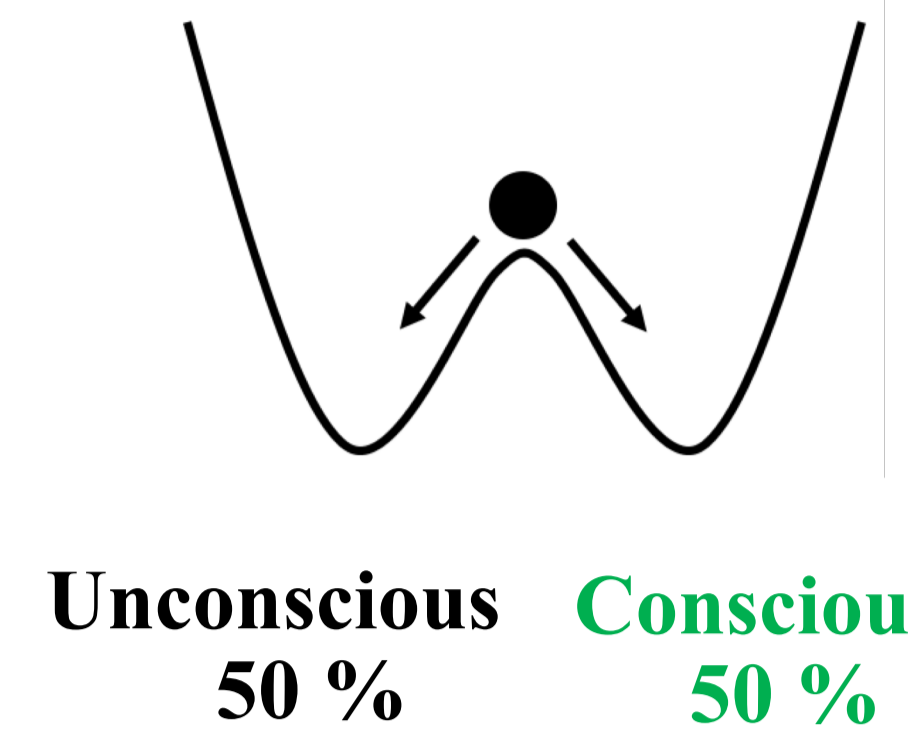
## 1 The neuroscience of consciousness



**Global Neuronal Workspace**  
Bifurcation in neural dynamics  
Non-linear “ignition”

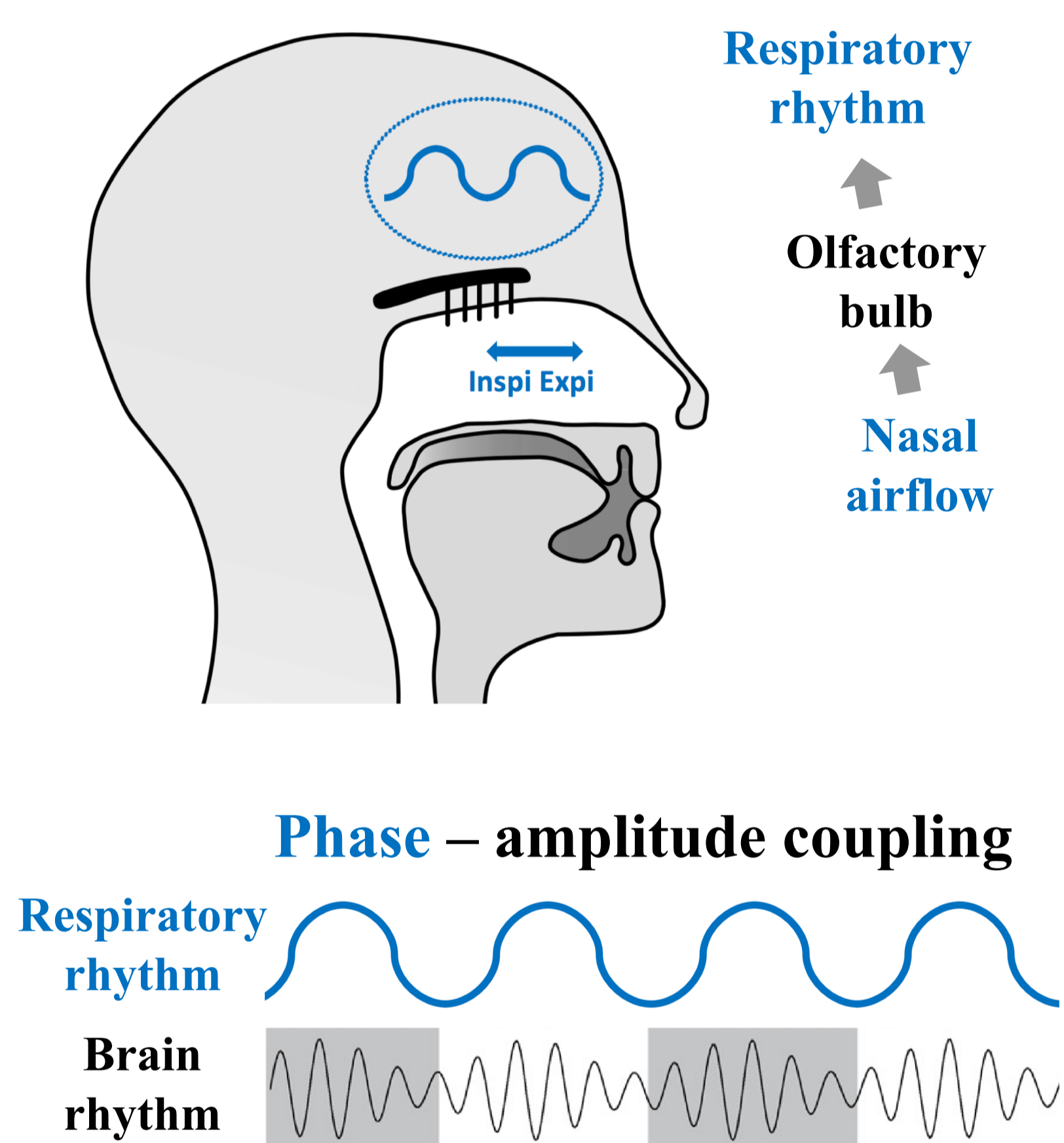


**The contrastive method**  
Bistability at the conscious threshold



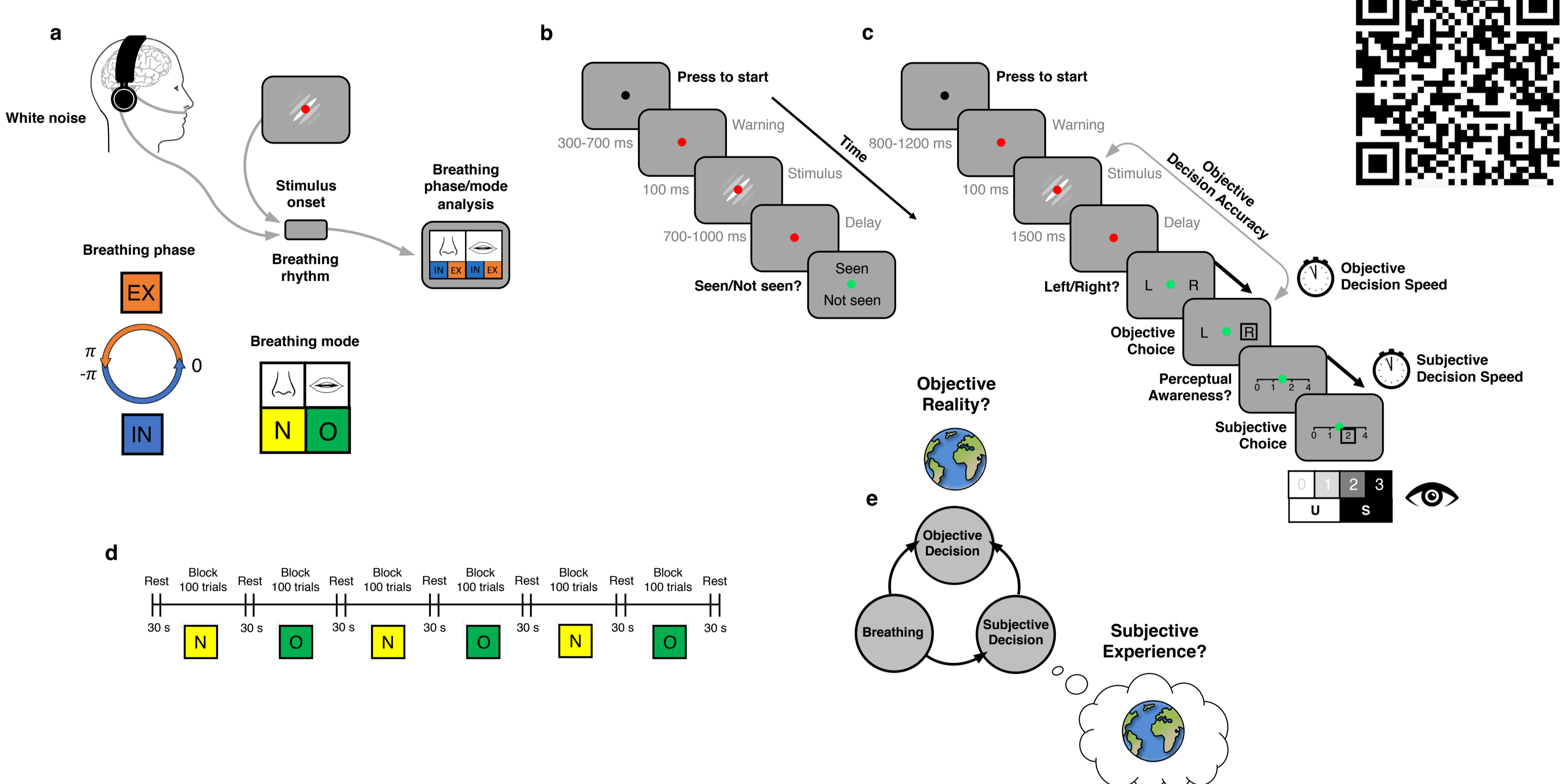
[1-5]

## 2 The neuroscience of breathing

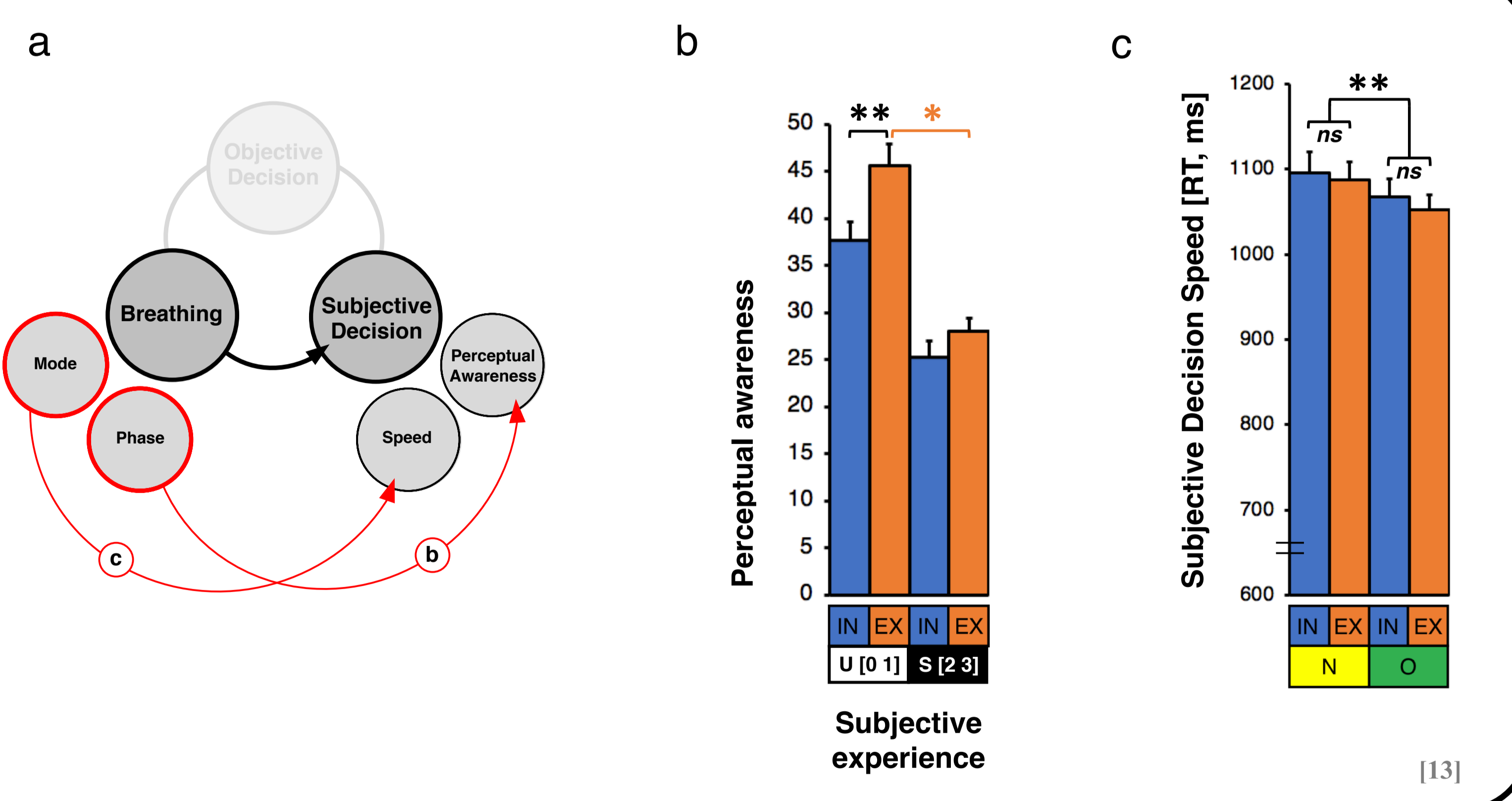


[8-12]

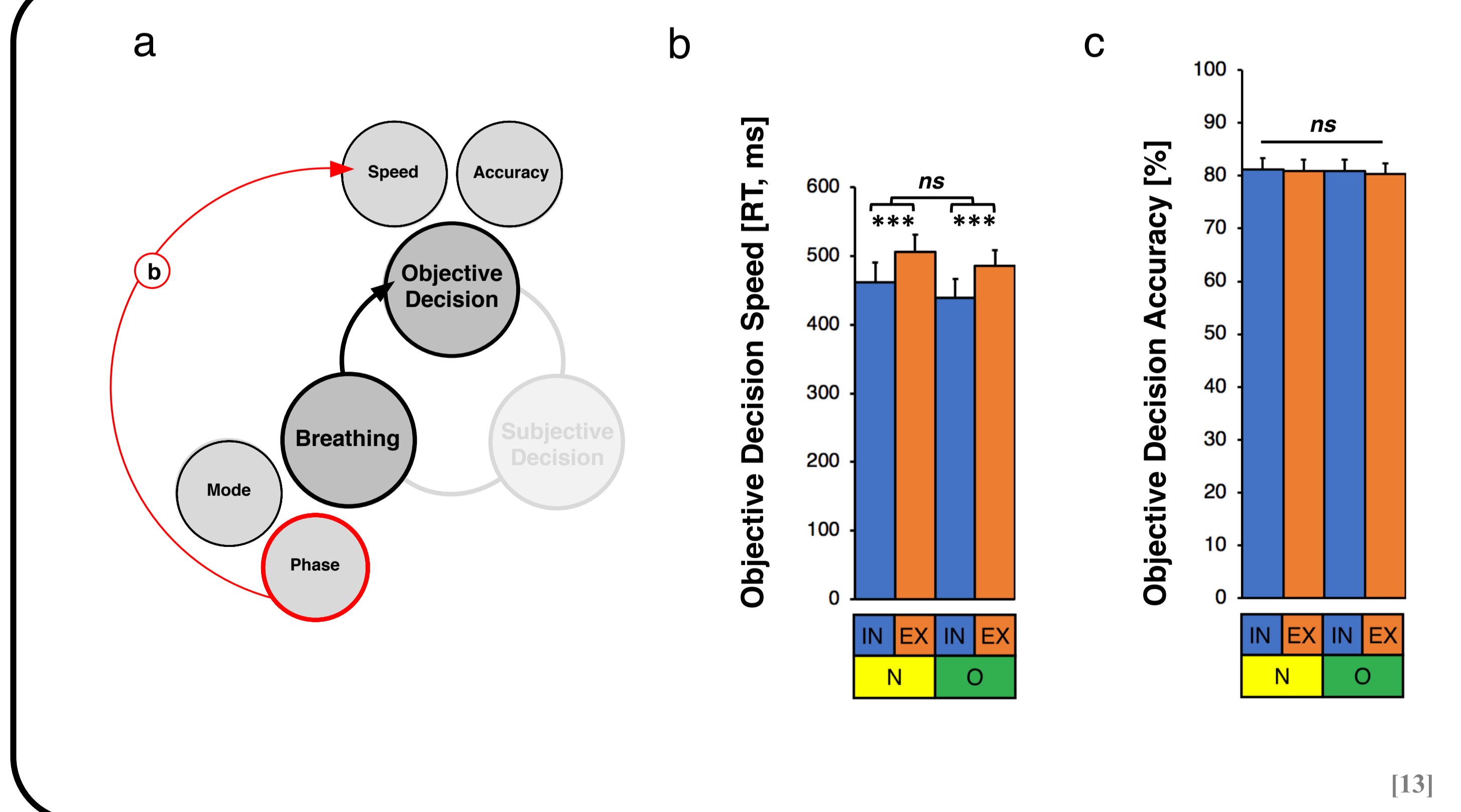
## 3 Experimental design and results



[13]



[13]



[13]

**Figure 1. Inhalation improves perceptual awareness, without affecting subjective decision speed.** a, The effect of breathing mode and phase on perceptual awareness and subjective decision speed. Red arrows indicate the significant effects observed. b, Perceptual awareness (i.e., average number of subjective choices) as a function of breathing phase by subjective experience. The black asterisk indicates a significant difference in the occurrence of “unseen” following stimuli presented during inhalation versus exhalation. The orange asterisk indicates a significant difference between the occurrence of “unseen” and “seen” following stimuli presented during exhalation. For clarity, as we found no significant effect of breathing mode on perceptual awareness, we pooled nasal and oral modes together on the figure. c, Subjective decision speed (i.e., mean subjective RT) as a function of breathing mode and phase.

**Figure 2. Inhalation speeds up objective decision-making, without affecting accuracy.** a, The effect of breathing mode and phase on objective decision speed and accuracy. The red arrow indicates the significant effects observed. b, Objective decision speed (i.e., mean objective RT) as a function of breathing mode and phase. c, Objective decision accuracy (mean percentage of correct objective choices) as a function of breathing mode and phase.

IN, inhale; EX, exhale; N, nasal; O, oral; RT, response time; U, unseen; S, seen; ns, not significant. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . Error bars represent standard errors (SE) of the means.