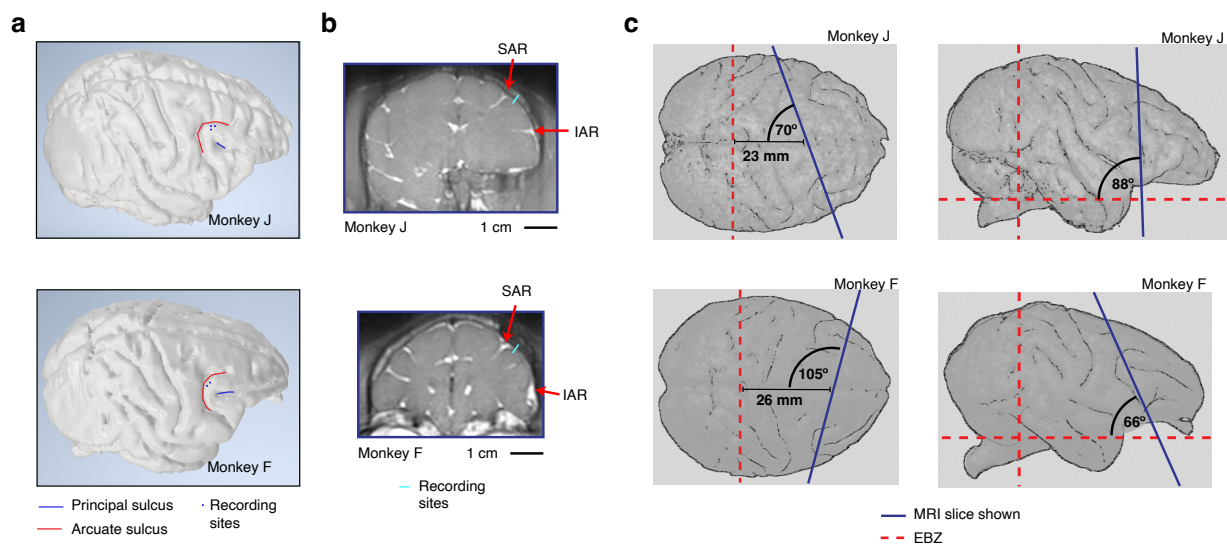
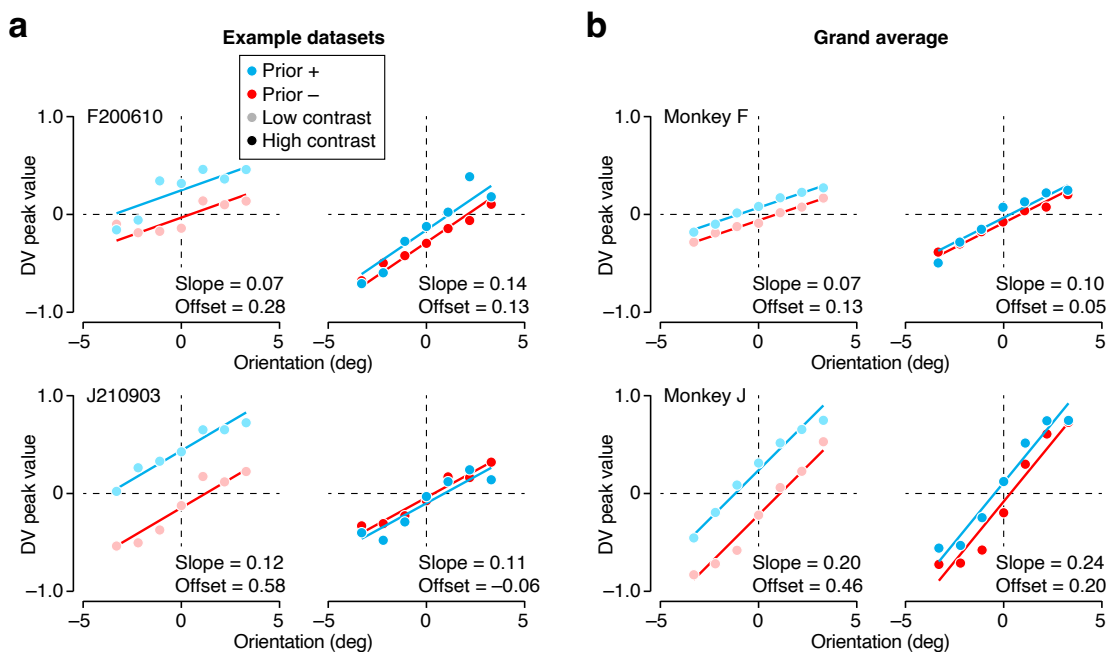


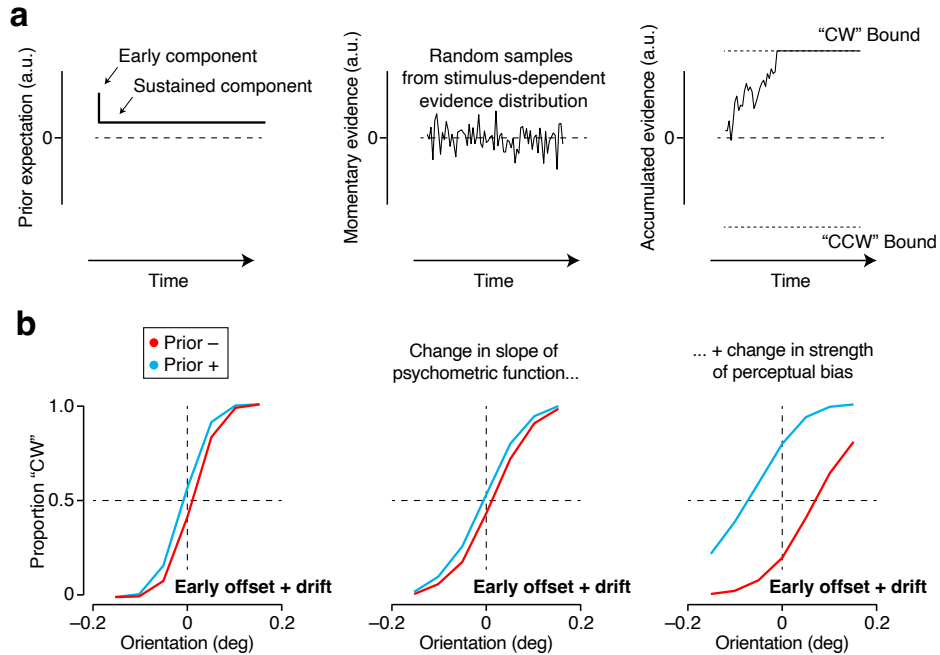
## Supporting Information – Thomas Langlois, Julie A. Charlton, and Robbe L. T. Goris



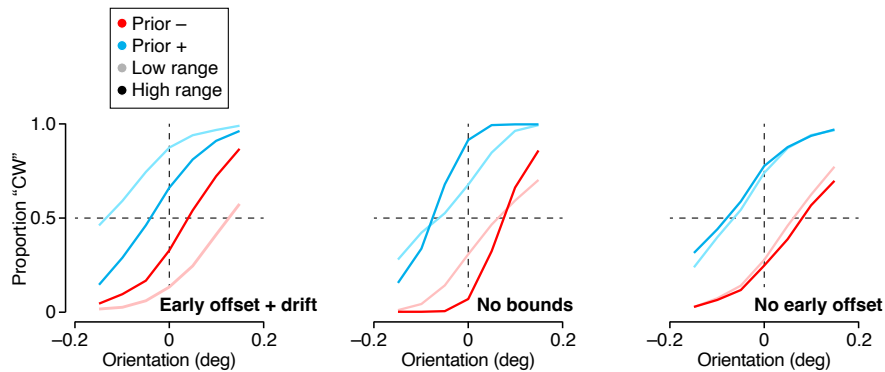
**Fig. S1.** Location of prearcuate gyrus recordings for monkey J and F (top vs bottom). **(a)** 3D reconstruction of the brain based on a structural MRI scan obtained before chamber and post implants. The locations of the recording sites are marked by blue dots. **(b)** Structural MRI scan illustrating the approximate recording site. The arrows indicate the superior arcuate sulcus (SAR) and inferior arcuate sulcus (IAR). **(c)** Top and side view (left vs right) of the MRI slice shown in panel **b**. Figure replotted from Charlton and Goris (2024).



**Fig. S2.** The peak value of the categorical DV exhibits key signatures of a Bayesian posterior. **(a)** Two example recording sessions illustrating that the peak value of the categorical DV depends on stimulus orientation (abscissa), stimulus contrast (left vs right panel), and stimulus prior (red vs blue). Symbols show the average value across all trials from a single recording session. Lines show a linear regression analysis used to estimate the slope and offset of this relation at low (left panel) and high (right panel) stimulus contrasts. **(b)** Same analysis as in panel **a** but now applied to data averaged across all recording sessions.



**Fig. S3.** Simulated bounded accumulation process. (a) The simulated bounded accumulation process contained three critical ingredients. First, a prior expectation, modeled as a time-varying signal with an early and late component (left). Second, a sensory input, modeled as a time-varying signal composed of random samples drawn from a Gaussian distribution (middle). The mean of the distribution reflects stimulus orientation, the spread of the distribution stimulus contrast. And third, two fixed bounds that terminate the accumulation process when crossed (right). (b) Under this process, prior expectations produce a robust horizontal shift of the psychometric function. The model parameters control the slope of the psychometric function and the magnitude of the decision bias.



**Fig. S4.** The relation between DV dynamic range and decision bias under different model variants. (Left) Median-split analysis of simulated choice behavior under two different prior expectations (blue vs red). The simulated process contained a prior-induced early offset and drift and terminating decision bounds. Trials with a smaller dynamic range yield more biased decisions (dark vs light colors). (Middle) Same analysis for an unbounded evidence accumulation process. Trials with a smaller dynamic range yield less sensitive decisions, as evidenced by the difference in the slope of the dark vs light psychometric functions. However, note that the decision bias, indicated by the horizontal separation of the midpoint of the red and blue psychometric function, does not depend on the dynamic range. (right) Same analysis for a bounded accumulation process in which the prior expectation does not induce an early offset, but only a drift.

## References

Charlton, J. A. & Goris, R. L. T. Abstract deliberation by visuomotor neurons in prefrontal cortex. *Nature Neuroscience* **27**, 1167–1175 (2024).