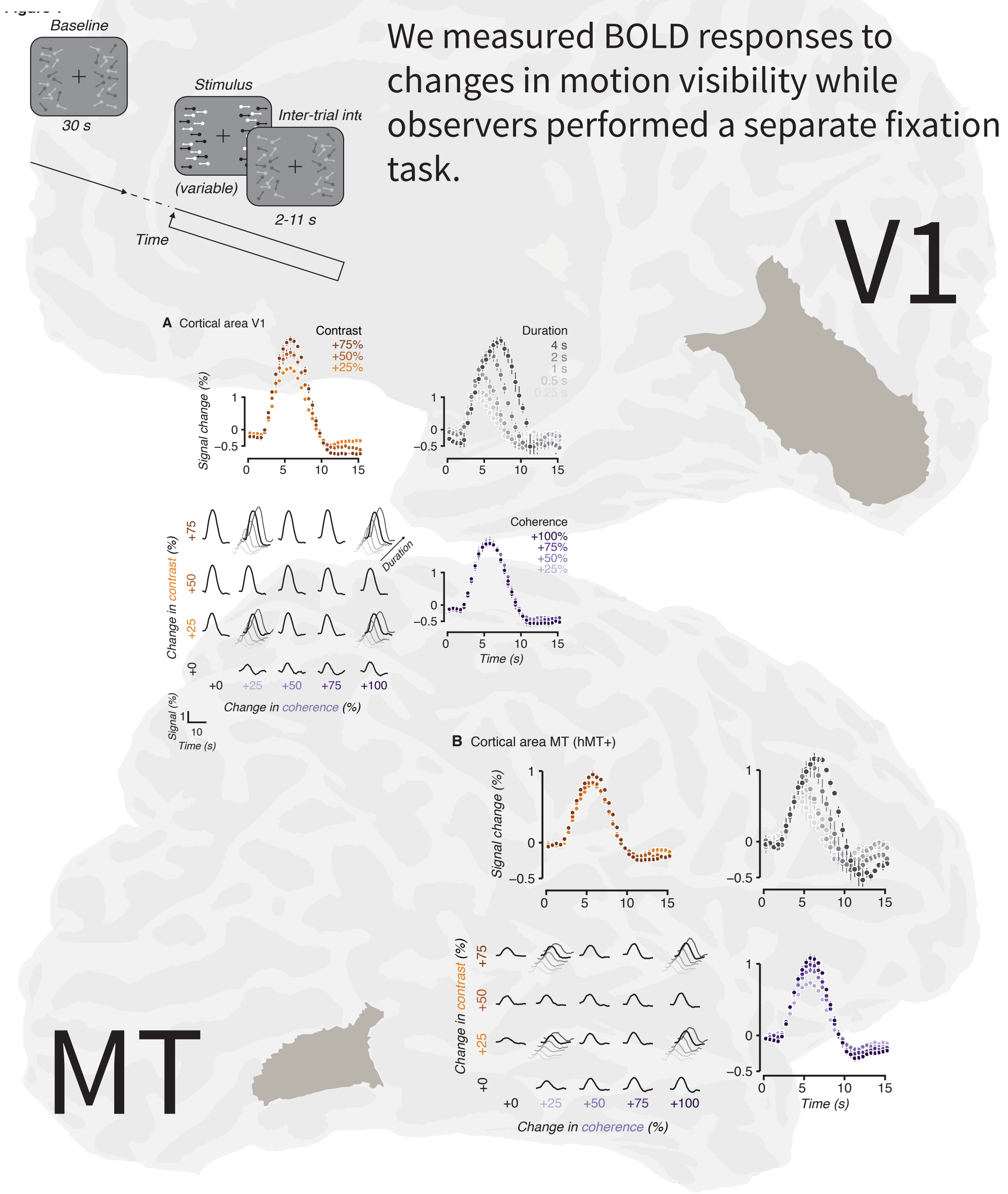


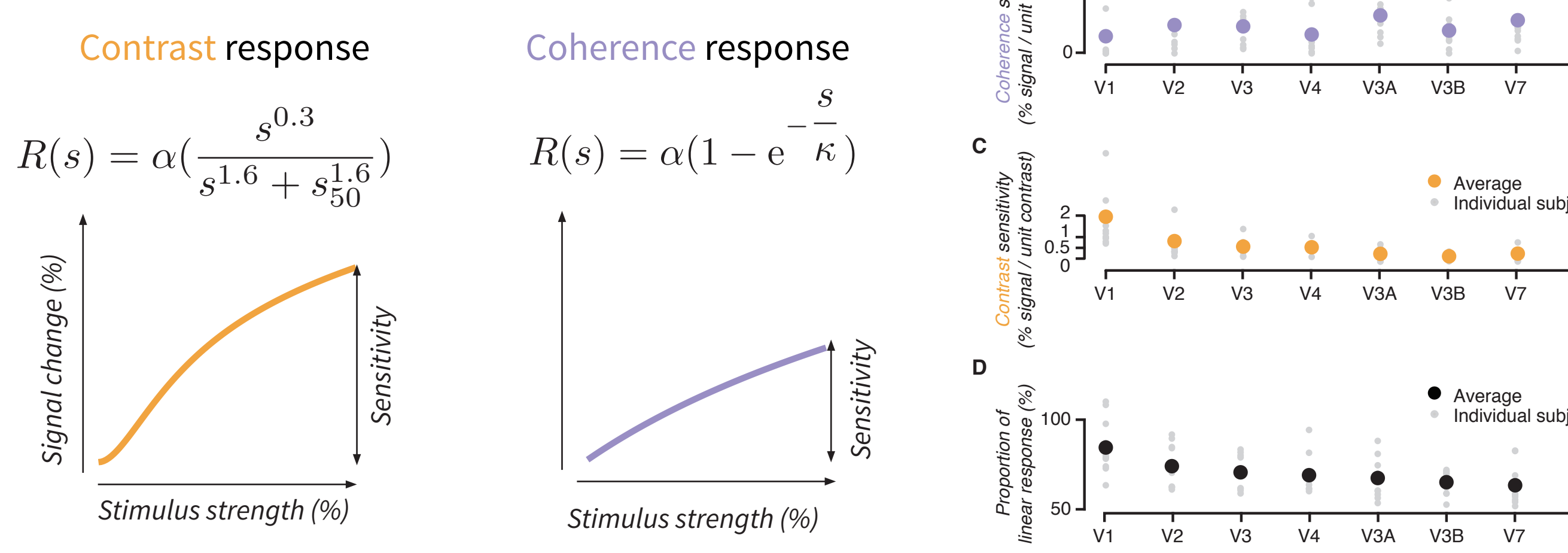
1. Introduction: Features

The manipulation of motion visibility features has been a key tool in cognitive neuroscience. How does the brain read out from visual cortex to support motion visibility perception?

2. Cortical measure-

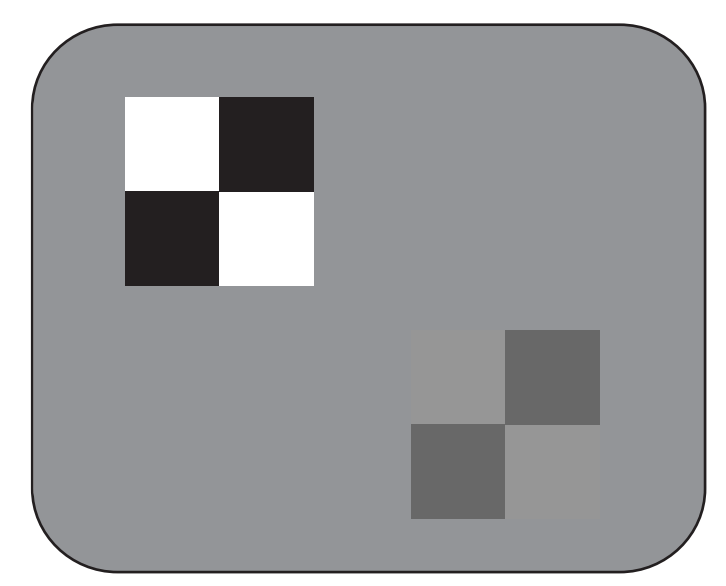


We fit a quantitative framework to these measurements to understand how sensitivity to motion visibility varies across cortex.



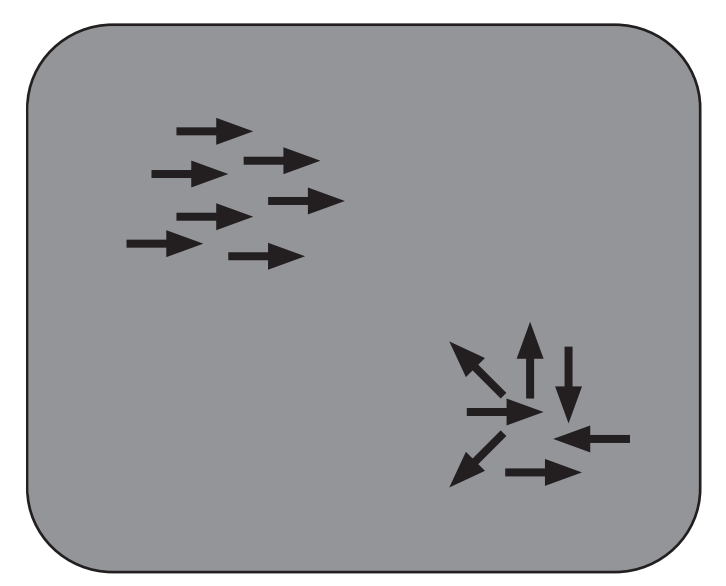
Contrast

The relative luminance to a gray background



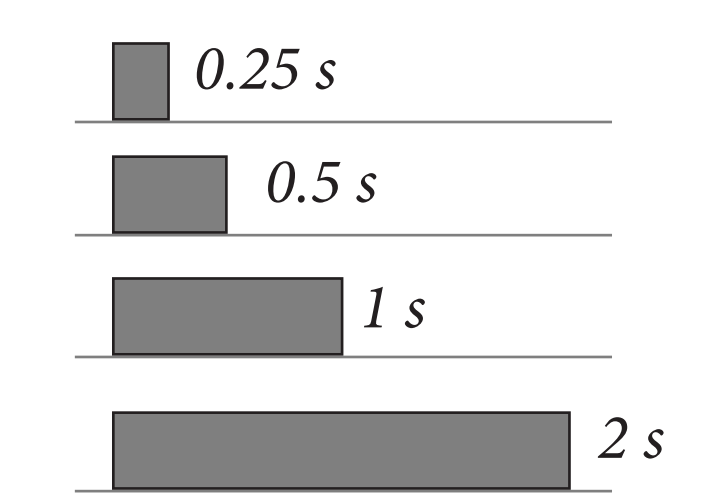
Coherence

The proportion of dots moving in sync



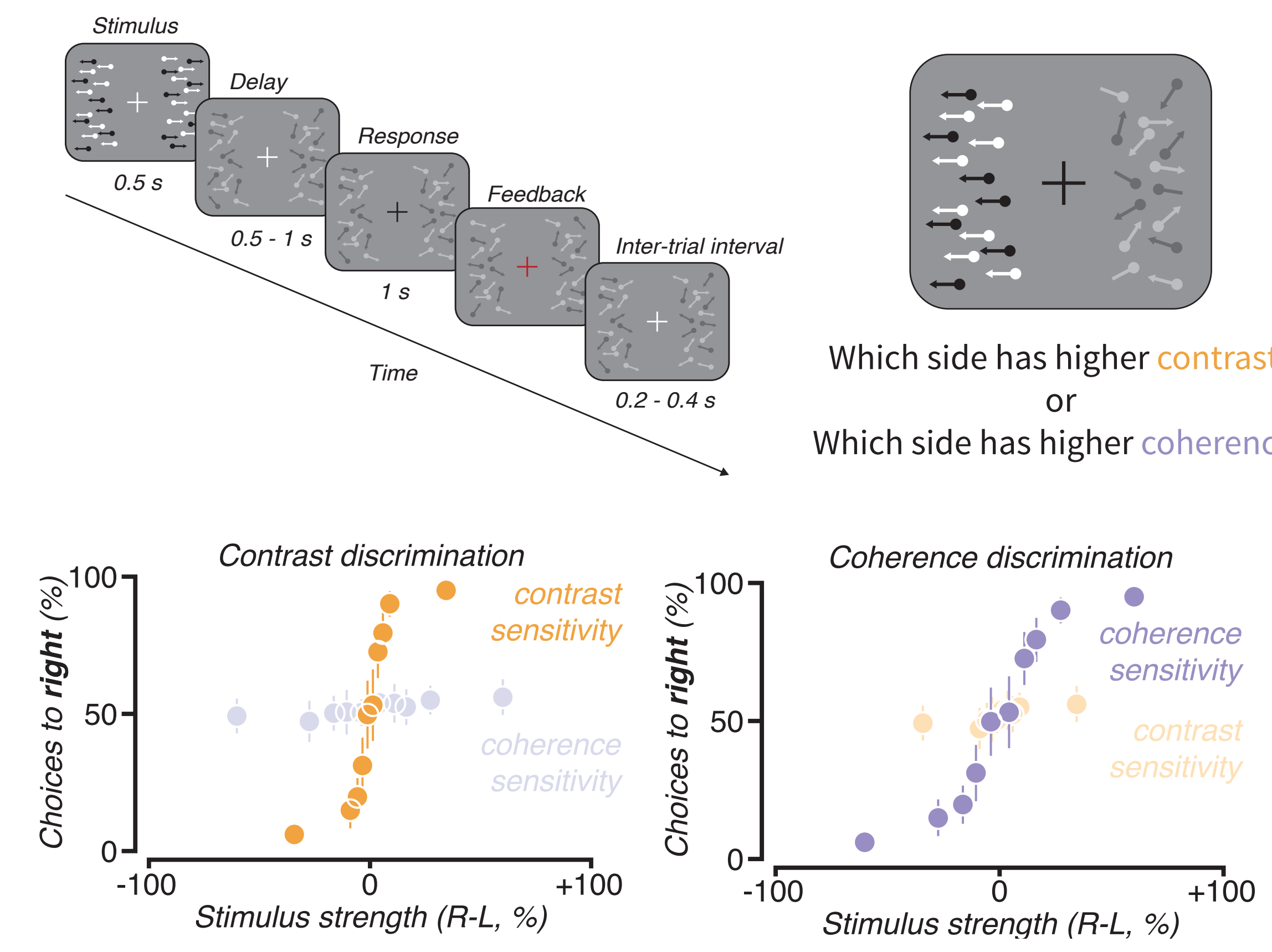
Duration

The length of time a stimulus was visible



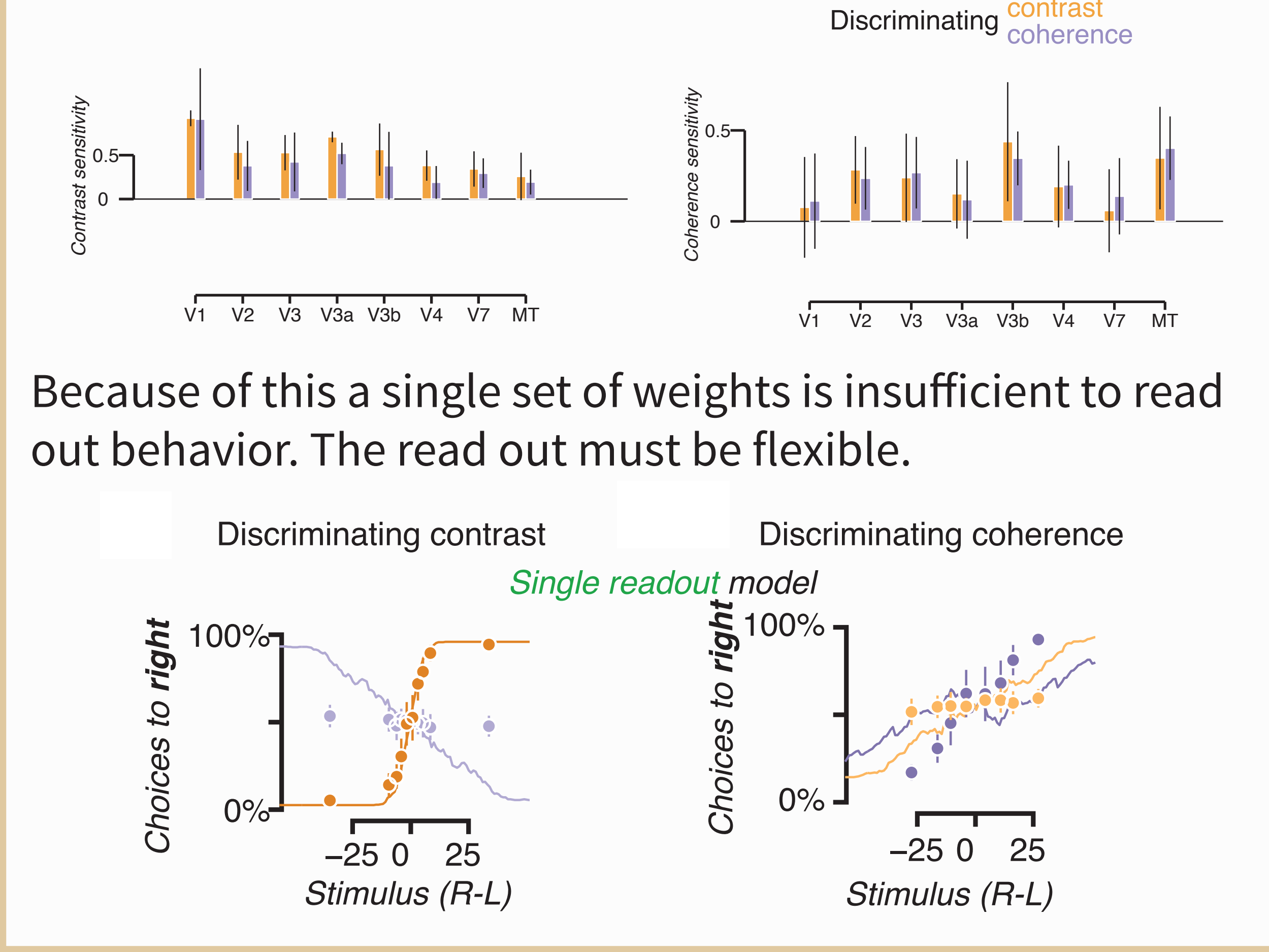
3. Behavior

We collected data on how well observers could discriminate small increments in the motion visibility features.



5. Stability

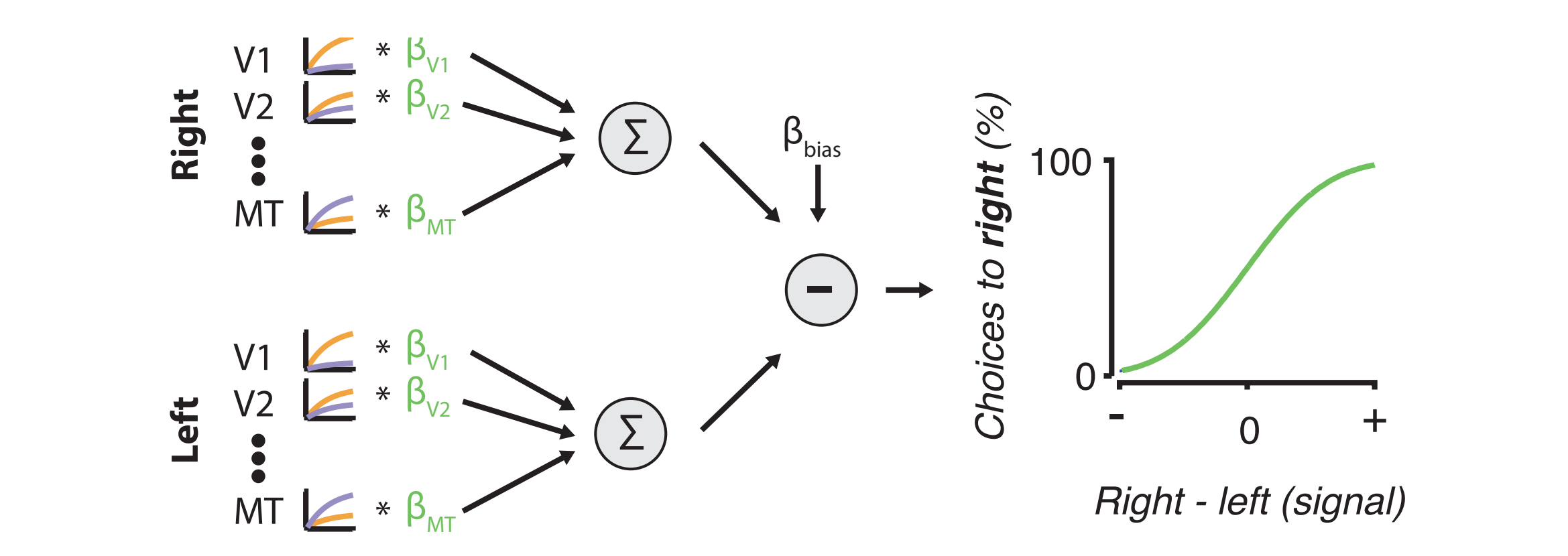
When observers performed the discrimination task in the scanner we found no evidence that contrast or coherence sensitivity shifted to support discrimination -- cortical representations remained stable.



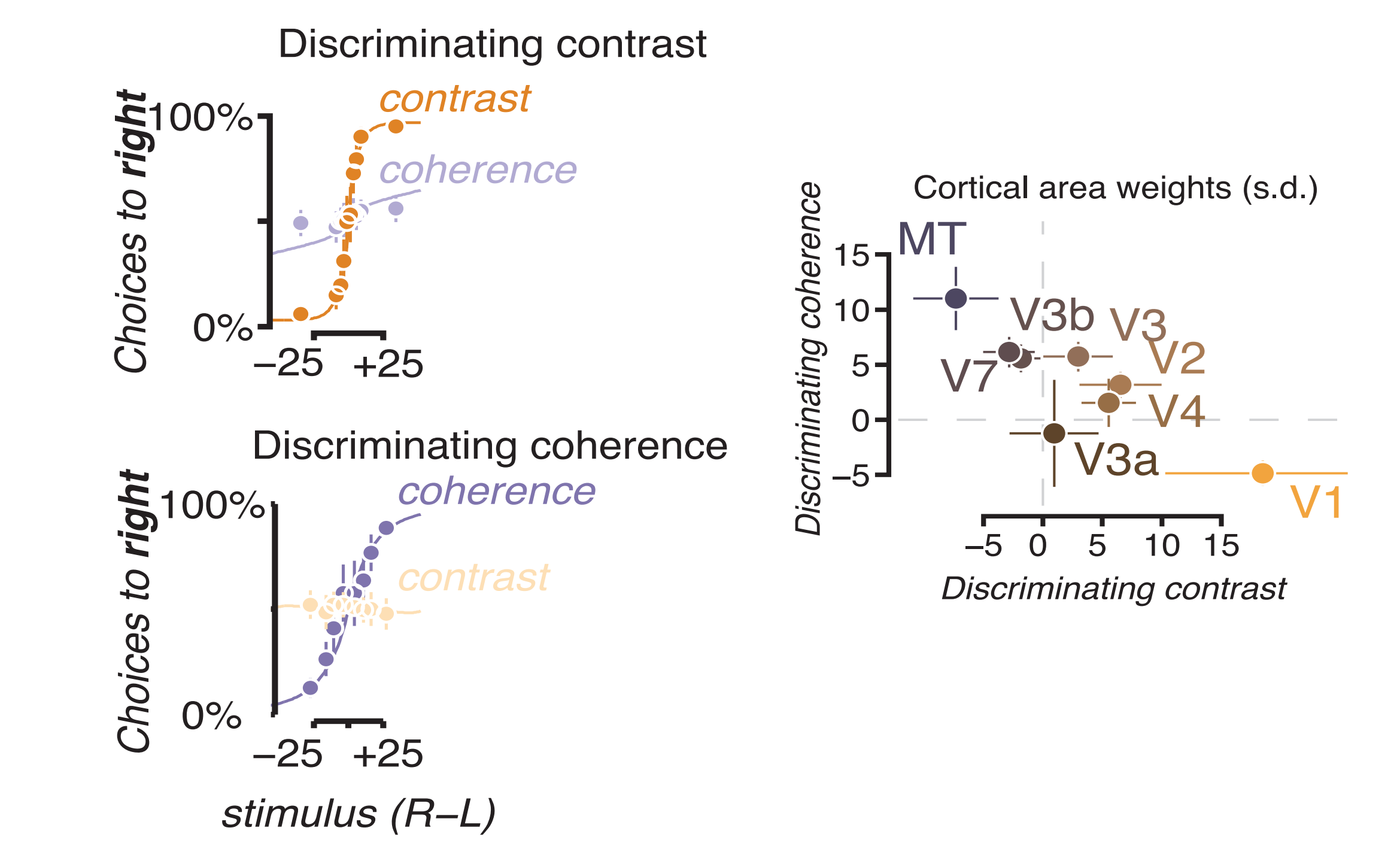
Because of this a single set of weights is insufficient to read out behavior. The read out must be flexible.

4. Linking model

To read out from visual cortex for perception, the linking model linearly weights areas in visual cortex.



The weighted responses are compared for the left and right dot patches, subject to Gaussian noise, to determine behavior on each trial.



Linking model: noise

Our linking model suggests that behavioral read out of sensory signals is subject to additive noise (independent of signal strength). A model with increasing (Poisson) noise failed to fit the data.

