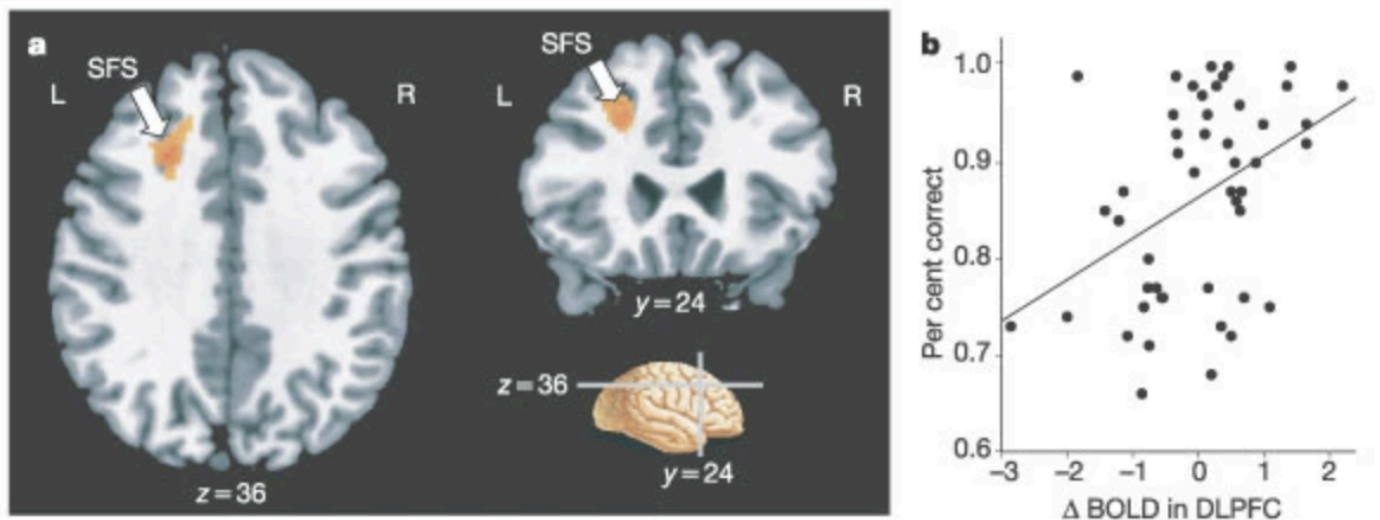


## A general mechanism for perceptual decision-making in the human brain

<https://www.nature.com/articles/nature02966>

- Activity within the left dorsolateral prefrontal cortex is greater during easy decisions than during difficult decisions, covaries with the difference signal between face- and house-selective regions in the ventral temporal cortex, and predicts behavioural performance in the categorization task
- The only region fulfilling both of the conditions was located in the depth of the left superior frontal sulcus in the posterior portion of the DLPFC (BA8/9, [Fig. 4](#)). This region is located just posterior to BA9/46 in the mid-DLPFC and just anterior to the FEF ([Fig. 3](#)). Task-related signal changes in the posterior portion of the DLPFC showed a positive correlation with task performance ([Fig. 4b](#)). Region in the depth of the left SFS, showing both a higher response to suprathreshold images of faces and houses relative to suprathreshold images, and a correlation with  $|\text{Face}(t) - \text{House}(t)|$
- the outputs of visual processing areas provide the sensory evidence for a decision
- These studies thus indicate that this prefrontal region has general decision-making functions, independent of stimulus and response modalities
- identical left posterior DLPFC showed a greater fMRI response to stronger motion signals

### Figure 4: Perceptual decision-making in posterior DLPFC.



## Brain mechanisms for perceptual and reward-related decision-making

[https://www.sciencedirect.com/science/article/pii/S0301008212000111?casa\\_token=vKkceed97oAAAAAA:HiuXovmGEXVxPqPf0RPr1vmcl40GnVDMxwtO07ZGsRZCV6mRv9NUKn0gET34Ry1Df13EgeSA](https://www.sciencedirect.com/science/article/pii/S0301008212000111?casa_token=vKkceed97oAAAAAA:HiuXovmGEXVxPqPf0RPr1vmcl40GnVDMxwtO07ZGsRZCV6mRv9NUKn0gET34Ry1Df13EgeSA)

- Brain mechanisms for perceptual and reward-related decision-making
- medial prefrontal cortex is involved in reward value-based decision-making

- Two-alternative forced choice (2AFC) is a method for measuring the sensitivity of a person or animal to some particular sensory input, stimulus, through that observer's pattern of choices and response times to two versions of the sensory input.
- The two hypotheses H1 and H2 stand for the two choice-alternatives.
- Decision-making can be implemented in an attractor network with at least two stable fixed points ('bistability'), representing the two choice-alternatives. The decision process is then regarded as the transition from an initial starting point towards one of the two attractors.

### **Orbitofrontal cortex control of striatum leads economic decision-making**

<https://www.nature.com/articles/s41593-023-01409-1>

- choice information in the OFC is relayed to the DMS to lead accurate economic decision-making
- Accumulation of evidence in decision making is the process by which noisy sensory information is sequentially sampled until sufficient evidence has accrued to favor one decision over another or others.
- Evidence accumulation occurs locally in the parietal cortex