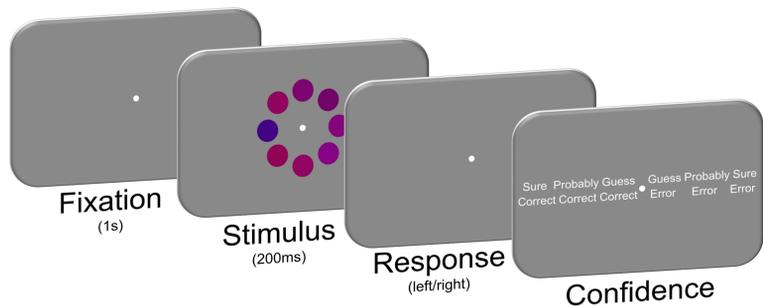


Background

&

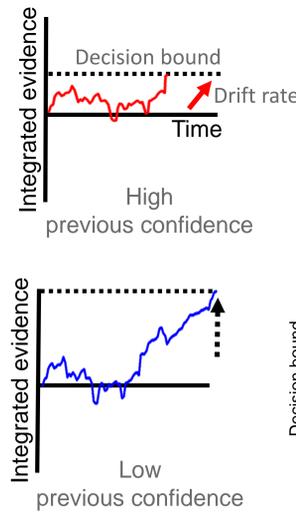
Prediction

“How confident are you that your decision is correct?”

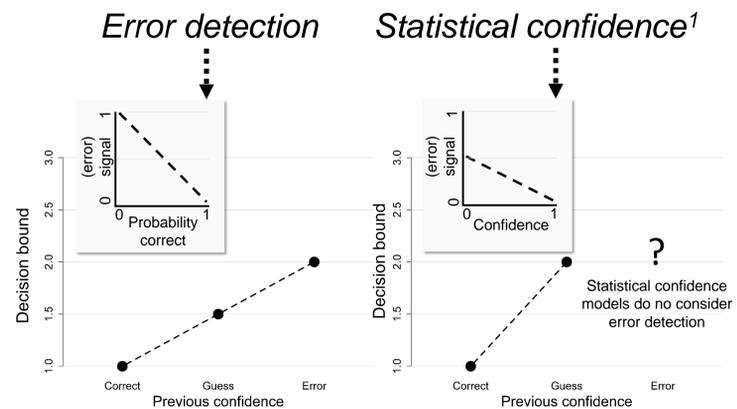


Decision making is typically characterized by a continuous process of **evidence accumulation** that terminates once a decision bound has been reached. Decision-makers might use decision confidence to **adapt choice behavior**.

The speed-accuracy tradeoff might be shifted depending on previous decision confidence. In the drift diffusion model, this can be achieved by **increasing the decision bound**.



Largely separated literatures in the field of metacognition make the following predictions:



Results

Potential confound:

- **slow variations in attentional state** may co-vary with fluctuations in confidence judgments.

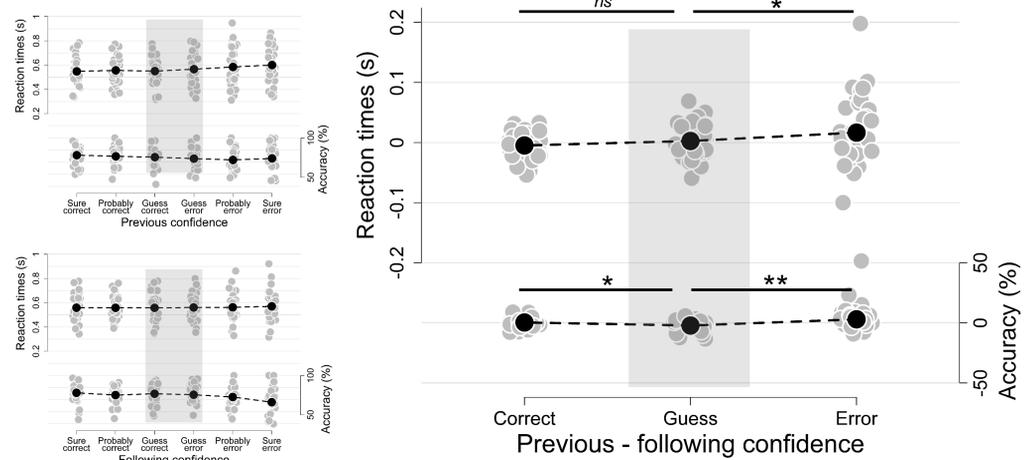
Solution:

- Use **confidence on the following trial** as a proxy for the attentional state on the previous trial³.
- We **subtracted** following from previous confidence to remove the influence of attention

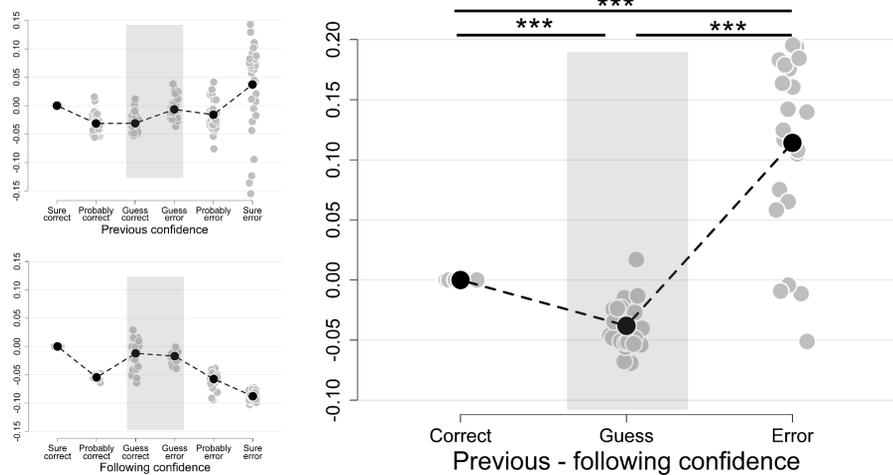
Software

- Hierarchical drift diffusion model (HDDM)²
 - Allow drift and bound to vary over previous/following confidence
 - Previous/following correct trials as reference category

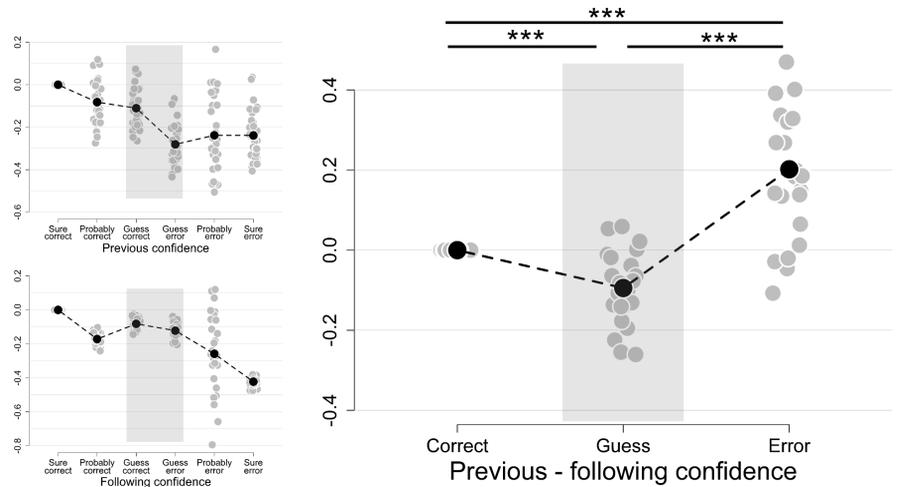
Behavioral results



Decision bound



Drift rate



Conclusions

- Decision bound is increased following the **detection of an error**, but not following low decision confidence. Possibly, an internal error signal needs to cross a threshold before the decision bound is increased (cf. the ERN⁴).
- **Slow fluctuations in attention** are an important confound in research on sequential effects: confidence on the *following* trial is a useful measure to remove the effect of attentional state.

References

- ¹ Sanders, J. *et al.* (2016). *Neuron*
- ² Wiecki, T. *et al.* (2013). *Front. Neuroinform.*
- ³ Dutilh, G. *et al.* (2012). *J. Math. Psychol.*
- ⁴ Charles, L. *et al.* (2013). *NeuroImage*

