Paper outline

Confidence = p(correct)

Involved in many adaptive mechanisms

Important to have a well-calibrated confidence to stay adaptive

But environment is very often changing + when learning a new task how does one learn to gain a correct uncertainty estimate?

Our proposal:

Ppl use feedback to learn how to map evidence to confidence

We describe the computational mechanism of how confidence can be updated according to feedback

We tested the hypothesis that ppl learn according to feedback + our computational account by alternating btw 2 model-generated feedback conditions throughout an experiment.

Working hypothesis:

* Ppl’s confidence evolves over time in a way that tracks feedback (and this is not explained by a change in performance)
* Specifically, ideally:
  + confidence increases in beta+ and decreases in beta- (irrespective of accuracy)
  + confidence increases in alpha+ and decreases in alpha-, but more so in correct trials than in incorrect trials
* Model fits will be able to account for these behavioral patterns
* A model with learning will be a better fit than a model without learning, and ideally a model with learning on beta (resp. alpha) only will be a better fit for participants whose feedback was manipulated according to beta (resp. alpha)

Model things to show:

* Parameter recovery (with and without estimating trial evidence) to show that our model works, but the bottleneck is not being able to know the participant’s accumulated evidence on individual trials
* Even then, we should have good model recovery: data generated by one model should be best explained by that same model

Results:

* Confidence evolves as expected, but only for beta experiment.
* Dynamical models were always the best ones, but no clear winner among them
* However the model recovery has mixed results (even when generating data from more optimistic parameter sets)