Daws study

Model free

Model based

Draws from reinforcement learning

Quick aside on the computational complexity of each

Model free looks only at what it knows about it’s current state. Compares expected return of all possible actions from current state and selects the max. Constant time

Model based looks ahead as far as it can, for the path of actions that will maximize overall reward. Think of it like a depth first search, or djikstras path finding algorithm. Either way, Definitely not constant time

Hypothesis was based on this reasoning. Current understanding predicts that the more computationally complex a calculation is, the longer it takes to complete. Therefore, we predicted model based decisions should take longer than model free decisions

Built computational models that allowed us to quantify how model free or model based a given subject was

No strong correlation with reaction time found, although a trend was observed on selected multiple regression analyses

Could be the result of small sample size. We also only looked at models that considered all of the subject’s decisions as a whole, which obscured any information about their models at a particular point in the study, or how the model parameters changed over time.

Could point towards precompiling or pre-caching with parallel processes