

Exploration strategies in human decision making

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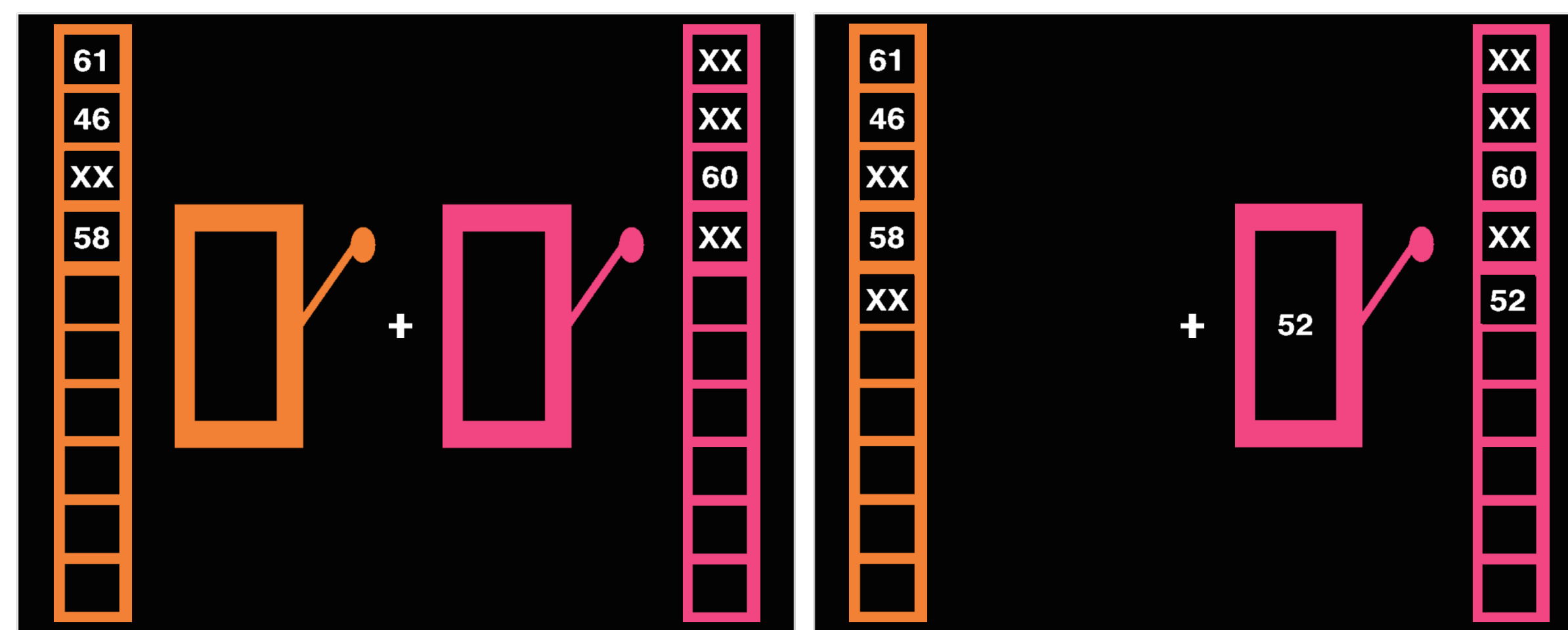
and Jonathan D. Cohen

Introduction

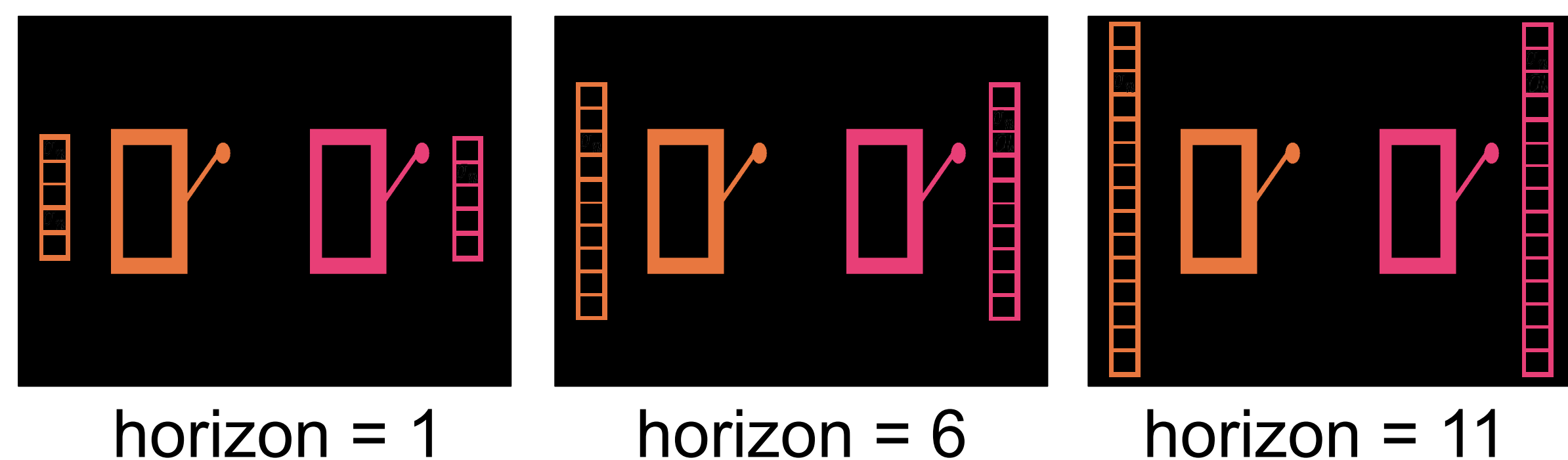


What strategies do we use handle the explore-exploit tradeoff?

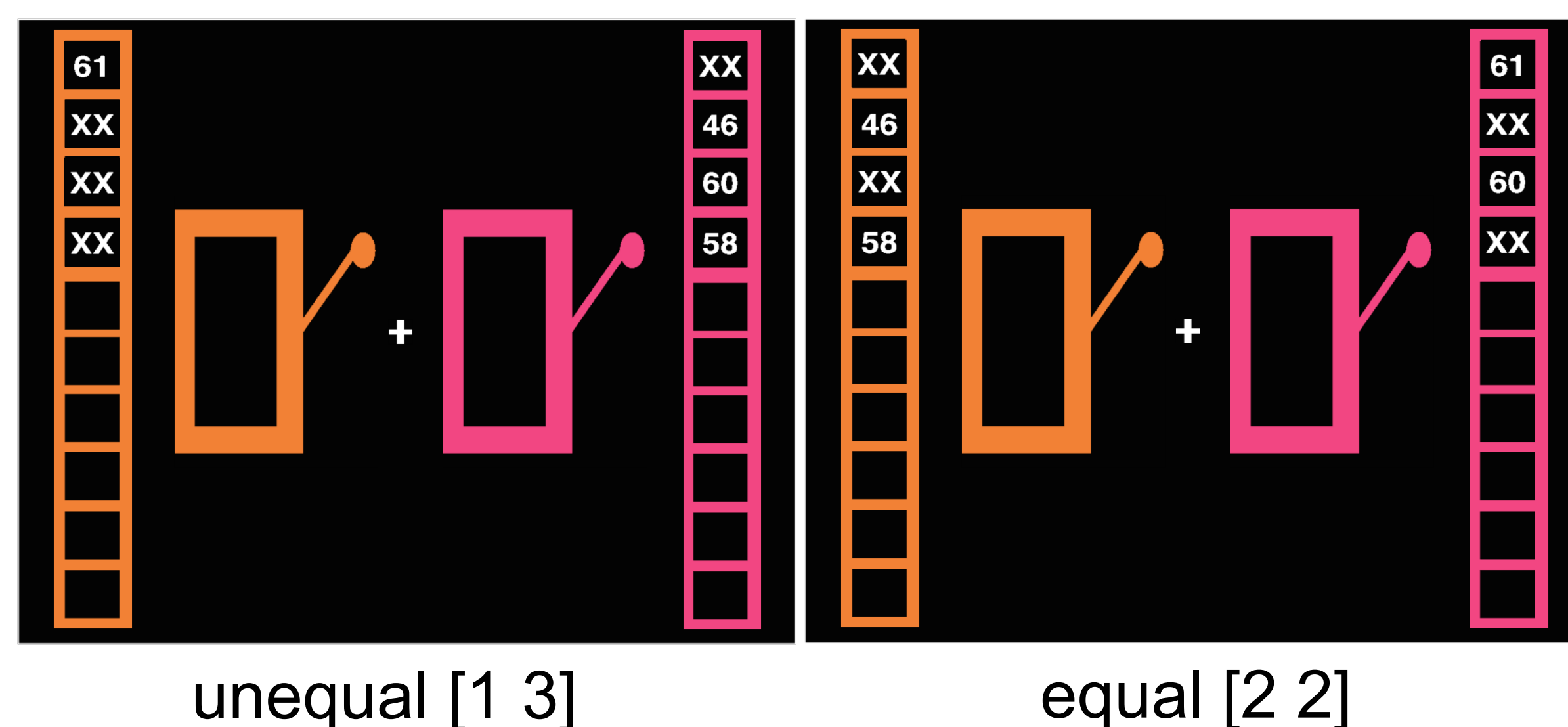
Task



Three horizon conditions

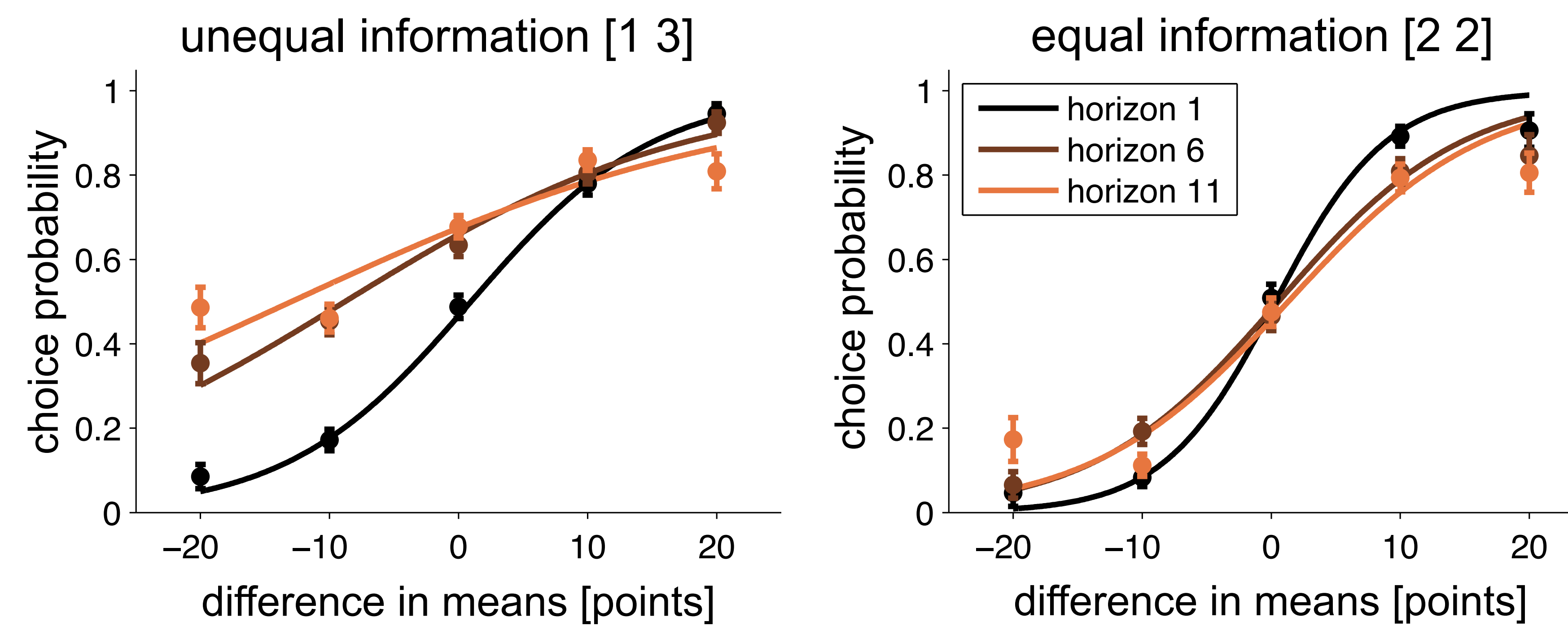


Two information conditions

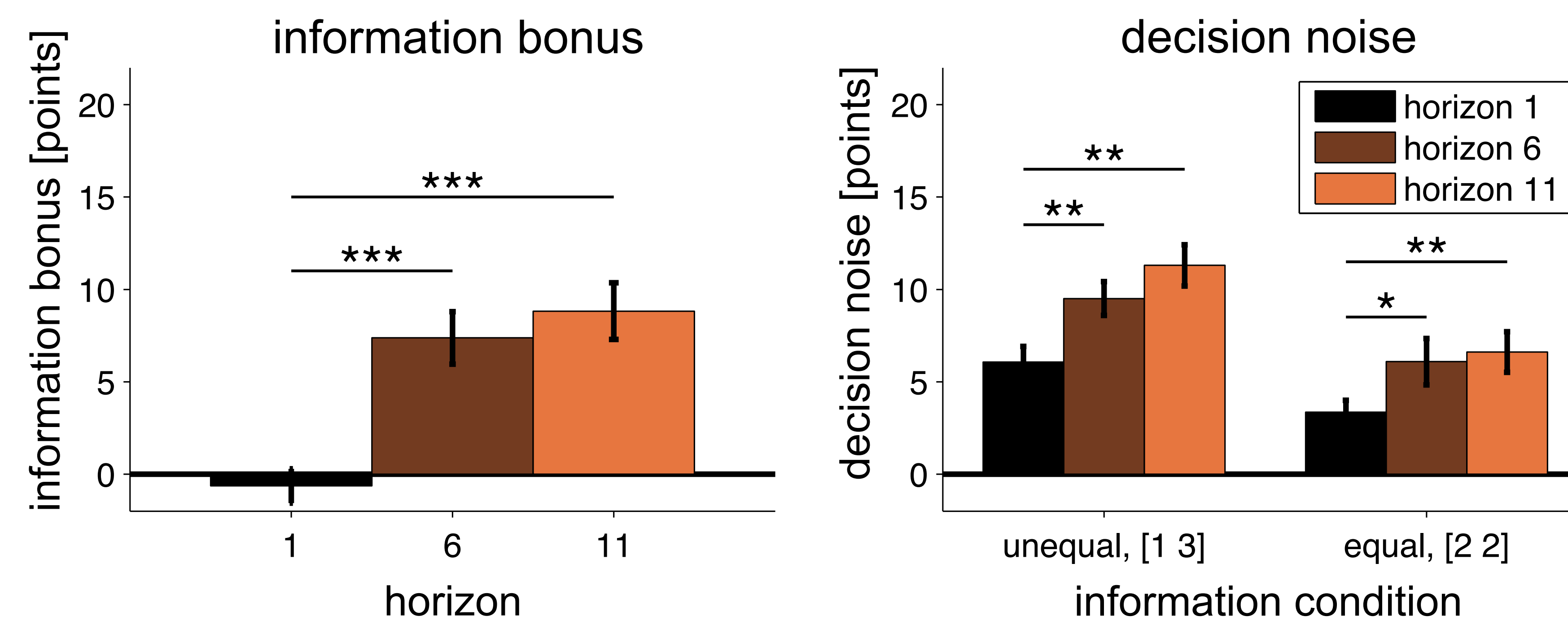


Results

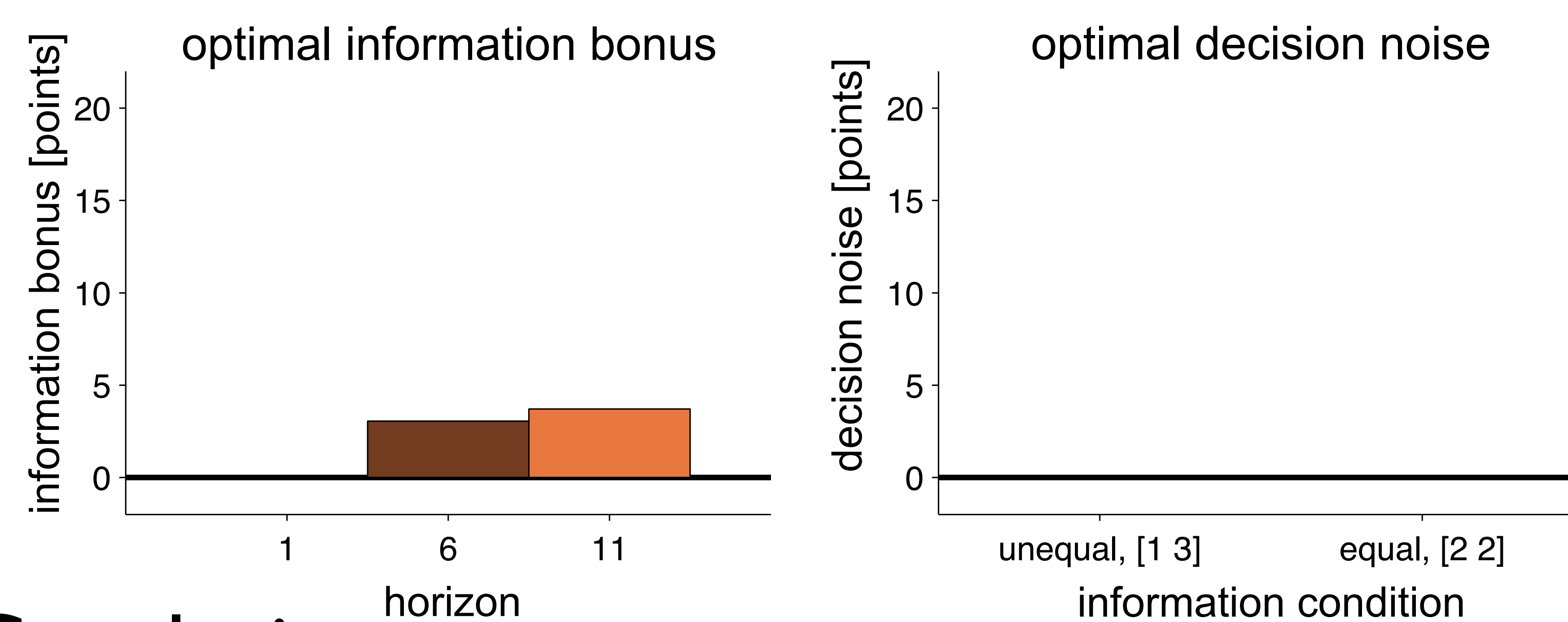
Choice curves (n = 33)



Model fits



Optimal strategy



Conclusions

Exploration in humans is driven by:

- an information bonus that is consistent with directed exploration of optimal models
- adaptive noise consistent with undirected exploration of practical models

Model

Choice probabilities

$$p = \frac{1}{1 + \exp\left(-\frac{\Delta\mu + A\Delta I + b}{\sigma}\right)}$$

$\Delta\mu$ difference in means

ΔI difference in information (-1, 0 or 1)

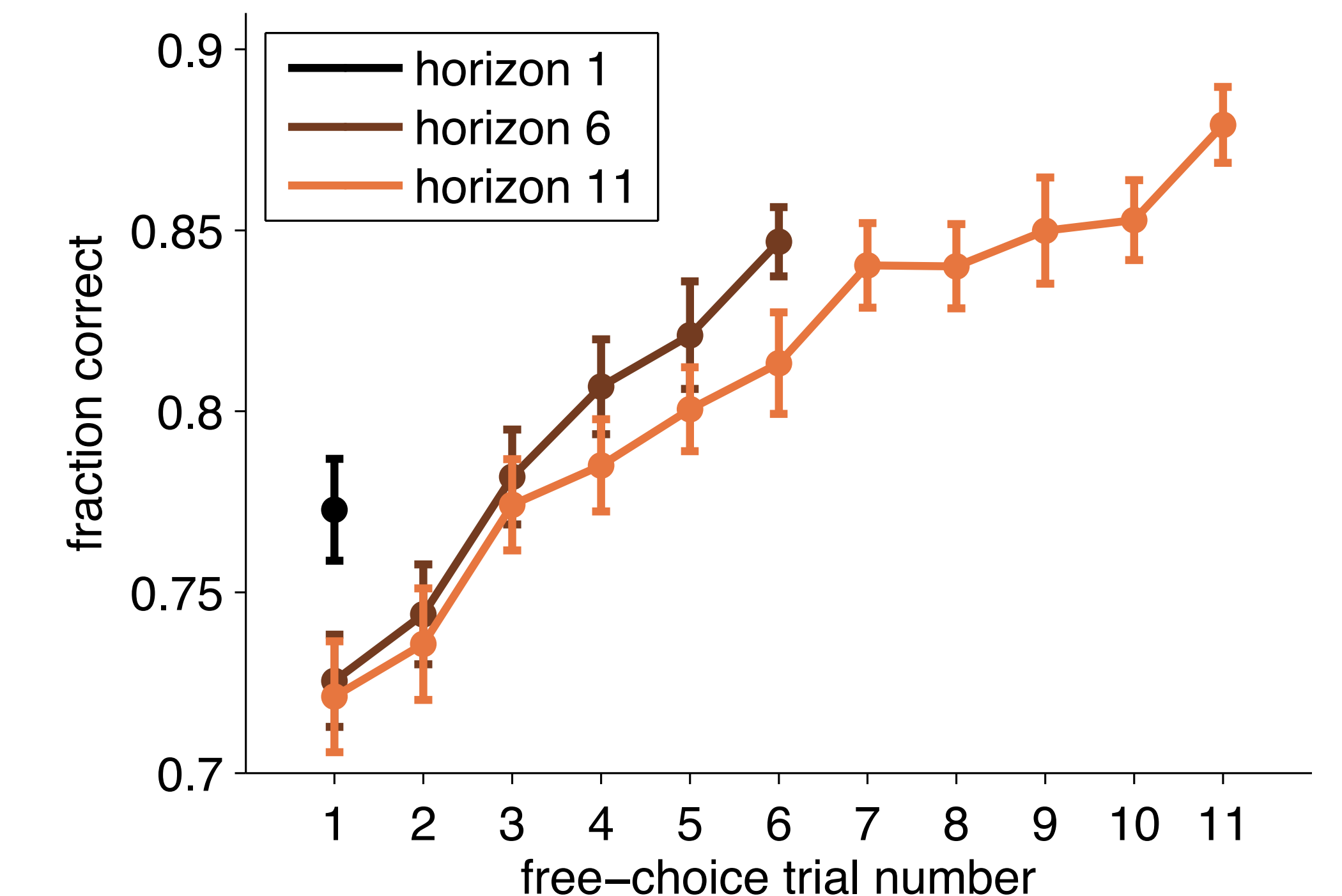
A information bonus

b side bias

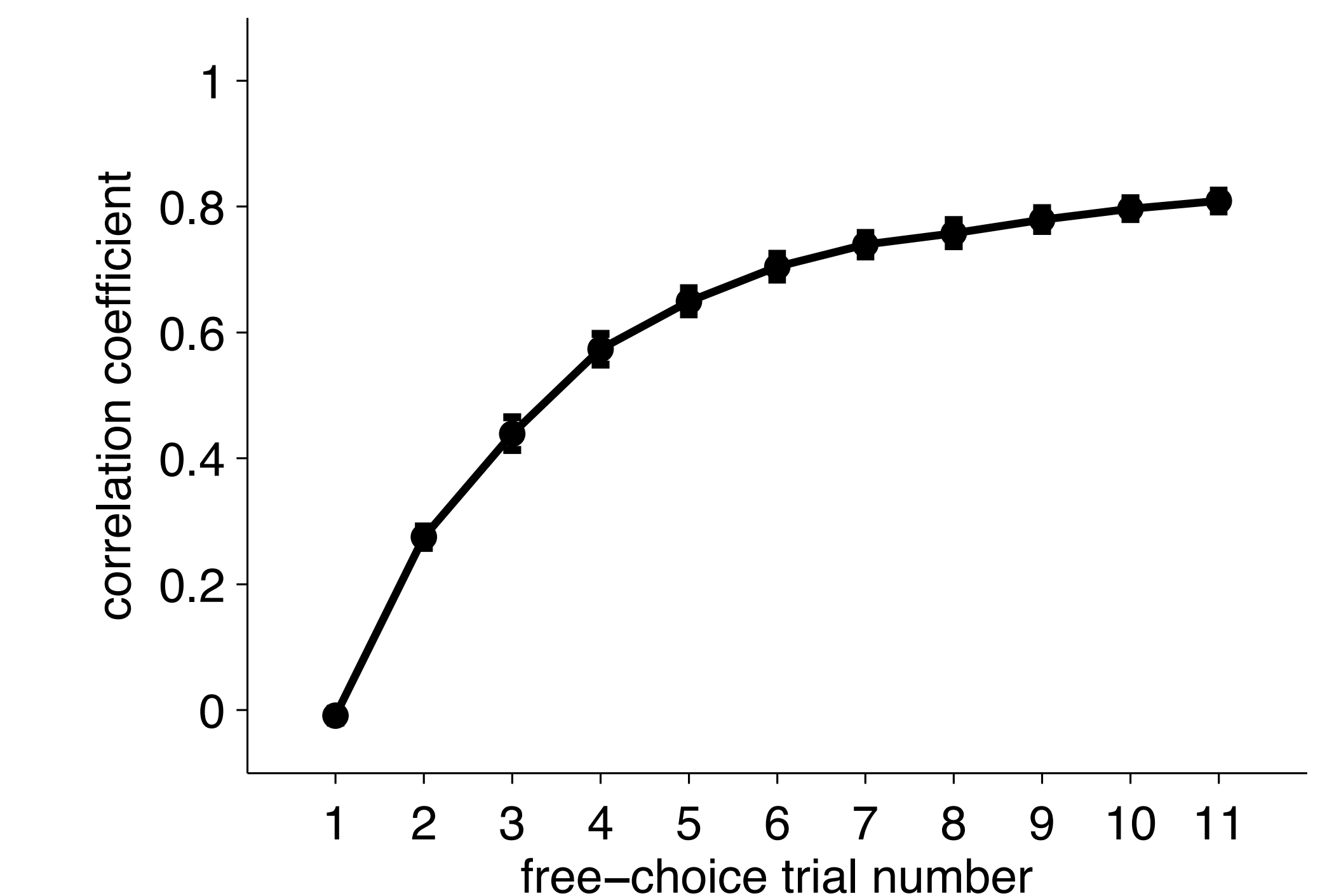
σ decision noise variance

Side notes

Learning curves



Why only focus on first choice?



This work was supported by a grant from The John Templeton Foundation to JDC