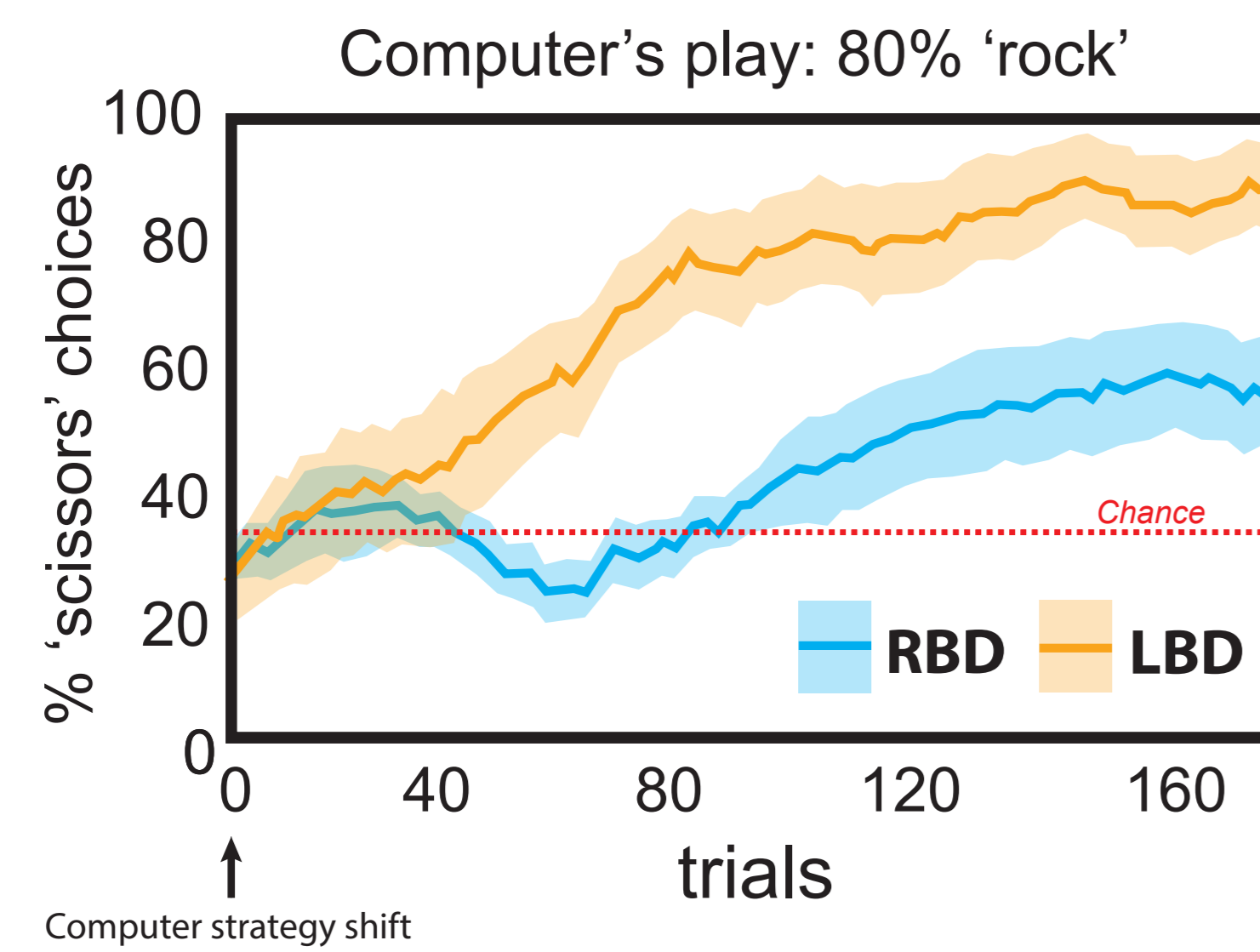


Updating can be impaired following right brain damage^a

- Right brain damaged (RBD) patients detect changes, but fail to update^b.

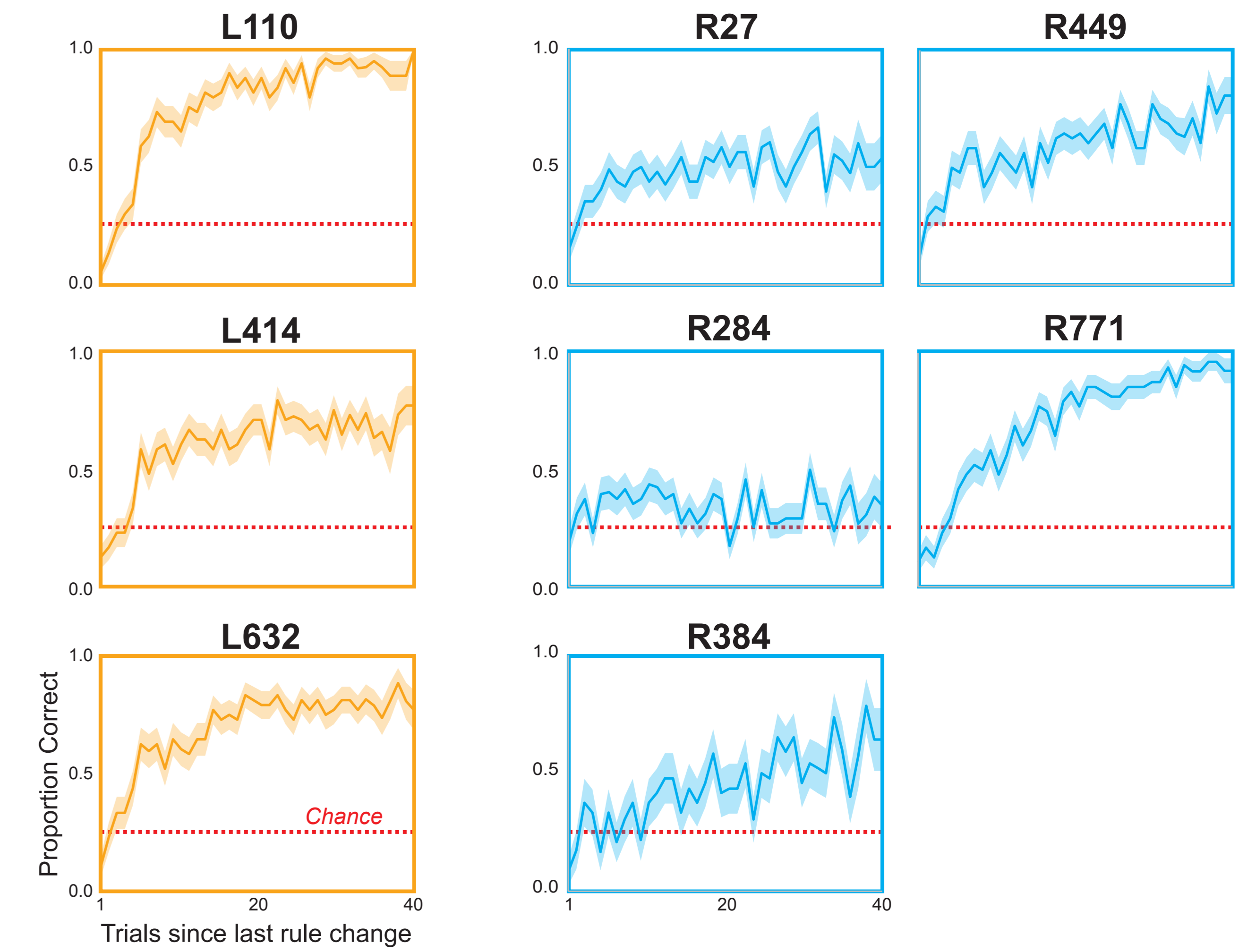
- We suggest that this may be due to difficulties exploring alternatives^c.



RBD patients updated more poorly than LBD patients to rule changes.



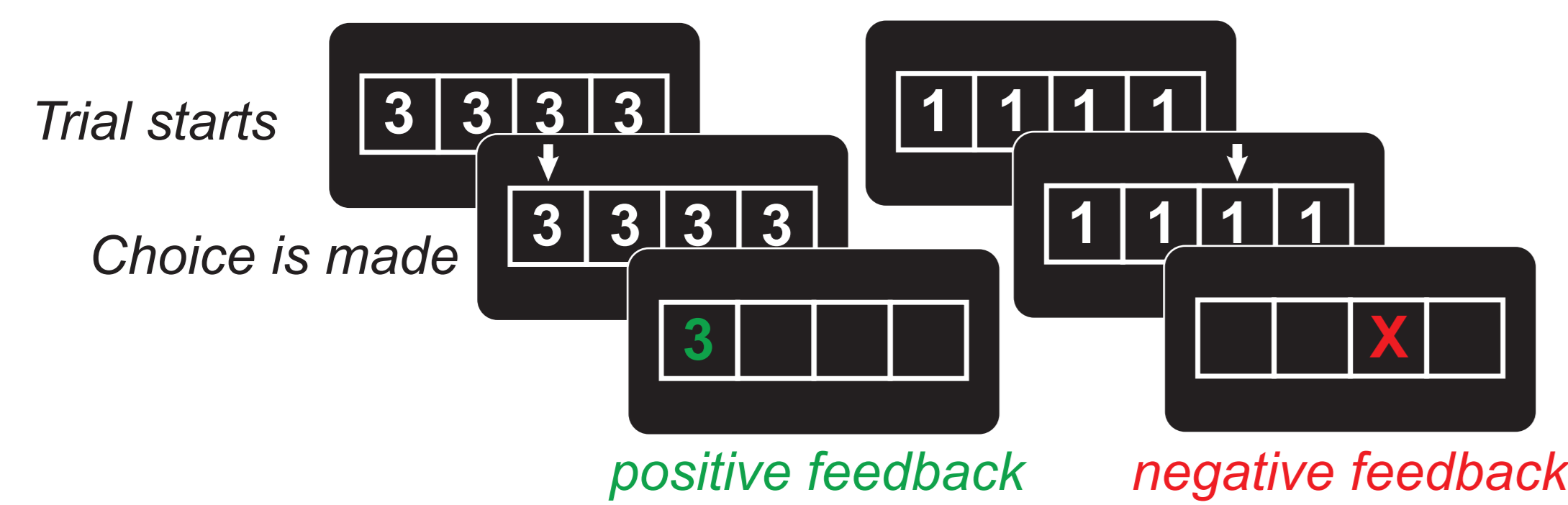
Individual patient behaviour



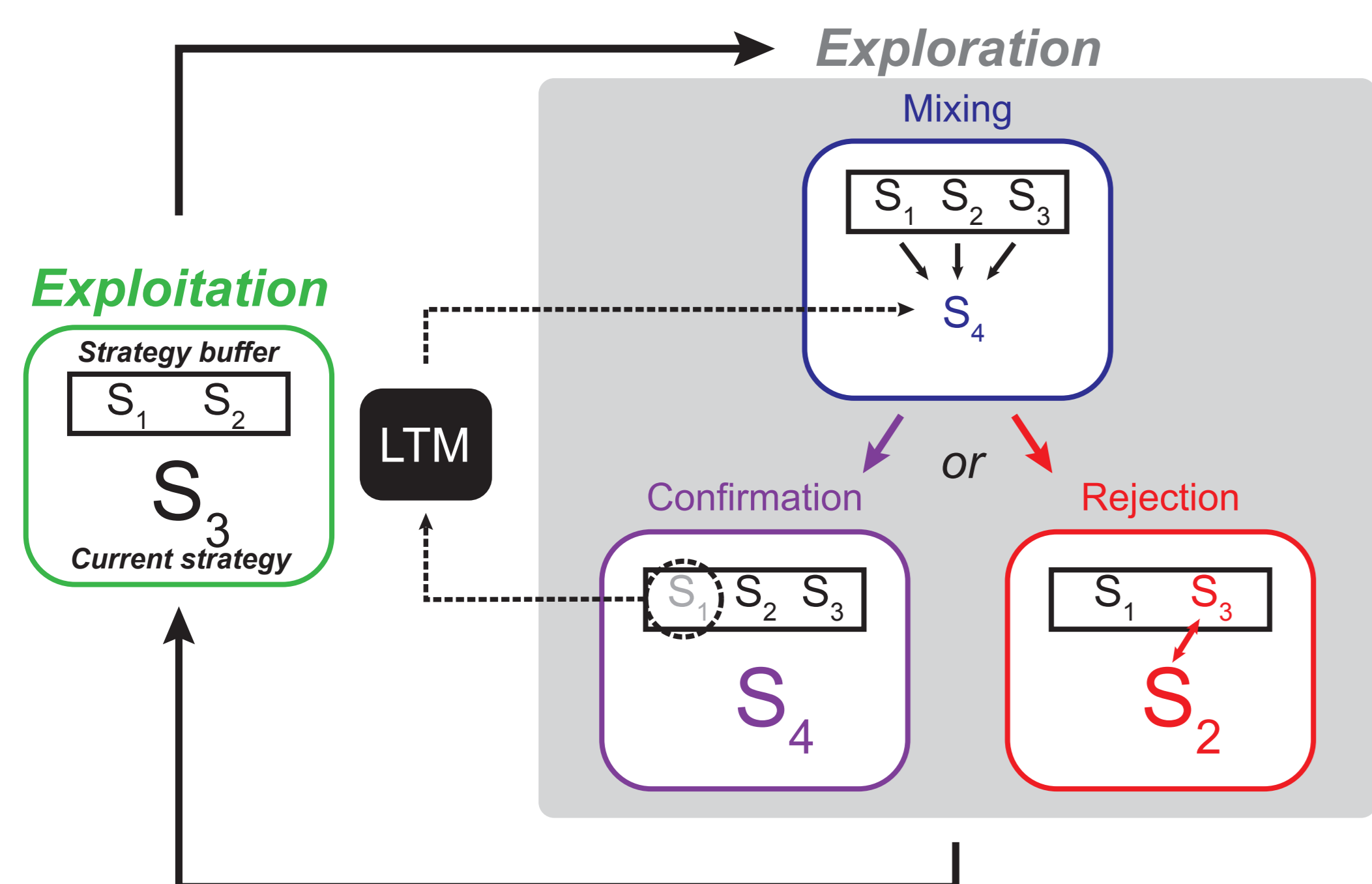
RBD and LBD patients performed an adaptive learning task^d

PROBE task:

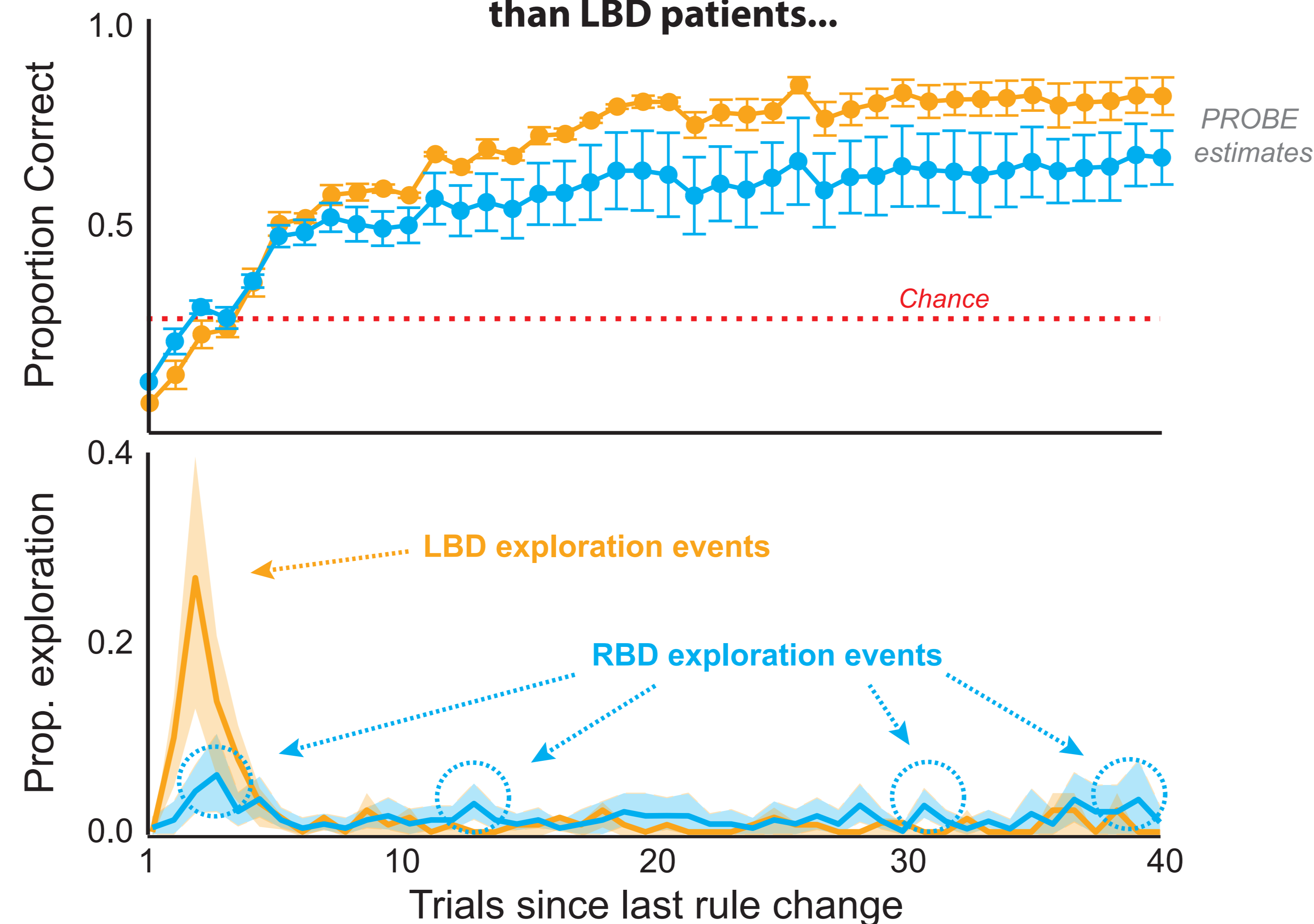
- Participants learn stimulus-response rules through trial feedback
- Rules change every ~40 trials
- Feedback is noisy (10% incongruent)



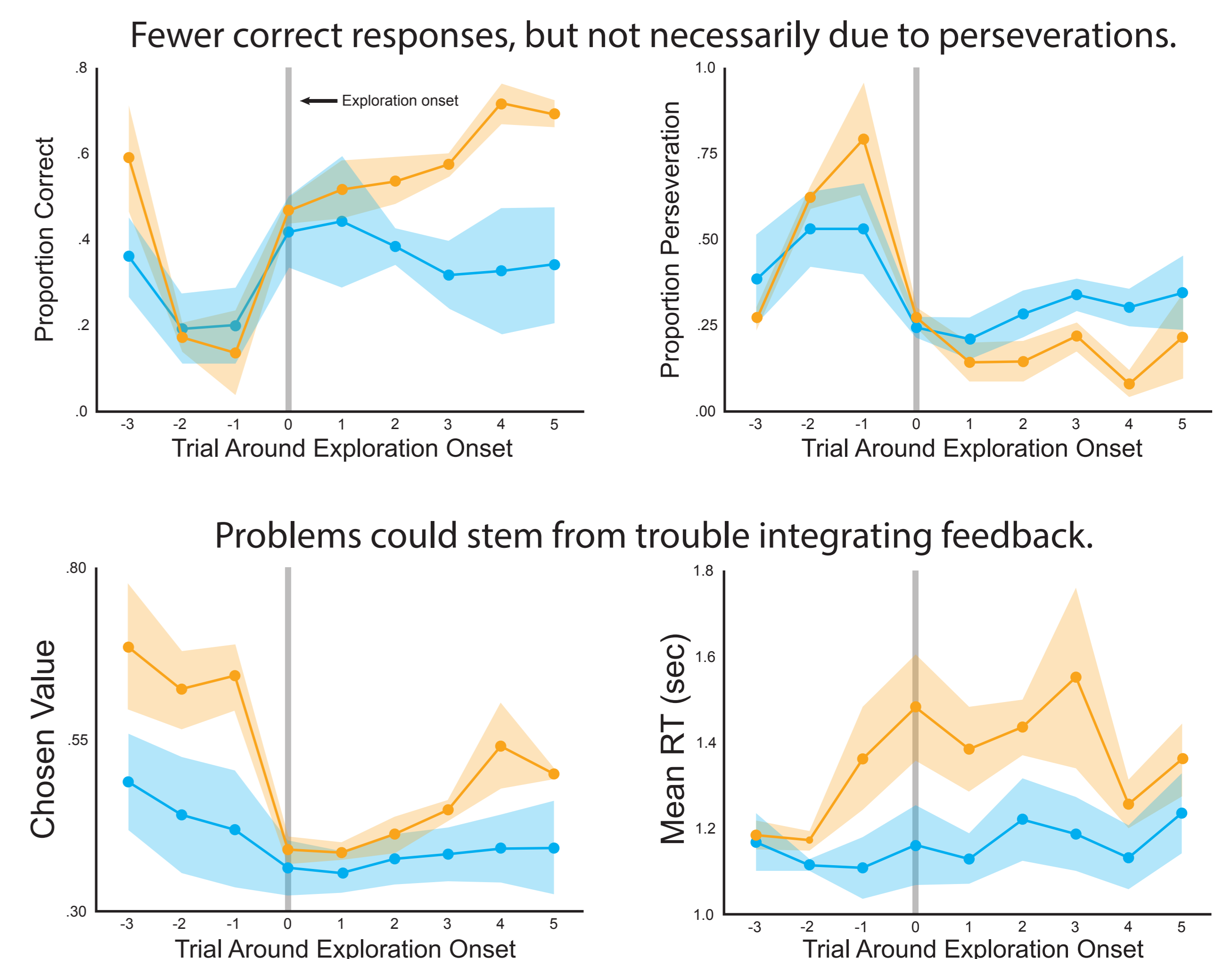
Patient performance was fit using a model of adaptive behaviour (PROBE^{d,e})



PROBE model fits suggest RBD patients explore at more time points than LBD patients...



...and use feedback less effectively at exploration onset



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References:

- a - Danckert, J., Stöttinger, E., Quehl, N., & Anderson, B. (2012). Right hemisphere brain damage impairs strategy updating. *Cereb. Cortex*
- b - Stöttinger, E., Filipowicz, A., Marandi, E., Quehl, N., Danckert, J., & Anderson, B. (2014). Statistical and perceptual updating: correlated impairments in right brain injury. *E. Brain Res.*
- c - Filipowicz, A., Anderson, B., & Danckert, J. (in press) Adapting to change: the role of the right hemisphere in mental model building and updating. *Can. J. Exp. Psychol.*
- d - Collins, A., & Koechlin, E. (2012). Reasoning, learning, and creativity: frontal lobe function and human decision-making. *PLoS Biol.*
- e - Donoso, M., Collins, A. G., & Koechlin, E. (2014). Foundations of human reasoning in the prefrontal cortex. *Science*

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