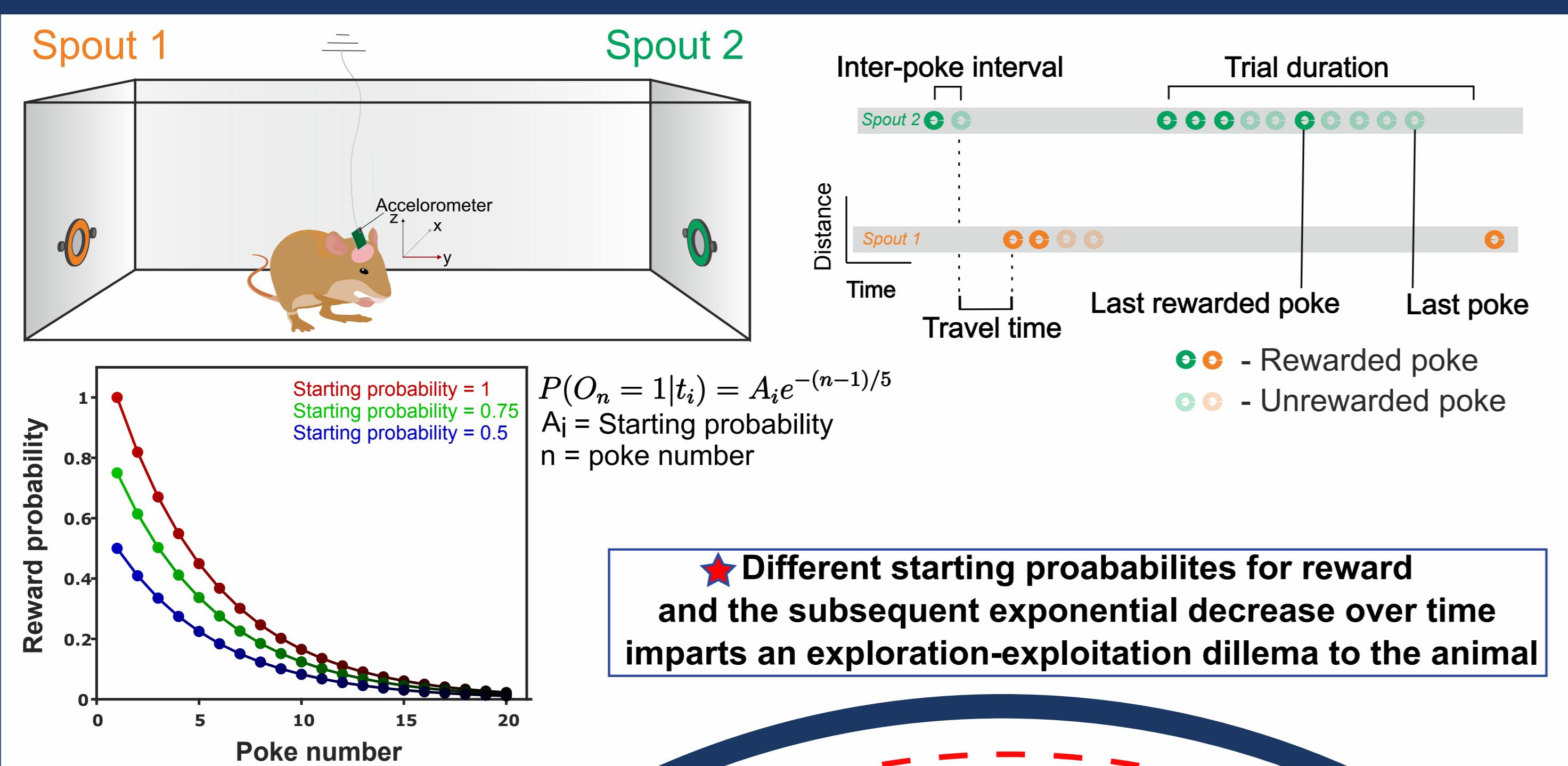


# Unraveling the Neural Mechanisms of Decision-Making in Uncertain Environments: Insights from a Probabilistic Foraging Task in Mongolian Gerbils

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## The situation - probabilistic foraging task

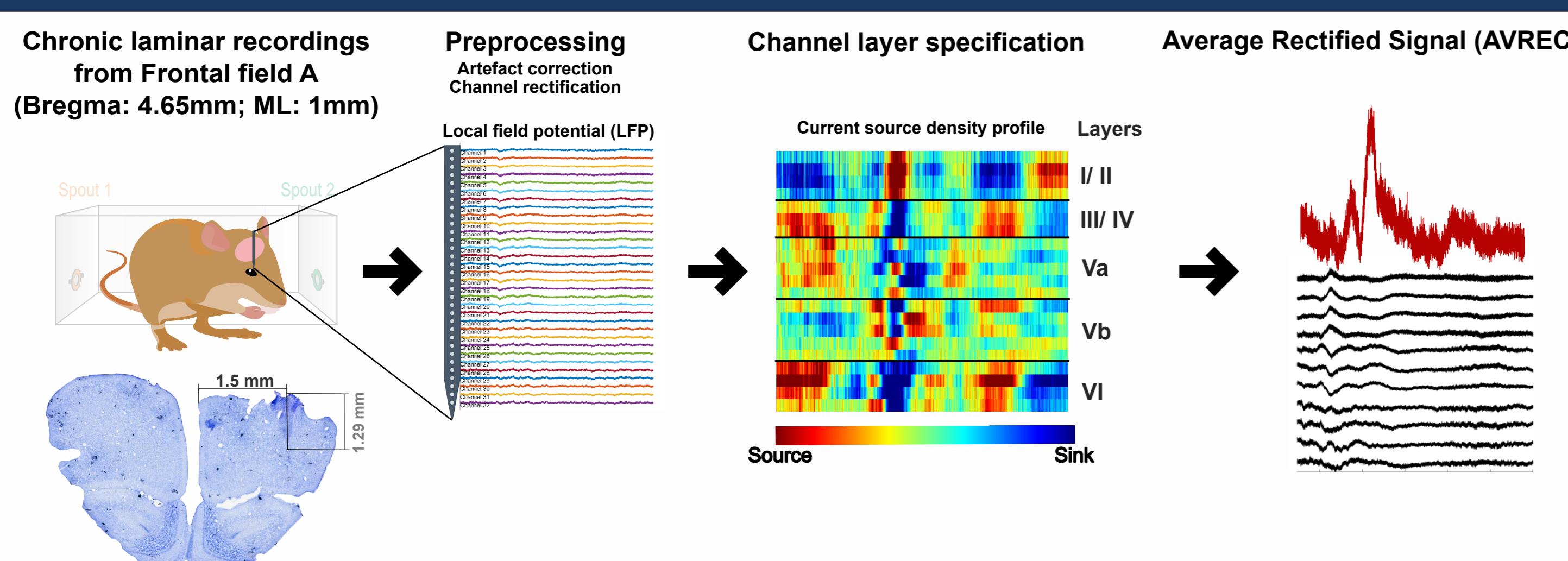


## Should I stay or shift?

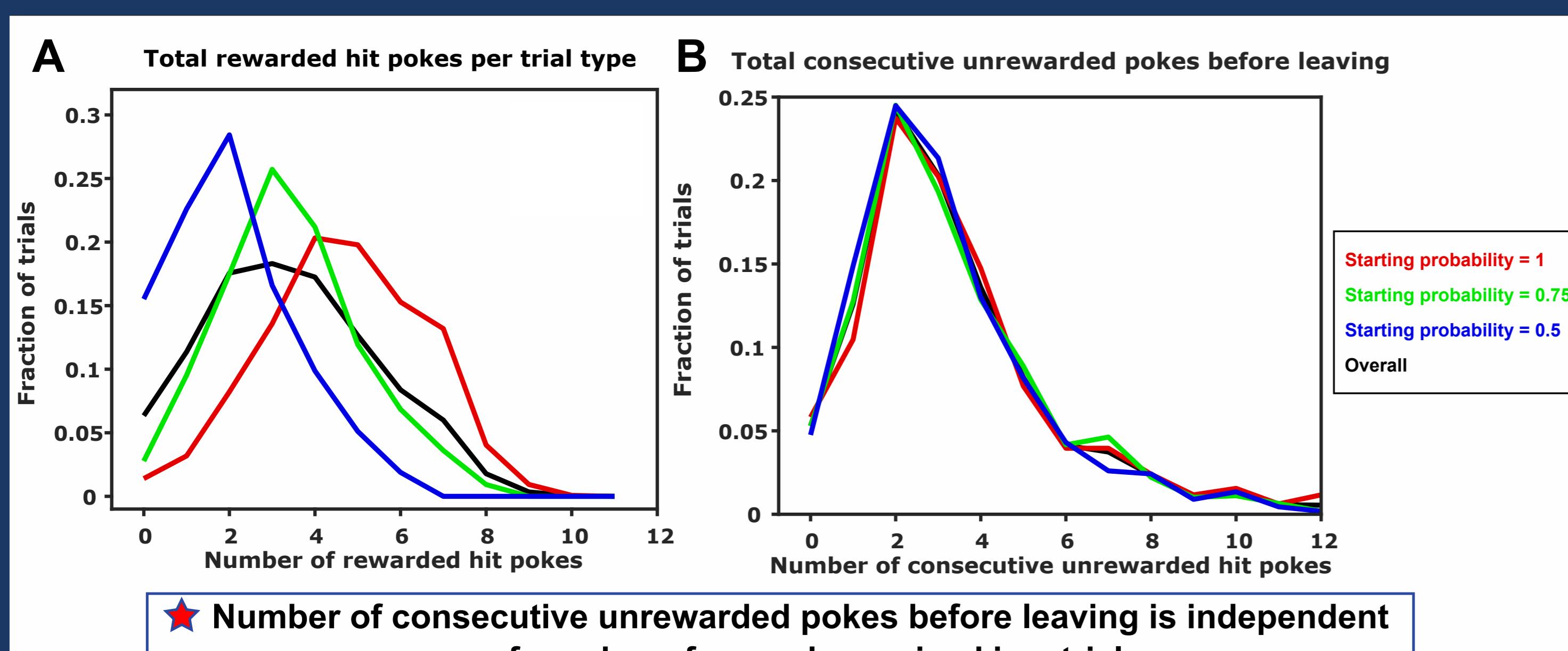
**Exploitation**      **Exploration**

Frontal cortex orchestrates the adaptive decision making

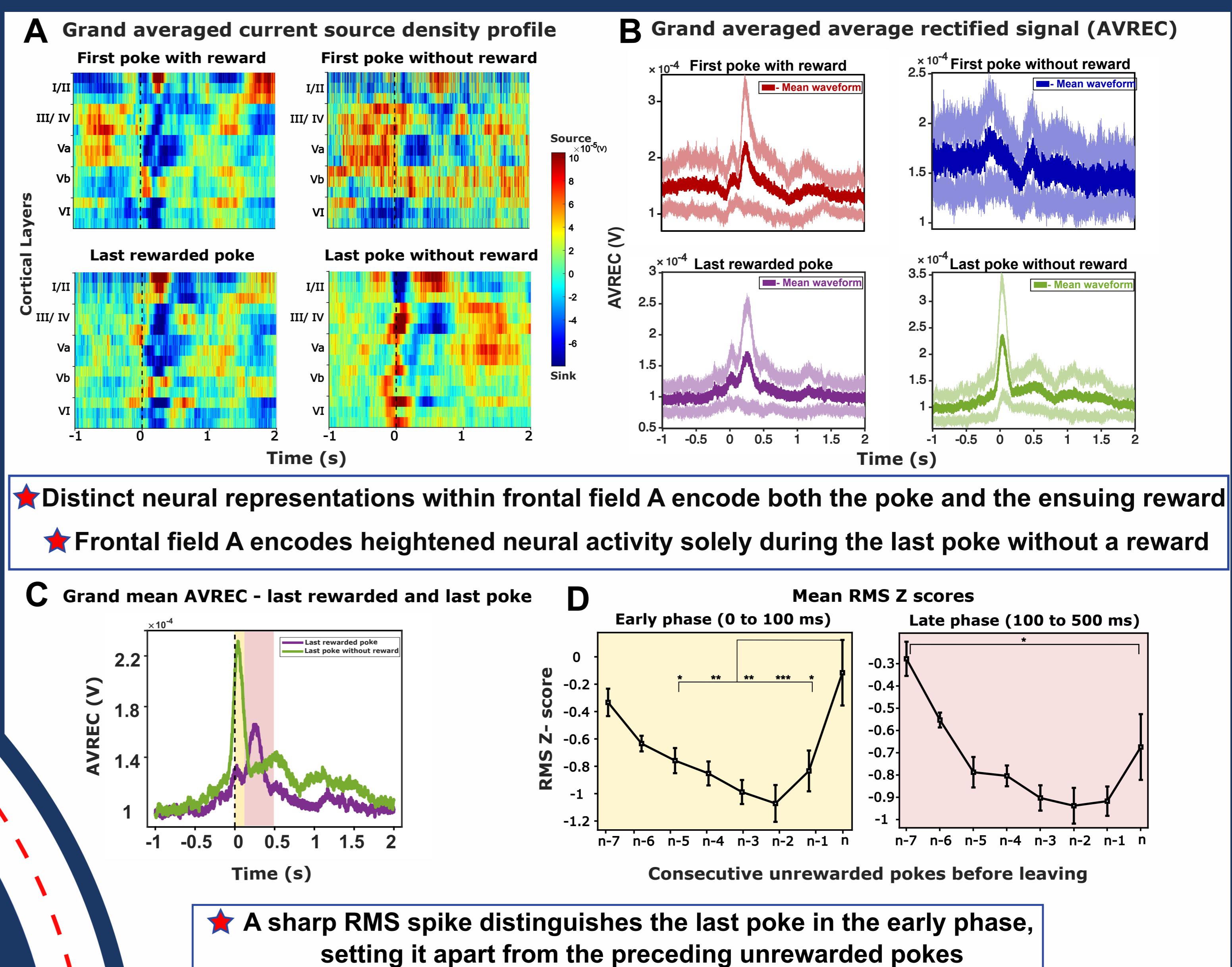
## How did we study this?



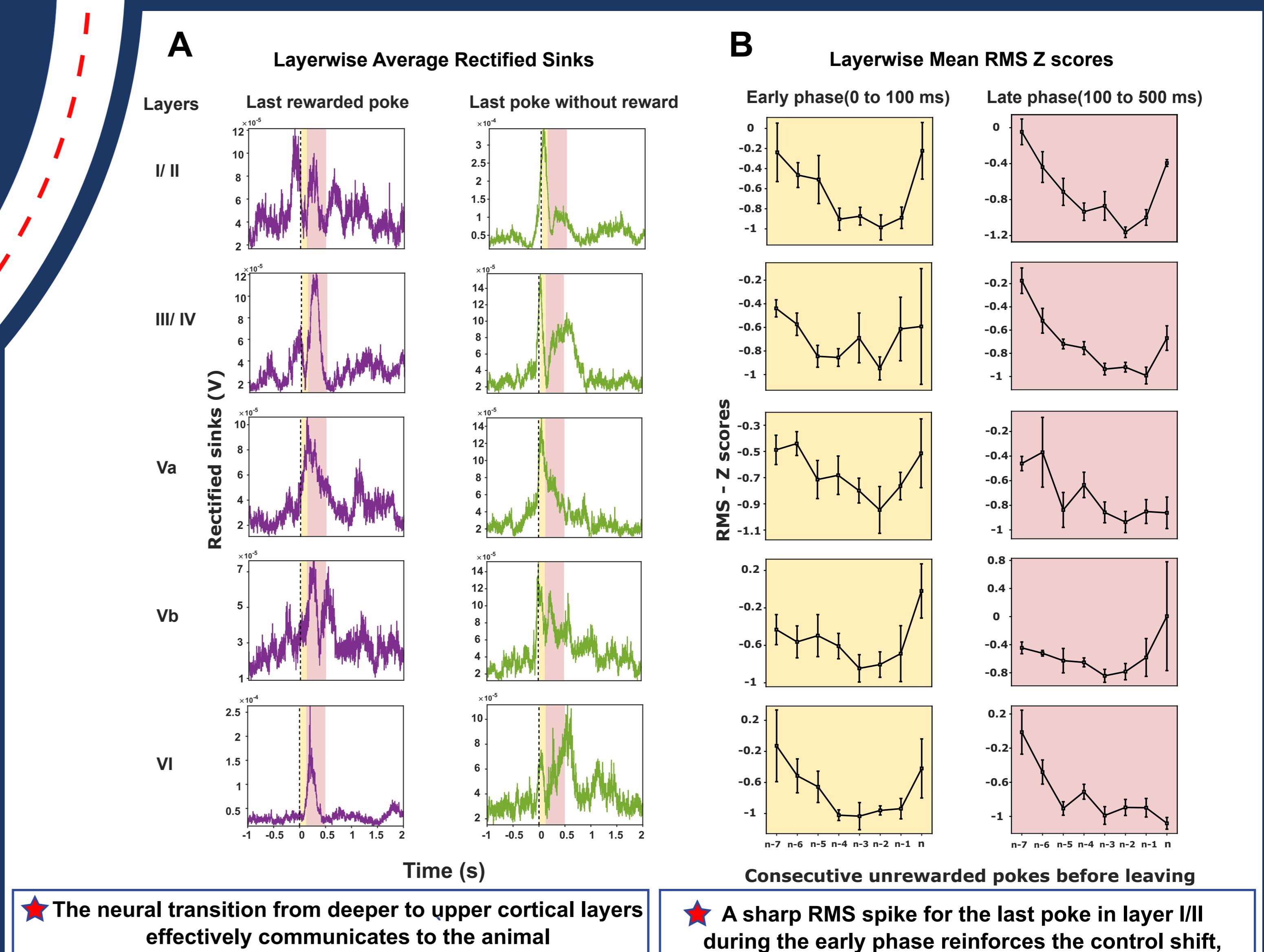
## Animals make inference based decisions



## What makes the last poke the last one?



## Frontal layer dynamics during decision making



## Concluding insights & next steps

- Conclusion**
- ◆ The transition of control from deeper to upper layers, complemented by the heightened activation of layer 1/2 during the final poke empowers the animal to make adaptive decisions between exploration and exploitation during uncertain environments
  - ◆ **GLM(M) Model Validation:** Validate Generalized Linear Models (GLM(M)) to assess the accuracy of overall cortical and layerwise RMS z-scores as pivotal decision features predicting the animal's shift from current spout.
  - ◆ **Reinforcement Learning Modeling:** Develop a reinforcement learning model to replicate the animal's inference-bound decision-making behavior, providing insights into the neural circuitry's role in adaptive choices.

## Acknowledgements

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