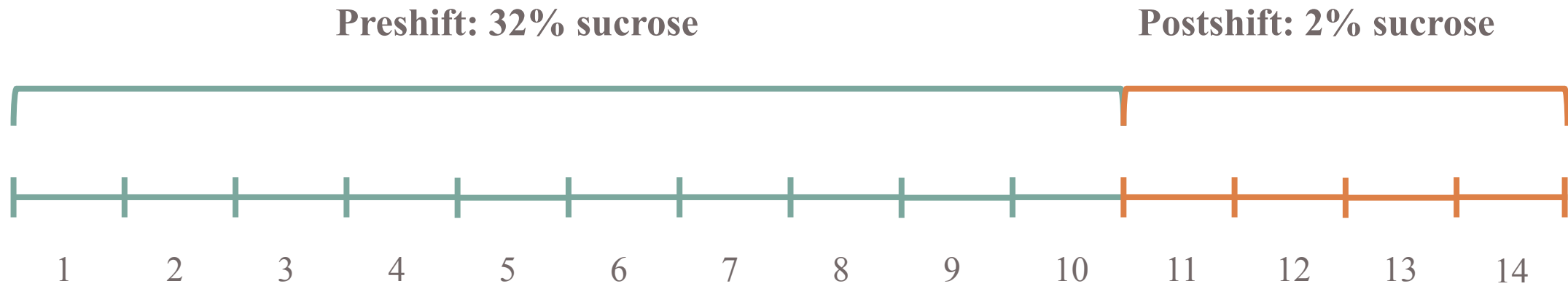


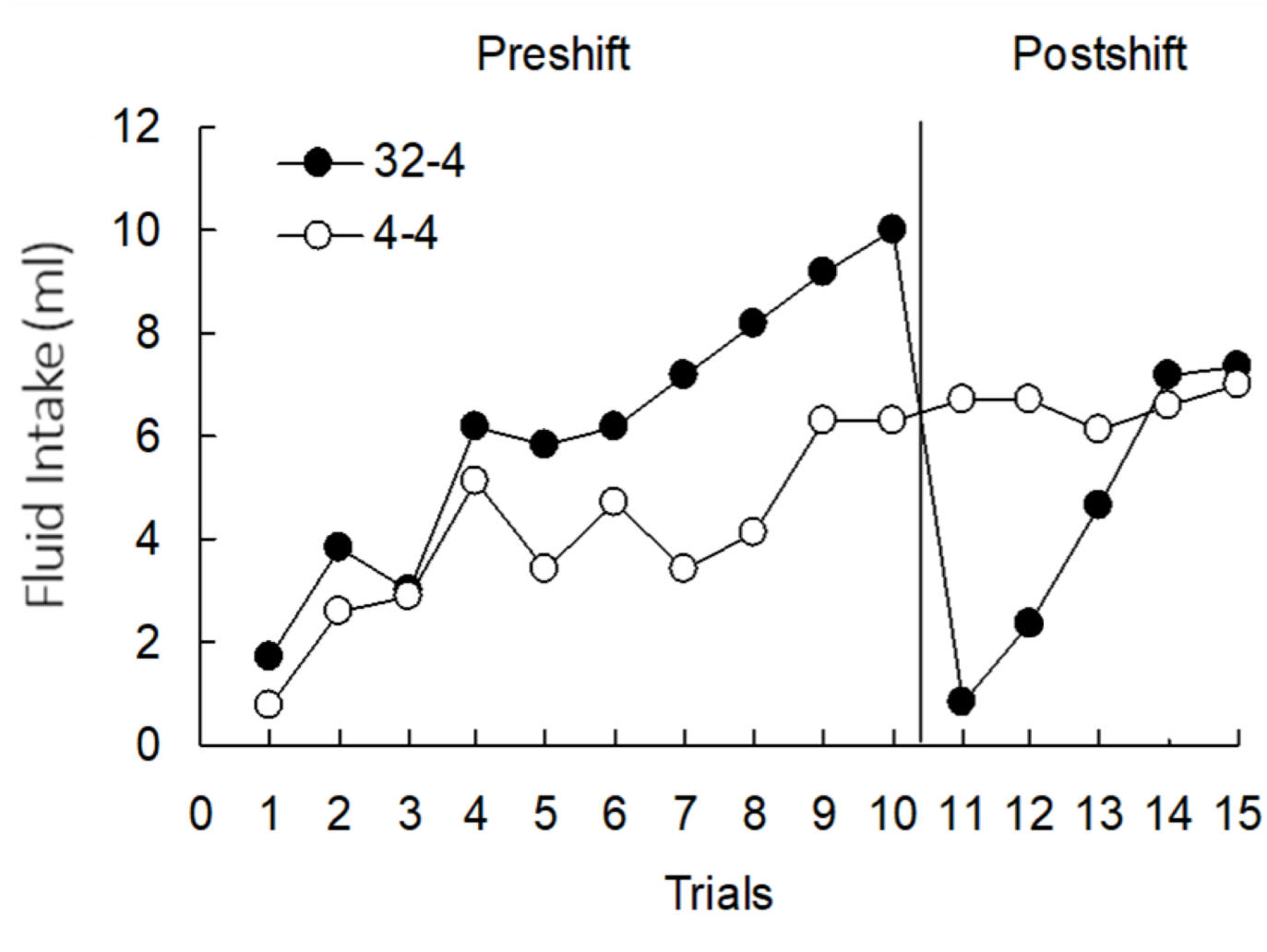
# The Role of the Nucleus Accumbens in Reward Loss

Quynh Nguyen

# Reward Downshift: An Animal Model of Reward Loss



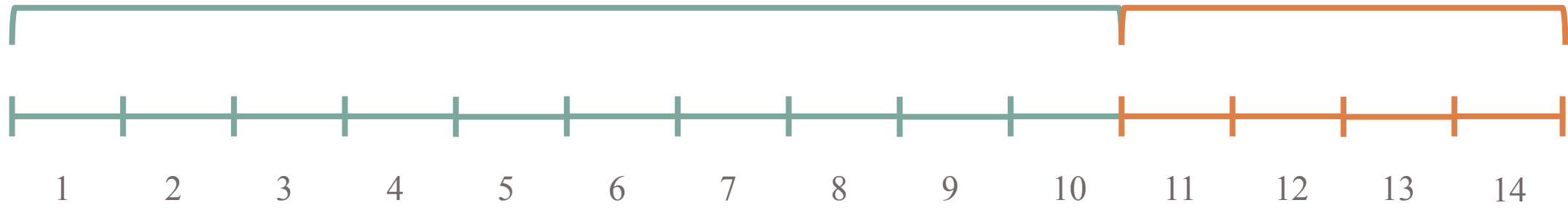
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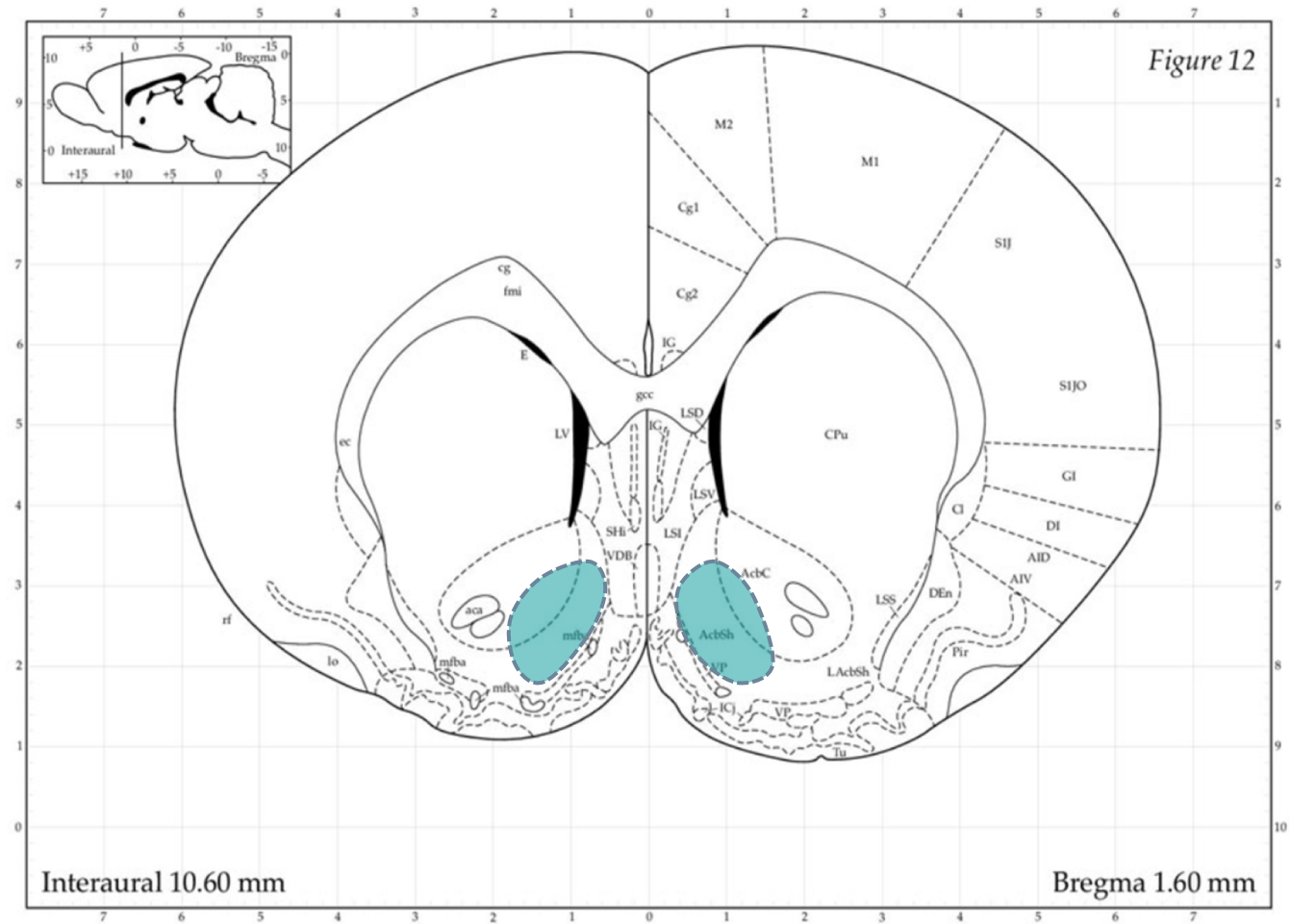
Preshift: 32% sucrose

Postshift: 2% sucrose





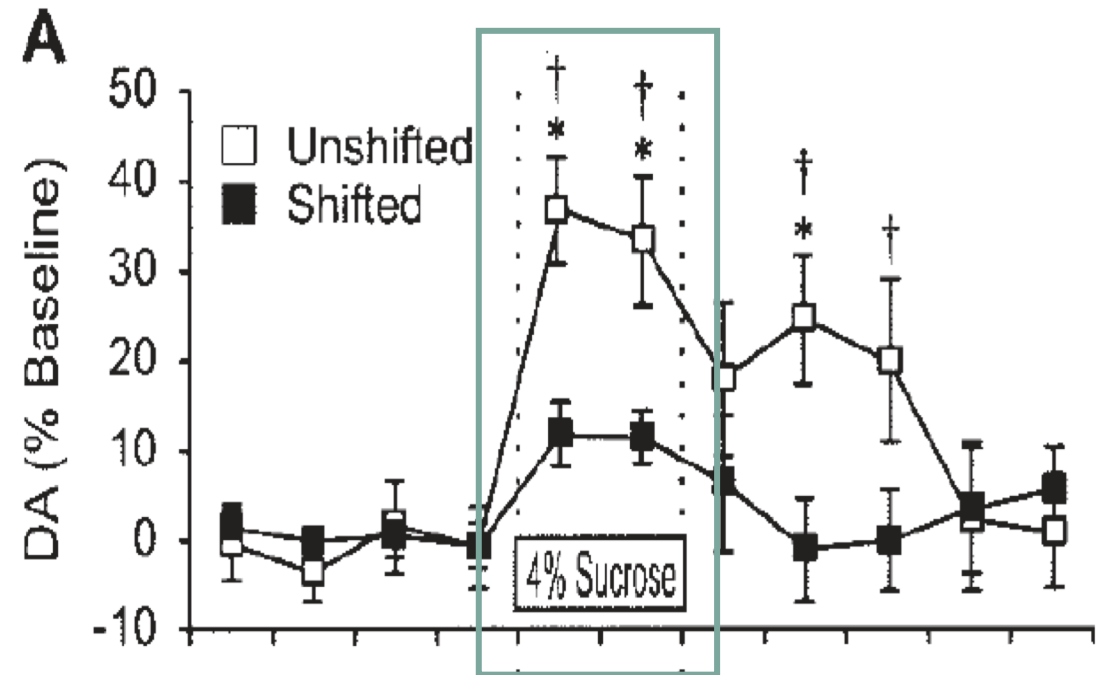
# Nucleus Accumbens (NAc)



# Nucleus Accumbens (NAc)

## Postshift Stage 1

NAc neurons released less dopamine during postshift Stage 1 in rats exposed to the 32-to-4% sucrose downshift relative to 4-to-4% controls (Genn, Ahn, & Phillips, 2004)



# The Current Study

**Aim:** Explore the role of NAc in the recovery phase of RD (postshift Stage 2).

## Predictions

- NAc excitation will increase the recovery rate.
- NAc inhibition will decrease the recovery rate.

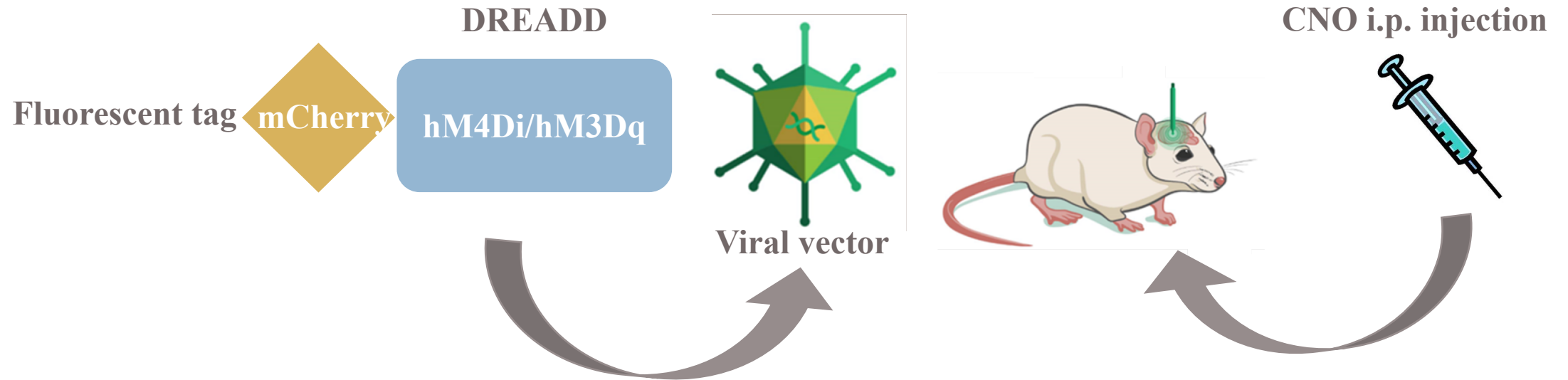
## Method: Subjects

- Experimentally naïve male Wistar rats
- $N = 48$



# Method: Surgery

## Designer Receptors Exclusively Activated by Designer Drugs (DREADDs)



# Method: Design

INH/CNO

EXC/CNO

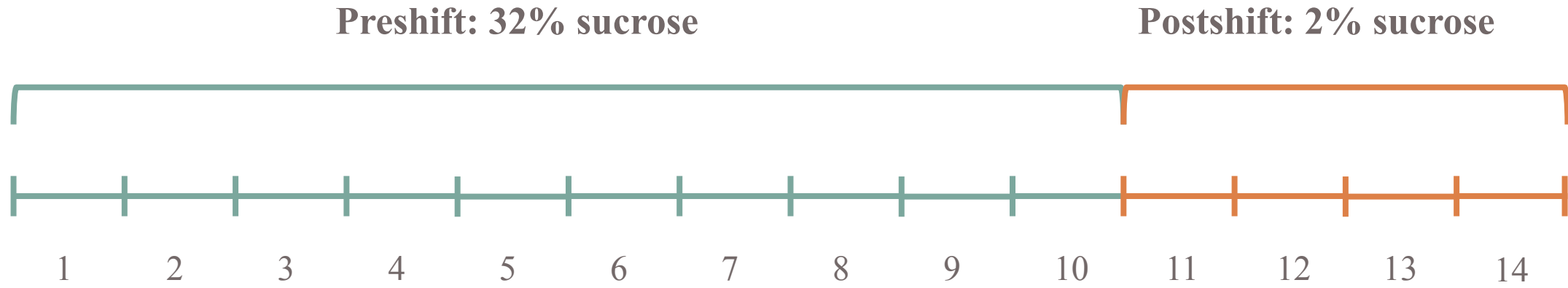
CON/CNO

INH/VEH

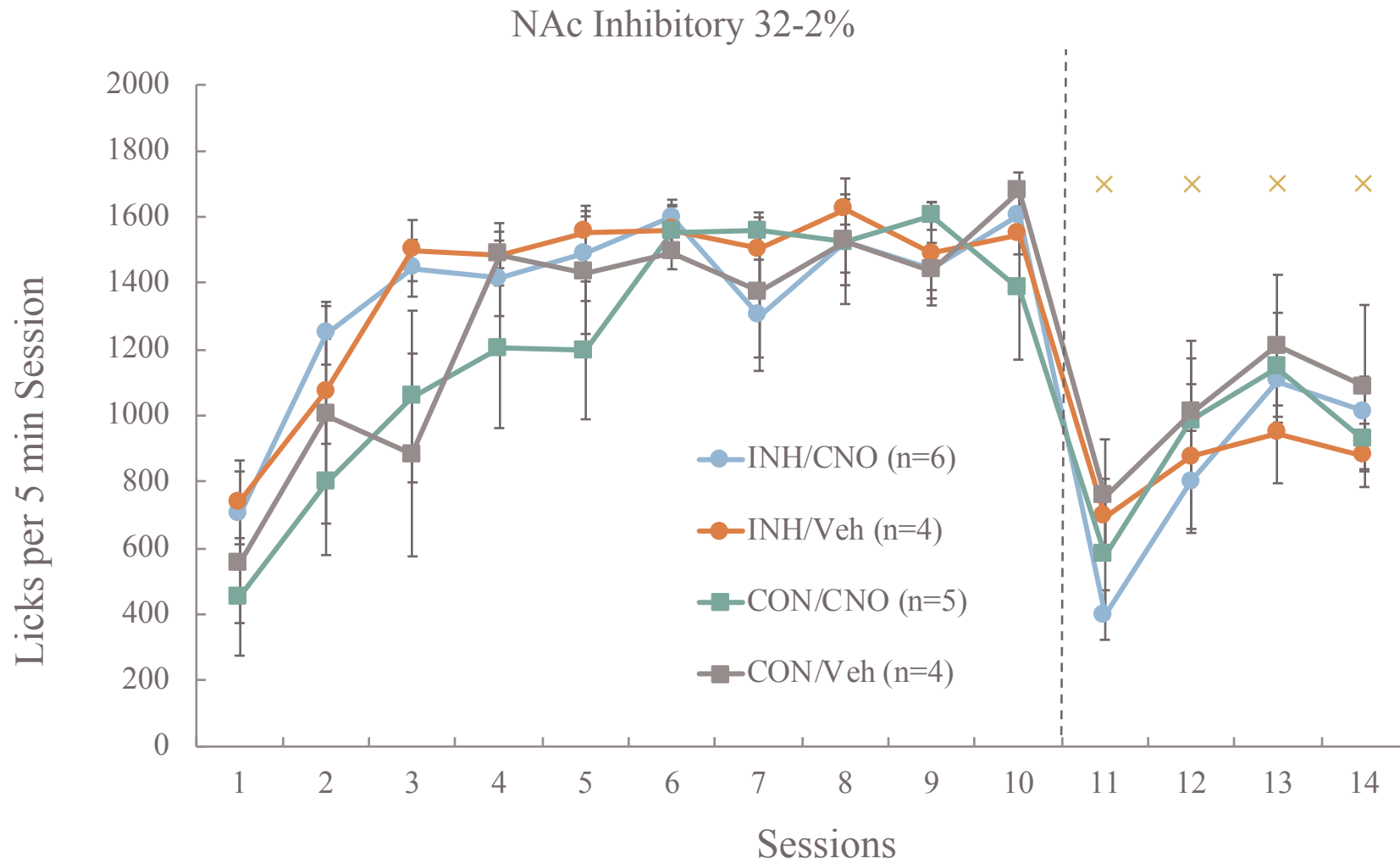
EXC/VEH

CON/VEH

# Reward Downshift: An Animal Model of Reward Loss

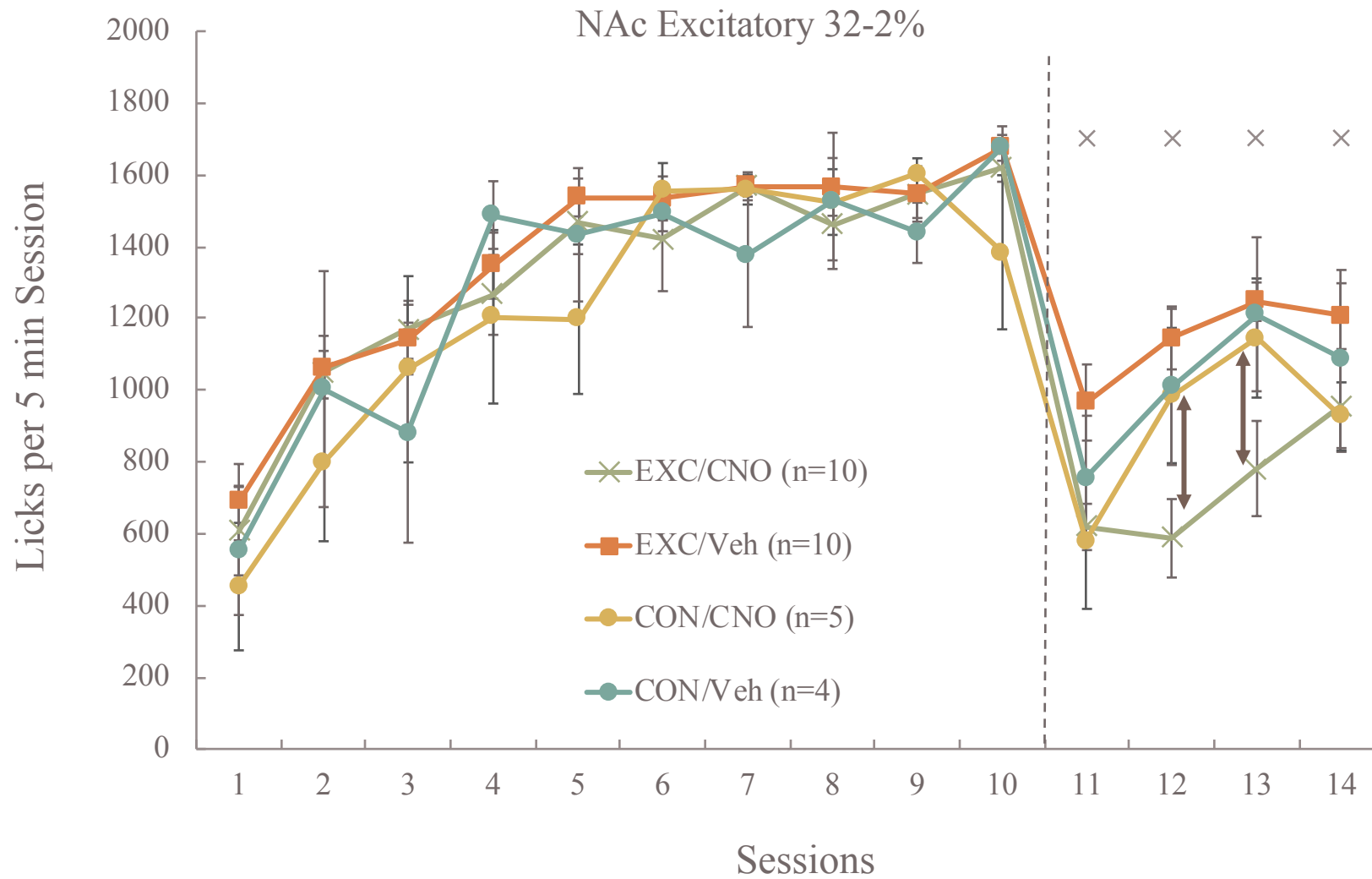


# Results: NAc Inhibition





# Results: NAc Excitation



# Discussion

**Possible explanation: excitation of inhibitory neurons  
within NAc**

# Discussion

- **First study to explore the role of NAc in reward loss using excitatory DREADDs**
- **Exploring Basolateral Amygdala (BLA) – NAc pathway**

**Thank you!**