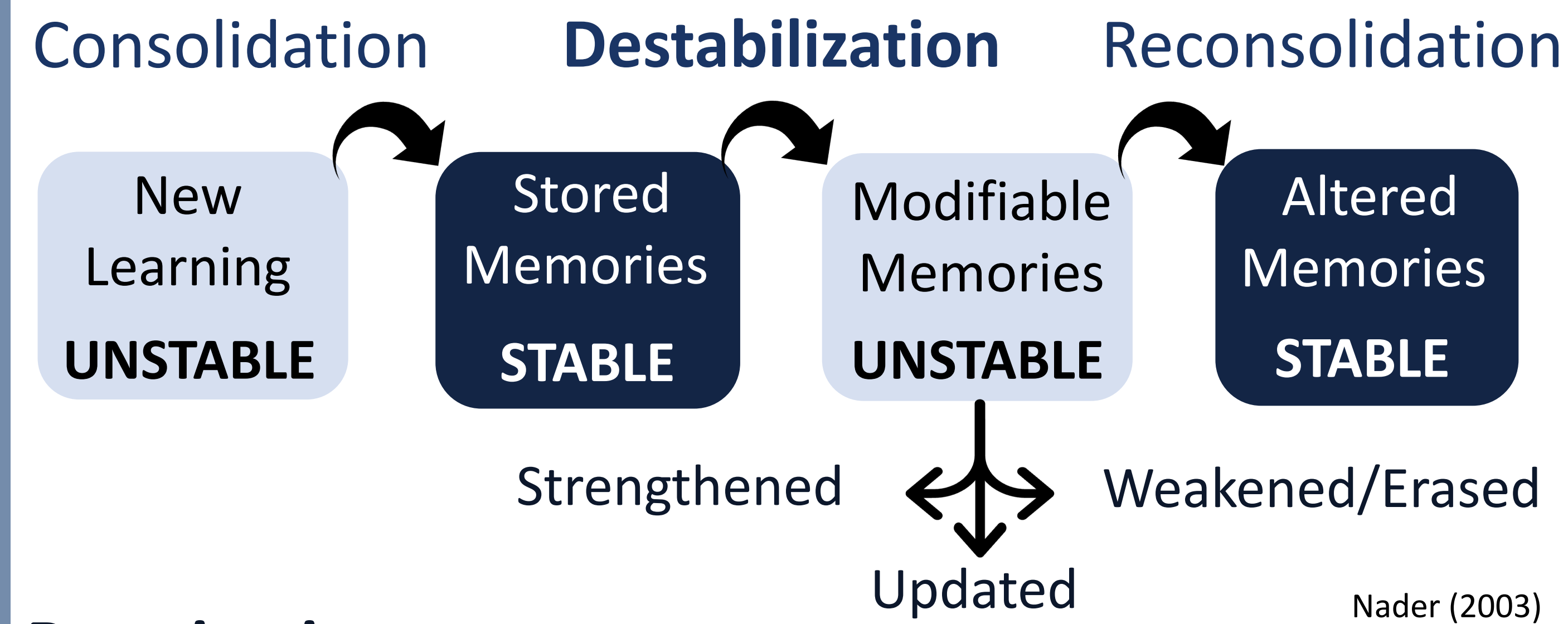


Background & Rationale

Reconsolidation Theory



Reactivation

- Brief re-exposure to previous learning-related cues can promote retrieval of an underlying memory trace ¹

Destabilization of Object Memories

→ Dopamine (DA) D1R

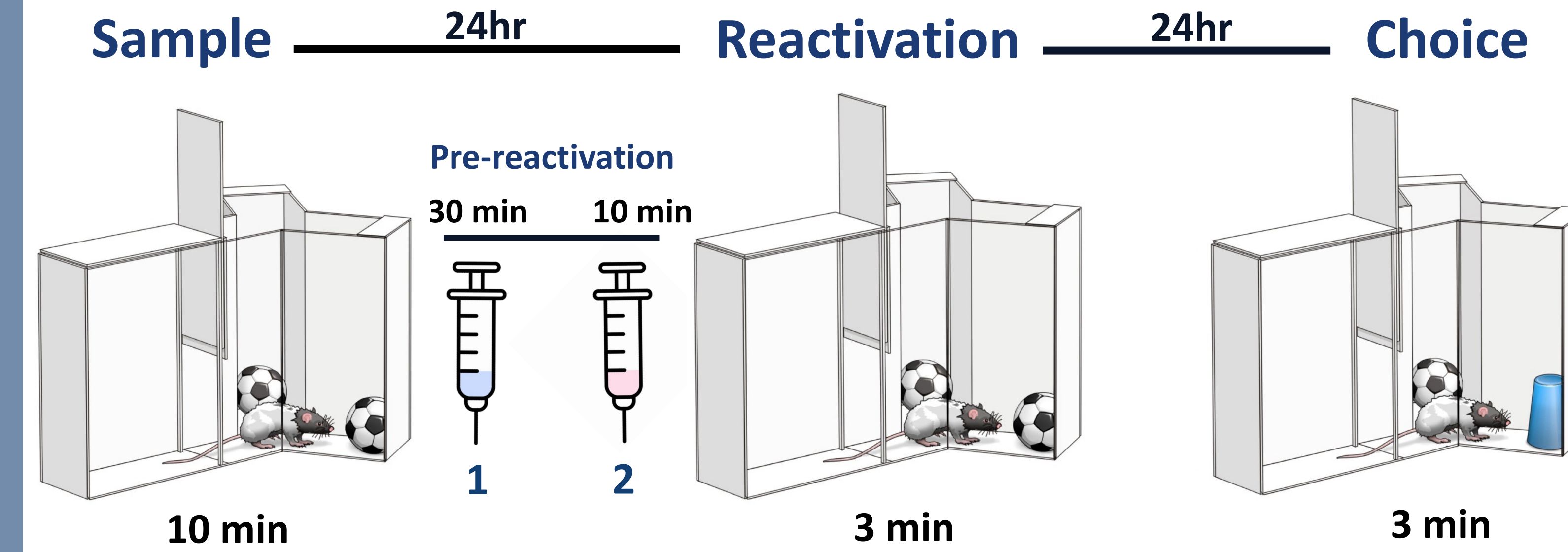
- Antagonism of D1 receptors prevents object memory destabilization in male rats ⁵

→ Acetylcholine (ACh) mAChR

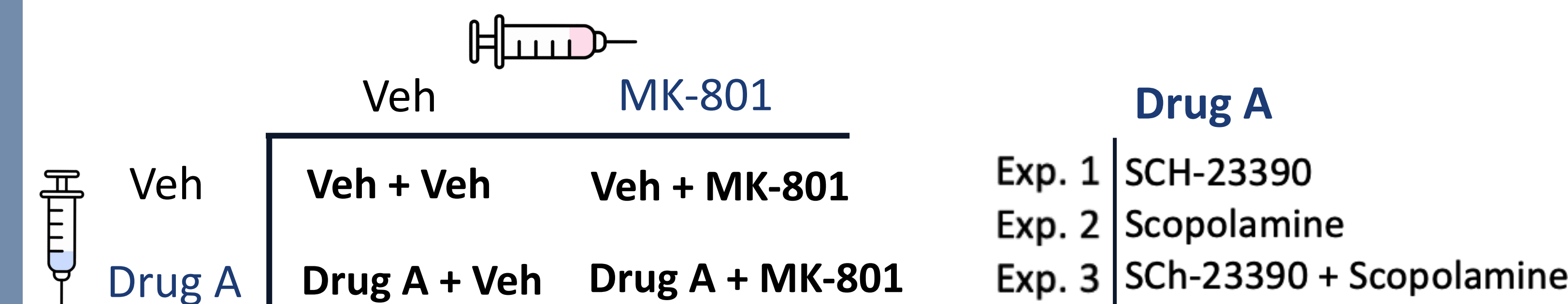
- Antagonism of mACh receptors prevents object memory destabilization in male rats ^{2,7}

Methods

Spontaneous Object Recognition (SOR) Task



Experimental Conditions



Discrimination Ratio (DR)

$$DR = \frac{\text{Novel (s)} - \text{Familiar (s)}}{\text{Total Exploration (s)}}$$

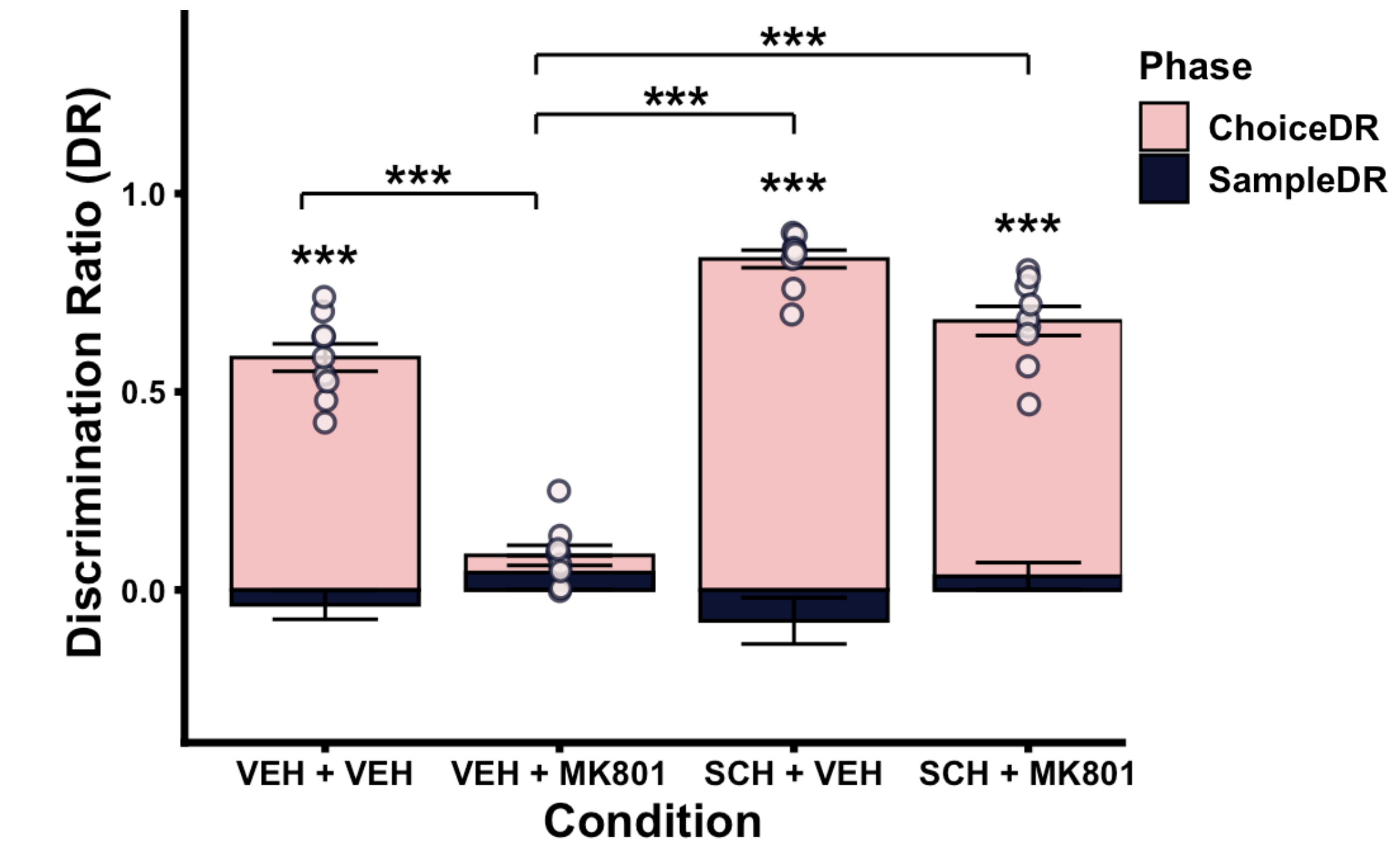
- DR > 0: Novel Preference = Intact memory.
- DR ≤ 0: No Novelty Preference = Memory impairments

Results

Experiment 1: SCH-23390

Aim: To assess the role of D1 receptors in object memory destabilization in female mice. (0.06mg/kg)

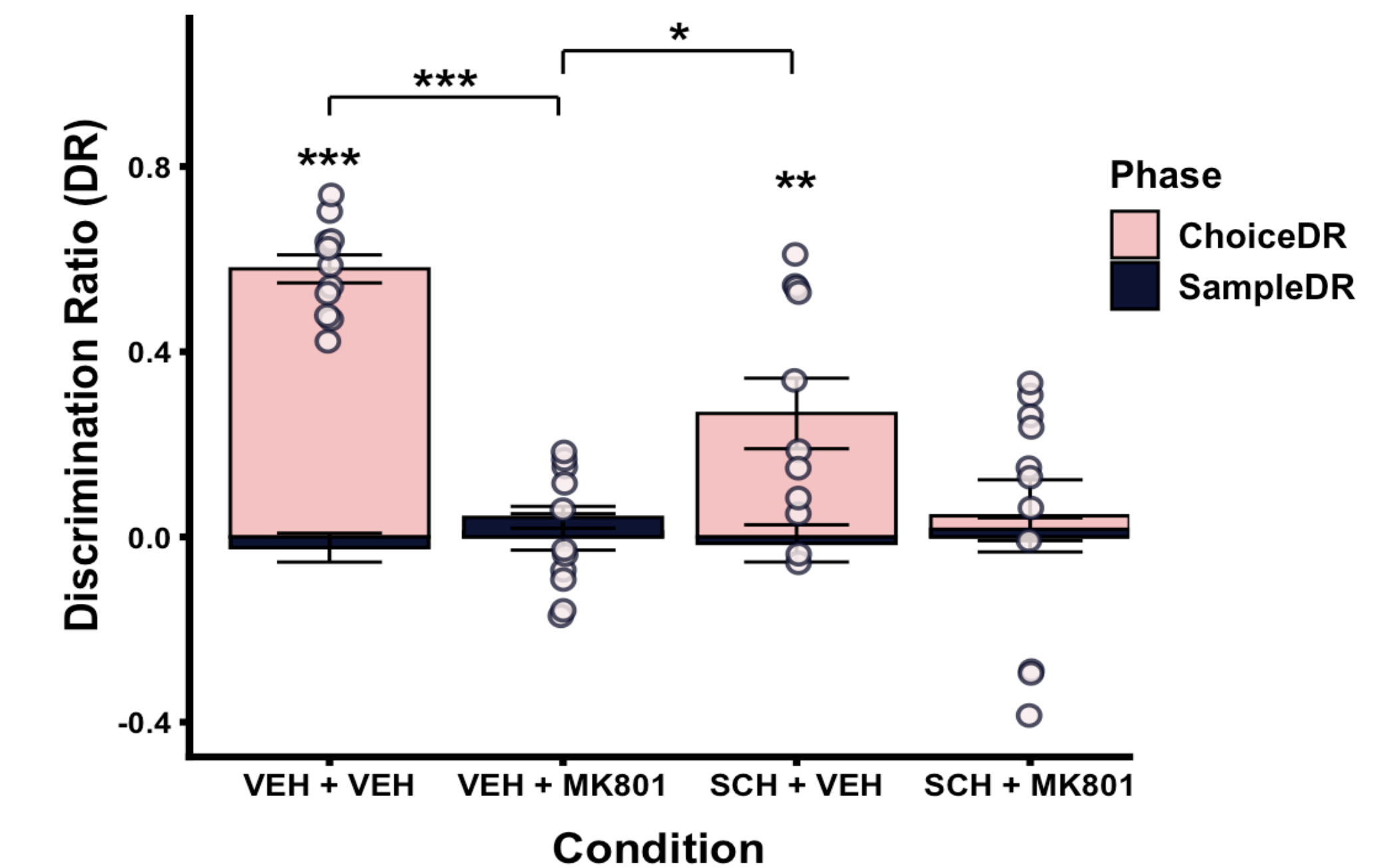
n = 9



SCH-23390 Suboptimal Pilot

Aim: To identify 0.03mg/kg as a suboptimal dose that did not block destabilization in female mice

n = 11



Research Aim

Aim

Investigate potential for an interaction between DA and ACh for the destabilization of object memories across sexes

Hypothesis

Combined suboptimal antagonism of D1R and mAChR will prevent destabilization of object memories

Methods

Subjects

- C57BL/6 Mice: Females
- n = 12 per experiment
- Within-subjects

Pharmacological Manipulation

Drug	Receptor	Effect
SCH-23390	D1R antagonist	Destabilization Manipulation
Scopolamine	mAChR antagonist	Destabilization Manipulation
MK-801	NMDAR antagonist	Reconsolidation Blockade
Vehicle	0.9% Saline	Vehicle Control

Results

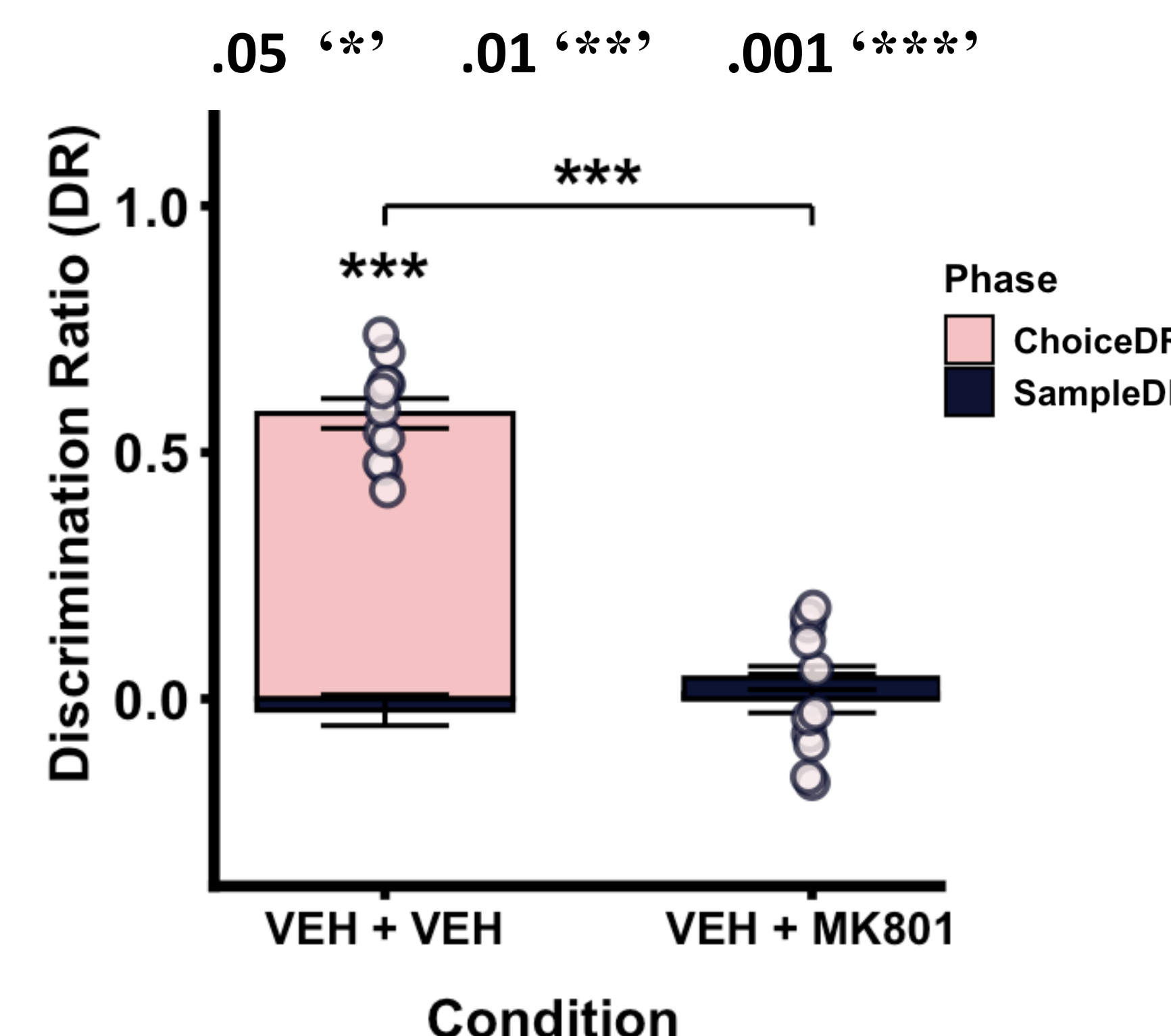
Statistical Analyses

- 2 x 2 Repeated Measures ANOVA - Choice DR across conditions
 - Injection 1 x Injection 2 as within-subject factors
- Sample-to-choice paired t-tests - Chance analyses
- Paired t-tests between Veh + MK-801 & Drug A + MK-801
 - Planned comparison assessing destabilization blockade

MK-801 Pilot Experiment

Aim: To ensure systemic administration of MK-801 prior to reactivation blocks memory reconsolidation in female mice

n = 11



Conclusions

Present Findings

- MK-801 blocks reconsolidation in female mice
- D1R activation is implicated in initiating destabilization mechanisms in female mice

Limitations

- Systemic administration

Future Directions

- Examine these systems intracranially
- Locate specific region of interaction
- Examine downstream molecular mechanisms
- Examine interaction in other memory tasks

Implications

- Females: higher prevalence of post-traumatic stress disorder & specific phobias ^{4,8}
- Therapeutic treatments for memory related disorders

Scan for References



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