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Social Learning of Safety in Degus

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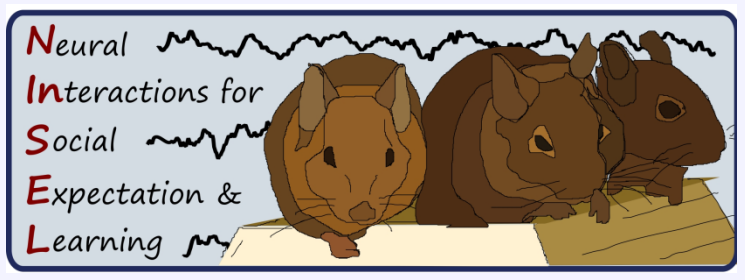
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Social Learning of Safety in Degus

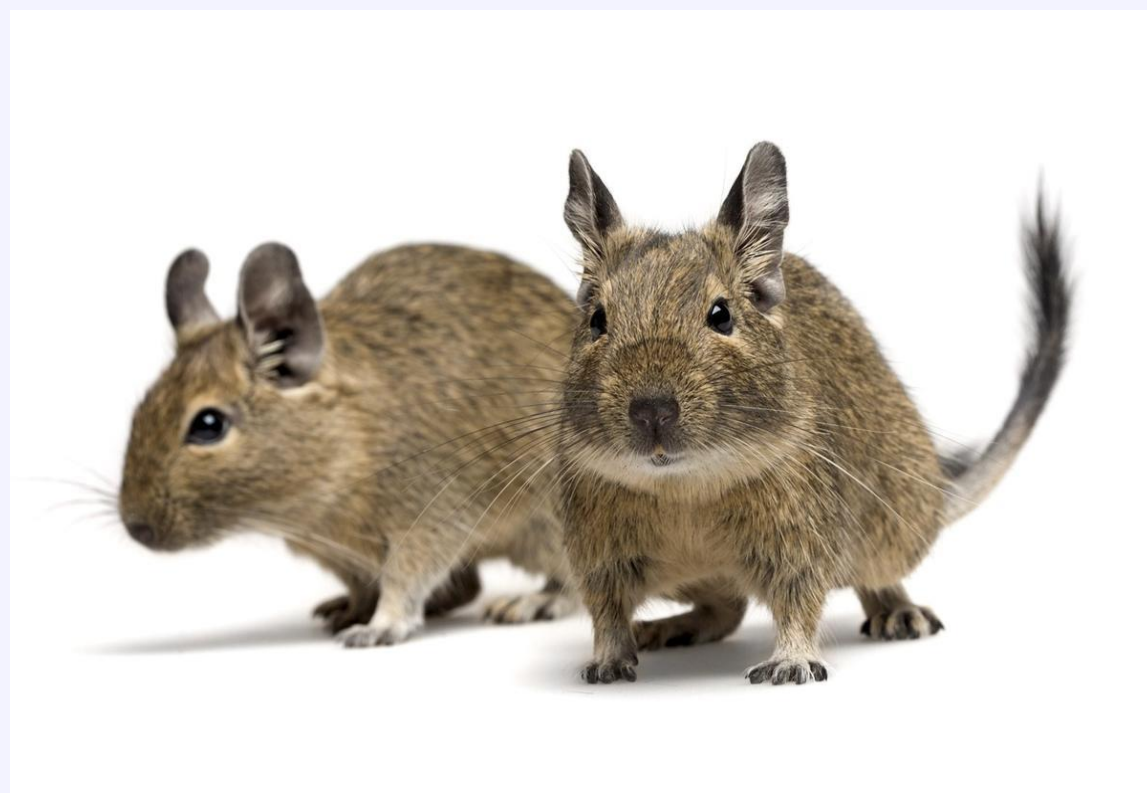
Dorothy Young, Purna Banerjee, Navdeep Lidhar, Kaori Takehara-Nishiuchi, Nathan Insel



Introduction

- Learning through observation of others (social learning) has important survival benefits.

- Many studies have shown social learning of fear, but different brain systems are involved in learning fear as compared with extinguishing fear memories.



- This study examined the effect of social learning on extinguishing fear memories.

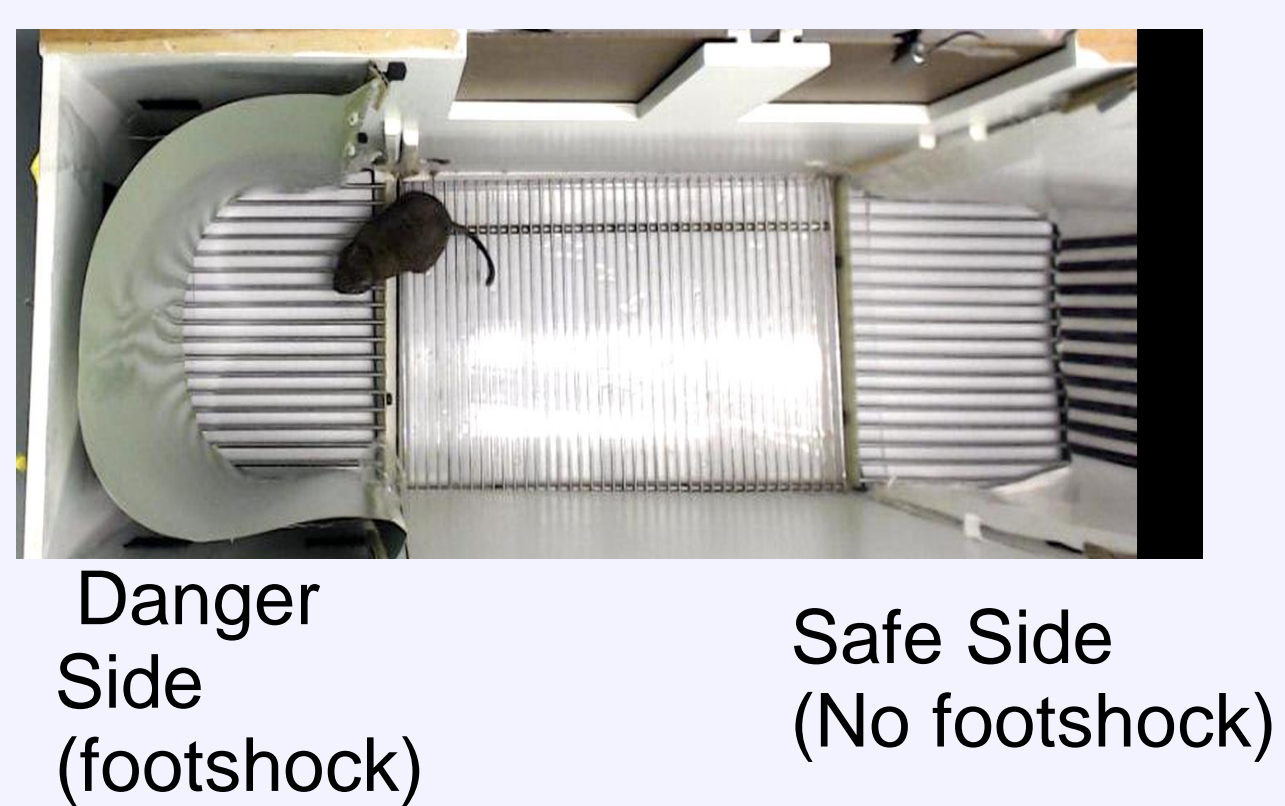
Research Question

Can rodents extinguish fear memories through social learning?

Methods

-12 pairs (cagemates) of degus (*Octodon degus*), a highly social species, were used in the study.

-Animals were conditioned over 5-10 days to fear one side of a chamber.



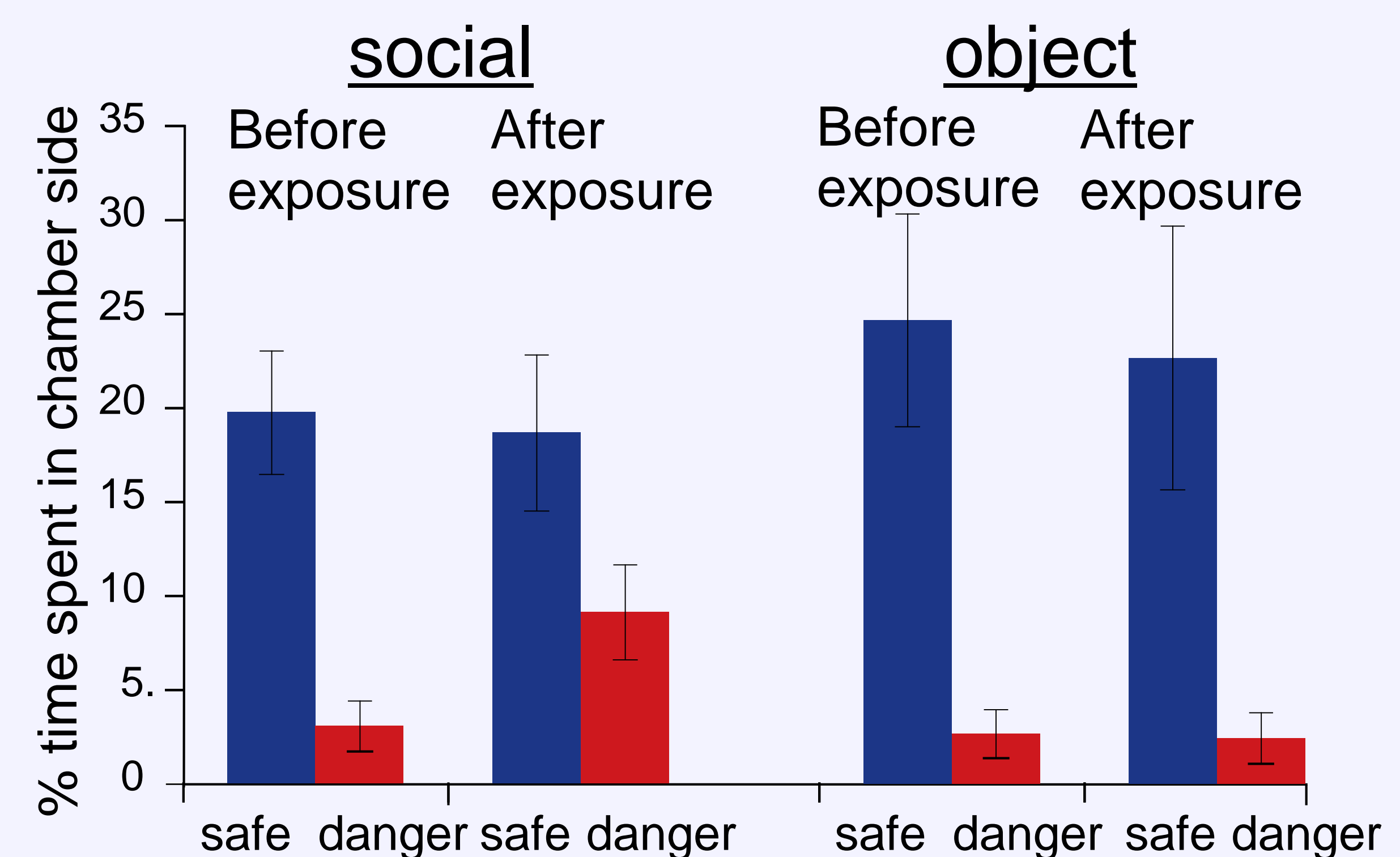
-After training, a naïve cagemate was placed in the chamber with the conditioned degu, and also placed into the danger and safe sides separated by a transparent barrier. **The naïve degu never received footshock.**

Prediction: the conditioned degu would avoid the danger side less in sessions following cagemate exposure, as compared with exposure to a novel object placed in the same rooms.

Results

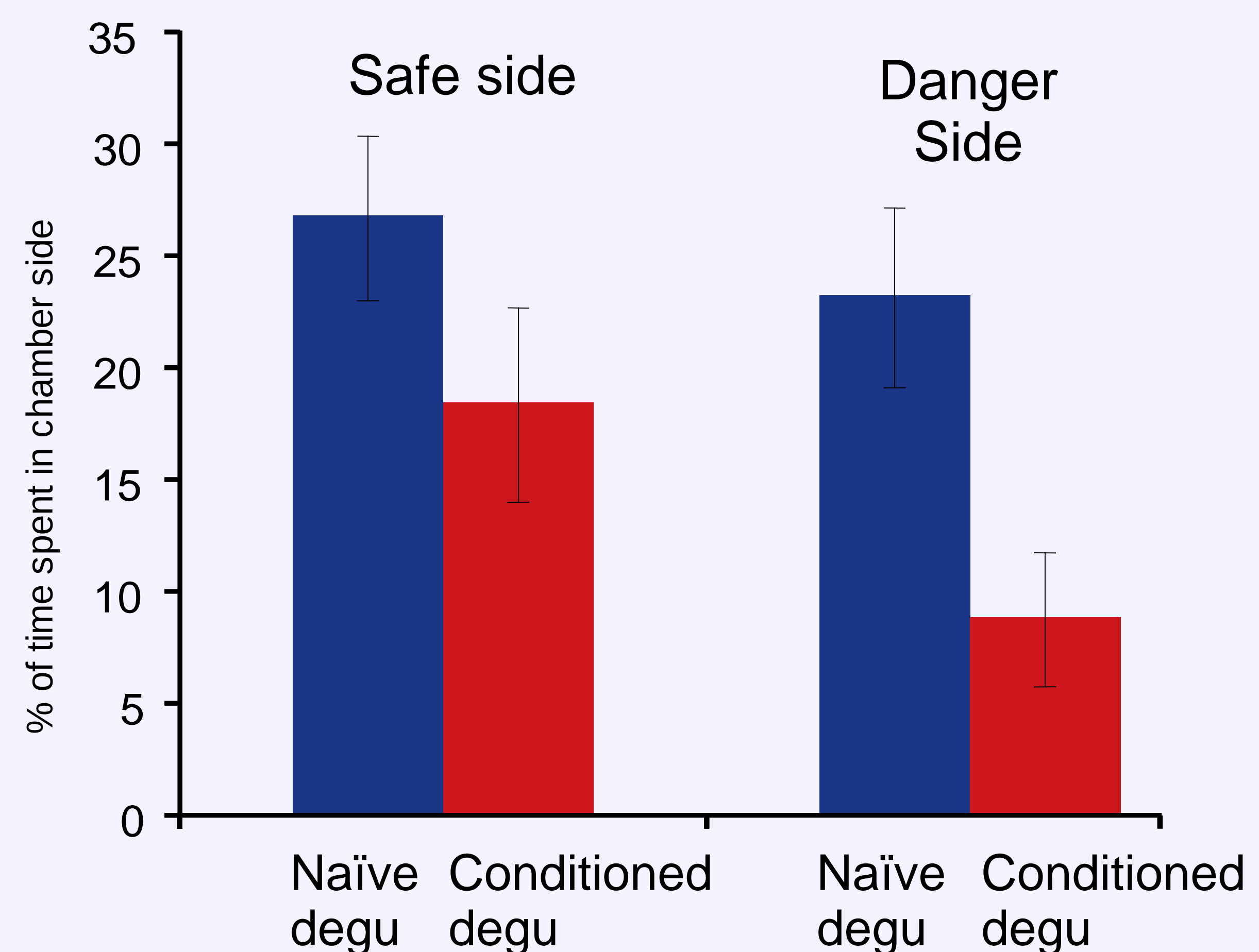
After observing a cagemate in the danger side without footshock, the conditioned degu appeared to spend more time in the danger side, as compared with after observing objects ($p = 0.058$, $\alpha = 0.1$).

Conditioned degus show evidence of socially-learned "safety" for a previously aversive area of space.



Unconditioned, naïve cagemates did not avoid the danger side after the social exposure (paired t-test, $p = 0.43$).

There was no evidence for social communication of threat for the danger side.



Summary and Future directions

It appears that rodents can learn that a region of space is safe by observing others behaving normally in that space.

Future studies can examine the neural basis of this learning, which may engage the same neural systems that are involved in fear extinction.