

# CAST AWAY

## Effects of Social Isolation on Food Motivation and Exploratory Behavior

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Reed College Bio 342

**How does social isolation affect the welfare of female laboratory (Sprague Dawley) rats?**



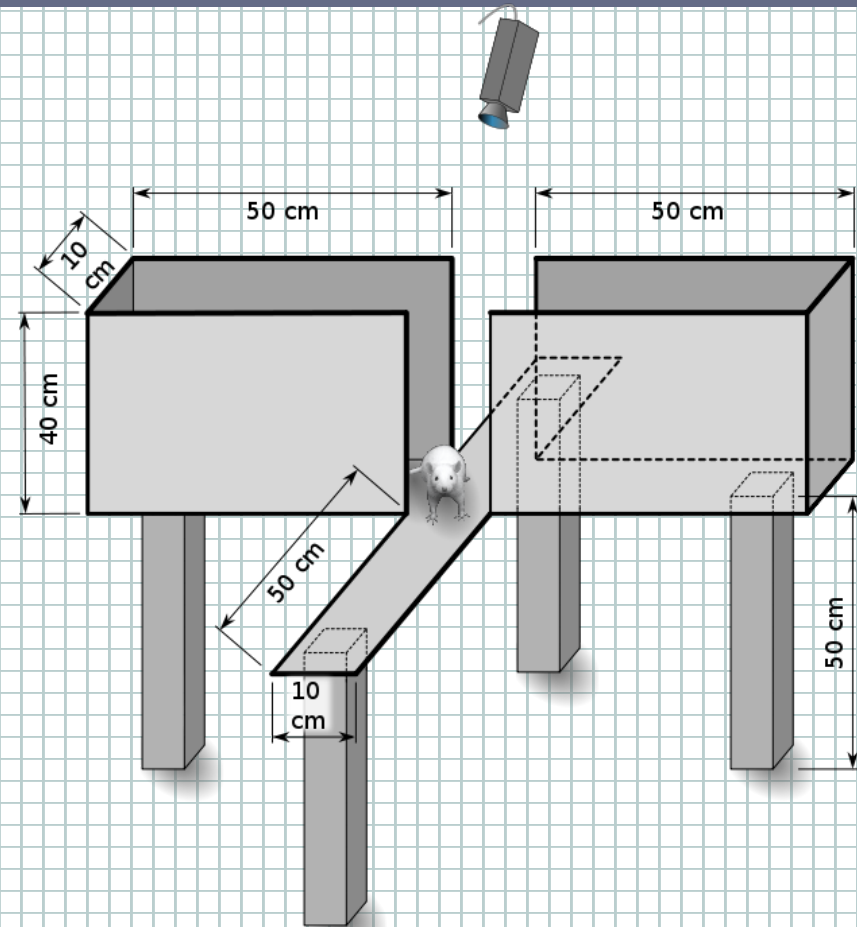
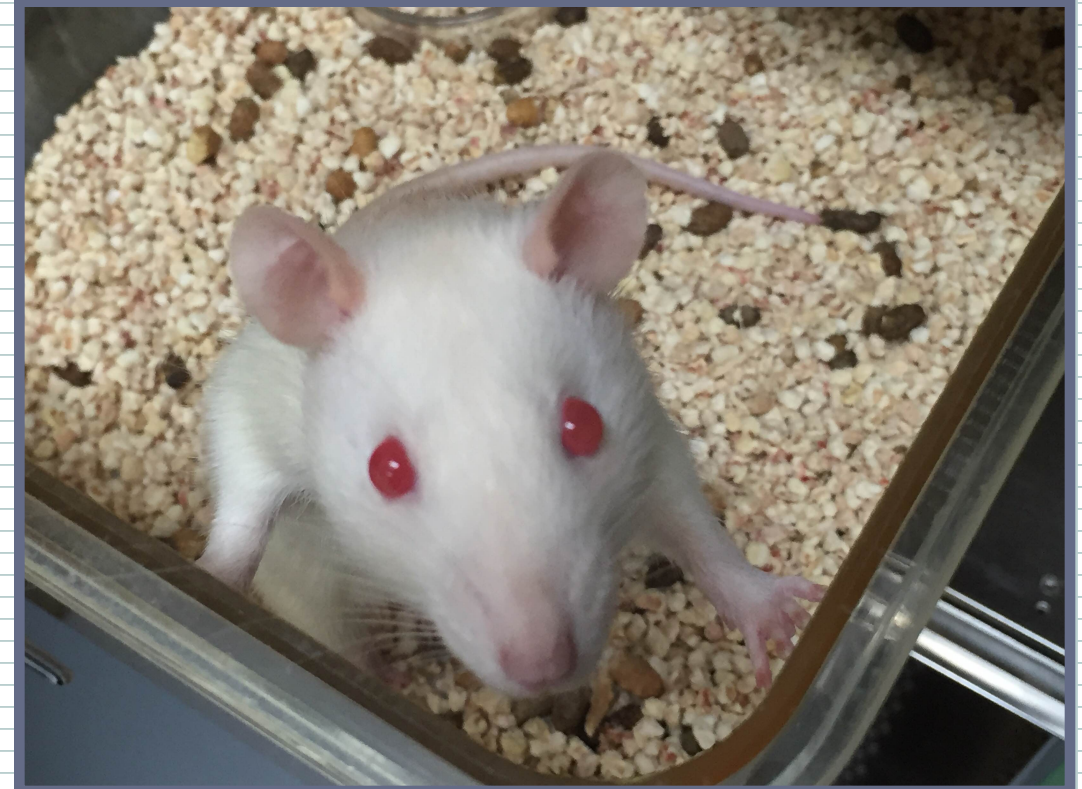
- Effective enrichment of laboratory animals should be adjusted to the specific species' natural environment, of which a large component is comprised of social interaction.
- Sprague Dawley rats are bred for laboratory use and are often housed in social isolation during the course of research.
- The effects of social deprivation have not been studied in female rats as much as they have been in male rats.



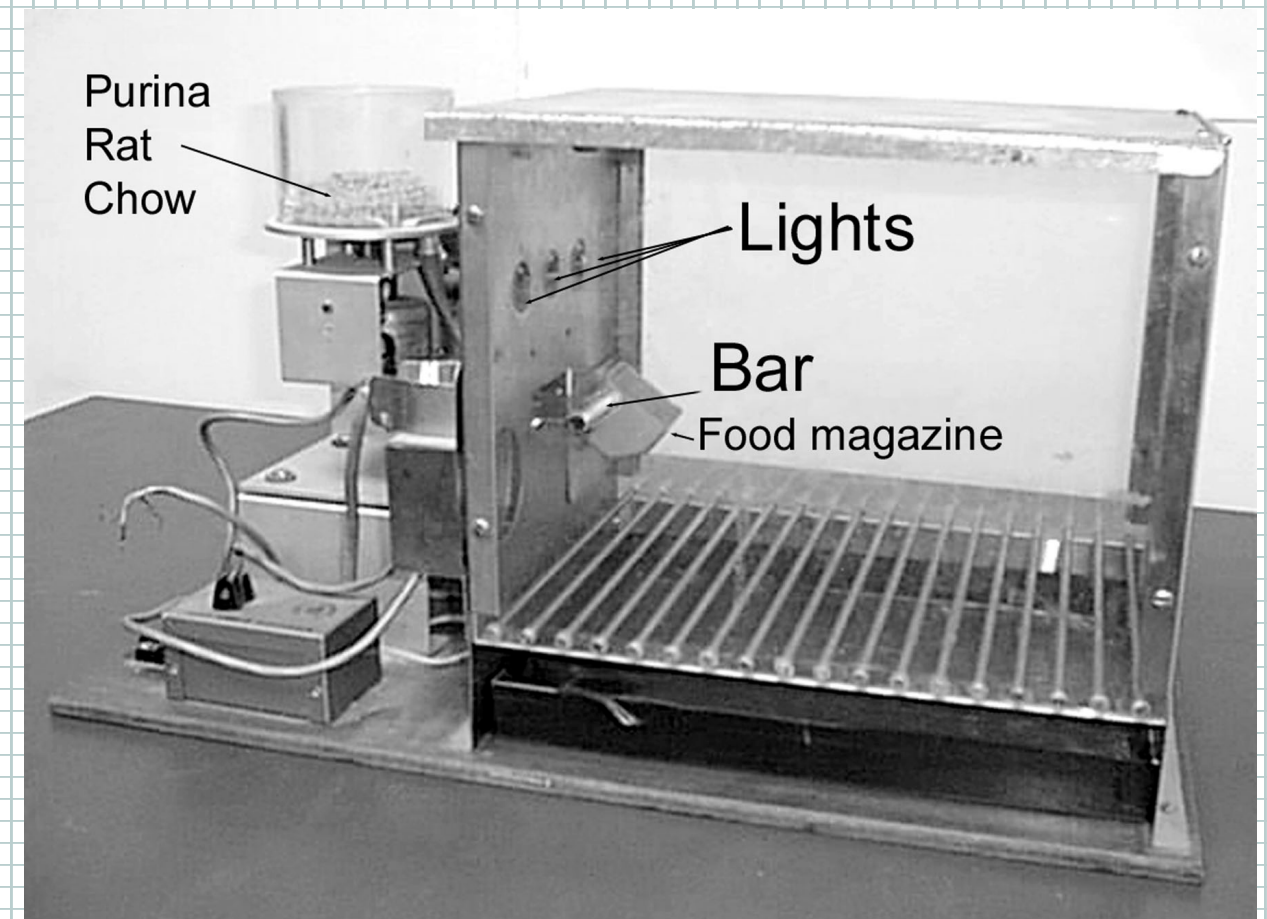
**Does social isolation affect motivation for palatable food and exploratory behavior?**

# Experimental Design & Methods

- **Subjects:** 4 female juvenile Sprague Dawley rats
- **Design**
  - Experimental group: Socially isolated
  - Control group: Pair housed
- **Measures:**
  - Progressive Ratio 3 schedule (food motivation)
  - Extinction schedule (food motivation)
  - Elevated plus maze (exploratory behavior)



**Image 1.** Elevated Plus Maze setup for rats

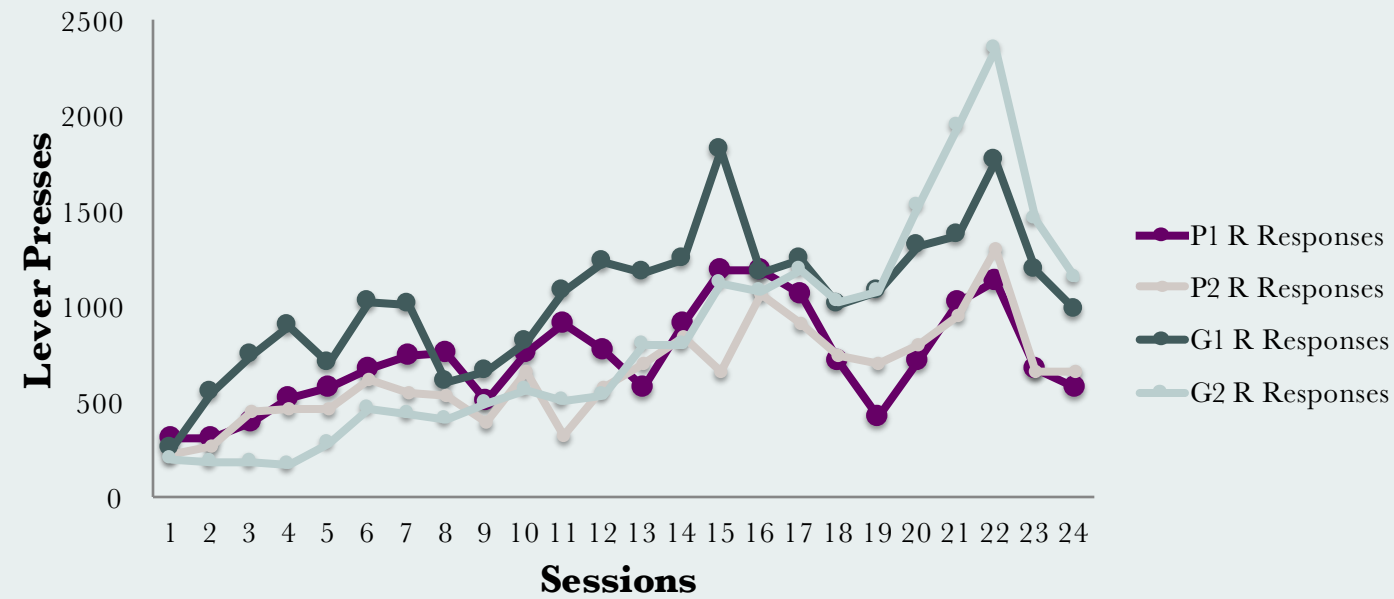


**Image 2.** The operant chamber or Skinner Box for the rat



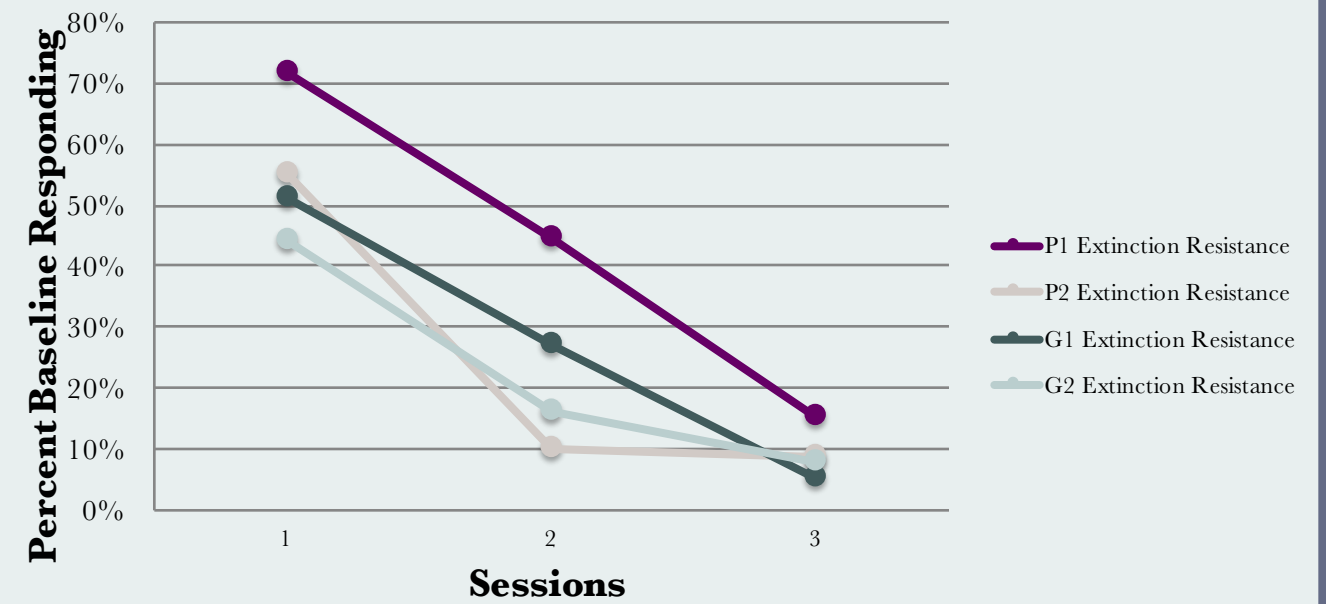
# Results

## Operant responses over time



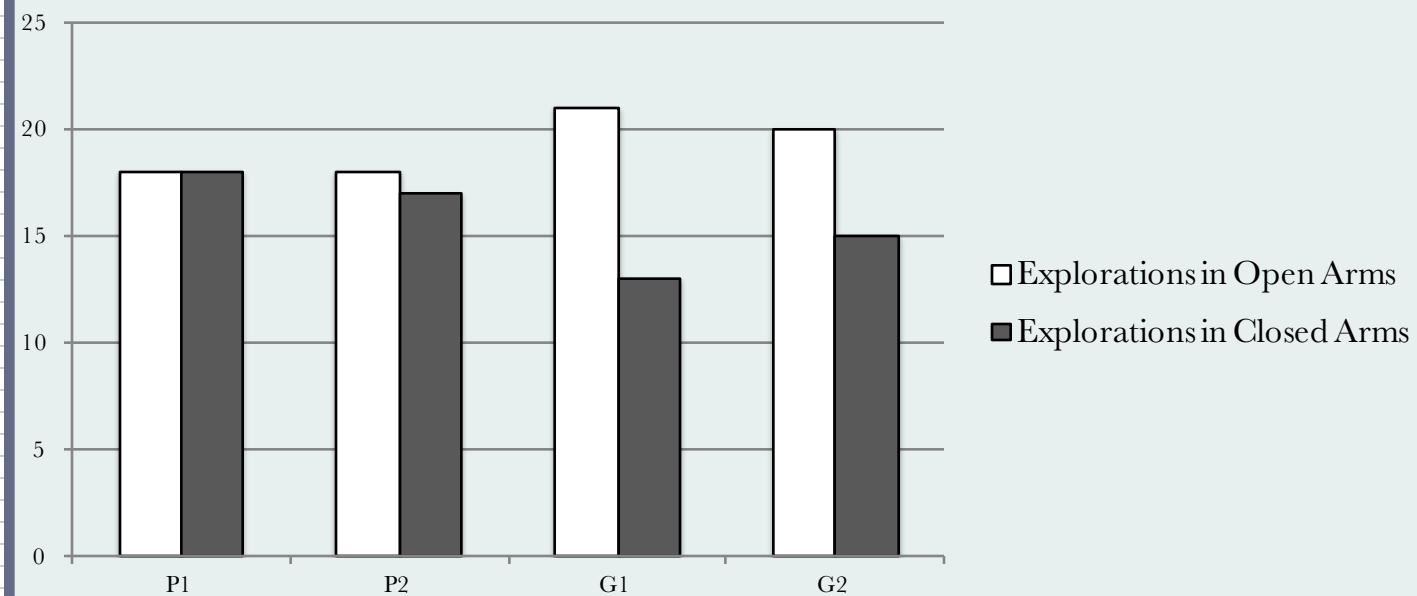
**Socially isolated rats respond at a higher rate than socially paired rats.**

## Sensitivity to extinction



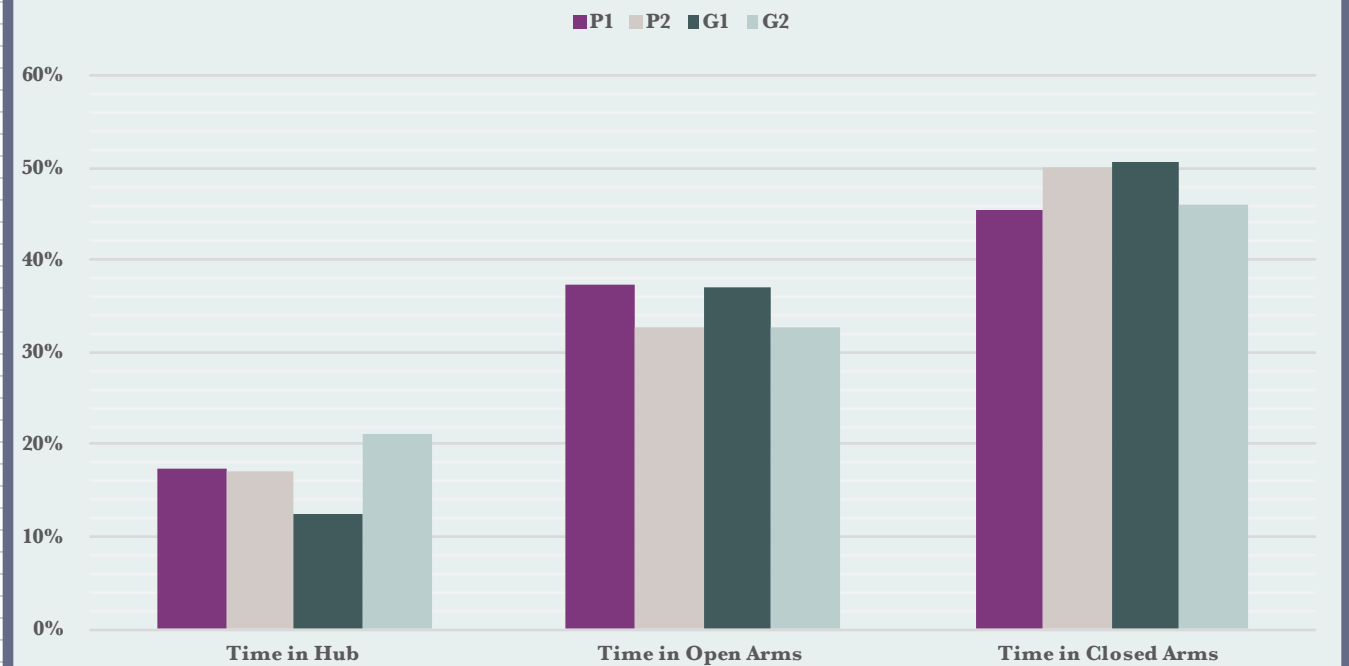
**No difference in sensitivity to extinction between the two conditions.**

## Total explorations of open and closed arms



**The difference between Open Arm and Closed Arm exploration is greater in socially isolated rats than the paired ones, with a slight preference for the Open Arm.**

## Exploratory durations



**No discernable trend for time spent in Open or Closed Arms.**

# Conclusions & Future Directions

- Although we found no significant differences, there were indications of trends. Socially deprived rats showed higher food motivation and a slight preference for the open arms of the elevated plus maze
- These findings may be markers of stress, and future studies should do direct hormonal measures for stronger correlations.
- The significance of this research is that social isolation versus pair housing may cause behavioral changes that may be mistaken for some other tested experimental effect.

## References

**Image 1.** [Elevated Plus Maze setup for rats.]. Retrieved December 9, 2015 From [https://en.wikipedia.org/wiki/Elevated\\_plus\\_maze#/media/File:ElevatedPlusMaze.svg](https://en.wikipedia.org/wiki/Elevated_plus_maze#/media/File:ElevatedPlusMaze.svg)

**Image 2.** [The operant chamber or Skinner Box for the rat]. Retrieved December 09, 2015 from [http://www.intropsych.com/ch05\\_conditioning/rat\\_lab.html](http://www.intropsych.com/ch05_conditioning/rat_lab.html)

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