

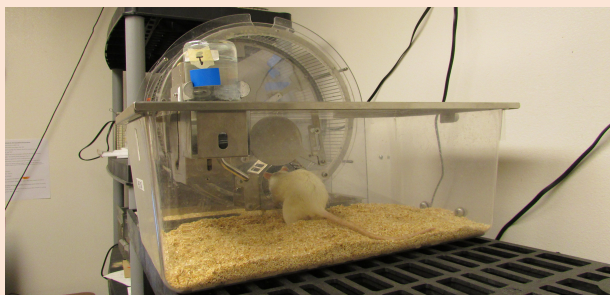
Deprivation-Induced Hyperactivity: Understanding a Common Symptom of Anorexia Nervosa

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I. Introduction

Deprivation induced hyperactivity (DIH) is the increase in physical activity when an animal is deprived of food. The current population most affected by DIH are patients diagnosed with anorexia nervosa. Although problematic for patients struggling with anorexia, DIH is likely to be an evolved adaptation to famine. Understanding the causes of DIH and why symptoms vary among patients is key to alleviating the problem.

Rats selectively bred on a taste phenotype also differ on measures of emotionality and DIH. These individual differences support the notion that deprivation-induced hyperactivity is more than a desire to lose weight.



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II. Method

Rats: Generation 1 Low-Saccharin-Consuming rats (LoS-R) rats and High-Saccharin-Consuming rats (HiS-R) adult female rats ($n = 12$)

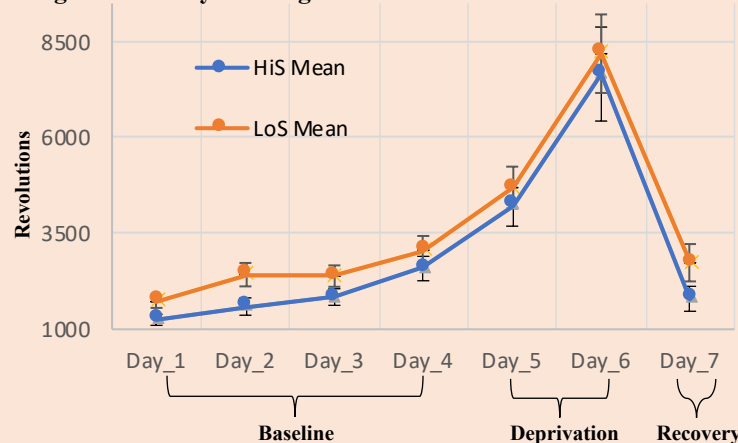
Phases

Baseline: Rats were given full access to chow for Days 1-4. Food intake and wheel revolutions were recorded.

Food Deprivation: Rats had access to chow for one hour on Days 5 and 6.

Recovery: On Day 7, rats received full access to chow.

Figure 1 – Daily running wheel revolutions



III. Results

Does hyperactivity occur when food is deprived?

Yes -- Running increased significantly when access to food was restricted and returned to baseline upon refeeding.

Do LoS-R rats exercise more than HiS-R rats?

No -- During baseline, overall running and the increase in running over days was similar in LoS-R and HiS-R rats.

Do LoS-R rats' reaction to food deprivation differ from HiS-R rats?

No -- The increase in running during restricted feeding was similar in LoS-R and Hi-R rats.

IV. Conclusions

Deprivation-induced hyperactivity and the fleeing-famine hypothesis are supported by this study. Even though a line difference was not significant, this finding does not disprove past evidence of a line difference in DIH. In the study in which a line difference in DIH was observed, the rats were from Generation 19 and 20. The replicate lines have only been bred for individual differences for one generation. Whether differences will emerge with continued selection remains to be determined.