Reciprocal Cooperation in Rats

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Reciprocal Cooperation in Rats
Department of Psychology, Illinois Wesleyan University

Introduction

• Cooperation is a valid evolutionary strategy.
• Previous studies have demonstrated that rats have the capability to cooperate reciprocally in a variety of tasks.
• Rats are capable of discriminating between different types of cooperators.
• Cooperation is dependent upon a rat's motivational state; food deprived rats are poorer cooperators compared to satiated rats.
• Some neurohormones, such as oxytocin and vasopressin, have been shown to have an effect of social behavior relevant to cooperation.

Hypothesis

• Rats will be more likely to cooperate with rats they live with compared to rats that they have never met before.
• Rats given the neurohormone Allopregnanolone will cooperate to a different degree than rats that are given a placebo.

Methods

• 15 pairs of Sprague Dawley rats
• 3 rats eliminated for not eating reinforcements
Part 1: 2 groups: cagemate pairs vs non-cagemate pairs
After pretraining, 8 days of 20 trials per day per test rat
Part 2: Group 1: drug day one, placebo day two
Group 2: placebo day one, drug day two

Table 1: Sample Size

<table>
<thead>
<tr>
<th></th>
<th>Wodka et al.</th>
<th>Viana et al. (2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>8 non-consecutive days</td>
<td>10 consecutive days (but learned after 1 day)</td>
</tr>
<tr>
<td>Sample Size</td>
<td>15 Sprague-Dawley strain rats</td>
<td>5 Sprague-Dawley strain rats</td>
</tr>
<tr>
<td>Visual Cues</td>
<td>Rats could not see arm prior to entry</td>
<td>Rats could potentially see arm prior to entry</td>
</tr>
<tr>
<td>Age of Rats</td>
<td>Approximately 1 year</td>
<td>Approximately 3 months</td>
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</tbody>
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Conclusions

Rats did not cooperate above chance
There was no significant difference in cooperation level between rats that were paired with cagemates and rats that were paired with non-cagemates.
Allopregnanolone did not enhance cooperation in rats.

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