Examining motor imitation in the rat:

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Background

- The ability to copy the motor actions of conspecifics provides a wealth of adaptive benefits.
- Previous studies have examined how observation of a conspecifics interaction with a manipulandum for reward increases the performance of the observer in the same context.
- Positive results in such studies are often incapable of excluding simpler mechanisms of social learning, such as being more attracted to the manipulandum used by a conspecific or to the important locations in the task.
- Here we present the first examination of whether a rat can learn to reproduce a specific motor behaviour without need to interact with a manipulandum or be performed in a specific location, that a demonstrator conspecific has learned to produce for reward.

Experimental Setup

Observation Assay

Bonsai Code for measuring rearing.

Observers learn to rear for reward faster than Controls.

Decreasing interval between rewards during demonstrator training:

Rewards per session during training and decreasing delta t for demonstrators:

Future Direction

- Conduct above experiment and examine the difference in propensity to double rear between control and observer rats.
- Conduct further controls, including naive observers to examine the influence of social facilitation on performance.
- Quantify the extent and specificity of imitation, examine whether idiosyncratic and not explicitly reinforced motor behaviour of demonstrators are imitated by observers.
- e.g. are stereotyped movements that have no direct role in the task taken on by the observer?