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Two-action sequence reinforcement

Forked from Single action sequence reinforcement

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ABSTRACT

Two-action sequence reinforcement protocol for mouse studies from Tang et al 2023.

GUIDELINES

Individual mice were subjected to a single session of protocol each day, with sessions following each other on consecutive days.

MATERIALS

The open-field box is made of 410 × 400 mm grey opaque acrylic walls and a 410 × 400 mm white matte acrylic base.

Protocol status: Working
We use this protocol and it's working

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First reinforcement session+ Baseline

1 Mice were placed in a grey open-field behaviour recording for this protocol.
To acquire baseline behavior, individual mice were allowed to behave freely inside the box for 30 minutes when the laser stimulation was not available for reinforcement.

2 After initial behavior acquisition, 60 minutes of laser availability was given. During the reinforcement periods, when the closed-loop system detects performance of the proximal action (T1) of interest, the algorithm enters a state in which the laser is triggered on performance of the distal action (T2), regardless of the amount of time that has elapsed between the latest T1 and T2.

Remaining Sessions

3 90 minutes of closed loop reinforcement were made available for individual mice during subsequent sessions.
During the reinforcement periods, when the closed-loop system detects performance of the proximal action (T1) of interest, the algorithm enters a state in which the

laser is triggered on performance of the distal action (T2), regardless of the amount of time that has elapsed between the latest T1 and T2.

Extinction protocol

4 An extinction protocol was carried out comprising of 20-minute maintenance of reinforced behavior with laser availability, followed by 60 minutes of extinction of reinforced behavior without laser availability, followed by 20-minute re-acquisition of reinforced behavior with laser availability.