protocols.io

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🌐 Behavior: Analysis Protocol

🔖 In 2 collections

Sasha Burwell[1]

[1]Duke University

ASAP Collaborative Research Network

Sasha Burwell
Duke University

ABSTRACT

This protocol details visualisation and analysis of the collected reward learning behavior
data.

Analysis Protocol

1 To visualize licks around reward delivery times (ex, Fig. 2b), load a

```
trialData.mat
```

file into the workspace and run

```
plotLicks
```

2 Move all the collected data from a mouse (one

```
trialData.mat
```

file per day of behavior) into the same subfolder (ex, called 'Data').

3 Run the Matlab code
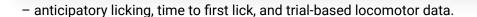
```
licksRelativeAnalysisDualCondExt_NI
```

3.1 Can run on different days during behavior, and the code will add to the analysis performed for each newly added

```
trialData
```

file.

3.2 Saves two data structures:

-
```
Cohort_mouse_analysis_tSchultz.mat
```

– anticipatory licking, time to first lick, and trial-based locomotor data.

- ▪

```
Cohort_mouse_analysis_running.mat
```

– locomotor data across entire behavior sessions.

3.3 Also calculates and prints probe and anticipatory licking information.

- ▪ Exclude any mouse with

```
Mean full probe day ant licking to tone A response
```

of less than 0.2 (20% of the anticipatory window spent licking on the last day of training).

- ▪ Exclude any mouse with

```
Mean probe response/ Mean full probe day ant licking to tone A
response
```

ratio of greater than 30% (high probe responses relative to their baseline tone A anticipatory licking).

4 Copy the

```
analysis_tSchultz.mat
```

and

```
analysis_running.mat
```

variables from all mice in an experimental condition into the same folder.

5 Run the Matlab code

```
licksAcrossMiceWithTreadmill
```

to combine and extract anticipatory licking and trial-based locomotor data across all the mice (from the

```
analysis_tSchultz.mat
```

variables).

5.1 This saves the data structure

```
cohort_grouped_analysis_n.mat
```

with the resized data for each mouse.

5.2 Also creates a variety of plots for visualization of mean and SEM.

- Figure 3 is used to create the plots seen in Fig. 2d-f.
- Figure 4 is used to create the plots seen in Ext. Fig. 3a.

6 Run the Matlab code

```
getAUCs
```

on the saved

```
grouped_analysis.mat
```

variable to extract the AUC values seen in Fig. 2g-h and Ext. Fig. 3c, d, and f.

7 Run the Matlab code

```
runningAcrossMice
```

to combine and extract total locomotor data across mice (from the

```
analysis_running.mat
```

variables), as seen in Ext. Fig. 3e.