



***eLife's* transparent reporting form**

We encourage authors to provide detailed information *within their submission* to facilitate the interpretation and replication of experiments. Authors can upload supporting documentation to indicate the use of appropriate reporting guidelines for health-related research (see [EQUATOR Network](#)), life science research (see the [BioSharing Information Resource](#)), or the [ARRIVE guidelines](#) for reporting work involving animal research. Where applicable, authors should refer to any relevant reporting standards documents in this form.

If you have any questions, please consult our Journal Policies and/or contact us: editorial@elifesciences.org.

Sample-size estimation

- You should state whether an appropriate sample size was computed when the study was being designed
- You should state the statistical method of sample size computation and any required assumptions
- If no explicit power analysis was used, you should describe how you decided what sample (replicate) size (number) to use

Please outline where this information can be found within the submission (e.g., sections or figure legends), or explain why this information doesn't apply to your submission:

No explicit power analysis was applied prior to the study, as effect sizes for individual experiments were unclear prior to data collection. Sample sizes are in accordance with other studies addressing similar questions (e.g. Marowsky et al 2005 Neuron; Mingote et al 2016 J Neurosci; Kwon et al 2015 Neuron; Groessl et al 2018 Nat Neurosci). This information is mentioned in the Materials and Methods section under "Data presentation and statistics".

Replicates

- You should report how often each experiment was performed
- You should include a definition of biological versus technical replication
- The data obtained should be provided and sufficient information should be provided to indicate the number of independent biological and/or technical replicates
- If you encountered any outliers, you should describe how these were handled
- Criteria for exclusion/inclusion of data should be clearly stated
- High-throughput sequence data should be uploaded before submission, with a private link for reviewers provided (these are available from both GEO and ArrayExpress)

Please outline where this information can be found within the submission (e.g., sections or figure legends), or explain why this information doesn't apply to your submission:



As we ask cell physiological questions, a biological replicate is the response of an individual cell to a specific stimulation or treatment. Whenever possible, different cell types were recorded from one animal in an interleaved fashion to avoid bias and to reduce animal number. Technical criteria to exclude recorded data are stated in the Materials and Methods section under “slice recordings and analysis”. For ex vivo recordings after behavioral training, the experimenter performing the recording and analysis was blind to the behavior of the animals. This is stated in the Materials and Methods section under “Behavioral procedures”.

Statistical reporting

- Statistical analysis methods should be described and justified
- Raw data should be presented in figures whenever informative to do so (typically when N per group is less than 10)
- For each experiment, you should identify the statistical tests used, exact values of N, definitions of center, methods of multiple test correction, and dispersion and precision measures (e.g., mean, median, SD, SEM, confidence intervals; and, for the major substantive results, a measure of effect size (e.g., Pearson's r, Cohen's d)
- Report exact p-values wherever possible alongside the summary statistics and 95% confidence intervals. These should be reported for all key questions and not only when the p-value is less than 0.05.

Please outline where this information can be found within the submission (e.g., sections or figure legends), or explain why this information doesn't apply to your submission:

Statistical analysis methods, software used, and reported measures are stated in the Material and Methods section under “Data presentation and statistics”. The specific statistical tests used, N, F, and p-values for individual data sets are included in the figure legends.

(For large datasets, or papers with a very large number of statistical tests, you may upload a single table file with tests, Ns, etc., with reference to sections in the manuscript.)

Group allocation

- Indicate how samples were allocated into experimental groups (in the case of clinical studies, please specify allocation to treatment method); if randomization was used, please also state if restricted randomization was applied
- Indicate if masking was used during group allocation, data collection and/or data analysis

Please outline where this information can be found within the submission (e.g., sections or figure legends), or explain why this information doesn't apply to your submission:

For behavioral experiments, animals were allocated randomly to the groups, this information is stated in the Materials and methods section under “Behavioral procedures”.

Additional data files (“source data”)

- We encourage you to upload relevant additional data files, such as numerical data that are represented as a graph in a figure, or as a summary table
- Where provided, these should be in the most useful format, and they can be uploaded as “Source data” files linked to a main figure or table



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- Include model definition files including the full list of parameters used
- Include code used for data analysis (e.g., R, MatLab)
- Avoid stating that data files are “available upon request”

Please indicate the figures or tables for which source data files have been provided:

Data sets in the figures are made available at:

Ehrlich, Ingrid et al. (2020), Midbrain dopaminergic inputs gate amygdala intercalated cell clusters by distinct and cooperative mechanisms, Dryad, Dataset,

<https://doi.org/10.5061/dryad.jh9w0vt9b>