

Reporting Summary

Nature Research wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Research policies, see [Authors & Referees](#) and the [Editorial Policy Checklist](#).

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a Confirmed

- ☐ ☒ The exact sample size (n) for each experimental group/condition, given as a discrete number and unit of measurement
- ☐ ☒ A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
- ☐ ☒ The statistical test(s) used AND whether they are one- or two-sided
Only common tests should be described solely by name; describe more complex techniques in the Methods section.
- ☐ ☒ A description of all covariates tested
- ☐ ☒ A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
- ☐ ☒ A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
- ☐ ☒ For null hypothesis testing, the test statistic (e.g. F , t , r) with confidence intervals, effect sizes, degrees of freedom and P value noted
Give P values as exact values whenever suitable.
- ☒ ☐ For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
- ☒ ☐ For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
- ☐ ☒ Estimates of effect sizes (e.g. Cohen's d , Pearson's r), indicating how they were calculated

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection

MAP 2.7 data acquisition system (Plexon)
CinePlex Studio 3.4.1 (Plexon)
Radiant 2.0 (Plexon)
nVista HD 2.1 (Inscopix)
AXIOSCAN.Z1 (Carl Zeiss AG)

Data analysis

Matlab 2018b (Mathworks)
CinePlex Studio 3.5.0 (Plexon)
CinePlex Editor 3.6.0 (Plexon)
NeuroExplorer® 4.135
Prism 8 (GraphPad Software)
ImageJ 2.0.0-rc-49/1.51a (NIH)
ZEN Blue 2.3 (Carl Zeiss AG)
Mosaic 1.2.0 (Inscopix Inc.)
Custom-written codes used to analyze data from this study are available from the corresponding authors upon request.

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors/reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Research [guidelines for submitting code & software](#) for further information.

Data

Policy information about [availability of data](#)

All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A list of figures that have associated raw data
- A description of any restrictions on data availability

The data that supports the findings of this study are available at <https://data.fmi.ch/PublicationSupplementRepo/>

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☒ Life sciences ☐ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Life sciences study design

All studies must disclose on these points even when the disclosure is negative.

Sample size	No statistical methods were used to predetermine sample size. The sample sizes were chosen based on published studies in the field. For references, see Statistical analysis paragraph in Methods section.
Data exclusions	All exclusion criteria were established prior to data collection: Mice were post-hoc excluded from the analysis if the GRIN lens was placed outside of the basolateral amygdala (BLA) or if they did not exhibit social behavior. Data exclusion criteria are also described in detail in the respective Methods sections.
Replication	The exact number of repetitions (individual data points from separate cells and/or animal) are indicated in figures and figure legends. Averaging across multiple trials per cell/animal is indicated where applicable and n/N numbers refer to data from individual cells/animals. Results shown on the study were successfully replicated. Multiple rounds of experimentation were required, i.e., multiple cohorts were used for behavioral experiments, which were averaged for the presented datasets. Imaging data was collected from ten mice from multiple cohorts. All protocols used for the experiments are described in detail in the Methods section and supplementary material, and further information can be requested from the corresponding authors to ensure that our findings can be replicated in other laboratories.
Randomization	Assignment of stimulus animal was random and no littermates were used as pairs of interactors.
Blinding	The algorithm was compared to manual scoring performed by blind experimenters.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☒	☐ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology
☐	☒ Animals and other organisms
☒	☐ Human research participants
☒	☐ Clinical data

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging

Animals and other organisms

Policy information about [studies involving animals](#); [ARRIVE guidelines](#) recommended for reporting animal research

Laboratory animals Mus musculus, males C57/Bl6J (Envigo), aged 2-3 months at the time of injection (2-5 months at time of the experiment) were

Laboratory animals	used. All experimental mice were individually housed and stimulus mice were group-housed in in open cages. Room temperature was set at 22°C (+/- 2°C) and room humidity was set at 55% (+/- 10%). Animals were kept in a 12h light/dark cycle (light cycle from 6.00AM to 6.00PM) with access to food and water ad libitum.
Wild animals	This study did not involve wild animals.
Field-collected samples	This study did not involve samples collected from the field.
Ethics oversight	All animal procedures were performed in accordance with institutional guidelines at the Friedrich Miescher Institute for Biomedical Research and were approved by the Veterinary Department of the Canton of Basel-Stadt.

Note that full information on the approval of the study protocol must also be provided in the manuscript.