

Reporting Summary

Nature Portfolio 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 Portfolio policies, see our [Editorial Policies](#) 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
<i>Only common tests should be described solely by name; describe more complex techniques in the Methods section.</i> |
| ☐ | ☒ | 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
<i>Give P values as exact values whenever suitable.</i> |
| ☒ | ☐ | 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

Data analysis

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 and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio [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 description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our [policy](#)

Human data from the ABCD study can be accessed through NDA.org: ABCD Study ID 2008, DOI: 10.15154/1528668

Research involving human participants, their data, or biological material

Policy information about studies with [human participants or human data](#). See also policy information about [sex, gender \(identity/presentation\), and sexual orientation](#) and [race, ethnicity and racism](#).

Reporting on sex and gender	We report of biological sex, since most of the children were too young to understand the gender question. The main human analyses encompass both sexes but we also report on interactions with sex and stratified by sex in the supplement.
Reporting on race, ethnicity, or other socially relevant groupings	We report on maternal race and ethnicity in our demographics table. This data was self-reported. In the analyses we control for maternal race/ethnicity as well as socioeconomic status (income, maternal education, neighborhood deprivation).
Population characteristics	Children were 9/10 years old at baseline. Children were divided into two groups dependent on whether or not their mothers reported on having used SSRIs during pregnancy. Analyses controlled for mother depression history and depressive symptoms. Child clinical symptoms was an outcome measure.
Recruitment	For the human experiments we did secondary analyses of Adolescent Brain Cognitive DevelopmentSM Study (ABCD Study®) data, a large longitudinal nationwide study of children recruited from primary and public-school systems at 21 sites nationwide. Exact procedures are reported elsewhere by ABCD study.
Ethics oversight	ABCD study procedures were approved by the Institutional Review Board at the University of California at San Diego, San Diego, CA. Parents provided written informed consent; children provided verbal assent. The local New York State Psychiatric Institute IRB approved secondary analyses of ABCD data (IRB protocol #8343, NDUC 12501, ABCD Study ID 2008, DOI: 10.15154/1528668).

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

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](https://www.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	Human study: N=95 SSRI+ children exposed to SSRIs in utero and N=3813 SSRI- unexposed children
Data exclusions	Data were excluded based on unavailability of data on maternal SSRI use or if the biological mother was not the reporter.
Replication	This is translational research. We replicated/translated findings successfully between mice and humans.
Randomization	For the human study because we could not randomize the sample we used propensity score weighting to make an approximation of a randomized sample. In addition we controlled for covariates.
Blinding	<i>Describe whether the investigators were blinded to group allocation during data collection and/or analysis. If blinding was not possible, describe why OR explain why blinding was not relevant to your study.</i>

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 and archaeology
☐	☒ Animals and other organisms
☒	☐ Clinical data
☒	☐ Dual use research of concern
☒	☐ Plants

Methods

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

Animals and other research organisms

Policy information about [studies involving animals](#); [ARRIVE guidelines](#) recommended for reporting animal research, and [Sex and Gender in Research](#)

Laboratory animals	mouse
Wild animals	<i>Provide details on animals observed in or captured in the field; report species and age where possible. Describe how animals were caught and transported and what happened to captive animals after the study (if killed, explain why and describe method; if released, say where and when) OR state that the study did not involve wild animals.</i>
Reporting on sex	<i>Indicate if findings apply to only one sex; describe whether sex was considered in study design, methods used for assigning sex. Provide data disaggregated for sex where this information has been collected in the source data as appropriate; provide overall numbers in this Reporting Summary. Please state if this information has not been collected. Report sex-based analyses where performed, justify reasons for lack of sex-based analysis.</i>
Field-collected samples	<i>For laboratory work with field-collected samples, describe all relevant parameters such as housing, maintenance, temperature, photoperiod and end-of-experiment protocol OR state that the study did not involve samples collected from the field.</i>
Ethics oversight	IACUC

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

Magnetic resonance imaging

Experimental design

Design type	block design
Design specifications	there are 80 trials for each of the two memory load conditions, and 20 trials for each stimulus type in each of the two memory load conditions. Thus, 40 trials of each stimulus types (Casey et al., 2018)
Behavioral performance measures	N-Back measures

Acquisition

Imaging type(s)	task-based fMRI
Field strength	3T
Sequence & imaging parameters	EPI, 216×216 FOV 2.4×2.4×2.4 voxels TR=800ms TE=30ms flipangle = 52
Area of acquisition	whole brain
Diffusion MRI	☐ Used ☐ Not used

Preprocessing

Preprocessing software	ABCD pipeline as reported on in Hagler et al., 2019
Normalization	ABCD pipeline as reported on in Hagler et al., 2019
Normalization template	ABCD pipeline as reported on in Hagler et al., 2019
Noise and artifact removal	ABCD pipeline as reported on in Hagler et al., 2019
Volume censoring	ABCD pipeline as reported on in Hagler et al., 2019

Statistical modeling & inference

Model type and settings	Linear mixed models on ROI measurements. 9 x 2 regions, analyses were FDR corrected.
Effect(s) tested	linear mixed effects models tested group differences in extracted beta values in response to negative versus neutral faces.
Specify type of analysis:	☐ Whole brain ☒ ROI-based ☐ Both
Anatomical location(s)	Freesurfer automated labeling, see Hagler et al. (2019)

Statistic type for inference

ROI based.

(See [Eklund et al. 2016](#))

Correction

FDR

Models & analysis

n/a	Involvement in the study
☒	☐ Functional and/or effective connectivity
☒	☐ Graph analysis
☒	☐ Multivariate modeling or predictive analysis