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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	A full description of the experimental procedures, validations and the fMRI dataset is available in a Data Descriptor (https://doi.org/10.1038/s41597-019-0113-7). Code used for fMRI data collection are available at https://github.com/rotemb9/NARPS_scientific_data.
Data analysis	Fully reproducible code for the analyses of the analysis teams' submitted results and statistical maps, as well as the prediction markets, are available at DOI: 10.5281/zenodo.3709273. The full list of software and versions used within the code are available in the dockerfile: https://github.com/poldrack/narps/blob/master/Dockerfile

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 fMRI dataset is openly available via OpenNeuro at DOI:10.18112/openneuro.ds001734.v1.0.4. Additional data are included with the analyses code at DOI:10.5281/zenodo.3709273

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

Behavioural & social sciences study design

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

Study description	Quantitative
Research sample	The fMRI dataset included nueroimaging and behavioral data of 108 participants. Demographic information of the participants can be found at DOI:10.18112/openneuro.ds001734.v1.0.4. 70 analysis teams analyzed the dataset. 96 “team members” and 91 “non-team members” signed up to participate in the prediction markets. N = 83 “team members” and N = 65 “non-team members” actively participated in the markets. Members of the analysis teams and traders in the predictions market were researchers in the field from around the world.
Sampling strategy	Relevant information for the fMRI dataset is available at the Data Descriptor (https://doi.org/10.1038/s41597-019-0113-7). With regard to the number of analysis teams and traders in the prediction markets, we aimed to recruit as many as possible within the time frame.
Data collection	Relevant information for the fMRI dataset is available at the Data Descriptor (https://doi.org/10.1038/s41597-019-0113-7). Shortly, data was collected using MRI scanner and computers.
Timing	The fMRI dataset was collected between November 2017 and May 2018. Analysis teams were recruited and analyzed the data between November 2018 and March 2019. The prediction markets were open between May 2nd to May 12th 2019.
Data exclusions	One team was excluded from all analyses since their reported results were not based on a whole-brain analysis as instructed. Of the remaining 69 teams, thresholded maps of 65 teams and unthresholded (z / t) maps of 64 teams were included in the analyses (see Extended Data Table 3b for detailed reasons for exclusion of the other teams).
Non-participation	12 out of the 82 analysis teams that signed the non-disclosure form and were provided with access to the data did not submit their results by the deadline. 13 traders in the "team members" and 26 traders in the "non-team members" prediction markets registered but did not actively participate in the prediction markets.
Randomization	fMRI dataset- participants were pseudo-randomly (alternately) assigned to one of two experimental conditions (Equal Indifference or Equal Range). Analysis teams were not allocated into experimental groups.

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

Human research participants

Policy information about studies involving human research participants

Population characteristics	fMRI dataset- demographic information of the participants can be found at DOI:10.18112/openneuro.ds001734.v1.0.4. 108 participants where included in the dataset: 54 in the Equal Indifference group (30 females, mean age = 26.06 years, SD age = 3.02 years) and 54 in the Equal Range group (30 females, mean age = 25.04 years, SD age = 3.99 years). All participants were right-handed, had normal or corrected-to-normal vision and reported no history of psychiatric or neurologic diagnoses, or use any medications that would interfere with the experiment.

Recruitment	Analysis teams were recruited via social media, mainly Twitter and Facebook, as well as during the 2018 annual meeting of The Society for Neuroeconomics. Prediction market traders were recruited via social media (mainly Facebook and Twitter) and e-mails. This recruitment method may increase the chances of specific researchers to participate in an analysis team or in the prediction markets, for example researchers that are more active in social media or attended the 2018 meeting of The Society for Neuroeconomics. Researchers who advocate for replication attempts and "open science" practices may also be more inclined to join such study. However, our results strongly suggest that they were not biased. For example, the fact that several hypotheses were only affirmed by roughly 5% of teams, while Hypothesis #5 was affirmed by 84% of teams, suggests that there was no overall bias towards either affirmation or rejection of hypotheses. In addition, each of the 70 analysis teams chose to use a different analysis pipeline, which suggests evidence against a potential bias in methods used by the specific analysis teams that joined the study. With regard to the prediction markets, traders that were exposed to the recruitment ads on social media may be biased with regard to their predictions, but as there is a debate in the published literature regarding most of the hypotheses included in our study, we do not have a specific reason to assume such bias.
Ethics oversight	MRI data collection was approved by the Helsinki committee at Sheba Tel Hashomer Medical Center and the ethics committee at Tel Aviv University, and all participants gave written informed consent (as described in the Scientific Data Descriptor of this dataset). The Board for Ethical Questions in Science at the University of Innsbruck approved the data collection in regards of the prediction markets, and certified that the project is in correspondence with all requirements of the ethical principles and the guidelines of good scientific practice. The Stanford University IRB determined that the analysis of the submitted team results did not meet the definition of human subject research, and thus no further IRB review was required.

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	Task
Design specifications	The fMRI dataset was published in a Data Descriptor (https://doi.org/10.1038/s41597-019-0113-7)
Behavioral performance measures	The fMRI dataset was published in a Data Descriptor (https://doi.org/10.1038/s41597-019-0113-7)

Acquisition

Imaging type(s)	functional and structural
Field strength	3T
Sequence & imaging parameters	Imaging data were acquired using a 3T Siemens Prisma MRI scanner with a 64-channel head coil, at the Strauss Imaging Center on the campus of Tel Aviv University. Functional data during the mixed gambles task were acquired using T2*-weighted echo-planar imaging sequence with multi-band acceleration factor of 4 and parallel imaging factor (iPAT) of 2, TR=1000ms, TE=30ms, flip angle=68 degrees, field of view (FOV)=212×212mm, in plane resolution of 2×2mm 30 degrees off the anterior commissure-posterior commissure line to reduce the frontal signal dropout27, slice thickness of 2mm, 64 slices and a gap of 0.4mm between slices to cover the entire brain. For each functional run, we acquired 453 volumes.
Area of acquisition	Whole brain

Diffusion MRI ☐ Used ☒ Not used

Preprocessing

Preprocessing software	Each team performed their own preprocessing. Raw data and data preprocessed with fMRIprep v. 1.1.4 were shared with the teams.
Normalization	Each team performed their own preprocessing. Raw data and data preprocessed with fMRIprep v. 1.1.4 were shared with the teams.
Normalization template	Each team performed their own preprocessing. Raw data and data preprocessed with fMRIprep v. 1.1.4 were shared with the teams.
Noise and artifact removal	Each team performed their own preprocessing. Raw data and data preprocessed with fMRIprep v. 1.1.4 were shared with the teams.
Volume censoring	Each team performed their own preprocessing. Raw data and data preprocessed with fMRIprep v. 1.1.4 were shared with the teams.

Statistical modeling & inference

Model type and settings	Each team performed their own analysis.
Effect(s) tested	Each team performed their own analysis.

Specify type of analysis: ☒ Whole brain ☐ ROI-based ☐ Both

Statistic type for inference (See Eklund et al. 2016)	Each team performed their own analysis.
Correction	Each team performed their own analysis.

Models & analysis

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