

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
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	Behavioural data was acquired and stored in MATLAB. Physiological data was acquired using BIOPAC's AcqKnowledge software; the obtained datasets were saved in MATLAB format. Eyetracking data was obtained with TheEyetribe software and converted to MATLAB format.
Data analysis	Custom MATLAB code was written for data analysis. This code makes use of MATLAB's Statistics and Machine Learning toolbox and the Signal Processing Toolbox. Furthermore, we have made use of the open-source MATLAB-based toolboxes Fieldtrip, VBA, and PsPM. All custom code is openly accessible in a designated GitHub repository. All code is compatible with MATLAB R2016b or later releases.

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](#)

Raw data, including behavioural data, physiological recordings, and eyetracking recordings, are made available for open-source access on the Open Science

Human research participants

Policy information about [studies involving human research participants and Sex and Gender in Research](#).

Reporting on sex and gender	Upon registration to the study, participants were asked to declare their gender in an online form. All participants reported their gender to be either male (35) or female (59). Consent was obtained to collect and share anonymized data about participants' gender. Sex and gender were not a variable of interest to the study.
Population characteristics	We collected participants' age, as well as scores on questionnaires of trait impulsivity, depression, anxiety, apathy, hypomania, anger rumination, and openness to experience. We recorded different subsets of these scales in the different studies.
Recruitment	Participants were recruited through the pools of the Paris Brain Institute and of RISC ('Relais d'Information sur les Sciences de la Cognition'), a collective of labs that conduct experiments in psychology and neuroscience around the Paris region. There was no recruiting bias.
Ethics oversight	The ethics committee of the Sorbonne Université in Paris oversaw and approved the ethics of this study.

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

Behavioural & social sciences study design

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

Study description	The study combines the collection of behaviour (choices, response times, ratings) with physiological recordings (facial electromyography, skin conductance, pupil dilation) and gaze tracking. These are quantitative measures collected in different experimental conditions (induction of different emotions) in a within-subject design.
Research sample	Participants were healthy adults from the greater Paris region who normally take part in psychological experiments and get paid for participating. The sample consisted of people who registered online after receiving the study announcement we distributed among our networks (see 'Recruitment').
Sampling strategy	Participants were sampled based on convenience from the list of registered candidates. Sample sizes were not pre-determined statistically. Instead, as a rule-of-thumb, we aimed to recruit N=18 subjects per sub-study for both exploratory studies and N=36 subjects for both confirmatory studies, minus cancellations. This resulted in samples of N=35 for exploratory studies and N=59 for confirmatory studies (confirmatory study 1 took place just before the COVID pandemic and faced many cancellations for that reason.) A sensitivity analysis proved that with our current total sample of N=94, the minimal detectable effect of the paper's main result is well below the observed effect.
Data collection	Participants were sat in a behavioural testing laboratory in front of a computer, where they performed the computerized task using their mouse and keyboard. An eyetracker from TheEyetribe was positioned below the computer screen. Electrodes for physiological recordings were placed on participants' hands and face, and wired to an emitter that sent the signal to a nearby BIOPAC recording device. The experimenter (author RH) installed the participants in the lab and placed the electrodes. The experimenter did not inform participants about the study's aims, and did not interact with participants during the experiment.
Timing	10-20 May 2017 (exploratory study 1), 22-26 August 2018 (exploratory study 2), 5-10 March 2020 (confirmatory study 1), 24 July - 1 September 2020 (confirmatory study 2).
Data exclusions	The only analysis where participants' data were excluded was a logistic regression of choices. When the distribution of binary data is extremely uneven, MATLAB's function for generalized linear modelling reaches its iteration limit. The criterion we used was a >95% rate of choosing the same option. This criterion was not pre-established.
Non-participation	No participants declined participation to the study and no one chose to drop out of the experiment.
Randomization	Participants 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 and archaeology
☒	☐ Animals and other organisms
☒	☐ Clinical data
☒	☐ Dual use research of concern

Methods

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