

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 Data collection was conducted using the Qualtrics platform. All data was automatically captured on Qualtrics.

Data analysis All analyses were conducted using R (Team, 2021) version 4.4.1.

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 and processed data files (including R scripts with pre-processing steps) are available in the OSF repository: https://osf.io/m86uw/?view_only=2747290d0a2040eea058941719a1b96a.

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	Participants self-reported their gender by selecting one of four options to a question in which they were asked to report their "gender": "Male," "Female," "Other," or "Prefer not to say". Gender distributions are summarised and reported in the manuscript to characterise the participant sample. Any exploratory analyses related to gender presented in the manuscript are based solely on these self-reported responses. A separate response for biological sex was not recorded from participants.
Reporting on race, ethnicity, or other socially relevant groupings	N/A
Population characteristics	Participants' age was captured via a self-reported slider response ranging from ages 0 - 100. Age distributions are summarised in the manuscript to characterise the participant sample. Any exploratory analyses involving age rely exclusively on these self-reported data.
Recruitment	The study was conducted at a local museum (muZIEum) in the city of Nijmegen, The Netherlands. Recruitment took place via interactive kiosks strategically positioned in the museum's waiting hall. Kiosks were advertised as educational activities and were placed among other museum exhibits available for visitor engagement. Participation was thus entirely voluntary. That is, visitors freely approached and could withdraw from the experiment at any point. The task was intentionally designed to be brief, requiring less than five minutes to complete, aligning with the typical museum waiting period. As participation was self-paced, some visitors ended their involvement early when their scheduled museum tours began. This recruitment method may introduce some self-selection bias as participants choosing to engage might differ in factors such as interest or available time compared to visitors who opted not to participate in full. This self-selection has been acknowledged in the limitations section of the discussion and should be considered when interpreting the findings.
Ethics oversight	Ethical approval was provided by the Ethics Committee of the Faculty of Social Science (Raboud University, Nijmegen, The Netherlands). Ethical approval for this study was provided under approval code 'ECSW-2021-076' for project entitled 'Short demonstrations at the muZIEum' (ethical approval documentation available on request).

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	This study used a quantitative experimental approach within a natural, observational museum setting. Interactive kiosks were placed as part of the museum's educational exhibits, allowing visitors to voluntarily participate, much like engaging with other interactive museum items/displays. Visitors could freely choose to start or stop participation at any point.
Research sample	The final sample for analysis (after exclusions as reported in the manuscript) consisted of 4,668 participants (age 16-85 years old; Mage = 36.73; SD ± 15.62). In the final sample, 2,744 identified as 'Female' (58.78%), 1,750 identified as 'Male' (37.5%), 109 chose 'Prefer not to say' (2.34%), and 65 selected 'Other' (1.39%). This sample reflected a broad demographic diversity of museum visitors supporting the representativeness and ecological validity of the study's findings.
Sampling strategy	Participants were recruited through convenience sampling via interactive kiosks strategically positioned as educational exhibits within the museum. Visitors could freely engage with the study at their discretion. No prior sample size calculation was performed. Instead, data collection took place for a continuous period of 13 months, after which the task was removed from the kiosks.
Data collection	Data collection was conducted using interactive kiosks displaying a Qualtrics-based experimental task. Participants interacted independently with the task without any experimenter supervision or intervention. That is, the kiosks were stand alone and unattended at any point. All responses were automatically recorded by Qualtrics.
Timing	Data collection occurred for an uninterrupted period starting on 14 January 2022 and ending on 1 March 2023.
Data exclusions	Participants were excluded if they completed less than 90% of the experimental task (i.e. participants who completed all four trials but opted not to read the full educational debriefing were retained). Additionally, participants who self-reported an age outside the range of 16-85 years were excluded from analysis.

Non-participation

Of the participants excluded, 3,788 were removed from the sample because they terminated the task prematurely likely due to their museum tour commencing or declining interest, and thus did not complete at least 90% of the experiment.

Randomization

All participants experienced the same conditions.

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

Plants

Seed stocks

Report on the source of all seed stocks or other plant material used. If applicable, state the seed stock centre and catalogue number. If plant specimens were collected from the field, describe the collection location, date and sampling procedures.

Novel plant genotypes

Describe the methods by which all novel plant genotypes were produced. This includes those generated by transgenic approaches, gene editing, chemical/radiation-based mutagenesis and hybridization. For transgenic lines, describe the transformation method, the number of independent lines analyzed and the generation upon which experiments were performed. For gene-edited lines, describe the editor used, the endogenous sequence targeted for editing, the targeting guide RNA sequence (if applicable) and how the editor was applied.

Authentication

Describe any authentication procedures for each seed stock used or novel genotype generated. Describe any experiments used to assess the effect of a mutation and, where applicable, how potential secondary effects (e.g. second site T-DNA insertions, mosaicism, off-target gene editing) were examined.