nature portfolio

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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	No commercial software was used for data collection. Data were collected online through a secure website and database managed by NIH's Clinical Trials Survey System.
Data analysis	Data were analyzed using R (version 4.3.1) with code that is available at https://osf.io/e7jrd/. We used the following packages and versions: finalfit (version 1.0.6); lme4 (version 1.1-35.1); effectsize (version 0.8.6); brms (version 2.20.4); bayestestR (version 0.13.1); mediation (version 4.5.0); bmlm (version 1.3.15); mltools (version 0.3.5); tm (version 0.7-14); wordcloud2 (version 0.2.1)

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

Participant-level data used for these analyses are available at https://osf.io/e7jrd/60 in the file " final_socmeasures_052824_n3605.csv". The complete dataset can

be found at https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/L4LRM261, which includes data obtained from the NIEHS COVID-19 Pandemic Vulnerability Index Dashboard49. All data are publicly available without restrictions.

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 analyzed self-reported gender, and controlled for gender in all analyses. We examined interactions with gender, restricted to men and women in supplementary materials and report positive findings in the main manuscript.
Reporting on race, ethnicity, or other socially relevant groupings	We analyzed self-reported racial identity and gender and included racial identity and ethnicity, as well as setting and education, as covariates in all analyses. We report differences by race, gender, and other social categories in table 1.
Population characteristics	In addition to the social categories mentioned above, we report on age and nationality.
Recruitment	Participants were recruited through several routes, as described in Methods: "We initially contacted former research participants via email from six labs of the National Institute of Mental Health (NIMH) and National Center for Complementary and Integrative Health (NCCIH) Intramural Research Programs and invited them to participate. The study was also advertised online through NIMH's social media outlets, listservs, clinicaltrials.gov and direct mail postcards." Participants were not compensated for participation. In our discussion, we address how this might have limited generalizability.
Ethics oversight	NIH Institution Review Board (NCT04339790). All participants provided informed consent.

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	Quantitative
Research sample	3655 volunteers from 41 countries, although the majority (91%) were in the US. Age ranged from 18-87 (M=48.31); most participants were female (80.5%). Complete demographics are reported in Table 1. The study was open to all participants for a fixed window of time to capture the first year of the pandemic, and we analyzed data from all respondents. As acknowledged in the Discussion, the sample was based on self-selection and not representative of the US population.
Sampling strategy	This was a convenience sample of 3655 participants, including prior participants from NIH and those who learned about the study through advertisements, postcards, or word of mouth. The study was completely voluntary and uncompensated. As per study design registered on clinicaltrials.gov (NCT04339790), we enrolled all participants for six months and then ceased enrollment. Power analyses were not conducted and no sample size calculation was performed. We believe this sample size is sufficient as our sample size and number of within-person measures surpasses nearly all other longitudinal studies of mental health during the pandemic's first year. Limitations are included in our Discussion.
Data collection	Data were collected online through surveys without identifiable information. Participants received automated emails every two weeks asking them to complete the next interval. There were no direct interactions with the study team and data were not identifiable. Participants could omit any intervals they did not wish to complete. Researchers were blind to condition, although researchers were not present during data collection.
Timing	Enrollment took place from April 4, 2020 through November 13, 2020. All participants (n = 3655) were asked to complete surveys every two weeks for 24 weeks. The final datapoint was collected on May 16 2021. This information is included in Figure 1.
Data exclusions	Because the current analyses focused on longitudinal data, participants who did not complete more than one timepoint (n = 306) were not included in analyses.
Non-participation	Participants could omit any time points they wished to and were not considered drop outs iif they did not complete all questionnaires. As mentioned above, if participants only completed baseline measures (n = 306), they were not included in analyses.
Randomization	There were no experimental groups, thus there was no randomization.

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

Clinical data

Policy information about clinical studies

All manuscripts should comply with the ICMJE guidelines for publication of clinical research and a completed CONSORT checklist must be included with all submissions.

Clinical trial registration	NCT04339790
Study protocol	https://clinicaltrials.gov/study/NCT04339790
Data collection	Data collection was conducted through the NIH Clinical Trials Survey System from April 4, 2020 through May 16, 2021. All participants provided informed consent and the study was approved by the NIH IRB.
Outcomes	As preregistered on clinicaltrials.gov (NCT04339790), our primary outcomes were responses on a survey we developed for this study, including loneliness, as well as mental health measures (DSM-XC, Kessler-5). The current paper evaluates our primary and secondary objectives, i.e., "Objectives: The primary objective is to describe the relationship between stressors related to COVID-19 and self-rated measures of mental health symptoms and distress among a range of participants including various patient populations and healthy volunteers. The secondary objectives are to determine whether existing mental health concerns moderates this relationship and to identify risk and resilience factors among study participants regarding the mental health impact of the COVID-19 pandemic." There were no secondary outcomes.

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, mosiacism, off-target gene editing) were examined.*