The International Climate Psychology Collaboration: Climate change-related data collected from 63 countries

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The International Climate Psychology Collaboration: Climate change-related data collected from 63 countries

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Climate change is currently one of humanity's greatest threats. To help scholars understand the psychology of climate change, we conducted an online quasi-experimental survey on 59,508 participants from 63 countries (collected between July 2022 and July 2023). In a between-subjects design, we tested 11 interventions designed to promote climate change mitigation across four outcomes: climate change belief, support for climate policies, willingness to share information on social media, and performance on an effortful pro-environmental behavioural task. Participants also reported their demographic information (e.g., age, gender) and several other independent variables (e.g., political orientation, perceptions about the scientific consensus). In the no-intervention control group, we also measured important additional variables, such as environmentalist identity and trust in climate science. We report the collaboration procedure, study design, raw and cleaned data, all survey materials, relevant analysis scripts, and data visualisations. This dataset can be used to further the understanding of psychological, demographic, and national-level factors related to individual-level climate action and how these differ across countries.

Background & Summary

Climate change is a global threat to human thriving[1]. Combating it more effectively requires massive changes at the individual, collective, and system levels[1–5]. Research has investigated many factors, including the antecedents, associations, and underlying processes related to climate change mitigation (e.g., beliefs, behaviours)[6–10]. However, much of this research has been conducted on Western, highly Educated samples from Industrialized, Rich, and Democratic countries (i.e., WEIRD), which limits the generalizability of the findings[11]. Further, research typically uses correlational methods, precluding an understanding of what factors actually cause climate action. Given that climate change presents a global threat, it is critical to better understand these factors, and how they impact climate change mitigation across the globe[12].

This manuscript describes the data gathered for the **International Collaboration to Understand Climate Action** (https://bit.ly/3VszDE9)[13]. This collaboration included 258 researchers and data collected from 63 countries across the globe between July 2022 and July 2023 (Supplemental Figure S1). A total of 83,927 participants signed up to participate, of which 59,508 eligible participants are presented in this manuscript (see below for the inclusion/exclusion criteria). When designing this project, our primary aim was to develop and test 11 expert crowd-sourced interventions (described in Table 1) designed to promote climate change mitigation, assessed by multiple outcome variables, in as many countries as possible (the preregistration for this main aim can be found at https://aspredicted.org/blind.php?x=W83_WTL). The outcomes included belief in climate change, support for climate mitigation policies, willingness to share climate-relevant information on social media, and a modified version of the Work for Environmental Protection Task (WEPT; explained further below)[14].

Each primary outcome was chosen due to its theoretical and practical relevance (see[12]). Briefly, belief in climate change is a key antecedent of pro-environmental intentions, behaviour, and policy support[6]. Public support for a given policy is the top predictor of policy adoption, especially within the realm of climate change[3,15].

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Intervention	Description	Relevant Statistics
Dynamic Social Norms[28]	Informs participants of how norms are changing and "more and more people are becoming concerned about climate change", suggesting that people should take action.	Median duration (SD): 49.50 (126.28) Raw N: 6820 Cleaned N (%): 5172 (75.84)
Work Together Norm[29]	Combines referencing a social norm (i.e., "a majority of people are taking steps to reduce their carbon footprint") with an invitation to "join in" and work together with fellow citizens toward this common goal.	Duration: 162.97 (253.76) Raw N: 6835 Cleaned N: 5160 (75.49)
Effective Collective Action[30,31]	Features examples of successful collective action that have had meaningful effects on climate policies (e.g., protests) or have solved past global issues (e.g., the restoration of the ozone layer).	Duration: 154.34 (321.56) Raw N: 6818 Cleaned N: 5169 (75.81)
Psychological Distance[32]	Frames climate change as a proximal risk by using examples of recent natural disasters caused by climate change in each participants' nation and prompts them to write about the climate impacts on their community.	Duration: 289.55 (337.26) Raw N: 6717 Cleaned N: 4737 (70.52)
System Justification[33]	Frames climate change as threatening to the way of life to each participant's nation, and makes an appeal to climate action, as the patriotic response.	Duration: 80.17 (152.10) Raw N: 6854 Cleaned N: 5179 (75.56)
Future-Self Continuity[34]	Emphasizes identification with future selves by asking each participant to project themselves into the future and write a letter addressed to themselves in the present, describing the actions they would have wanted to take regarding climate change.	Duration: 258.02 (523.07) 6491 Cleaned N: 4226 (65.11)
Negative Emotions[35,36]	Exposes participants to ecologically valid scientific facts regarding the impacts of climate change framed in a 'doom and gloom' style of messaging that were drawn from different real-world news and media sources.	Duration: 213.10 (295.31) Raw N: 6778 Cleaned N: 5167 (76.23)
Pluralistic Ignorance[37]	Presents real public opinion data collected by the United Nations that shows what percentage of people in each participant's country agree that climate change is a global emergency.	Duration: 36.89 (1055.17) Raw N: 6876 Cleaned N: 5172 (75.22)
Letter to Future Generation[38,39]	Emphasizes how one's current actions impact future generations by asking participants to write a letter to a socially close child who will read it in 25 years when they are an adult, describing current actions towards ensuring a habitable planet.	Duration: 346.20 (490.72) Raw N: 6404 Cleaned N: 4044 (63.15)
Binding Moral Foundations[40]	Invokes authority (e.g., "From scientists to experts in the military, there is near universal agreement"), purity (e.g., keep our air, water, and land pure), and ingroup-loyalty (e.g., "it is the American solution") moral foundations.	Duration: 13.48 (58.64) Raw N: 6877 Cleaned N: 5092 (74.04)
Scientific Consensus[22]	Informs participants that "99% of expert climate scientists agree that the Earth is warming, and climate change is happening, mainly because of human activity".	Duration: 11.76 (272.47) Raw N: 6892 Cleaned N: 5296 (76.84)
Control Condition	Participants read a brief paragraph that was unrelated to climate change (i.e., a short paragraph from the novel "Great Expectations" by Charles Dickens).	Duration: 70.92 (247.49) Raw N: 6847 Cleaned N: 5094 (74.40)

Table 1. Intervention names, descriptions, and relevant statistics.

Discussing and sharing information about climate change with one's peers is an essential step in addressing climate change[12,16], thus we also added the willingness to share information on social media variable. Finally, real, effortful pro-environmental behaviour is needed in order to fight climate change, thus we added the WEPT, which is a web-based task that allows us to measure the amount of effort participants are willing to exert to help protect the environment[14].

In order to easily assess the average impact of the interventions on each of the main outcome variables (beliefs, policy support, social media sharing, and the WEPT), varied across multiple demographics including nationality, political ideology, age, gender, education, income level and perceived level of socioeconomic status, we provide an easy to use and disseminate webtool called the Climate Intervention Webapp: https://climate-interventions.shinyapps.io/climate-interventions/.

Our secondary aim was to maximise the utility of the data collected. To do that and also keep the survey length similar across all conditions, participants in the no-intervention control condition responded to numerous additional variables. This included items such as trust in climate scientists, degree of environmentalist identity[17], and second-order climate beliefs (a full list of included items is reported below). A schematic overview of the survey design is shown in Figure 1.

Due to the richness of this dataset[13], there are a multitude of secondary analyses that are possible. For example, the effectiveness of the interventions can be explored across socio-political variables[18], individualism-collectivism[19], or a number of other factors[20].

In addition to the above-mentioned participant data, we also present data from an intervention tournament which was conducted before the study, where collaborators submitted interventions they wished to see tested in this international context (more information can be found in the section "Intervention tournament", below). We received 36 submissions, which were sorted and cleaned by the organisational team (see below for more). The remaining 11 interventions were then rank-ordered by 188 of our collaborators in terms of their practical and theoretical support (Figure 2). Given the high levels of support from our collaborators for all interventions, we decided to include all 11 interventions in the main project.

Methods

Collaboration Procedure. In early November of 2021, the organising team (i.e., K. C. Doell, M. Vlasceanu, & J. J. Van Bavel) announced a call for collaboration (https://manylabsclimate.wordpress.com/call-for-collaboration/) on social media, via personal networks, and by posting on various mailing lists and forums.

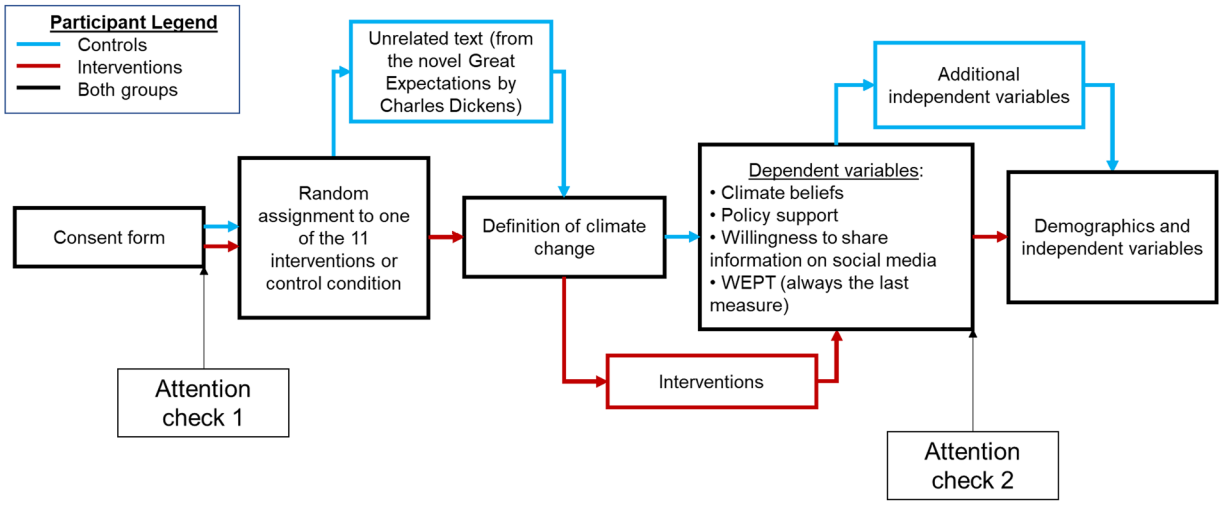

Fig. 1 Schematic overview of the survey flow. The pathways for the control participants are shown in blue, and the intervention participants are shown in red.

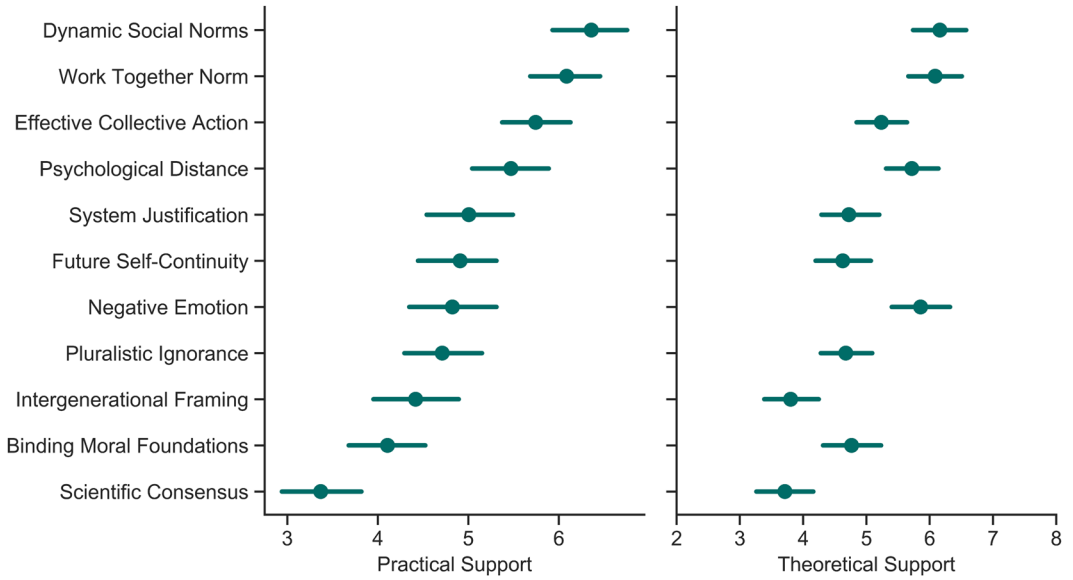

Fig. 2 Average support of each crowdsourced intervention. Support was ranked by a sample of 188 behavioural scientists (coauthors on the current paper) who were asked to rate the interventions on perceived efficiency (practical support) and theoretical value (theoretical support). Error bars are bootstrapped confidence intervals around the mean. The mean is a mean rank, where the rank ordinals are defined such that 10 means most support and 0 means least support.

We announced that researchers could join this collaboration by contributing in one of three ways: (1) collect data (i.e., >500 responses), (2) propose and design an intervention included in the final study, and/or (3) financially contribute to the acquisition of data (i.e., >500 responses) in a country not yet covered in the collaboration. We aimed to limit the cost of collaboration in two specific ways. First, we prioritised creating a relatively short survey (i.e., less than 20 minutes total). This meant the intervention designers had to create interventions that took no more than 5 minutes. Second, while we strongly encouraged data-collection collaborators to recruit representative samples from market research agencies, representative data was not required (see the Participant section for more details).

Intervention tournament. We invited all collaborators to submit proposals for interventions to be tested via the survey platform Qualtrics (https://www.qualtrics.com/). They were required to submit a short abstract that outlined their intervention and included any relevant references. They were also required to calculate the effect sizes of each intervention based on previous work. Finally, they were asked to consider time constraints (i.e., no more than 5 minutes).

We received 36 proposed interventions, which two authors from the organisational team screened (who were blinded to the intervention authors). The screening procedure involved removing interventions that were not feasible in an international context (e.g., removing proposals including videos that needed to be translated), relevance for the dependent variables, and theoretical support from prior work (quantified by previously reported effect sizes). We also aggregated similar interventions and duplicates. We identified 11 unique and feasible interventions. We then asked all collaborators to read the short summaries of the interventions and rank-order them based on their practical support (i.e., Please rank the following climate interventions in order of their practical support (will it be successful?) from *1 = "most important", to 11 = "least important"*) and theoretical support (Please rank the following climate interventions (their descriptions are above) in order of their theoretical importance from *1 = "most important", to 11 = "least important"*). We obtained 188 responses from our collaborators in January 2022 (Figure 2). The Qualtrics file, and the data from this survey can be found in the "ClimateManylabs_InterventionTournamentVote" folder in the data repository.

Intervention design. Given high levels of support for all interventions (Figure 2), we tested all 11 interventions in the main study[12]. We then contacted the collaborators whose interventions had been selected to be included to coordinate the intervention implementation and programming on the Qualtrics survey platform. All interventions went through two rounds of reviews. First, the organisational team gave the intervention designers feedback on their submissions and allowed them time to address the comments. After receiving the revised interventions, we contacted expert researchers who had published relevant theoretical work, asking them to review each intervention's implementation critically. For example, Professor John Jost reviewed the System Justification intervention[21]. Professor Sander van der Linden reviewed the Scientific Consensus intervention[22]. This process was iterated for each of the 11 interventions.

Finally, the organisational team asked all collaborators from around the world for additional feedback on the entire survey, including all interventions, demographics, and independent variables. This was to improve the overall quality and to help reduce any American-centric researcher biases that may have influenced the original survey.

This revision process lasted until the end of May 2022, when we started piloting the final version of the study, on a sample of 723 participants collected in the United States ($M_{age} = 43.6$; $SD_{age} = 15.7$; 52% women, 46% men, <2% non-binary). After the piloting was completed (July 2022), we sent our collaborators the final version of the study in Qualtrics, along with an in-depth instructions manual (available at https://osf.io/ujzcx) on how to translate and adapt the study to each country. We also instructed our collaborators to obtain ethics approval from their institutions' review boards before launching data collection.

It should also be noted that multiple interventions included additional questionnaire items mainly meant to increase participant engagement. These additional items, as well as the number of participants that did and did not respond to these items per condition are available in Supplemental Table S4. These results can be used to help estimate the level of engagement of the participants in the cleaned dataset.

Survey translations. Consistency of the survey adaptations was ensured in three ways. First, collaborator teams were instructed to use back-translations to ensure that the text was adequate. Should any disputes arise, they were asked to have multiple native speakers work together to help resolve it. Second, teams that were using the same language were strongly encouraged to work together when translating the survey so that they could more evenly distribute the amount of effort that was required. Not only did this help to reduce the likelihood of fatigue by the translators, but it also meant that there were often several native speakers working on the same translations, ensuring that there was a consensus among them. Finally, the organisational team carefully combed through the submitted survey files using different translation software (e.g., DeepL) to ensure that the entire survey had been translated and adapted sufficiently.

Participants. The data were collected between July 2022 and July 2023. To be included in the cleaned dataset, participants had to be between 18–100 years old, pass two attention checks (i.e., Please select the colour "purple" from the list below." and "To indicate you are reading this paragraph, please type the word sixty in the text box below."; the dropout rates by collaborator team are shown in Supplemental Table S6), and pass the WEPT demonstration page. By removing participants who did not pass the attention check, we operated under the assumption that the treatment effects are consistent across both attentive and less attentive groups. This decision was made to enhance data quality while maintaining the assumption of minimal heterogeneous treatment effects.

We also screened the survey files that were uploaded by collaborators to ensure that all translations and country-level adaptations were successfully adopted, and if not, those participants were removed (see the Data Cleaning section). As the main aim of the present data paper is to provide the fullest dataset possible, we opted to include only the above-mentioned inclusion/exclusion criteria when cleaning the data. This allows users to set their own judgements for the boundaries/cutoffs inside of their analyses that make sense for what they would like to do. Thus, there is a small portion of participants included who did not finish the entire survey (2.99% of participants have a 0 in the "Finished" column of the dataset), or participants who did not respond to all items in each subscale.

A total of 83,927 people participated, and 59,508 participants ($M_{age} = 39.12$, $SD_{age} = 15.77$; 51% women, 47% men, 0.6% non-binary; Figure 3) from 63 countries passed both attention checks and correctly completed the WEPT demonstration. All collaborator team-level descriptive data for age and gender is shown in Supplemental Table S1. Table 1 shows the breakdown for the number of participants that were originally assigned to each group (i.e., "Raw N") and the number of participants that were included in each condition in the final cleaned dataset (i.e., "Cleaned N"). These values can be used to calculate and adjust for attrition rates across the dataset.

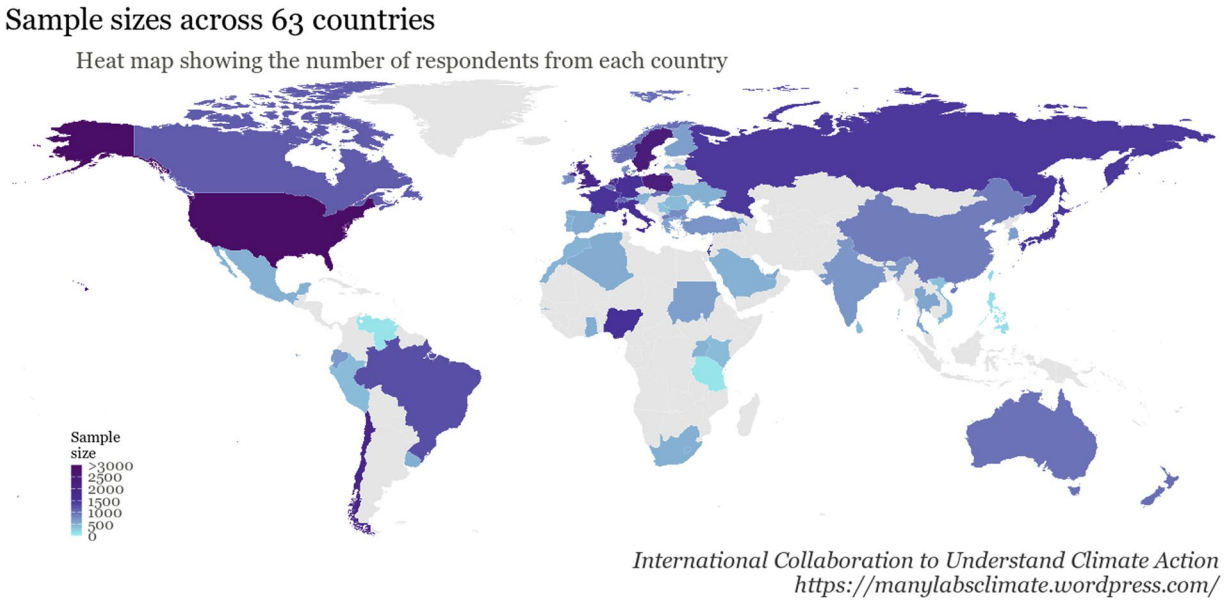

Fig. 3 Data distributions. The number of participants in each of the 63 countries represented in the sample ($N_{total} = 59{,}508$).

Overall, 75.05% of the entire sample was matched to the population in some way (e.g., census matched regarding age), and 66% of the sample was matched for both age and gender (see Table 2 for the breakdown of all matched variables). Ethics approval was obtained independently by each data collection team from their corresponding Institutional Review Board (IRB). Only datasets submitted, along with IRB approval or an ethics waiver from IRB, are included in the repository.

Regarding the heterogeneity in the dataset, there are several things to note. First, the sampling procedures differed between countries (e.g., the U.S. samples were all census matched on age, and gender while the Slovakian sample was matched on age, gender, region, and municipality size; Table 2). Thus, there is a large amount of heterogeneity within the dataset. Second, while having a sample that is broadly representative of key demographics is ideal, recent work has found that representative samples are not necessarily required to obtain generalisable estimates of effect sizes within countries[23]. Various analyses have highlighted that convenience samples are adequate for estimating treatment effects[23–25]. Thus, the data included in this manuscript should also be suitable, especially for researchers interested in analysing the treatment effects within our sample.

Experimental design. A dedicated schematic representation of the design can be found in Figure 1. Briefly, all participants were first required to read and acknowledge the informed consent page. At the end of the consent page, participants were exposed to the first attention check ("Please select the color "purple" from the list below. We would like to make sure that you are reading these questions carefully."). They were then randomly assigned to one of 12 conditions, including the 11 intervention groups (Table 1) or a no-intervention control condition. Participants in the control condition were then exposed to a short, thematically unrelated text from the novel "Great Expectations" by Charles Dickens in order to balance the amount of time spent on this phase of the experiment. Next, all participants were exposed to a definition of climate change: "Climate change is the phenomenon describing the fact that the world's average temperature has been increasing over the past 150 years and will likely be increasing more in the future." Participants in the intervention groups were then exposed to their intervention.

All participants were then directed to the dependent variable phase, where, in random order, they rated their (1) climate beliefs, (2) climate policy support, and (3) were given the option to create a social media post. Finally, they could contribute to the tree-planting effort by completing the WEPT. Note that the WEPT was always the last outcome variable measured, while the other three outcomes were measured randomly. Next, participants in the control condition were asked to complete a series of additional variables (described below). Finally, participants were asked to report their demographic information, which included another attention check ("In the previous section, you viewed some information about climate change. To indicate you are reading this paragraph, please type the word sixty in the text box below.").

Primary Outcomes. Figure 4 shows graphic illustrations of the four primary outcome variables.

Climate change beliefs. Climate beliefs were measured by participants' answers to the question "How accurate do you think these statements are?" from *0 = Not at all accurate to* 100 = *Extremely accurate*. The four statements were: "Taking action to fight climate change is necessary to avoid a global catastrophe," "Human activities are causing climate change," "Climate change poses a serious threat to humanity," and "Climate change is a global emergency."

Sample	Matched Variables	N	%	Sample	Matched Variables	N	%
Algeria	N/A	528	0.89	Philippines	N/A	145	0.24
Armenia	N/A	492	0.83	Poland_1	Age, Gender, Education	1883	3.17
Australia	Age, Gender	979	1.65	Poland_2	N/A	463	0.78
Austria	Age, Gender	502	0.84	Portugal	N/A	499	0.84
Belgium_1	Age, Gender	522	0.88	Romania	N/A	411	0.69
Belgium_2	Age, Gender	512	0.86	Russia_1	N/A	718	1.21
Brazil	Age, Gender, Education	1261	2.12	Russia_2	Region, Ethnicity	395	0.66
Bulgaria	Age, Gender	778	1.31	Russia_3	N/A	322	0.54
Canada_1	N/A	858	1.44	Saudi Arabia	N/A	489	0.82
Canada_2	Age, Gender	303	0.51	Serbia	N/A	337	0.57
Chile	Age, Gender, Region, SES	1992	3.35	Singapore	N/A	500	0.84
China	N/A	896	1.51	Slovakia	Age, Gender, Region, Municipality Size	1027	1.73
Czechia	N/A	547	0.92	Slovenia	Age, Gender	501	0.84
Denmark	Age, Gender, Region	792	1.33	South Africa	Age, Gender	496	0.83
Ecuador	Age, Gender, Region	679	1.14	South Korea	Age, Gender	639	1.08
Finland	Age, Gender	625	1.05	Spain_1	N/A	110	0.19
France	Age, Gender	1480	2.49	Spain_2	Age, Gender, Region	434	0.73
Gambia	N/A	527	0.89	Sri Lanka	N/A	413	0.69
Germany	Age, Gender, Region	1545	2.6	Sudan	Age, Gender	623	1.05
Ghana	Age, Gender	522	0.88	Sweden	Age, Gender	2393	4.03
Greece	Age, Gender	597	1	Switzerland_1	Age, Gender	512	0.86
India	N/A	688	1.16	Switzerland_2	Age, Gender	531	0.89
Ireland	N/A	753	1.27	Taiwan	N/A	206	0.35
Israel	Age, Gender, Region, Ethnicity	1384	2.33	Tanzania	Age, Gender	104	0.17
Italy_1	Age, Gender, Region	591	0.99	Thailand	N/A	586	0.99
Italy_2	Gender	993	1.67	Turkey_1	N/A	359	0.6
Japan_1	N/A	653	1.1	Turkey_2	Age, Gender	347	0.58
Japan_2	Income, Education, Region, Ethnicity	802	1.35	Uganda	Age, Gender	476	0.8
Kenya	Age, Gender	409	0.69	UK_1	N/A	235	0.37
Latvia	Income, Education, Ethnicity	485	0.82	UK_2	Age, Gender	952	1.6
Mexico	Age, Gender	490	0.82	UK_3	N/A	287	0.39
Morocco	Age, Gender	474	0.8	UK_4	Gender	501	0.84
Netherlands_1	Age, Gender	854	1.44	Ukraine	N/A	496	0.83
Netherlands_2	Age, Gender	510	0.86	UAE	Broadly representative for age, gender, and nationality[a]	554	0.93
Netherlands_3	N/A	500	0.84	Uruguay	N/A	497	0.84
New Zealand	Gender	1005	1.69	USA_1	Age, Gender	838	1.41
Nigeria	Age, Gender	1513	2.55	USA_2	Age, Gender, Region, Ethnicity	2360	3.97
N. Macedonia	N/A	878	1.48	USA_3	Age, Gender	5055	8.5
Norway	Age, Gender, Ethnicity	997	1.68	Venezuela	N/A	110	0.19
Peru	Age, Gender	405	0.68	Vietnam	N/A	383	0.64

Table 2. Variables on which the samples in each country were matched to the population. [a]The UAE has a widely diverse and distinctive demographic composition characterized by a significant proportion of expatriate residents as opposed to citizens, and availability of current figures is limited by the infrequent publication of such data. Thus, the data included here is broadly representative.

Climate change policy support. This dependent variable consisted of participants' level of agreement from *0 = Not at all* to *100 = Very much so* using a slider (participants could also respond with "not applicable", which is coded as "NA" in the dataset), with the following nine statements: "I support raising carbon taxes on gas/fossil fuels/coal," "I support significantly expanding infrastructure for public transportation," "I support increasing the number of charging stations for electric vehicles," "I support increasing the use of sustainable energy such as wind and solar energy," "I support increasing taxes on airline companies to offset carbon emissions," "I support protecting forested and land areas," "I support investing more in green jobs and businesses," "I support introducing laws to keep waterways and oceans clean," and "I support increasing taxes on carbon-intensive foods (for example, meat and dairy)."

Willingness to share climate information on social media. Participants were first presented with the text, "Did you know that removing meat and dairy for only two out of three meals per day could decrease food-related carbon emissions by 60%? It is an easy way to fight #ClimateChange #ManyLabsClimate${e://Field/cond} source:

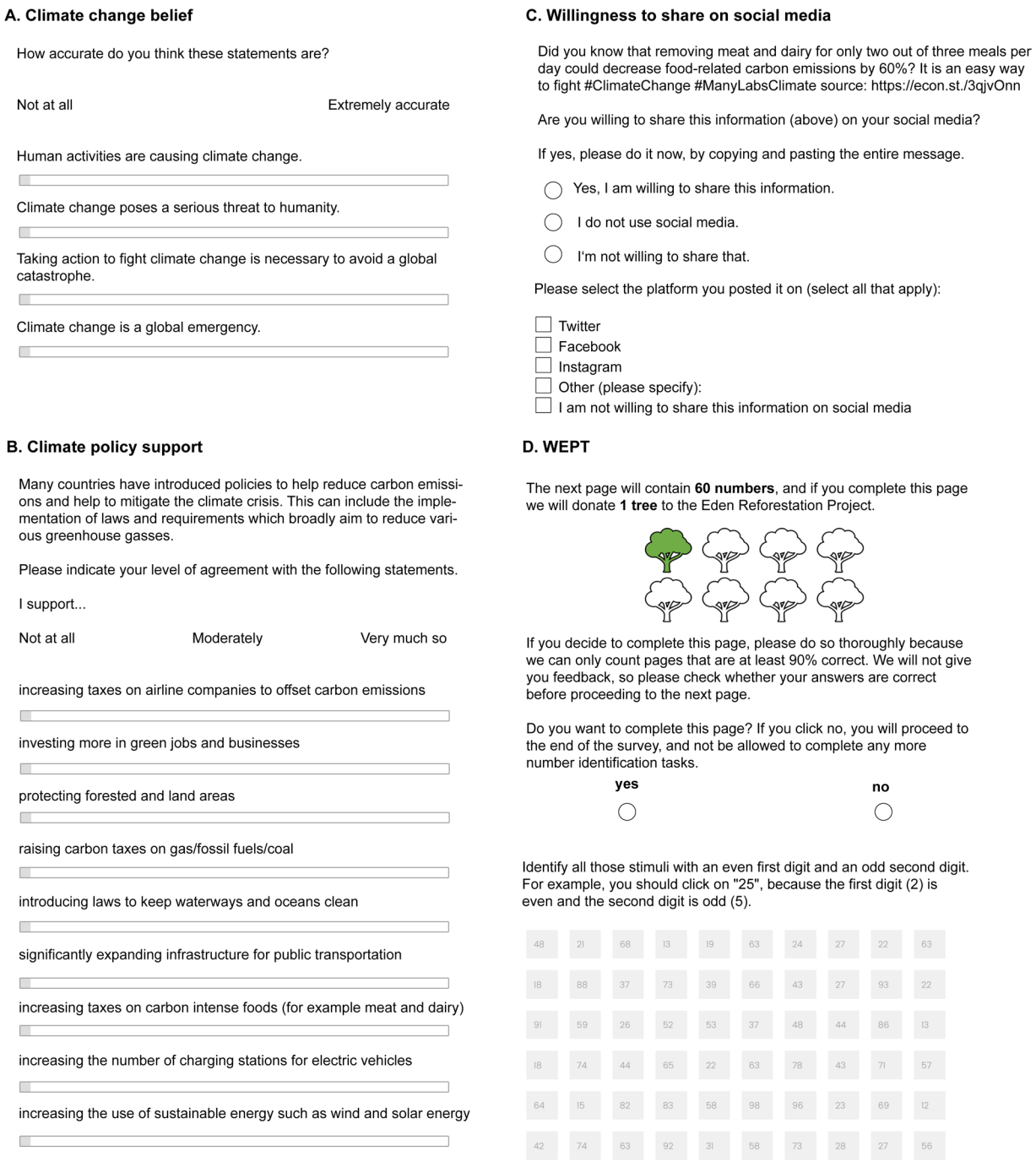

Fig. 4 Graphic illustration of the primary outcome variables. (**A**) climate change belief, (**B**) climate policy support, (**C**) willingness to share on social media, (**D**) the WEPT.

https://econ.st/3qjvOnn" (where "{e://Field/cond}" was replaced with the condition code for each group; an example can be found here https://bit.ly/3FKcwyq). Participants were then asked, "Are you willing to share this information on your social media?" the answer options were "Yes, I am willing to share this information," "I am not willing to share this information," and "I do not use social media." Participants who indicated they do not use social media (N = 15,252, 25.9% of the sample) were recoded as NA in this variable to avoid confusion and to exclude them from relevant analyses. Moreover, participants were asked to indicate the platform (e.g., Facebook, Twitter, Instagram) on which they posted the information.

WEPT Tree planting efforts. We used a modified version of the Work for Environmental Protection Task (WEPT) to measure an action with a real-world impact performed at an actual cost to participants[14]. This task is a multi-trial web-based procedure that detects consequential pro-environmental behaviour by allowing participants the opportunity to engage in voluntary cognitive effort (i.e., screening numerical stimuli) in exchange

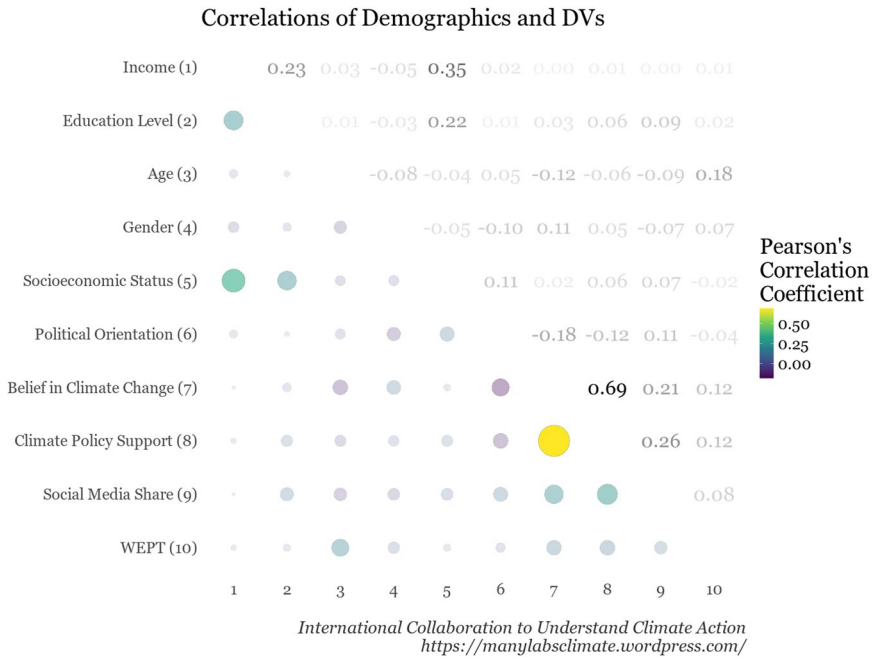

Fig. 5 Correlation matrix showing the Pearson's correlations between the demographic predictors and the four outcome variables.

for donations to an environmental organisation. This measure has been validated and has been found to correlate to self-reports and objective observations of other pro-environmental behaviours and conceptually related measures[14,26].

Participants were first exposed to a demonstration of the WEPT, in which they were instructed to identify all target numbers for which the first digit is even and the second digit is odd (4 out of 18 numbers were target numbers on the demonstration page). Participants could not advance the page until they correctly completed the WEPT demonstration. They were then told that planting trees is one of the best ways to combat climate change and that they would have the opportunity to plant up to 8 trees if they chose to engage in additional pages of the item identification task (one tree per page of WEPT completed). These pages contained 60 numbers per page, which participants had to screen for target numbers. Alongside these instructions, participants were shown a pictogram of 8 trees, one of which was coloured green to mark their progress in the task (Figure 4D). Participants were allowed to exit the task at any point with no penalty.

Due to the participants' efforts, 333,333 trees were planted in collaboration with The Eden Reforestation Project. Assuming that the average fully-grown tree absorbs between 10 and 40 kg of carbon dioxide per year, in 5–10 years when all trees are fully grown, the efforts from this project will result in approximately 9,999,990 kg of carbon dioxide sequestered per year, which is the equivalent amount of carbon dioxide used to produce energy for 1,260 US homes per year.

Additional independent variables. As shown in Figure 1, participants from the no-intervention control condition were also required to complete a set of additional independent variables. The items included are listed in Supplemental Table S3.

Demographic block. After briefly explaining why we were measuring some background information, we then measured a series of demographic variables (see Supplemental Table S5). The correlation plot between the variables from the demographic block and the primary outcomes is shown in Figure 5.

Data cleaning. We received individual data files from each collaboration team in either .csv or .xlxs format as well as the Qualtrics files (i.e.,.qsf) from the survey (information about each data submission can be found at: https://osf.io/sd5qb). Each team's survey file was visually inspected by at least two members of the organisational team (mainly BT & PS) to ensure that they were adapted and translated fully. While some interventions required only translation, others (Work Together Norm, System Justification, Psychological Distance, Pluralistic Ignorance, Dynamic Social Norms, Binding Moral Foundation) required further adaptations on a country-level (the collaborator manual outlining all adaptations can be found at https://osf.io/ujzcx). For example, the Binding Moral Foundation intervention contained an image of a person holding a flag, thus, a different image with the respective flag for the country was required. If the image was not changed, we removed the participants receiving this intervention from that collaborator team's data. We documented all unsuccessful/partial translations and adaptation of the interventions (see https://osf.io/wu6gf for an overview).

Measure	Cronbach's Alpha	Guttman's split-half coefficient	McDonald's Omega	Proportion of variance explained
Climate Belief	0.90 (0.06)	0.91 (0.05)	0.90 (0.05)	0.71 (0.11)
Policy Support	0.86 (0.04)	0.90 (0.03)	0.85 (0.05)	0.42 (0.07)
Political Orientation	0.77 (0.10)	0.77 (0.10)	0.77 (0.10)	0.64 (0.13)
Environmental Identity	0.90 (0.05)	0.93 (0.04)	0.90 (0.04)	0.70 (0.10)
External Motivation	0.85 (0.07)	0.86 (0.04)	0.86 (0.06)	0.58 (0.10)
Internal Motivation	0.70 (0.17)	0.77 (0.09)	0.78 (0.08)	0.47 (0.10)
Trust in Climate Science	0.85 (0.13)	0.85 (0.13)	0.85 (0.12)	0.75 (0.15)

Table 3. Average and standard deviations (brackets) for the reliability measures averaged across all 63 countries.

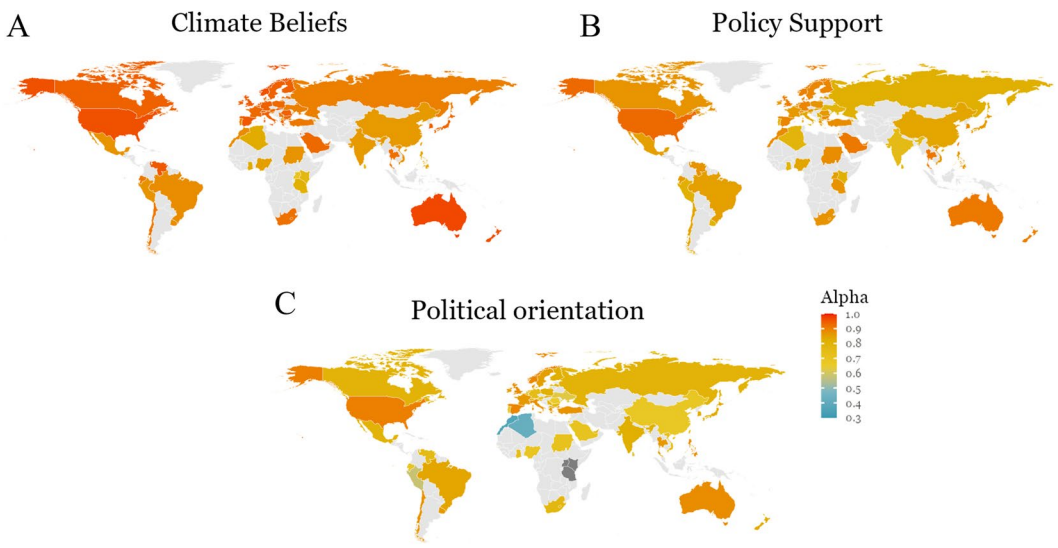

Fig. 6 Internal consistency (Cronbach's alpha) of the items measuring (**A**) climate change beliefs, (**B**) policy support, and (**C**) political orientation, calculated and plotted separately for each country.

The measure for socioeconomic status contained the respective country name, so we inspected the surveys and documented if the name has not been changed to reflect the correct country (see https://osf.io/ueqgy for an overview). Additionally, we documented which teams had changed the coding of some of the variables (see https://osf.io/qbe84 for gender, https://osf.io/5ypca for education). Before we merged the individual datasets, we changed the data from the participants who did not give consent to NAs. To merge and clean these raw data, minor modifications were introduced, which are briefly described below, and fully documented in the dataset merging script (https://osf.io/uam3y) and cleaning script (https://osf.io/4rm7g).

In the merging script, each dataset was imported into R individually. When encountering ambiguous date formats (such as those found in start date, end date, and record date), we manually specified the correct format and standardized them. Column names which were inconsistent with the original survey were renamed or removed, and the attention checks were recorded to ensure accuracy. The merged raw dataset can be found on OSF (see https://osf.io/snuwd).

In the cleaning script, all variables were checked to ensure they were coded in a consistent and comparable way. For example, there were some mistakes with the way that education was coded for some teams, so the data were individually recoded. Next, the empty rows for the non-consenting participants were removed, as well as survey tests that some teams did not remove when submitting their data. Next, participants who were not assigned a condition due to technical issues were removed (N = 1,753), as well as participants with invalid age values (less than 18 or more than 100, N = 157). Any errors that were identified for the survey translation and adaptation were then corrected individually, and participants were removed accordingly (N = 1,010). Participants who did not pass the two attention checks (first: N = 574, second: N = 20,194), nor the WEPT demonstration (N = 354) were then removed. The cleaned dataset can be found on OSF (see https://osf.io/xum6b).

Data Records

All materials for this project are openly available on the project's repository hosted on Open Science Framework (https://osf.io/ytf89/)[13].

Navigating the repository. The file repository is organised in several folders:

- **ClimateManylabs_Code** folder contains R scripts, including the code for merging the raw datasets submitted by each of the collaborators (datapaper_merging_raw.R), the code for cleaning the data (datapaper_cleaning.R) and the code for reproducing the figures (datapaper_figures_code.R).
- **ClimateManylabs_CollaboratorResources** contains the document with the information on ethics application (ethics_application_materials.pdf), the manual the collaborators received for adapting the interventions to their country and language (intervention_adaptation_manual.pdf) and a pdf file containing the master survey items (master_survey.pdf).
- **ClimateManylabs_Data** contains the single raw data files (i.e. all of the submitted datasets from all of the collaborators in a compressed form - countries_rawdata.7z), the merged raw dataset (data_raw.csv), the cleaned dataset (data_countries.csv), an additional cleaned version without the timers (data_notimers.csv), a codebook for navigating the dataset (codebook.xlsx), the items of the survey we used when asking the collaborators to submit their datasets (data_submission_survey.pdf), and the responses to this survey (manylabsclimate_datasubmission.csv).
- **ClimateManylabs_InterventionTournamentVote** contains the Qualtrics survey file (intervention_vote_manylabs.qsf) used for evaluating the interventions, the data of this survey (vote_data.xlsx), and the pdf file where the items of the survey can be seen (tournament_survey_items.pdf).
- **ClimateManylabs_IRBs** contains all of the approvals by the ethics boards in the different institutions.
- **ClimateManylabs_QSF** contains all the Qualtrics survey files (.qsf) that the collaborators used to collect their data.
- **ClimateManylabs_Supplementary** contains a supplementary figure with the data collection dates (data_collection_dates.png), an overview table of how education was coded (education_coding_overview.xlsx), how gender was coded (gender_coding_overview.xlsx), an overview of whether the interventions were translated and adapted correctly (intervention_translation_and_adaptation_overview.xlsx), a table containing the internal consistencies of the measures used in the survey, calculated per country (measures_internal_consistency_per_country.csv), and an overview of the adaptation of the socioeconomic status ladder per country (SES_ladder_countryname_adaptation_overview.xlsx).

An easy to access guide on navigating the repository can be found in the READme.txt file on the OSF platform.

Technical Validation

Similar to a previously published many labs dataset[27], we calculated numerous indicators of internal consistency at the country level for any scale (Table 2, Supplemental Tables S4-5) that contained more than two items. This included Cronbach's Alpha, McDonald's Omega, Guttman's split-half reliability, and the proportion of variance explained by a unidimensional factor. The average of these measures is shown in Table 3. The full table of results can be found at https://osf.io/ejtdq, and visualisations of Cronbach's alpha for climate belief, policy support, and political orientation are shown in Figure 6. Visualisations of Cronbach's alpha for all other variables from Table 3 are shown in Supplemental Figure S2. Across these reliability measures, the majority of variables had good (Cronbach's alpha > 0.70) to excellent (Cronbach's alpha > 0.80) internal consistency.

Usage Notes

We recommend using one of the cleaned datasets. One dataset, which includes all participant timers, and number of clicks per page can be found at https://osf.io/xum6b, and a version without any timers/click counts can be found at: https://osf.io/8q6ue. For more information on how to navigate the OSF repository read the uploaded READme.txt file (https://osf.io/8wh9m).

Code availability

All data (raw and cleaned), the materials from the study (e.g., Qualtrics surveys, IRB forms, etc.), codebooks, and the code presented in this manuscript are available at https://osf.io/ytf89.

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References

1. IPCC. Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/ar6/syr/, https://doi.org/10.59327/IPCC/AR6-9789291691647 (2023).
2. Amel, E., Manning, C., Scott, B. & Koger, S. Beyond the roots of human inaction: Fostering collective effort toward ecosystem conservation. *Science* **356**, 275–279 (2017).
3. Drews, S. & Van Den Bergh, J. C. J. M. What explains public support for climate policies? A review of empirical and experimental studies. *Climate Policy* **16**, 855–876 (2016).
4. Nielsen, K. S., Nicholas, K. A., Creutzig, F., Dietz, T. & Stern, P. C. The role of high-socioeconomic-status people in locking in or rapidly reducing energy-driven greenhouse gas emissions. *Nat Energy* **6**, 1011–1016 (2021).
5. Hampton, S. & Whitmarsh, L. Choices for climate action: A review of the multiple roles individuals play. *One Earth* **6**, 1157–1172 (2023).
6. Hornsey, M. J., Harris, E. A., Bain, P. G. & Fielding, K. S. Meta-analyses of the determinants and outcomes of belief in climate change. *Nature Climate Change* **6**, 622–626 (2016).
7. Doell, K. C. *et al.* Leveraging neuroscience for climate change research. *Nat. Clim. Chang.* 1–10, https://doi.org/10.1038/s41558-023-01857-4 (2023).
8. Doherty, T. J. & Clayton, S. The Psychological Impacts of Global Climate Change. *American Psychologist* **66**, 265–276 (2011).

9. Gifford, R. The Dragons of Inaction: Psychological Barriers That Limit Climate Change Mitigation and Adaptation. *American Psychologist* **66**, 290–302 (2011).
10. Rode, J. B. *et al*. Influencing climate change attitudes in the United States: A systematic review and meta-analysis. *Journal of Environmental Psychology* **76**, 101623 (2021).
11. Henrich, J., Heine, S. J. & Norenzayan, A. The weirdest people in the world? *Behavioral and Brain Sciences* **33**, 61–83 (2010).
12. Vlasceanu, M. *et al*. Addressing climate change with behavioral science: A global intervention tournament in 63 countries. *Science Advances* **10**, eadj5778 (2024).
13. Doell, K. C., Todorova, B., Vlasceanu, M. & Van Bavel, J. J. International Collaboration to Understand Climate Action. OSF https://doi.org/10.17605/OSF.IO/YTF89 (2024).
14. Lange, F. & Dewitte, S. The Work for Environmental Protection Task: A consequential web-based procedure for studying pro-environmental behavior. *Behavior Research Methods* https://doi.org/10.3758/s13428-021-01617-2 (2021).
15. Yeganeh, A. J., McCoy, A. P. & Schenk, T. Determinants of climate change policy adoption: A meta-analysis. *Urban Climate* **31**, 100547 (2020).
16. Anderson, A. A. Effects of Social Media Use on Climate Change Opinion, Knowledge, and Behavior. in Oxford Research Encyclopedia of Climate Science https://doi.org/10.1093/acrefore/9780190228620.013.369 (Oxford University Press, 2017)
17. Brick, C. & Lai, C. K. Explicit (but not implicit) environmentalist identity predicts pro-environmental behavior and policy preferences. *Journal of Environmental Psychology* **58**, 8–17 (2018).
18. Berkebile-Weinberg, M., Goldwert, D., Doell, K. C., Van Bavel, J. J. & Vlasceanu, M. The differential impact of climate interventions along the political divide in 60 countries. *Nat Commun* **15**, 3885 (2024).
19. Goldwert, D., Bao, Y. E., Doell, K. C., Van Bavel, J. J. & Vlasceanu, M. The Effects of Climate Action Interventions along Cultural Individualism-Collectivism. Preprint at https://doi.org/10.31234/osf.io/cv3n4 (2024).
20. Todorova, B. *et al*. Machine learning identifies key individual and nation-level factors predicting climate-relevant beliefs and behaviors. Preprint available at: https://doi.org/10.31219/osf.io/um69t (2024).
21. Jost, J. T. & Banaji, M. R. The role of stereotyping in system-justification and the production of false consciousness. *British journal of social psychology* **33**, 1–27 (1994).
22. van der Linden, S. L., Leiserowitz, A. A., Feinberg, G. D. & Maibach, E. W. How to communicate the scientific consensus on climate change: plain facts, pie charts or metaphors? *Climatic Change* **126**, 255–262 (2014).
23. Coppock, A., Leeper, T. J. & Mullinix, K. J. Generalizability of heterogeneous treatment effect estimates across samples. *Proceedings of the National Academy of Sciences* **115**, 12441–12446 (2018).
24. Weinberg, J., Freese, J. & McElhattan, D. Comparing Data Characteristics and Results of an Online Factorial Survey between a Population-Based and a Crowdsource-Recruited Sample. *Sociological Science* **1**, 292–310 (2014).
25. Mullinix, K. J., Leeper, T. J., Druckman, J. N. & Freese, J. The Generalizability of Survey Experiments. *Journal of Experimental Political Science* **2**, 109–138 (2015).
26. Lange, F. & Dewitte, S. Validity and scope sensitivity of the work for Environmental Protection Task. *Journal of Environmental Psychology* **86**, 101967 (2023).
27. Azevedo, F. *et al*. Social and moral psychology of COVID-19 across 69 countries. *Sci Data* **10**, 272 (2023).
28. Sparkman, G. & Walton, G. M. Dynamic Norms Promote Sustainable Behavior, Even if It Is Counternormative. *Psychological Science* **28**, 1663–1674 (2017).
29. Howe, L. C., Carr, P. B. & Walton, G. M. Normative appeals motivate people to contribute to collective action problems more when they invite people to work together toward a common goal. *Journal of Personality and Social Psychology* **121**, 215–238 (2021).
30. Goldenberg, A. *et al*. Testing the impact and durability of a group malleability intervention in the context of the Israeli–Palestinian conflict. *Proceedings of the National Academy of Sciences* **115**, 696–701 (2018).
31. Lizzio-Wilson, M. *et al*. How collective-action failure shapes group heterogeneity and engagement in conventional and radical action over time. *Psychological Science* **32**, 519–535 (2021).
32. Jones, C., Hine, D. W. & Marks, A. D. G. The Future is Now: Reducing Psychological Distance to Increase Public Engagement with Climate Change. *Risk Analysis* **37**, 331–341 (2017).
33. Feygina, I., Jost, J. T. & Goldsmith, R. E. System Justification, the Denial of Global Warming, and the Possibility of "System-Sanctioned Change". *Pers Soc Psychol Bull* **36**, 326–338 (2010).
34. Hershfield, H. E., Cohen, T. R. & Thompson, L. Short horizons and tempting situations: Lack of continuity to our future selves leads to unethical decision making and behavior. *Organizational Behavior and Human Decision Processes* **117**, 298–310 (2012).
35. Chapman, D. A., Lickel, B. & Markowitz, E. M. Reassessing emotion in climate change communication. *Nature Climate Change* **7**, 850–852 (2017).
36. Doell, K. C., Conte, B. & Brosch, T. Interindividual differences in environmentally relevant positive trait affect impacts sustainable behavior in everyday life. *Scientific Reports* **11**, 1–11 (2021).
37. Geiger, N. & Swim, J. K. Climate of silence: Pluralistic ignorance as a barrier to climate change discussion. *Journal of Environmental Psychology* **47**, 79–90 (2016).
38. Shrum, T. R. The salience of future impacts and the willingness to pay for climate change mitigation: an experiment in intergenerational framing. *Climatic Change* **165**, 1–20 (2021).
39. Wickersham, R. H., Zaval, L., Pachana, N. A. & Smyer, M. A. The impact of place and legacy framing on climate action: A lifespan approach. *PLOS ONE* **15**, e0228963 (2020).
40. Wolsko, C., Ariceaga, H. & Seiden, J. Red, white, and blue enough to be green: Effects of moral framing on climate change attitudes and conservation behaviors. *Journal of Experimental Social Psychology* **65**, 7–19 (2016).

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Author contributions

Conceptualization: K.C.D., B.T., M.V. Data curation and cleaning: K.C.D., B.T., P.S., M.M.B.-W., Y.P. Project Administration: K.C.D., M.V., J.J.V.B., Data visualization: K.C.D., B.T., P.S. Data acquisition: The entire Climate Collaboration, Writing-original draft: K.C.D., B.T., M.V. Writing- editing and reviewing: The entire Climate Collaboration.

Competing interests

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Additional information

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