

Climate justice beliefs related to climate action and policy support around the world

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Supplementary data

Table S1. Country-wise sample demographic profile

	AUS	BRA	GER	IND	JPN	NED	NGR	PHL	UAE	UK	USA
	% of <i>N</i>										
<i>Age</i>											
18 – 24	15.0	16.6	10.7	18.1	7.0	12.4	28.4	17.8	15.2	11.1	8.5
25 – 34	18.1	24.2	17.3	25.4	14.6	17.1	30.3	23.9	41.0	19.3	30.7
35 – 44	17.0	21.3	17.3	20.1	15.6	17.9	22.1	22.9	30.7	18.4	32.3
45 – 54	16.6	17.0	21.0	15.9	15.6	21.0	13.9	16.6	11.5	19.3	12.7
55+	33.3	20.9	33.7	20.5	47.2	31.6	5.3	18.8	1.6	31.8	15.8
<i>Gender</i>											
Woman	48.3	48.9	50.0	54.9	46.8	50.7	55.8	47.0	68.8	49.0	49.5
Man	51.5	50.9	49.4	43.3	53.0	48.7	43.2	52.6	30.9	50.8	50.5
Other	-	-	-	1.0	0.2	0.4	0.2	-	0.2	0.2	-
Prefer not to say	0.2	0.2	0.6	0.8	-	0.2	0.8	0.4	0.2	-	-
<i>Education</i>											
University Degree or higher	40.2	55.8	23.6	78.1	48.0	21.6	75.1	64.4	82.2	39.7	30.5
Other	59.8	44.2	76.4	21.9	52.0	78.4	24.9	35.6	17.8	60.3	69.5
<i>Political orientation</i>											
M(SD)	5.44(2.32)	5.40(2.77)	4.97(2.04)	7.23(2.37)	5.24(1.38)	5.16(2.17)	5.70(2.32)	6.53(2.11)	6.50(2.25)	5.36(2.22)	5.44(2.67)
Left	17.6	22.6	20.2	5.8	8.2	22.2	13.3	5.7	6.1	17.6	19.8
Centre	54.6	45.7	60.9	33.0	77.4	50.3	52.4	47.7	49.0	53.1	48.3
Right	27.8	31.7	18.8	61.2	14.4	27.5	34.2	46.6	44.9	29.3	31.9
<i>N</i>	507	530	504	503	513	509	511	511	512	522	505

Age and gender quotas were loosened in Nigeria and UAE in order to meet total sample size targets for these countries.

Table S2. Country-wise CJB I scores, reliability, and correlation with climate justice awareness and self-rated knowledge

Country	$M_{\text{cjb i}}$ (SD)	α	$r_{\text{cjb i} - \text{cja}}$ (Sig.)	$r_{\text{cjb i} - \text{cjk}}$ (Sig.)	Valid N
Australia	2.83(0.85)	0.94	.32 ($<.001$)	.43 ($<.001$)	286
Brazil	3.08(0.56)	0.85	.12 (.020)	.26 ($<.001$)	362
Germany	3.02(0.67)	0.89	.04 (.523)	.09 (.110)	304
India	3.28(0.62)	0.87	.19 ($<.001$)	.38 ($<.001$)	414
Japan	2.84(0.65)	0.90	.12 (.069)	.11 (.090)	237
Netherlands	2.97(0.67)	0.89	.14 (.015)	.20 (.001)	302
Nigeria	3.00(0.64)	0.83	.17 (.001)	.29 ($<.001$)	372
Philippines	3.05(0.68)	0.88	.14 (.005)	.21 ($<.001$)	402
United Arab Emirates	3.09(0.64)	0.86	.15 (.002)	.20 ($<.001$)	394
United Kingdom	3.03(0.70)	0.90	.23 ($<.001$)	.29 ($<.001$)	301
United States	2.79(0.79)	0.92	.28 ($<.001$)	.37 (.001)	291
Total	3.02(0.69)	0.89	.20 ($<.001$)	.30 ($<.001$)	3665

CJB I mean values range from 1 to 4. Correlations estimates are two-tailed Pearson Product-moment correlation coefficients. All correlations estimates were significant at $p<.05$ except values in grey-shaded cells. CJB I = Climate Justice Beliefs Index, CJA = Climate Justice Awareness, CJK = Self-rated Climate Justice Knowledge.

Table S3. Country-wise descriptive statistics, scale reliability, and zero-order correlation of DVs with Climate Justice Beliefs Index (CJBI)

	Climate action			Online activism			PEB			Push policies		
	M(SD)	α	$r_{\text{cjbi-x}}$ (Sig.)	M(SD)	α	$r_{\text{cjbi-x}}$ (Sig.)	M(SD)	α	$r_{\text{cjbi-x}}$ (Sig.)	M(SD)	α	$r_{\text{cjbi-x}}$ (Sig.)
Australia	.20(.31)	.86	.49 ($<.001$)	2.35(1.30)	.94	.64 ($<.001$)	3.40(0.89)	.81	.55 ($<.001$)	2.50(0.85)	.86	.76 ($<.001$)
Brazil	.21(.17)	.72	.30 ($<.001$)	2.94(1.09)	.86	.48 ($<.001$)	3.70(0.72)	.74	.40 ($<.001$)	2.48(0.74)	.80	.57 ($<.001$)
Germany	.21(.17)	.76	.19 (.001)	2.45(1.17)	.90	.37 ($<.001$)	3.57(0.79)	.74	.41 ($<.001$)	2.44(0.81)	.81	.54 ($<.001$)
India	.59(.67)	.77	.28 ($<.001$)	3.80(0.91)	.77	.50 ($<.001$)	4.07(0.68)	.76	.41 ($<.001$)	3.01(0.71)	.78	.40 ($<.001$)
Japan	.08(.19)	.80	.28 ($<.001$)	1.51(0.89)	.92	.29 ($<.001$)	2.70(0.97)	.79	.33 ($<.001$)	2.34(0.68)	.77	.57 ($<.001$)
Netherlands	.21(.27)	.77	.24 ($<.001$)	2.37(1.12)	.89	.41 ($<.001$)	3.40(0.79)	.76	.37 ($<.001$)	2.52(0.67)	.76	.43 ($<.001$)
Nigeria	.35(.30)	.75	.25 ($<.001$)	2.98(1.17)	.89	.30 ($<.001$)	3.67(0.72)	.75	.32 ($<.001$)	2.62(0.76)	.76	.41 ($<.001$)
Philippines	.38(.32)	.78	.15 (.003)	3.35(1.06)	.87	.22 ($<.001$)	3.97(0.66)	.76	.28 ($<.001$)	2.78(0.70)	.78	.34 ($<.001$)
UAE	.45(.34)	.79	.18 (.001)	3.30(1.07)	.85	.42 ($<.001$)	3.65(0.80)	.80	.43 ($<.001$)	2.79(0.71)	.76	.47 ($<.001$)
UK	.22(.30)	.82	.38 ($<.001$)	2.53(1.25)	.91	.50 ($<.001$)	3.50(0.79)	.76	.47 ($<.001$)	2.63(0.76)	.81	.64 ($<.001$)
USA	.21(.31)	.85	.40 ($<.001$)	2.58(1.28)	.92	.56 ($<.001$)	3.22(0.95)	.83	.56 ($<.001$)	2.44(0.83)	.83	.65 ($<.001$)
Total	.28(.32)	.82	.32 ($<.001$)	2.75(1.27)	.91	.45 ($<.001$)	3.53(0.87)	.80	.44 ($<.001$)	2.60(0.77)	.80	.54 ($<.001$)
Range	(0 – 1)			(1 – 5)			(1 – 5)			(1 – 4)		

$r_{\text{cjbi-x}}$ = zero-order correlation of specified DV with CJBI. Values are two-tailed Pearson product-moment correlation coefficients. All correlation estimates are significant at $p < .01$.

Table S4. Breakdown of climate justice awareness, knowledge and CJBI scores by age, education and political orientation

	Before today, have you ever heard of the term “climate justice”? (%Yes)	How much do you know about climate justice? (% indicating “fair amount” or “a lot”)	M_{CJBI} (SD)
Age	$\gamma = -.32, p < .001$	$\gamma = -.31, p < .001$	$F_{(4,3664)} = 10.50, p < .001, \eta^2 = .01$
18 – 24	43.6	23.1	2.91(0.63)
25 – 34	45.3	29.6	3.10(0.63)
35 – 44	36.2	25.4	3.07(0.67)
45 – 54	29.0	16.5	2.99(0.73)
55+	17.5	9.8	2.94(0.77)
Education	$V = .15, p < .001$	$V = .23, p < .001$	$t_{(3663)} = -8.35, p < .001, d = .68$
Other	26.7	12.1	2.91(0.70)
University degree or higher	40.8	29.4	3.10(0.67)
Political orientation	$X^2_{(2)} = 183.70, p < .001$	$X^2_{(6)} = 579.93, p < .001$	$F_{(2,3664)} = 17.84, p < .001, \eta^2 = .01$
Left	30.6	11.3	3.16(0.61)
Centre	27.1	13.0	2.96(0.63)
Right	45.8	37.4	3.04(0.77)
<i>N</i>	5,627	5,627	3,665

Note: The proportion of respondents indicating awareness of climate justice (%Yes) and those indicating that they had a “fair amount” or “a lot” of climate justice knowledge across age segments were compared using Gamma tests. The results indicated a significant negative association of age with climate justice awareness and self-rated knowledge. Mean CJBI scores across age segments were compared using a one-way ANOVA followed by post hoc comparisons adjusted for multiple comparisons with the Games-Howell correction method. Results showed that respondents aged 18 – 24 had significantly lower CJBI scores than those aged 25 – 34 ($p < .001$) and those aged 35 – 44 years ($p < .001$). However, the 18 – 24 age group did not differ significantly from the 45 – 54 ($p = .332$) and 55+ age groups ($p = .996$) in their average CJBI scores. In contrast, respondents aged 25 – 34 years had significantly higher CJBI mean scores than all other age segments except the 35 – 44 years segment ($p = .885$). The 35 – 44 years segment only showed significantly great CJBI scores that the 18 – 24 years ($p < .001$) and 55+ years segments ($p = .003$). The 45 to 54 years segments only showed significantly lower mean CJBI scores than the 25 – 34 years segment ($p = .023$). The 55+ segment showed significantly lower mean CJBI scores than the 25 – 34 years ($p < .001$) and the 35-44 years segment ($p = .003$). There was no significant difference in CJBI scores among respondents aged 45 – 54 and those aged 55+ ($p = .747$).

Climate justice awareness and self-rated knowledge were compared across respondents with and without university-level education using the Cramer's V. The results indicated a significant positive association of education level with climate justice awareness and self-rated knowledge. Furthermore, mean CJBI scores across the two categories of education level were compared with a t-test. CJBI scores were significantly higher among respondents with a university degree.

The proportion of respondents indicating awareness of climate justice and those indicating that they had a "fair amount" or "a lot" of climate justice knowledge across segments of the political spectrum were compared using Chi-square tests. These showed significant differences in levels of climate change awareness and self-rated knowledge across the political spectrum. One-way ANOVA was used to compare mean CJBI scores across the different political segments followed by post hoc comparisons with adjustment for multiple comparisons using the Games-Howell correction. The political left segment had significantly higher climate justice belief scores than the right ($p = .002$) and centre segments ($p < .001$). The political right also had higher climate justice belief scores than the centre ($p = .002$).

All comparisons of climate justice awareness, self-rated knowledge and CJBI across demographic categories reported here are two-tailed tests.

Table S5. Country-wise partial correlations between CJBI and the behavioural and policy support DVs

	Climate action		Online activism		PEB		Push policies	
	r_{partial}	Sig.	r_{partial}	Sig.	r_{partial}	Sig.	r_{partial}	Sig.
Australia	.39	<.001	.57	<.001	.52	<.001	.72	<.001
Brazil	.27	<.001	.46	<.001	.43	<.001	.57	<.001
Germany	.24	<.001	.41	<.001	.43	<.001	.54	<.001
India	.28	<.001	.50	<.001	.42	<.001	.40	<.001
Japan	.34	<.001	.35	<.001	.38	<.001	.57	<.001
Netherlands	.23	<.001	.42	<.001	.36	<.001	.39	<.001
Nigeria	.24	<.001	.28	<.001	.28	<.001	.37	<.001
Philippines	.18	<.001	.26	<.001	.28	<.001	.32	<.001
UAE	.20	<.001	.43	<.001	.43	<.001	.46	<.001
UK	.32	<.001	.47	<.001	.49	<.001	.61	<.001
USA	.34	<.001	.51	<.001	.53	<.001	.63	<.001
Overall	.30	<.001	.45	<.001	.44	<.001	.52	<.001

Cell entries (r_{partial}) = Two-tailed Pearson product-moment correlation estimates of relationship between CJBI and named DV controlling for age, gender and education.

Table S6. Metric invariance tests of measures used in the study

Measure	χ^2	df	χ^2/df	CFI	RMSEA	SRMR
Climate Justice Beliefs Index	385.89	377	1.02	1.00	.008	.051
Climate Action	283.72	149	1.90	.99	.042	.049
Online Activism	42.85	52	0.82	1.00	.000	.025
Pro-environmental Behaviours	276.95	128	2.16	.98	.051	.049
Climate mitigation (push) policies	67.46	52	1.30	1.00	.024	.030

Figures

Figure S1. Scatterplot with simple regression line showing linear association between CJNI and climate action across countries. Shaded error bands are 95% confidence intervals.

Figure S2. Scatterplot with simple regression line showing linear association between CJNI and online activism across countries. Shaded error bands are 95% confidence intervals.

Figure S3. Scatterplot with simple regression line showing linear association between CJNI and pro-environmental behaviour across countries. Shaded error bands are 95% confidence intervals.

Figure S4. Scatterplot with simple regression line showing linear association between CJNI and climate change mitigation push policy support across countries. Shaded error bands are 95% confidence intervals.







