Assessing the Relationship of Scientist-Related Conspiracy Endorsement and Climate Change Attitudes

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Intro

Why?

- Current, hot topic
- Although the scientific consensus on the issue of human influence on climate change is indisputable, research shows that public opinion varies, while digital media abounds with information that often contradicts scientific findings.
- Opponents often allege bias among scientists, selective publishing, and accepting bribes, leading to a potential erosion of public trust
- Counter-narratives invoking conspiracies among scientific comunity
- Is scientist-related conspiracy endorsement a contributing factor of climate change attitudes?

Taken from https://www.un.org/en/climatechange/what-is-climate-change, 7 June 2024

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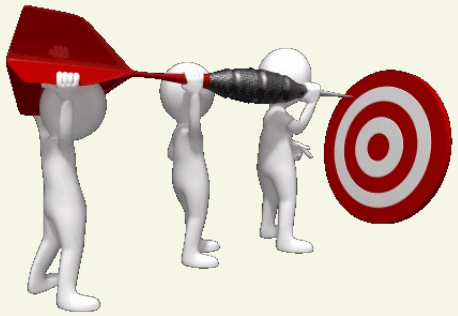

Investigate the relationship of scientist-related conspiracy endorsement and climate change attitudes

Worry & personal responsibility:

individuals endorsing conspiracy theories about scientists would exhibit **less worry** about CC (**H1**) and feel **less personal responsibility** for reducing it (**H2**).

ACC beliefs:

individuals endorsing conspiracy theories about scientists would be more likely to believe that **CC is a natural phenomenon (vs human-caused)** (**H3**), and **deny it altogether** (**H4**)

⇨ **explored** whether the **association** between endorsing **conspiracy theories about scientists** and these **criteria varied with political orientation**

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Sample & procedure

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10th wave of the **European Social Survey**

- Fieldwork: September 2020 - August 2022
- Initial sample = 37,611 across 20 countries (*France & Montenegro did not collect the data on CC & CT)
- Complete data from all participants across 20 countries → 30,902 - 31,867

Who?

When? Where?

Country	*N*
Belgium	1341
Bulgaria	2718
Switzerland	1523
Czechia	2476
Estonia	1542
Finland	1577
United Kingdom	1149
Greece	2799
Croatia	1592
Hungary	1849
Ireland	1770
Iceland	903
Italy	2640
Lithuania	1659
North Macedonia	1429
Netherlands	1470
Norway	1411
Portugal	1838
Slovenia	1252
Slovakia	1418

Method

Measures - criteria

How?

- wrclmch [1] "**How worried** are you about climate change?”
  - 1 - Not at all worried 1, 2 - Not very worried, 3 - Somewhat worried, 4 - Very worried, 5 - Extremely worried
- ccrdprs [1] "To what extent **feel personal responsibility** to reduce climate change”
  - 0 - Not at all; 10 - A great deal
- ccnthum [1] "Do you think that climate change is caused by natural processes, human activity, or both?”
  - 1 - Entirely by natural processes
  - 2 - Mainly by natural processes
  - 3 - About equally by natural processes and human activity
  - 4 - Mainly by human activity
  - 5 - Entirely by human activity
  - **##55** - don't think climate change is happening → es10$cc <- ifelse(es10$ccnthum == 55, 1, 0)

Method

Measures - IVs

How?

- scidecpb [1] "Groups of scientists manipulate, fabricate, or suppress evidence in order to deceive the public."
  - 1 - Agree strongly, 2 – Agree, 3 - Neither agree nor disagree, 4 – Disagree, 5 - Disagree strongly

- Control Variables:
  - gender (gndr)
  - age (agea)
  - income (hincfel) - Feeling about household's income nowadays (Living comfortably on present income, Coping on present income, Difficult on present income, Very difficult on present income)
  - education (eisced) - highest level of education
- Political orientation (lr) as a moderator [1] "Placement on left right scale"
  - 0 means the left and 10 means the right

  → 5 groups: (< 2) "strongly left-leaning"; (2, 3) "left-leaning"; (4, 5, 6) "centrists"; (7, 8) "right-leaning", > 8 "strongly right-leaning"

Method

Analyses

How?

- Single item measures → **SEM (path analysis)** → conducted on a general sample with countries as clusters → the results are obtained as in multilevel without random slopes
- **Political orientation as a multigroup factor**
- Programme R → lavaan package

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Results

Taken from https://tenor.com/view/homero-cerebro-anteojos-lentes-gif-21341134, 7 June 2024

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Results: Endorsement of scientist-related conspiracies as a determinant of CC attitudes

Predicting CC worry (wrclmch)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb	**-0.11**	0.04	-2.80	**-.14**	0.05	[-.23, -.04]	**0.01**
Intercept	3.56	0.12	29.8				< .001
with controls							
scidecpb	**-0.11**	0.04	-2.7	**-.13**	0.05	[-.22, -.04]	**.007**
gender	0.20	0.03	7.02	.11	0.01	[.08, .13]	< .001
age	-0.0005	0.001	-0.5	-.01	0.02	[-.05, .03]	.600
income	0.002	0.02	0.12	.002	0.02	[-.03, .03]	.905
education	0.03	0.002	14.20	.09	0.01	[.08, .11]	< .001
Intercept	3.16	0.09	34.04				< .001

Predicting CC responsibility (ccrdprs)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb	**-0.35**	0.06	-6.30	**-.16**	0.03	[-.22, -.11]	**< .001**
Intercept	7.22	0.39	18.72				< .001
with controls							
scidecpb	**-0.25**	0.05	-5.5	**-.12**	0.02	[-.16, -.07]	**< .001**
gender	0.40	0.07	5.43	.08	0.01	[.05, .11]	< .001
age	-0.002	0.003	-0.6	-.02	0.02	[-.06, .03]	.536
income	-0.41	0.11	-3.9	-.13	0.03	[-.20, -.07]	< .001
education	0.07	0.01	6.16	.09	0.01	[.06, .11]	< .001
Intercept	6.94	0.27	25.45				< .001

- Tendency to endorse conspiracy theories about scientists

→ **slightly less worried** about CC, **less personally responsible** for its reduction

→ **higher likelihood of climate change denial** (rather than attributing climate change to natural or human causes)

→ **slightly more likely to atribute CC to natural processes**

Predicting CC belief (ccnthum)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb	**0.27**	0.04	6.57	**.29**	0.04	[.21, .37]	**< .001**
with controls							
scidecpb	**0.21**	0.04	5.01	**.22**	0.04	[.14, .30]	**< .001**
gender	-0.11	0.09	-1.20	-.05	0.04	[-.13, .03]	.231
age	0.004	0.002	1.96	.07	0.04	[.001, .14]	.050
income	0.35	0.05	7.68	.26	0.03	[.19, .32]	< .001
education	-0.05	0.03	-1.8	-.14	0.08	[-.29, .009]	.075

Predicting CC attribution (ccnthum)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb	**-0.10**	0.03	-3.3	**-.15**	0.05	[-.24, -.05]	**.001**
Intercept	3.81	0.07	50.9				< .001
with controls							
scidecpb	**-0.10**	0.03	-3.6	**-.14**	0.04	[-.22, -.06]	**< .001**
gender	-0.004	0.02	-0.2	.00	0.02	[-.03, .03]	.873
age	-0.004	0.0008	-4.8	-.09	0.02	[-.13, -.05]	< .001
income	-0.01	0.02	-0.7	-.01	0.02	[-.04, .02]	.495
education	0.008	0.003	2.58	.03	0.01	[.006, .05]	.010
Intercept	3.98	0.12	32.58				< .001

Results: Political orientation as a potential moderator

Predicting CC worry (wrclmch)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb_strongly left-leaning	**-0.08**	0.05	-1.73	**-.10**	0.06	[-.22, .01]	**.083**
scidecpb_left-leaning	**-0.10**	0.04	-2.88	**-.12**	0.04	[-.21, -.04]	**.004**
scidecpb_centrists	**-0.10**	0.04	-2.36	**-.12**	0.05	[-.22, -.02]	**.018**
scidecpb_right-leaning	**-0.09**	0.05	-1.79	**-.12**	0.06	[-.24, .008]	**.074**
scidecpb_strongly right-leaning	**-0.06**	0.03	-2.06	**-.07**	0.03	[-.14, -.005]	**.040**

Model	df	AIC	BIC	χ^2	$\Delta\chi^2$	Δdf	*p*
M1	0	72361	72649	0			
M2	4	72357	72612	4.0106	0.31931	4	.989

Predicting CC responsibility (ccrdprs)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb_strongly left-leaning	**-0.38**	0.13	-2.95	**-.18**	0.05	[-.28, -.08]	**.003**
scidecpb_left-leaning	**-0.28**	0.06	-4.44	**-.14**	0.03	[-.19, -.09]	**< .001**
scidecpb_centrists	**-0.19**	0.05	-4.11	**-.09**	0.02	[-.14, -.04]	**< .001**
scidecpb_right-leaning	**-0.29**	0.13	-2.20	**-.14**	0.06	[-.26, -.02]	**.028**
scidecpb_strongly right-leaning	**-0.15**	0.08	-1.96	**-.06**	0.03	[-.13, .001]	**.050**

Model	df	AIC	BIC	χ^2	$\Delta\chi^2$	Δdf	*p*
M1	0	124205	124492	0			
M2	4	124218	124473	21.69	2.93	4	.570

Predicting CC belief (ccnthum)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb_strongly left-leaning	**0.43**	0.13	3.40	**.45**	0.10	[.24, .65]	**< .001**
scidecpb_left-leaning	**0.22**	0.11	2.04	**.19**	0.09	[.009, .37]	**.042**
scidecpb_centrists	**0.13**	0.05	2.52	**.13**	0.05	[.03, .23]	**.012**
scidecpb_right-leaning	**0.24**	0.09	2.62	**.25**	0.09	[.08, .42]	**.009**
scidecpb_strongly right-leaning	**0.51**	0.1	5.35	**.47**	0.08	[.33, .62]	**< .001**

Model	df	χ^2	$\Delta\chi^2$	Δdf	*p*
M1	0	0			
M2	4	15.38	15.38	4	**.004**

Model	χ^2	*df*	*p*	RMSEA	CFI	TLI	SRMR
M1	.000†			.000†	1.00†	1.00†	.000†
M2	15.38	4	**.004**	**.023**	0	1.00†	.000†

Predicting CC attribution (ccnthum)

Predictor	*b*	SE(*b*)	*z*	β	SE(β)	95% CI for β	*p*
scidecpb_strongly left-leaning	**-0.02**	0.03	-0.83	**-.04**	0.04	[-.12, .05]	**.407**
scidecpb_left-leaning	**-0.10**	0.02	-5.21	**-.15**	0.03	[-.21, -.09]	**< .001**
scidecpb_centrists	**-0.10**	0.03	-3.58	**-.14**	0.04	[-.23, -.06]	**< .001**
scidecpb_right-leaning	**-0.10**	0.04	-2.56	**-.14**	0.05	[-.25, -.04]	**.010**
scidecpb_strongly right-leaning	**-0.06**	0.02	-2.59	**-.08**	0.03	[-.13, -.02]	**.009**

Model	df	AIC	BIC	χ^2	$\Delta\chi^2$	Δdf	*p*
M1	0	64033	64320	0			
M2	4	64050	64305	25.30	3.14	4	.535

M1 - baseline model
M2 - model in which the effect of scidecpb is constrained to be equal across all political orientation groups

Can you recap?

Main findings

- Individuals expressing a greater endorsement conspiracy theories about scientists:
  - **slightly less worried** about CC and **felt less personally responsible** for its reduction, even after controlling for sex, age, education, and economic status.
  - in general, a **higher likelihood of climate change denial** (rather than attributing climate change to natural or human causes)
  - **slightly more likely to atribute CC to natural processes**

- **Moderating role of political orientation** - evident solely for the **belief in climate change**: among **strong left- or right-leaning** individuals, the relationship between **disbelief in climate change** and the **endorsement of conspiracy theories about scientists** was **stronger** compared to **politically moderate** participants.
  - ☞ This suggests a **non-linear relationship** where endorsement of conspiracy theories on scientists at both the left and the right extremes leads to a greater likelihood of disbelieving in climate change

  - ☞ The complexity of the relationships between various variables in considering attitudes towards climate change

Limitations & looking ahead

- Other relevant variables not considered
- Correlational, cross-sectional study
- Experimental, repeated, and longitudinal studies needed

Summary & conclusions

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Thank you ☺

For any questions, comments, criticism or suggestions, feel free to contact us!

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