

Supplementary Materials

for

Between Public Engagement and Discursive Repression:

Media-Related Communication Risks for Scientists in the Context of

Socio-Ecological Crises

by

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Table S1. Exploratory factor analysis (principal axis factoring) of positive experiences with interviews and/or posts on social platforms

	λ_i	h^2
Publicly taking a stance...		
1. allowed me to bring my message to the public.	.621	.380
2. was personally enriching for me.	.872	.717
3. improved my communication skills.	.743	.618
4. enhanced my scientific reputation.	.135	.417
5. helped me establish new professional contacts.	.296	.503
6. assisted me in securing funding or opened pathways for potential funding.	-.108	.372
7. led to positive feedback.	.590	.359

Note. $N = 98$. λ_i = item loading; h^2 = item communality. Bold loadings indicate retained items. Because only one factor was extracted, rotation was not applicable. Under principal axis factoring, the extracted factor had an extraction sum of squared loadings of 2.76 (39.4% variance).

Table S2. Exploratory factor analysis (principal axis factoring) of negative experiences with interviews and/or posts on social platforms

	Physical threats /legal risks (Factor 1)	Insults (Factor 2)	
	λ_{i1}	λ_{i2}	h^2
1. Personal insults	-.087	.863	.678
2. Attacks on my scientific reputation	-.041	.966	.895
3. Hostile group-based hate (e.g., racist, sexist, antisemitic, or other)	.232	.467	.380
4. My statements were taken out of context by the media	.231	.243	.169
5. Threats of physical or sexual violence	.802	.228	.879
6. Death threats	.844	.164	.878
7. Physical attacks	.938	-.139	.770
8. Sexual assault	.936	-.155	.756
9. Complaints about me to my employer	.462	.457	.632
10. Criminal charges against me	.705	.107	.583

Note. $N = 97$. Items 2, 5, 6 and 7 were adapted from Nogrady (2021); Loadings for Factors 1 and 2 are reported in the pattern matrix; h^2 = item communality. Principal axis factoring with oblimin rotation was used. Rotated sums of squared loadings were 4.89 for Factor 1 and 3.66 for Factor 2. Because the factors were obliquely rotated, factor-specific percentages of variance are not uniquely attributable and are therefore not reported; the rotated sums are not additive across factors. Bold loadings indicate retained items.

Table S3. Exploratory factor analysis (principal axis factoring) of reputational consequences of political/social engagement

	λ_i	h^2
1. My involvement has impacted my scientific credibility in the media.	.667	.496
2. I have the impression that I am less frequently approached by the media as a scientific expert.	.659	.504
3. My involvement is emphasised in the media more than my scientific expertise.	.597	.432
4. Due to my involvement, the media has questioned my scientific neutrality.	.964	.920
5. I feel pressured by questions regarding my scientific neutrality in the media.	.726	.526
6. I see no contradiction between my involvement and my scientific role.	.054	.235
7. I have developed strategies to emphasise my scientific neutrality in the media.	.370	.158
8. I am considering reducing my involvement to maintain my scientific credibility.	.512	.261

Note. $N = 98$. λ_i = item loading; h^2 = extraction communality from the complete two-factor principal axis factoring solution. Because two factors were initially extracted, h^2 reflects the common variance accounted for jointly by both factors and therefore need not equal λ_i^2 . Only the first factor was retained for substantive interpretation and scale construction and is displayed in the table. Because oblique rotation was used, the extraction communalities also reflect the correlation between the extracted factors. Bold loadings indicate retained items. The retained factor had an extraction sum of squared loadings of 3.10 and accounted for 38.8% of the variance.

Table S4. Items measuring stress

<i>Negative Affectivity (PANAS; Krohne et al., 1996)</i>	
1.	I was annoyed.
2.	I was nervous.
3.	I was shocked.
4.	I was stressed.
5.	I was frightened.
6.	I was irritated.
7.	I was confused.
<i>Psychosomatic Complaints (adapted from Mohr et al., 2005)</i>	
1.	I experienced psychosomatic problems (e.g., tension, sleep disorders).
2.	I had to think about it constantly, at work and at home.

Table S5. Mediation model coefficients (Figure 2) with covariates and positive experiences as a direct predictor of willingness to engage, linking negative experiences to willingness to give interviews or post on social media.

Path	Predictor → Outcome	<i>b</i>	<i>SE</i>	95% CI (<i>b</i>)	<i>p</i>	β	95% CI (β)
a1	Insults → Reputational Harm	0.029	0.04	-0.012 to 0.127	.474	0.341	-0.452 to 1.135
a2	Physical Threats/Legal Risks → Reputational Harm	0.012	0.005	0.004 to 0.022	.012	0.332	0.038 to 0.625
d1	Gender → Reputational Harm	0.181	0.198	-0.259 to 0.528	.361	0.097	-0.120 to 0.315
d2	Tenure → Reputational Harm	0.01	0.185	-0.313 to 0.411	.956	0.005	-0.190 to 0.201
b	Reputational Harm → Willingness	-0.332	0.12	-0.562 to -0.087	.005	-0.395	-0.705 to -0.085
c1'	Insults → Willingness (direct)	-0.005	0.033	-0.023 to 0.050	.887	-0.066	-0.967 to 0.835
c2'	Physical Threats/Legal Risks → Willingness (direct)	0.004	0.005	-0.007 to 0.012	.437	0.127	-0.187 to 0.441
e1	Gender → Willingness	-0.099	0.156	-0.409 to 0.194	.528	-0.063	-0.260 to 0.134
e2	Tenure → Willingness	0.237	0.146	-0.035 to 0.536	.105	0.152	-0.022 to 0.326
g	Positive Experiences → Willingness	0.012	0.003	0.006 to 0.019	<.001	0.324	0.148 to 0.499
a1*b	Indirect effect (Insults; a1 × b)	-0.01	0.016	-0.058 to 0.002	.550	-0.135	-0.508 to 0.238
a2*b	Indirect effect (Physical Threats/Legal Risks; a2 × b)	-0.004	0.002	-0.009 to -0.001	.047	-0.131	-0.262 to 0.000

Note. Structural equation model estimated using maximum likelihood in lavaan. Missing data were handled using FIML with missing = "fiml.x"; exogenous variables were treated as fixed. The full data set comprised $N = 138$ participants, and lavaan used $N = 138$ cases for this model. Model fit was $\chi^2(1) = 1.61$, $p = .205$, CFI = .989, TLI = .883, RMSEA = .066, and SRMR = .021. Standard errors and confidence intervals were obtained via bias-corrected bootstrap resampling with 5,000 draws. b = unstandardised coefficient; β = standardized coefficient. $R^2 = .351$ for Reputational Harm and $R^2 = .278$ for Willingness for Interviews/Posts. Gender coded 0 = female, 1 = male; Tenure coded 0 = no, 1 = yes. Variable-level missingness is reported in Table S7.

Table S6. Coefficients for the mediation model (Figure 2) without demographic covariates, linking negative experiences to willingness to give interviews or post on social media

Path	Predictor → Outcome	<i>b</i>	<i>SE</i>	95% CI (<i>b</i>)	<i>p</i>	β	95% CI (β)
a1	Insults → Reputational Harm	0.029	0.038	-0.010 to 0.115	.448	0.343	-0.411 to 1.097
a2	Physical Threats/Legal Risks → Reputational Harm	0.012	0.005	0.004 to 0.022	.010	0.340	0.047 to 0.633
b	Reputational Harm → Willingness	-0.336	0.119	-0.563 to -0.088	.005	-0.398	-0.705 to -0.091
c1'	Insults → Willingness (direct)	-0.005	0.035	-0.019 to 0.058	.893	-0.067	-1.028 to 0.894
c2'	Physical Threats/Legal Risks → Willingness (direct)	0.005	0.005	-0.006 to 0.013	.353	0.152	-0.161 to 0.465
g	Positive Experiences → Willingness	0.012	0.003	0.006 to 0.019	<.001	0.329	0.158 to 0.500
a1*b	Indirect effect Insults ($a1 \times b$)	-0.010	0.015	-0.054 to 0.002	.524	-0.137	-0.497 to 0.223
a2*b	Indirect effect Physical Threats/Legal Risks ($a2 \times b$)	-0.004	0.002	-0.009 to -0.001	.039	-0.136	-0.266 to -0.005

Note. Structural equation model estimated using maximum likelihood in lavaan. Missing data were handled using FIML with missing = "fiml.x"; exogenous variables were treated as fixed. The full data set comprised $N = 138$ participants, and lavaan used $N = 98$ cases for this model. Model fit was $\chi^2(1) = 1.06$, $p = .303$, CFI = .999, TLI = .992, RMSEA = .025, and SRMR = .024. Standard errors and confidence intervals were obtained via bias-corrected bootstrap resampling with 5,000 draws. b = unstandardised coefficient; β = standardized coefficient. $R^2 = .338$ for Reputational Harm and $R^2 = .261$ for Willingness for Interviews/Posts. Variable-level missingness is reported in Table S7.

Table S7. Missing data overview for mediation models

Model	Variable	N used by lavaan	N observed	N missing	% missing
With covariates	Reputational Harm	138	78	60	43.5
With covariates	Insults	138	97	41	29.7
With covariates	Physical Threats/Legal Risks	138	97	41	29.7
With covariates	Gender	138	132	6	4.3
With covariates	Tenure	138	134	4	2.9
With covariates	Willingness for Interviews/Posts	138	83	55	39.9
With covariates	Positive Experiences	138	98	40	29.0
Without covariates	Reputational Harm	98	78	60	43.5
Without covariates	Insults	98	97	41	29.7
Without covariates	Physical Threats/Legal Risks	98	97	41	29.7
Without covariates	Willingness for Interviews/Posts	98	83	55	39.9
Without covariates	Positive Experiences	98	98	40	29.0

Note. N used refers to the number of cases retained by lavaan for the respective FIML model. N observed and N missing refer to the respective variable in the full data set. Because FIML uses all available information, participants did not need complete data on all model variables to contribute to model estimation.

Table S8. Regression of willingness to give interviews or post on social media platforms on reputational harm and organisational support, and their interaction

Predictor	<i>b</i>	<i>SE</i>	β	95% CI (β)	<i>t</i>	<i>p</i>
Gender	-0.246	0.232	-0.14	-0.41 to 0.13	-1.063	.295
Tenure	0.623	0.241	0.35	0.08 to 0.63	2.583	.014
Frequency of Interviews/Posts	0.107	0.155	0.13	-0.26 to 0.53	0.693	.493
Positive Experiences	0.126	0.131	0.14	-0.16 to 0.44	0.960	.344
Physical Threats/Legal Risks	0.171	0.170	0.21	-0.21 to 0.64	1.010	.319
Insults	0.124	0.173	0.11	-0.21 to 0.43	0.715	.480
Reputational Harm (RH)	-0.430	0.131	-0.44	-0.72 to -0.15	-3.289	.002
Organisational Support (OS)	0.148	0.115	0.20	-0.07 to 0.46	1.293	.205
RH x OS	0.306	0.139	0.33	0.03 to 0.63	2.209	.034

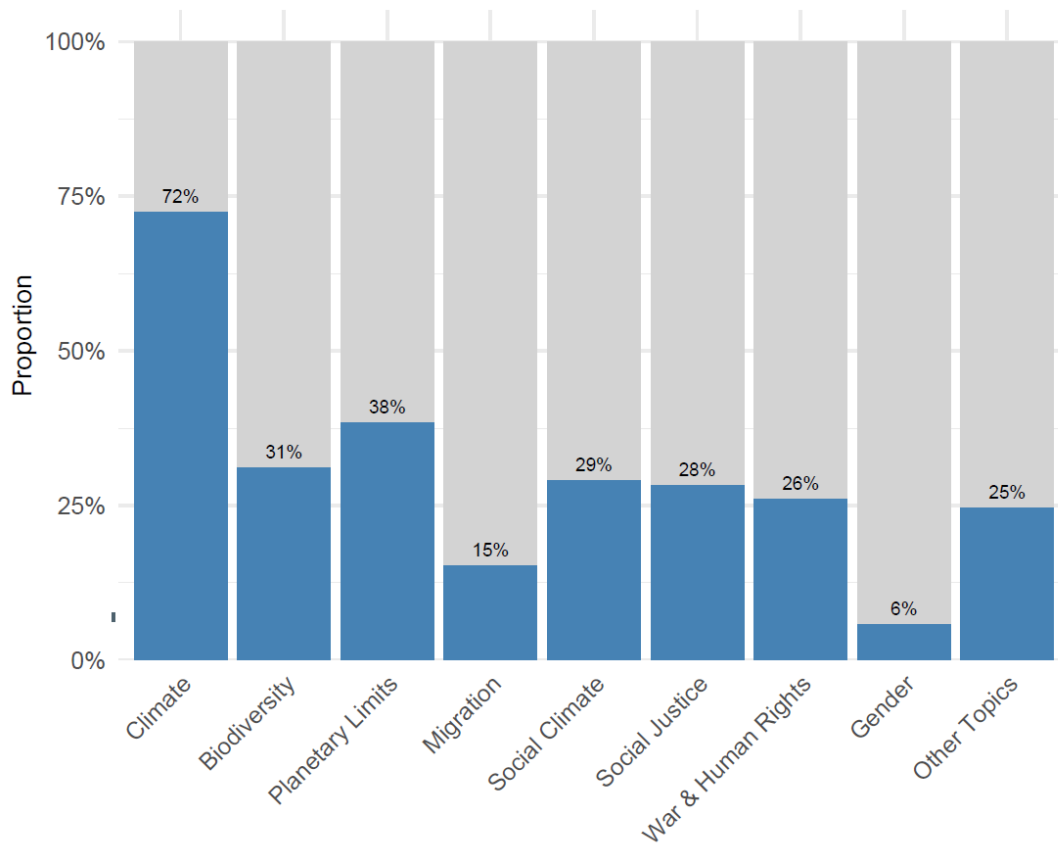
Note. $R^2 = .484$, $F(9, 35) = 3.649$, $p = .003$; $n = 45$. Gender: 0 = female, 1 = male; Tenure: 0 = no, 1 = yes.

Table S9. Regression of willingness to give interviews or post on social media platforms on tenure and reputational harm, and their interaction

Predictor	<i>b</i>	<i>SE</i>	β	95% CI (β)	<i>t</i>	<i>p</i>
Gender	-0.250	0.249	-0.14	-0.44 to 0.15	-1.006	.321
Tenure	0.621	0.253	0.34	0.05 to 0.63	2.451	.019
Frequency of Interviews/Posts	0.053	0.161	0.07	-0.34 to 0.48	0.329	.744
Positive Experiences	0.143	0.137	0.16	-0.15 to 0.47	1.039	.306
Physical Threats/Legal Risks	0.191	0.181	0.24	-0.22 to 0.69	1.056	.298
Insults	0.074	0.182	0.07	-0.27 to 0.40	0.410	.684
Reputational Harm (RH)	-0.163	0.241	-0.37	-0.68 to 0.06	-0.675	.504
Organisational Support	0.159	0.121	0.18	-0.10 to 0.46	1.312	.198
RH x Tenure	-0.296	0.278	-0.16	-0.47 to 0.15	-1.065	.294

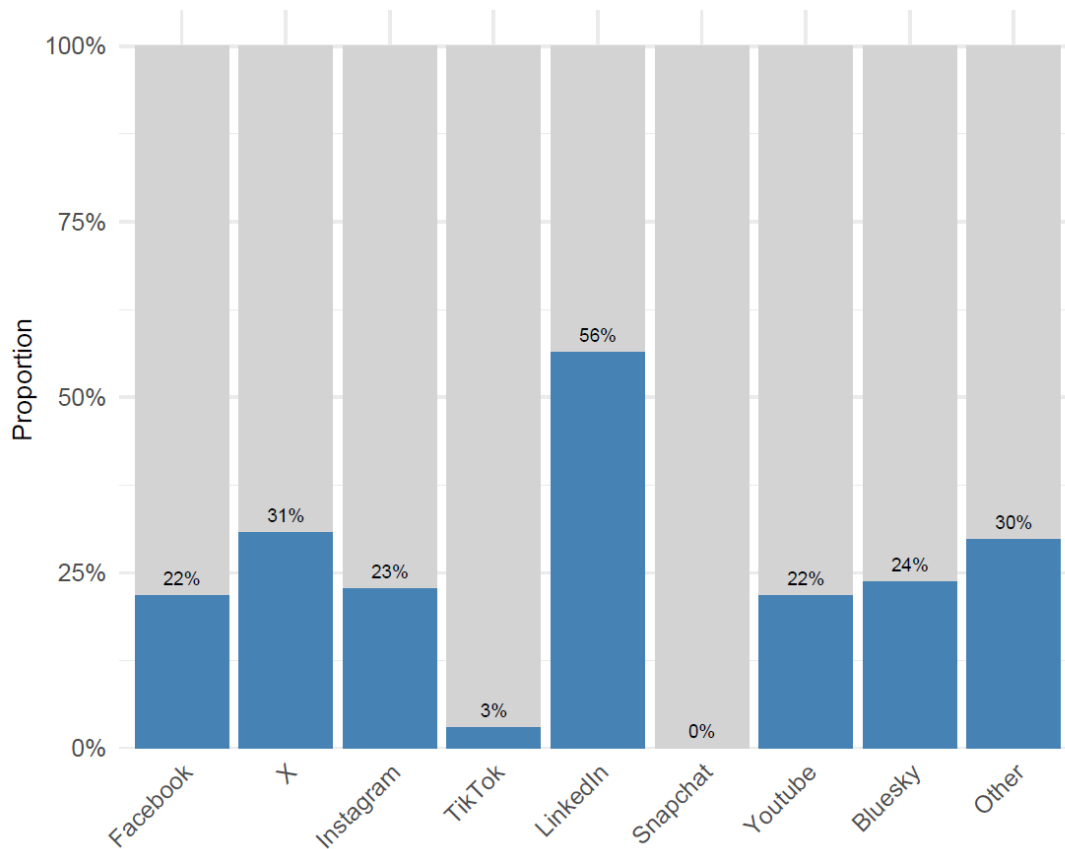
Note. $R^2 = .431$, $F(9, 35) = 2.94$, $p = .010$; $n = 45$. Gender: 0 = female, 1 = male; Tenure: 0 = no, 1 = yes.

Figure S1. Socio-ecological and related topics addressed by scientists in public discourse



Note. Other = Renewable Energies/Wind Energy, Soil Sealing, Biodiversity Crisis, Over-tourism, Sustainable Tourism Development, Labour Market, Education for Sustainable Development, Sexism, Racism, Geopolitics, Geo-economics, Transformation, Democracy, Right-wing Populism, Agriculture and Climate Change, COVID-19 Measures, COVID-19 Vaccination, Urban Development, Reproducibility Crisis, Traffic Transition, Environmental Protection, Protest, Repression, Renewable Energies, Light and Noise Pollution, Nature Conservation/Environmental Monitoring, Human-Wildlife Conflicts, Mobility Transition, Cycling, General Mobility, Socially Relevant Issues, Earth's Limits, Astronomical Context, Traffic Emissions, Climate, Earth System, Government Actions, Anthropocene, Climate Protection is Child Protection, Gender Relations and Climate Crisis, Sustainable Food Systems, Future of Energy Supply in the New Energy World, Sustainability, Ethics of Technology.

Figure S2. Social media platforms used by scientists for public engagement on socio-ecological issues



Note. “Other”: Mastodon, Telegram, Reddit, Forums, Topic-Specific Pages, Scientists4Future, Austrian Society for Transcendental Meditation, Personal Blog, Research Platforms, Panels, Podcasts (via Podigee, Amazon, Spotify, Deezer), Climate Reporter, WhatsApp, WordPress, Vimeo, Xing, ResearchGate, Blog of the Local Climate Alliance, Heise Forum, Forums of Traditional Newspapers, Threads.