

**“System change, not climate change”: Effective environmental policies and state repression moderate the relationship between psychological predictors and environmental collective action**

**Highlights**

- Higher environmental concern and higher environmental efficacy beliefs predict more engagement in environmental collective action.
- In countries that have inadequate environmental governance, the relationship between environmental concern and environmental collective action tends to weaken.
- In countries that have inadequate environmental governance, the relationship between environmental efficacy and environmental collective action tends to weaken.
- Environmental concern is less likely to translate into environmental collective action in repressive countries.

**Abstract**

Social psychological research on environmental collective action often overlooks the facilitating or hindering impact of a country's context. Governments' institutional attitudes toward environmental issues may have crucial roles in mobilizing environmental activism. To explore how individual and contextual factors interplay for engagement in environmental collective action, we conducted multilevel modelling using data from 12 countries ( $n = 18,746$ ). While environmental collective action was predicted by higher environmental concern and higher environmental efficacy beliefs, the strength of these relationships was moderated by macro-level contextual variables related to political governance. In countries

with more effective environmental policies, the impact of both environmental concern and environmental efficacy beliefs on collective action were much stronger than in the countries with inadequate environmental governance. Moreover, our findings show that environmental concern is less likely to translate into environmental collective action in repressive countries. Findings are discussed within perspectives on community resilience, identity, empowerment, and repression.

**Keywords:** environmental collective action, climate movement, efficacy, repression, empowerment, multilevel modelling

### **Plain Language Summary**

This research examines psychological and societal factors associated with individuals' participation in environmental collective action such as being members of environmental groups, making donations, signing petitions, and engaging in protests. We analysed survey data from more than 18,000 participants from 12 different countries (Austria, Denmark, Finland, Germany, Hungary, Japan, New Zealand, the Philippines, Russia, Slovenia, Switzerland, and Thailand). People who were more concerned about environmental issues and had more belief that they could make a meaningful contribution to mitigating the environmental crisis also showed more participation in environmental collective action in the last five years. However, these findings depended on the countries' societal and political characteristics such as repression (use-of-force) and effective environmental policies. In countries that have less environmental policies and governmental efforts, the relationship between environmental concern and environmental collective action tends to weaken. In other words, the environmental concern of individuals who live in countries with effective environmental policies is more likely to translate into environmental collective action.

Similarly, people's belief that they can make a meaningful contribution to environmental efforts is more likely to translate into environmental collective action in countries with effective environmental policies. Last, environmental concern is less likely to lead to environmental collective action in repressive countries, compared to less repressive countries. In brief, although psychological factors such as feeling concerned about the environmental crises or believing the efficiency of their actions against these crises have an important impact on environmental activism, these are highly contingent upon countries' contextual factors.

**“System change, not climate change”: Effective environmental policies and state repression moderates the relationship between psychological predictors and environmental collective action**

There is an increasing consensus that the climate crisis is one of the biggest social and health threats of the century. UNICEF (2021) state that almost half of the World’s children live in countries of extremely high risk due to climate change. In addition to the physical risks that children from the Global South already face, young people all around the world are disproportionately affected by psychological consequences of climate change such as distress, anxiety, and depression due to climate crisis. Marks et al. (2021) surveyed climate-crisis-induced emotions of ten thousand participants aged from 16 to 25 in ten countries. They showed that while 77% of their participants found the future frightening, 66% were very or extremely worried due to the climate crisis. Moreover, 45% of the participants reported that their feelings about climate change affected their daily life. These negative feelings, appraisals, and anticipations may move individuals from passive subjects of the climate crisis and related disasters to active participants of environmental justice movements (e.g., Landmann & Rohmann, 2020; Rees & Bamberg, 2014; Stanley et al., 2021; Uysal & Akfirat, 2022; Uysal et al., 2022; van Zomeren et al., 2010; Vestergren et al., 2022). However, emotions alone are not sufficient conditions to motivate people to engage in actions to facilitate social change. Research has shown that people who can mobilize their identity-related psychological resources such as empowerment and perceived collective efficacy create community resilience against negative appraisals and emotions related to the environmental crisis and hence, display higher intention to participate in environmental collective actions (e.g., Bamberg et al., 2015; Ntontis et al., 2020; van Zomeren et al., 2010; Vestergren et al., 2018, 2019). In accordance with Gulliver et al. (2022), we define environmental collective action as actions taken by individuals identifying as part of a

collective (Wright, 2009) and seeking to achieve collective goals (van Zomeren et al., 2018) such as environmental change.

Although emotions and collective efficacy are important for environmental collective action in the social psychology literature, there is a tendency to conceptualize and test these processes' impact on motivation to participate in climate movements in de-contextualized settings. While efficacy, emotion, and identity may be proximal factors that influence people's decision to participate in protests universally (for meta-analysis, see van Zomeren et al., 2008), it is important not to overlook how these factors are heightened or inhibited by context-specific factors using a multi-level approach. Whether societal macro processes can transform collective action intention into actual collective actions should be one of the core questions of social psychology studies.

In this respect, a country's institutional approach to environmental issues and climate movements may have crucial roles in emotion-focused (e.g., anger, worry, concern) and problem-focused (e.g., efficacy, empowerment, control) pathways for mobilization in the climate movement, turning intentions into actions. To help address the macro-level factors affecting the social psychology underlying environmental collective action, the present research aims to test the predictive roles of environmental concern and environmental efficacy for participating in environmental collective action across different countries by conducting multi-level modelling. We aim to test the moderator roles of states' *i*) use-of-force frequency and severity against opponents and activists and *ii*) environmental efforts to mitigate the climate crisis. Thus, a multi-level mixed model analysis was conducted to investigate individual (Level-1; i.e., environmental concern and efficacy) and contextual (Level-2; i.e., use-of-force and environmental governance scores of the states) factors that may explain environmental collective action across 12 different countries.

### **Individual Level: Environmental Concern and Efficacy**

Concerning negative feelings connected to the climate crisis and environmental disasters, eco-anxiety is the most frequent concept in both scientific literature and public discourse. Eco-anxiety refers to experiencing common characteristics of anxiety such as lack of control and uncertainty about the future as a response to the climate crisis (Pihkala, 2020). In addition to eco-anxiety, concepts like eco-depression (Stanley et al., 2021), worry about climate change (Timmons et al., 2022), eco-anger (Stanley et al., 2021), fear (van Zomeren et al., 2010), and perceived climate risk (i.e., expectations of environmental catastrophes; Uysal et al., 2022) are used in social psychological research related to environmental collective action. In the present study, we use *environmental concern* as a more general concept that refers to acknowledging the worry and looming potential danger of environmental crisis.

Participating in environmental collective action might be a coping strategy against negative emotions related to environmental concerns (e.g., Vestergren et al., 2017, 2022). For instance, van Zomeren et al. (2010) proposed an emotion-focused approach, arguing that higher environmental action intention against climate crisis is an outcome of heightened fear of the negative future consequence of climate crisis. Moreover, Dunlap, and colleagues (Dunlap & van Liere, 1978, Dunlap et al., 2000) approach the environmental concern as a "paradigm" and define it as a coherent cognitive structure or worldview. Following this definition, environmental concern can be described as a cognitive unit that is shared by like-minded people. Hence, sharing a similar concern on other humans, non-human species, the earth, and environment facilitates the formation of an opinion-based group and increases social change commitment and engagement (see Bliuc et al., 2007; McGarty et al., 2009). Thus, we hypothesize that environmental concern will predict more environmental collective action (*Hypothesis 1a*).

In addition to concern, efficacy is an important determinant of participation in collective action in social psychology research. Collective efficacy may refer to a sense of

control, agency, and power that is perceived by individuals who shared a common ingroup identity. Collective efficacy beliefs are crucial for ingroup members to perceive themselves as having influence on political decision-making or challenge the existing societal power relations. Collective efficacy belief is strongly connected to high intention to participate in voting behaviour (Grant et al., 2017), support for social change (Abrams & Grant, 2012), perceived legitimacy of social movements (Jiménez-Moya et al., 2019), and normative (Cohen-Chen & van Zomeren, 2018; Uysal & Akfirat, 2022) and non-normative collective actions (Lizzio-Wilson et al., 2021; Saab et al., 2016).

Based on early research derived from the recourse mobilization approach (Klandermans, 1984), various forms of efficacy beliefs such as self-efficacy (Brunstig & Postmes, 2002), group efficacy (Mummendey et al., 1999; van Zomeren et al., 2004), and participative efficacy (Mazzoni et al., 2015; Wilkins et al., 2019; van Zomeren et al., 2013, 2019) are seen as important predictors of engagement in social movements. Moreover, recent research show that self-efficacy (Hamann & Reese, 2020; Jugert et al., 2016; Lauren et al., 2016), group efficacy (Jugert et al., 2016; van Zomeren et al., 2019), and participative efficacy (Bamberg et al., 2015; Haugestad et al., 2021; Landmann & Rohmann, 2020) are related with both private and public pro-environmental behaviours. We approach environmental efficacy as a form of domain-specific self-efficacy, as it focuses on people's sense of control and agency in pro-environmental behaviours. Recent research on self-efficacy showed that it can be related to different aspects of pro-environmental behaviours. In the context of a peer-to-peer coaching program for sustainability volunteers, Hamann and Reese (2020) showed that self-efficacy predicted activist pro-environmental behaviour intention. Hence, we hypothesize that environmental efficacy predicts environmental collective action (*Hypothesis 2a*).

### **Macro Level: Repression and Environmental Policies**

Although environmental concern is an important facilitator of environmental activism, we suggest that in contexts where people face police brutality, government sanctions, and personal risk due to their activism, their environmental concerns may be less likely to translate into collective action. Hence, the link between concern and collective action may weaken. There is evidence demonstrating that repression may trigger further collective action (Ayanian et al., 2021; Hess & Martin, 2006; Opp & Roehl, 1990). However, these studies also showed that repression triggers further collective actions via increased anger, identity consolidation, alliances, or third-party support, rather than concern, worry, anxiety, or fear. For instance, Ayanian et al. (2021) showed that the perceived likelihood of risk due to activism (e.g., risk of being arrested by police), predicted heightened fear in repressive countries such as Russia, Ukraine, Hong Kong, and Turkey, that is, countries with higher repression (i.e., use of force). Although, they could not find a significant relationship between fear and future collective action intention in most of these countries, the perceived likelihood of risk negatively predicted collective action through heightened fear in Russia. Thus, we hypothesize that the relationship between environmental concern and environmental collective action will be moderated by states' use-of-force scores (*Hypothesis 1b*). In other words, in more repressive countries, environmental concern is less likely to translate into collective action than in less repressive countries.

The relationship between repression and efficacy is complex and contains various facets of efficacy. Although repression may fuel collective action via individuals' belief that their group can get public support or increase solidarity, it may weaken people's belief that they individually can make meaningful contributions to help succeed with collective goals. Ayanian et al. (2021) tested different facets of efficacy related to repression and collective action. Perceived risk of activism in repressive countries negatively predicted political efficacy. However, it positively predicted identity consolidation efficacy (i.e., belief that their

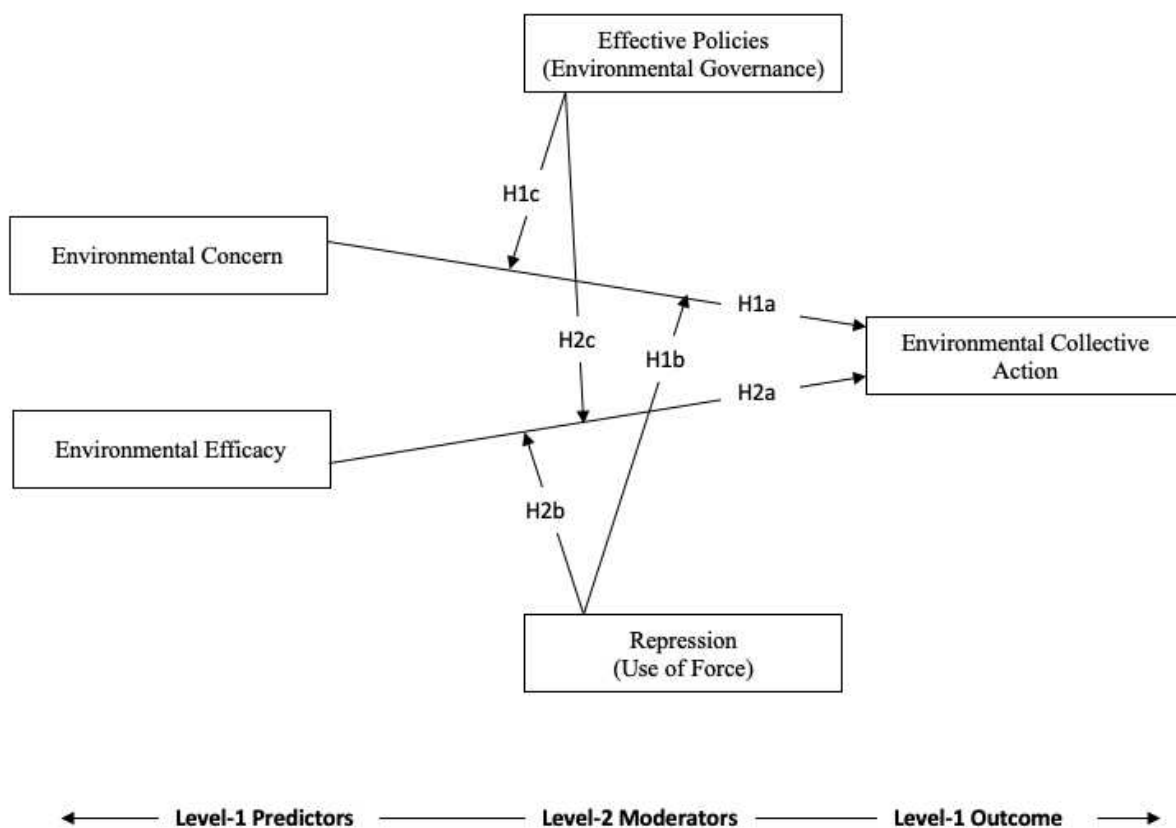


group can get public support or increase solidarity) and participative efficacy (i.e., belief that they individually put meaningful effort to help group for succeed collective goals). Identity consolidation efficacy predicted future collective action, whereas political efficacy and participative efficacy did not. In the context of pro-environmental behaviours, people's efficacy beliefs might be contested by the outgroup's (e.g., state) power and actions. The government might influence the strength of the relationship between environmental efficacy beliefs and collective actions. Hence, we hypothesize that the relationship between environmental efficacy and environmental collective action will be moderated by states' use-of-force scores. Put simply, in more repressive contexts, environmental collective action will be less driven by environmental efficacy beliefs (*Hypothesis 2b*).

Not only repression and use-of-force, but governments' environmental policies and efforts may be a condition for whether individuals' concern and efficacy beliefs translate into activism. Drury and colleagues (Drury & Reicher, 1999, 2005; Drury et al., 2020) argue the importance of perceived collective support for identity-relevant goals in social change commitment, protest participation, and the well-being of activists. Although perceived collective support is mostly discussed as empowerment and efficacy beliefs through expected social support from other group members, in a broader respect, institutional collective support for dealing with the global environmental crisis could have a similar influence. Hence, we suggest that when people believe government and national institutions are working to tackle the climate crisis, they are more likely to perceive collective action as a coping strategy against climate concerns. In other words, we hypothesize that states' environmental governance scores will moderate the relationship between environmental concern and environmental collective action (*Hypothesis 1c*).

Low trust in governments and the perception of disregard by policymakers are emerging as important factors of disempowerment among people with environmental

concerns and an agenda to mitigate the climate crisis (Chiw & Ling, 2019; Marks et al., 2021). Furthermore, hope through seeing others act, and shared responsibility is associated with increased collective efficacy beliefs and a sense of having control and power to mitigate the climate crisis (Haugestad et al., 2021; Jones & Davison, 2021; Prendergast et al., 2021). Thus, we hypothesize that the relationship between environmental efficacy and environmental collective action will be moderated by states' environmental governance scores (e.g., trust that the government is concerned about the environment, and seen as acting upon those concerns). Specifically, we argue that environmental collective action will be more driven by environmental efficacy in contexts that have more effective environmental governance (*Hypothesis 2c*).



**Figure 1.** Conceptual Model and Hypotheses

## Method

## Data

The analyses were conducted on a dataset retrieved from an annual cross-national collaboration: International Social Survey Programme 2020 Environment Module IV (ISSP, 2022). The central theme of the module is attitudes towards environment-related issues. The module used multistage probability sampling procedure and conducted face-to-face and web-based interviews for data collection. Data were collected between June 2020 and September 2021. The sample included a total of 18,746 participants from 12 countries (Austria, Denmark, Finland, Germany, Hungary, Japan, New Zealand, the Philippines, Russia, Slovenia, Switzerland, and Thailand).<sup>1</sup> Around 52% of participants were self-identified females. The mean age of participants was 50 ( $SD = 17.56$ ), with the Philippines having the youngest on average ( $M = 43.62$ ,  $SD = 16.47$ ) and Austria the oldest ( $M = 55.62$ ,  $SD = 16.93$ ). Data are available at [https://osf.io/zeqg7/?view\\_only=5a000c01f11a4c5a909ec3a45d7280fb](https://osf.io/zeqg7/?view_only=5a000c01f11a4c5a909ec3a45d7280fb).

## Materials

**Individual-level variables.** We used two individual-level variables retrieved from ISSP 2020: Environmental concern and environmental efficacy. We measured *environmental concern* with a single item “*Generally speaking, how concerned are you about environmental issues?*” (1 = not at all, 5 = very concerned). *Environmental efficacy* is assessed with three items (1 = strongly agree, 5 = strongly disagree): “*It is just too difficult for someone like me to do much about the environment,*” “*There is no point in doing what I can for the environment unless others do the same*” and “*I find it hard to know whether the way I live is helpful or harmful to the environment*” (McDonald’s  $\omega = .63$ ).

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<sup>1</sup> Although the original dataset consisted of 14 countries and over 21,000 participants, we removed Taiwan and Iceland since the information on our country-level moderators (e.g., use of force and environmental governance) is not available.

**Country-level variables.** We retrieved country-level variables from the Sustainable Security Index (Watson et al., 2020) to assess the use of force and environmental governance scores. The index combines indicators from four indices: the Global Peace Index, the Fragile State Index, the Global State of Democracy Initiative, and the Environmental Performance Index. Related to use-of-force indicators which is a proxy for repression level, the index asks two questions: “Do state security forces work in the interests of the population or are citizens subjected to violent internal repression” and “Is a state focused on hard power solutions to global and regional insecurity” (Watson et al., 2020, p. 8). *Use-of-force* scores for 155 countries is created using three different pillars: Militarization<sup>2</sup>, Internal and External Conflict<sup>3</sup>, and Security Apparatus<sup>4</sup> (from 0 to 100). The first two pillars focus on multiple factors such as military expenditure, arms sales, and the number and duration of internal and external conflicts, whereas the third pillar focus on the institutional attitudes of a state on the monopoly of the use of force such as the presence of police brutality. Higher scores for use of force indicate that the country has better standards in terms of using force (less repressive environment).

Watson et al. (2020) also created *environmental governance* scores as a proxy for the effectiveness of environmental policies in a country and state's efforts to mitigate climate change using the questions: “How effective is a state’s environmental governance, including efforts to address climate change” and “How far is it helping or hindering other states to do the same” (p. 9). They create environmental governance scores for countries (from 0 to 100) by using the Environmental Performance Index and countries' carbon export through fossil fuels as well as how much money they spent to mitigate climate change relative to GDP.

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<sup>2</sup> From the Institute for Economics and Peace’s Global Peace Index

<sup>3</sup> From the Institute for Economics and Peace’s Global Peace Index

<sup>4</sup> From the Fragile State Index.

Higher scores for environmental governance indicate better quality in environmental policies and governance (see Table 1).

**Table 1.** Sample sizes, mean ages, and country-level variables' scores of countries

| Country     | Sample Size | Age (mean) | Use of Force<br>Score | Environmental<br>Governance<br>Score |
|-------------|-------------|------------|-----------------------|--------------------------------------|
| Austria     | 1261        | 55.6       | 80                    | 65                                   |
| Denmark     | 1198        | 51.2       | 80                    | 71                                   |
| Finland     | 1137        | 48.7       | 72                    | 77                                   |
| Germany     | 1702        | 54.0       | 74                    | 74                                   |
| Hungary     | 1001        | 49.8       | 73                    | 57                                   |
| Japan       | 1491        | 56.0       | 78                    | 70                                   |
| New Zealand | 993         | 51.9       | 82                    | 61                                   |
| Philippines | 1500        | 43.6       | 32                    | 54                                   |
| Russia      | 1583        | 46.1       | 28                    | 39                                   |
| Slovenia    | 1102        | 49.1       | 82                    | 60                                   |
| Switzerland | 4280        | 50.1       | 79                    | 74                                   |
| Thailand    | 1498        | 45.0       | 40                    | 50                                   |

**Dependent variable.** As an outcome variable, we retrieved items from ISSP 2020 for measuring environmental collective action. *Environmental collective action* is measured with 4 categorical items (0 = no, 1 = yes). Participants answered whether, in the last five years, they had; “*signed a petition about an environmental issue,*” “*given money to an environmental group*” or “*taken part in a protest or demonstration about an environmental*

issue”. Additionally, to account for their involvement in ecological or environmental collectives we used the item “*Are you a member of any group whose main aim is to preserve or protect environment?*”. We created a composite score for environmental collective action by aggregating the answers of these four items (McDonald’s  $\omega = .65$ ).

### **Analytical Procedure**

A multi-level mixed model analysis was conducted via *GAMLj* module (Gallucci, 2020) of *jamovi* statistical software (The jamovi project, 2022)<sup>5</sup>. We clustered data based on country. A restricted maximum likelihood model is used for estimation. First, we added individual-level predictors (*environmental concern* and *environmental efficacy*) to the models. Then, country-level variables (*use of force* and *environmental governance*) were entered as predictors. Last, cross-level interactions were entered into the model for testing moderator roles of governments’ environmental governance and use of force scores in the relationship between *a*) environmental efficacy and environmental climate action and *b*) environmental concern and environmental climate action. The final model is reported (for all models, see Table S1-S6).

### **Results**

The descriptive statistics and zero-order correlations between our variables are depicted in Table 2. Results of multi-level modelling showed that, among individual-level predictors, both higher environmental concern ( $b = .18$ ,  $SE = .01$ , 95% CI [.17, .19]) and higher environmental efficacy ( $b = .17$ ,  $SE = .01$ , 95% CI [.16, .19]) predict higher engagement in environmental collective action (see Table3), supporting *Hypotheses 1a* and *2a*. Neither environmental governance nor use of force as country-level variables predicted environmental collective action. However, interactions between *a*) environmental concern

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<sup>5</sup> Authors confirm that this research adheres to APA’s ethical principles of psychologists and code of conduct as well as the Declaration of Helsinki. As this paper used secondary data, it is exempt from ethical review.

and environmental governance, b) environmental concern and use of force, and c) environmental efficacy and environmental governance predict higher involvement in environmental climate action, indicating significant moderations (see Table 3). We tested the model with and without demographic variables (age, gender, education level, and perceived status). While the results did not change, participants who self-identify as male, have higher education levels, and belong to higher social status showed higher environmental collective action participation (see Table S7).

**Table 2.** Means, standard deviations, and correlations of all measures

| Variables                          | <i>M (SD)</i> | 1 | 2      | 3      | 4      | 5      |
|------------------------------------|---------------|---|--------|--------|--------|--------|
| 1. Environmental Collective Action | .52 (.91)     | - | .23*** | .28*** | .21*** | .21*** |
| 2. Environmental Concern           | 3.91 (1.05)   |   | -      | .21*** | .03*** | .04*** |
| 3. Environmental Efficacy          | 3.35 (.87)    |   |        | -      | .20*** | .22*** |
| 4. Environmental Governance        | 64.2 (11.3)   |   |        |        | -      | .82*** |
| 5. Use of Force                    | 67.0 (19.6)   |   |        |        |        | -      |

*Note.* \*\*\*  $p < .001$

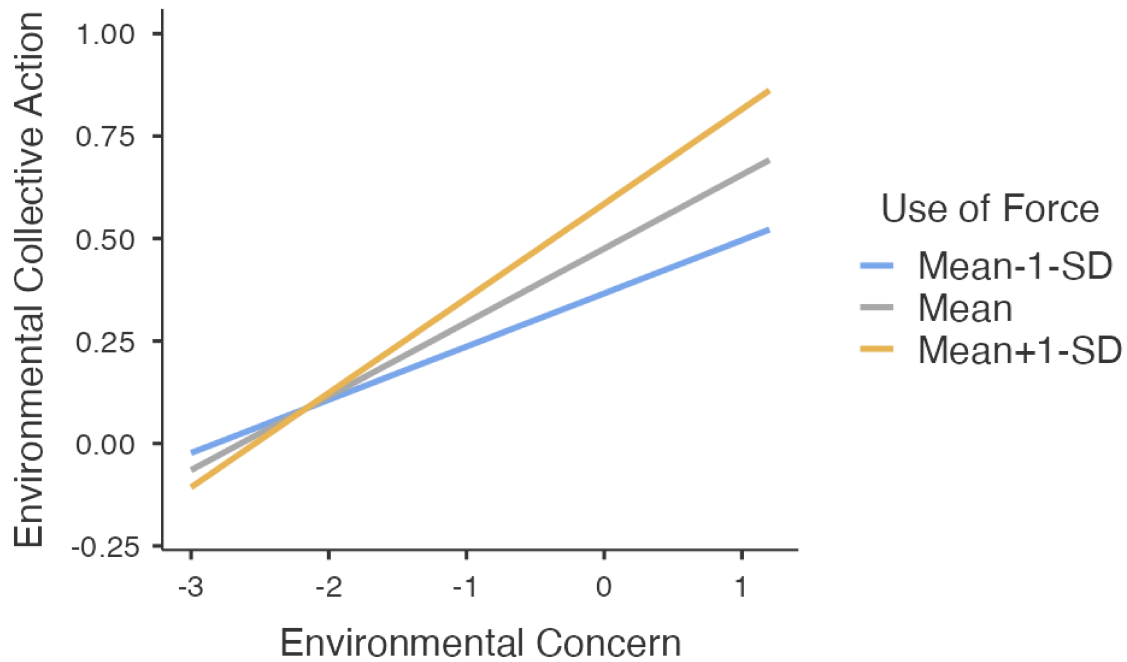
We found two significant country-level moderators for the relationship between environmental concern and environmental collective action. First, supporting *Hypothesis 1b*, the strength of the relationship between environmental concern and environmental collective action is weaker for the countries with lower use of force scores, that is, countries who frequently use force against activists, protestors, or political opponents (see Figure 2). Simple slope analysis showed that the association between environmental concern and environmental collective action is  $b = .23$ ,  $SE = .01$ , 95% CI= [.20, .26],  $p < .001$  for countries that have higher country-level use of force scores;  $b = .18$ ,  $SE = .01$ , 95% CI= [.17, .19],  $p < .001$  for moderate use of force scores; and  $b = .13$ ,  $SE = .01$ , 95% CI= [.11, .15],  $p < .001$  for countries have lower use of force scores. Thus, the association between environmental

concern and engagement in environmental collective action is highly contingent upon how frequently and how harshly countries use force against social movements.

**Table 3.** Results of the multi-level mixed model analysis on Environmental Collective Action

| Predictors                      | Estimate | SE  | 95 % CI |       | <i>t</i> | <i>p</i> |
|---------------------------------|----------|-----|---------|-------|----------|----------|
|                                 |          |     | Lower   | Upper |          |          |
| <i>(Intercept)</i>              | .48      | .07 | .34     | .61   | 6.99     | < .001   |
| <b><i>Level-1</i></b>           |          |     |         |       |          |          |
| Environmental concern           | .18      | .01 | .17     | .19   | 27.72    | < .001   |
| Environmental efficacy          | .17      | .01 | .16     | .19   | 21.41    | < .001   |
| <b><i>Level-2</i></b>           |          |     |         |       |          |          |
| Environmental governance        | .00      | .01 | -.02    | .02   | .36      | .730     |
| Use of force                    | .01      | .01 | -.00    | .02   | 1.06     | .317     |
| <b><i>Level-1 * Level-2</i></b> |          |     |         |       |          |          |
| Environmental concern *         | .00      | .00 | .00     | .00   | 2.84     | .004     |
| Environmental governance        |          |     |         |       |          |          |
| Environmental concern *         | .00      | .00 | .00     | .00   | 4.57     | < .001   |
| Use of force                    |          |     |         |       |          |          |
| Environmental efficacy *        | .01      | .00 | .00     | .01   | 5.44     | < .001   |
| Environmental governance        |          |     |         |       |          |          |
| Environmental efficacy *        | .00      | .00 | -.00    | .00   | .10      | .923     |
| Use of force                    |          |     |         |       |          |          |
| Variance                        |          |     |         | .053  |          |          |
| ICC                             |          |     |         | .072  |          |          |

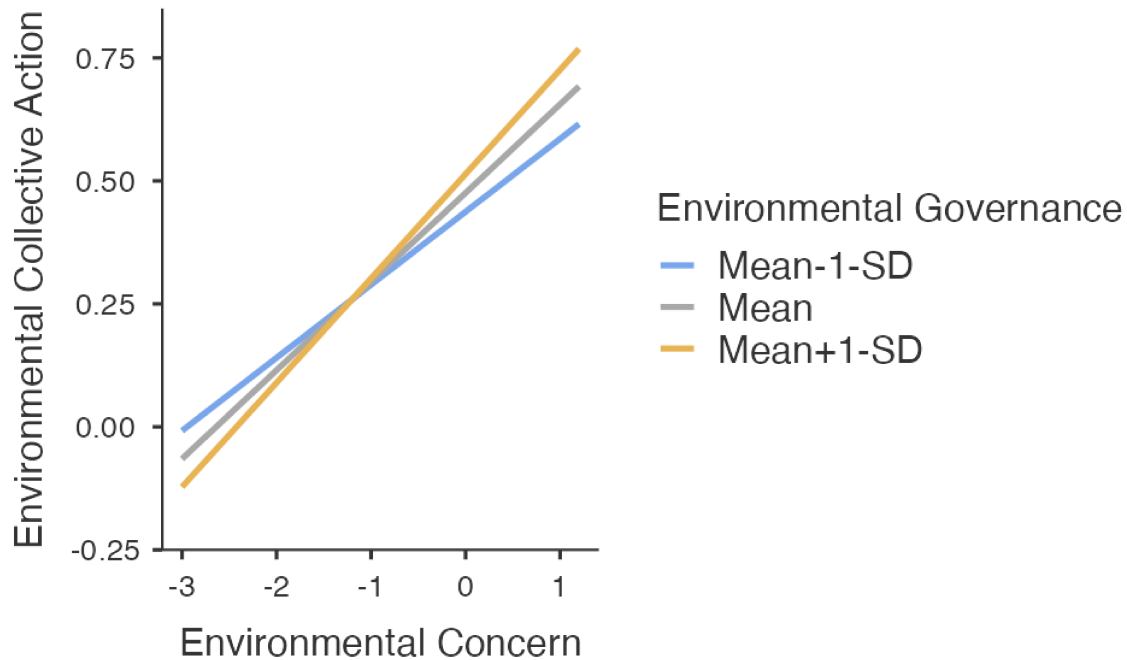




**Figure 2.** The association between environmental concern and environmental collective action for different levels of country-level use of force scores.

Second, although environmental collective action showed a relative increase for higher scores on environmental concern, as can be seen in Figure 3, the increase is lower for countries that have low environmental governance scores (i.e., lower quality in environmental policies and governance), similar to the relationship between environmental efficacy and collective action. In other words, the association between environmental concern and environmental collective action is stronger in countries with more environmental policies and governance (higher environmental governance scores), supporting *Hypothesis 1c*. Simple slope analyses also showed that the relationship between environmental concern and environmental collective action tends to weaken in the countries that have relatively lower environmental governance scores:  $b = .21$ ,  $SE = .01$ , 95% CI = [.19, .24],  $p < .001$  in the countries that have high environmental governance scores;  $b = .18$ ,  $SE = .01$ , 95% CI = [.17, .19],  $p < .001$  in the countries that have moderate environmental governance scores, and  $b =$

.15,  $SE = .01$ , 95% CI = [.12, .17],  $p < .001$  in the countries that have low environmental governance scores.

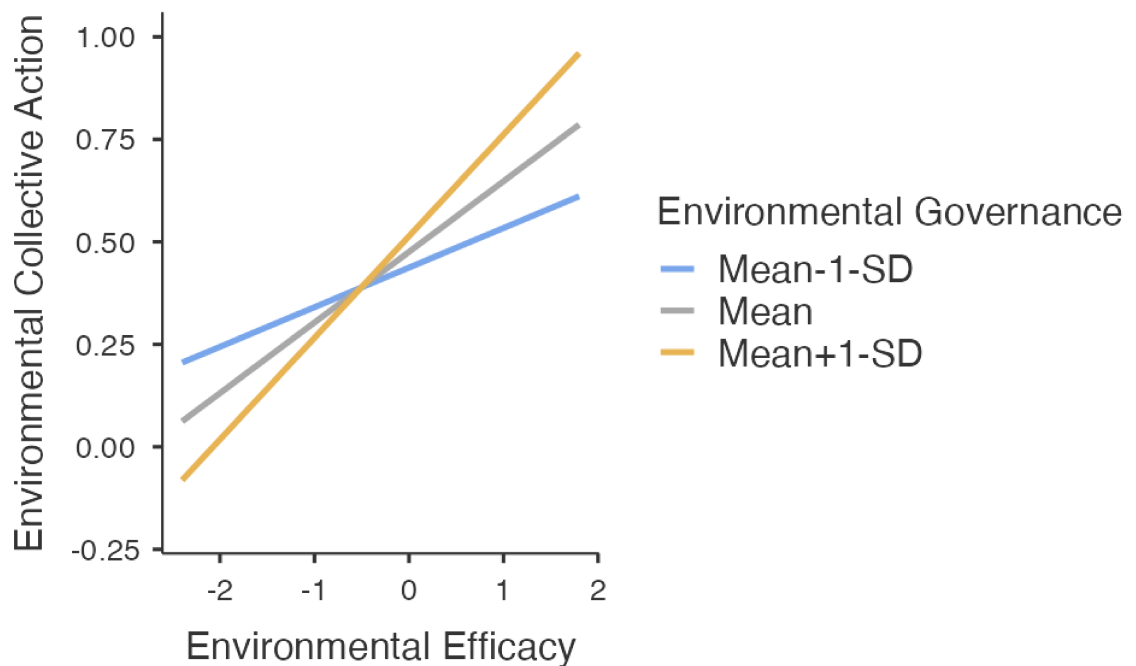


**Figure 3.** The association between environmental concern and environmental collective action for different levels of country-level environmental governance scores.

Although we hypothesized that states' use-of-force scores will moderate the relationship between environmental efficacy and environmental collective action, the impact of cross-level interaction between environmental efficacy and countries' use-of-force scores on individuals' environmental collective action is not significant. Thus, *Hypothesis 2b* is not supported. Simple slope analysis also showed that the strength of the relationship between environmental efficacy and environmental collective action did not change ( $b = .17$ ) for low, moderate, and high use-of-force scores of countries.

As can be seen in Figure 4, although environmental collective action showed a relative increase for higher scores on environmental efficacy, the increase is lower for

countries that have low environmental governance scores while the relationship between environmental efficacy and environmental collective action is relatively stronger in the countries that have higher environmental governance scores. Similarly, simple slope analyses showed that the strength of the positive relationship between environmental efficacy and engagement in environmental collective action tends to weaken as the environmental governance scores of the country decrease: in the countries that have high environmental governance scores  $b = .25$ ,  $SE = .02$ , 95% CI = [.22, .28],  $p < .001$ ; in the countries that have moderate environmental governance scores,  $b = .17$ ,  $SE = .01$ , 95% CI = [.16, .19],  $p < .001$ , and in the countries that have low environmental governance scores,  $b = .10$ ,  $SE = .02$ , 95% CI = [.07, .13],  $p < .001$ . In other words, the association between environmental efficacy and environmental collective action is stronger in countries with better environmental governance, supporting *Hypothesis 2c*.



**Figure 4.** The association between environmental efficacy and environmental collective action for different levels of country-level environmental governance scores.

## Discussion

We sought to investigate individual-level and contextual-level predictors of environmental collective action across 12 countries using multi-level modelling. In particular, we examine whether environmental concern and environmental efficacy, as individual-level psychological variables, predict individuals' participation in environmental collective action over the last five years. The results show that higher environmental concern and higher environmental efficacy are associated with higher environmental collective action, supporting *Hypotheses 1a* and *2a*. Moreover, we test the moderator roles of contextual factors by adding the countries' scores of use-of-force (as a proxy for repression) and environmental governance (as a proxy for efficient environmental policies) to the model. In countries that have a higher use-of-force score (i.e., less repressive countries; e.g., Austria, Denmark, Switzerland), the relationship between environmental concern and collective action is stronger than in countries that have a lower use-of-force score (i.e., more repressive countries; e.g., Russia, Philippines, Thailand), supporting *Hypothesis 1b*. Hence, we argue that concerned people are more likely to take to action if the stakes in terms of state punishment is lower. In addition to the impact of state repression, the moderator role of countries' environmental policies (i.e., environmental governance) further indicates the importance of the context. In countries that have a higher environmental governance score (i.e., the countries that have strong policies to mitigate climate change; e.g., Germany, Finland, Denmark, and Switzerland), the relationship between environmental concern and collective action is stronger than in countries that have lower environmental governance score (i.e., countries that have not strong environmental policies; e.g., Russia, Hungary, Philippines, Thailand), supporting *Hypothesis 1c*. Similarly, in countries that have a higher environmental governance score (in other words the countries that have strong policies to mitigate climate change; e.g., Germany, Finland, Denmark, and Switzerland), the relationship

between environmental efficacy and collective action is stronger than in countries who have lower environmental governance score (i.e., countries that have not strong environmental policies; e.g., Russia, Hungary, Philippines, Thailand), supporting *Hypothesis 2c*. Hence, the efficiency of countries' policies to mitigate climate crisis can be a crucial determinant for the strength of efficacy and environmental concern impact on environmental collective action. However, the relationship between environmental efficacy and environmental collective action was not moderated by states' use of force scores (*Hypothesis 2b*). This could be explained by that we measure environmental efficacy as a less context-sensitive aspect of efficacy, in comparison with group efficacy and participative efficacy. Since we conceptualized and measured environmental efficacy as domain-specific self-efficacy, it might not easily be influenced by macro-level contexts such as the repression level of a country.

Recent studies showed that negative emotions such as anxiety, anger, fear, and worry are important predictors of engagement in environmental collective action (e.g., Stanley et al., 2021; Timmons et al., 2022; van Zomeren et al., 2010). Our findings indicate that this relationship might be highly contingent upon the countries' climate policies. Even though the association between environmental concern and collective action is significant in countries with low environmental governance (i.e., lack of efficient climate policies, insufficient budget allocation for climate and environmental studies, destructive environmental policies etc.), the strength of this relationship is significantly lower than for the countries with higher environmental governance. In countries where people cannot identify themselves as members of an agentic overarching group that can mitigate climate crises, their environmental concerns may lead to individual helplessness (Barth et al., 2021; Salomon et al., 2017), lack of environmental efficacy, and climate inaction. Recent studies argue that environmental activism and increased efficacy as a result of shared identity and activism can buffer for

climate change anxiety, worry, and related depressive symptoms (e.g., Schwartz et al., 2022; van Zomeren et al., 2010). Vestergren et al. (2018, 2019) showed that participation in environmental protests increased and sustained physical and psychological well-being among a group of activists and non-activist people.

Similar to the pattern of concern and collective action, the strength of the relationship between environmental efficacy and environmental collective action is higher in countries that have high environmental governance than countries with low environmental governance (for comparisons between countries, see Supplementary Materials). Hence, it can be suggested that people are more empowered in countries which are perceived to do more for the environment. The perception of their state listening to them may strengthen the likelihood of enacting their environmental efficacy by engaging in environmental collective action.

Research on environmental activism emphasise a link between perceiving themselves as a part of a community (i.e., shared social identity) and empowerment among activists and supporters (Vestergren et al., 2018, 2019). Empowerment has been defined as one's perception of being able to challenge existing power relations (e.g., Drury & Reicher, 2005) and emerges from perceived collective support for identity-relevant goals (Drury & Reicher, 1999). Hence, governmental environmental policies are important not only because of their direct roles in mitigating the climate crisis but also for increasing empowerment among their citizens for climate action. Effective environmental policies might reduce the damage to disproportionately affected communities and generations, and increase wellbeing via empowerment. Furthermore, expected social support is associated with higher collective efficacy (e.g., Drury et al., 2016; Ntontis et al., 2018), hence, people who believe that governmental policies support their actions would show higher collective efficacy, in turn, higher engagement in environmental collective action.

In addition to the link between being a part of a community, efficacy, and direct empowerment, in their research on how protests in different places of London spread in 2011 riots, Drury et al. (2020) suggest the concept "vicarious empowerment", related to the extension between actions and engagement of people who were not previously involved in the protests. Vicarious empowerment is based on the idea that ingroup members' identity enactment over powerful outgroups can be empowering to those not involved in the actions through extended identification. In their conceptualization, due to this vicariousness of empowerment, participants gain collective efficacy when they see their common enemy weakened elsewhere. We argue that vicarious empowerment is also possible through governmental policies and efforts in the context of the climate crisis. Simultaneous actions of governments and activists can be understood as a victory of the climate movement and empower people who are not initially engaged in the movement. While climate protests force governments to take action all around the world, governments who positively respond via effective environmental policies can increase both activists' and non-activists' collective efficacy, and help more people to engage in pro-environmental actions through identification. However, this needs further exploration through future research.

Despite the implications of the current study, we acknowledge that the findings should be interpreted with caution due to some limitations. First, we use secondary correlational data, thus it would be problematic to assume causality between variables. Relatedly, the reliability scores of environmental efficacy and environmental collective action measures were below .70, hence, requires evaluating the robustness of these constructs. Moreover, the single-item measurement of environmental concern limits the inclusion of multiple aspects of environmental concern and the robustness of the construct. Nonetheless, we believe that these findings provide important preliminary findings that may stimulate future research with more robust measures.

Second, the measurement of collective action focuses a narrow set of political acts that can be defined as non-confrontational action. Especially while discussing the relationship between collective action and repression, we need to be careful and keep in mind that radical, violent, or confrontational collective actions may occur with different results. Third, in terms of the generalizability of our findings, our dataset did not include countries from African and American continents. The countries in our dataset are a few examples that reflect the WEIRD and non-WEIRD samples, however, to reach a fine-grained cultural and contextual understanding of environmental activism, future research should extend this work with culturally and politically more nuanced and extensive datasets including more geographical areas.

### **Conclusion**

We explored how contextual macro-level variables such as state repression and effectiveness of environmental policies interplay with individual micro-level variables such as environmental concern and environmental efficacy beliefs to explain engagement in environmental collective action. While environmental collective action was predicted by higher environmental concern and higher environmental efficacy beliefs, the strength of these relationships was moderated by contextual variables. Our findings showed that environmental concern is less likely to translate into environmental collective action in repressive countries. Moreover, in countries with more effective environmental policies, the impacts of both environmental concern and environmental efficacy beliefs on collective action were much stronger than in the countries with inadequate environmental governance. Hence, contextual factors are crucial variables in environmental collective action and fighting the socio-ecological crisis.



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## APPENDIX: SUPPLEMENTARY MATERIALS

**Table S1. Model Info for Raw Model (Model 0)**

| Info                  |  |
|-----------------------|--|
| Estimate              | Linear mixed model fit by REML         |
| Call                  | Collective Action ~ 1 +( 1   country ) |
| AIC                   | 46448.189                              |
| BIC                   | 46474.781                              |
| LogLikel.             | -23222.666                             |
| R-squared Marginal    | 0.000                                  |
| R-squared Conditional | 0.104                                  |
| Converged             | yes                                    |
| Optimizer             | bobyqa                                 |

**Table S2. Fixed Effects for Model 0**

| Names       | Estimate | SE     | 95% Confidence Interval |       | df   | t    | p      |
|-------------|----------|--------|-------------------------|-------|------|------|--------|
|             |          |        | Lower                   | Upper |      |      |        |
| (Intercept) | 0.462    | 0.0847 | 0.296                   | 0.628 | 11.0 | 5.45 | < .001 |
| Variance    |          |        |                         | .086  |      |      |        |
| ICC         |          |        |                         | .104  |      |      |        |

**Table S3. Model Info for Model 1 (Only Level-1 Predictors)**

| Info                  |   |
|-----------------------|---|
| Estimate              | Linear mixed model fit by REML  |
| Call                  | Collective Action ~ 1 + Environmental Concern + Efficacy +( 1   country ) |
| AIC                   | 42005.2433  |
| BIC                   | 42063.5183  |
| LogLikel.             | -21007.4138   |
| R-squared Marginal    | 0.0816  |
| R-squared Conditional | 0.1562  |
| Converged             | yes   |
| Optimizer             | bobyqa  |

**Table S4. Fixed Effects for Model 1 (Only Level-1 Predictors)**

| Variables              | Estimate | SE      | 95% Confidence Interval |       | df      | t     | p      |
|------------------------|----------|---------|-------------------------|-------|---------|-------|--------|
|                        |          |         | Lower                   | Upper |         |       |        |
| (Intercept)            | 0.482    | 0.07193 | 0.341                   | 0.623 | 11.0    | 6.70  | < .001 |
| Environmental Concern  | 0.169    | 0.00644 | 0.156                   | 0.181 | 16948.8 | 26.19 | < .001 |
| Environmental Efficacy | 0.181    | 0.00804 | 0.165                   | 0.196 | 16940.3 | 22.44 | < .001 |
| Variance               |          |         |                         | .062  |         |       |        |
| ICC                    |          |         |                         | .081  |         |       |        |

**Table S5. Model Info for Model 2 (Level-1 and Level-2 Predictors, without interactions)**

| Info      |  |
|-----------|--|
| Estimate  | Linear mixed model fit by REML   |
| Call      | Collective Action ~ 1 + Environmental Concern + Efficacy + Use of Force + Environmental Governance+( 1   country ) |
| AIC       | 42005.298  |
| BIC       | 42096.543  |
| LogLikel. | -21014.188   |

**Table S5. Model Info for Model 2 (Level-1 and Level-2 Predictors, without interactions)**

| Info                     |        |
|--------------------------|--------|
| R-squared<br>Marginal    | 0.112  |
| R-squared<br>Conditional | 0.176  |
| Converged                | yes    |
| Optimizer                | bobyqa |

**Table S6. Fixed Effects for Model 2 (Level-1 and Level-2 Predictors, without interactions)**

| Variables                | Estimate | SE      | 95% Confidence Interval |        | df       | t      | p      |
|--------------------------|----------|---------|-------------------------|--------|----------|--------|--------|
|                          |          |         | Lower                   | Upper  |          |        |        |
| (Intercept)              | 0.49071  | 0.06880 | 0.35586                 | 0.6256 | 8.99     | 7.132  | < .001 |
| <i><b>Level-1</b></i>    |          |         |                         |        |          |        |        |
| Environmental Concern    | 0.16852  | 0.00643 | 0.15591                 | 0.1811 | 16946.71 | 26.189 | < .001 |
| Environmental Efficacy   | 0.18027  | 0.00805 | 0.16450                 | 0.1960 | 16941.32 | 22.406 | < .001 |
| <i><b>Level-2</b></i>    |          |         |                         |        |          |        |        |
| Use of Force             | 0.00462  | 0.00536 | 0.00588 <sup>-</sup>    | 0.0151 | 9.02     | 0.863  | 0.411  |
| Environmental Governance | 0.00387  | 0.00965 | 0.01504 <sup>-</sup>    | 0.0228 | 9.01     | 0.401  | 0.698  |
| Variance                 |          |         |                         | .054   |          |        |        |
| ICC                      |          |         |                         | .072   |          |        |        |

**Table S7. Final Model with Demographic Variables**

| Variables   | Estimate | SE      | 95% Confidence Interval |          | df       | t      | p      |
|---|----------|---------|-------------------------|----------|----------|--------|--------|
|   |          |         | Lower                   | Upper    |          |        |        |
| (Intercept)   | 0.47497  | 0.06744 | 0.34279                 | 0.60716  | 9.01     | 7.042  | < .001 |
| Environmental Concern                                 | 0.17408  | 0.00670 | 0.16094                 | 0.18722  | 15790.80 | 25.968 | < .001 |
| Environmental Efficacy                                | 0.14546  | 0.00842 | 0.12897                 | 0.16196  | 15783.51 | 17.285 | < .001 |
| Environmental Governance                              | 0.00263  | 0.00948 | -0.01594                | 0.02121  | 9.02     | 0.278  | 0.787  |
| Use of Force  | 0.00559  | 0.00526 | -0.00473                | 0.01590  | 9.03     | 1.062  | 0.316  |
| Gender (Male = 0, Female = 1)                         | -0.01956 | 0.01308 | -0.04520                | 0.00607  | 15783.13 | -1.496 | 0.135  |
| Age   | -0.00163 | 3.87e-4 | -0.00239                | -8.73e-4 | 15787.80 | -4.214 | < .001 |
| Education Level (from 0 = no education to 8 = PhD)    | 0.04876  | 0.00382 | 0.04127                 | 0.05625  | 15775.61 | 12.761 | < .001 |
| Perceived Social Status (from 0 = bottom to 10 = top) | 0.01432  | 0.00391 | 0.00665                 | 0.02199  | 15790.62 | 3.658  | < .001 |
| Environmental Concern * Environmental Governance      | 0.00304  | 0.00100 | 0.00107                 | 0.00500  | 15790.71 | 3.023  | 0.003  |
| Environmental Concern * Use of Force                  | 0.00247  | 5.72e-4 | 0.00135                 | 0.00359  | 15789.82 | 4.326  | < .001 |
| Environmental Efficacy * Environmental Governance     | 0.00716  | 0.00126 | 0.00470                 | 0.00963  | 15767.67 | 5.702  | < .001 |
| Environmental Efficacy * Use of Force                 | -4.36e-4 | 7.43e-4 | -0.00189                | 0.00102  | 15745.22 | -0.587 | 0.557  |

**Table S8. Explanatory Factor Analysis for Individual Predictors**

Factor Loadings

|                       | Factor |        |   | Uniqueness |
|-----------------------|--------|--------|---|------------|
|                       | 1      | 2      | 3 |            |
| Efficacy1             | 0.645  |        |   | 0.580      |
| Efficacy2             | 0.619  |        |   | 0.601      |
| Efficacy3             | 0.542  | -0.117 |   | 0.695      |
| Environmental Concern | 0.253  | 0.148  |   | 0.900      |

Note. 'Minimum residual' extraction method was used in combination with a 'oblimin' rotation

### Comparisons of some countries

Comparing the countries that have the highest and lowest environmental governance scores might be sufficient to highlight our findings: Russia (39 out of 100) and Finland (77 out of 100). In Russia, the relationship between environmental concern and environmental collective action ( $b = .03$ ,  $SE = .01$ ,  $p = .017$ ) is much weaker than in Finland ( $b = .20$ ,  $SE = .03$ ,  $p < .001$ ). Similarly, the relationship between environmental efficacy and environmental collective action in Russia ( $b = .09$ ,  $SE = .02$ ,  $p < .001$ ) is considerably weaker than in Finland ( $b = .22$ ,  $SE = .03$ ,  $p < .001$ ).

We can do it similar analysis for show the impact of repression: in New Zealand (highest score in use of force; 82 out of 100), the relationship between environmental concern and environmental collective action ( $b = .34$ ,  $SE = .04$ ,  $p < .001$ ) is much stronger than in Russia (lowest score in use of force; 28 out of 100;  $b = .03$ ,  $SE = .01$ ,  $p = .017$ ).