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When worry about climate change leads to climate action:

How values, worry and personal responsibility relate to various climate actions

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Highlights

- Climate worry raises personal responsibility and, thereby, diverse climate actions
- Individuals who strongly endorse biospheric values worry more about climate change
- Personal responsibility to reduce climate change relates to various climate actions
- Biospheric values primarily relate to personal climate mitigation behaviours
- Worry about climate change is primarily associated with climate policy support

Abstract

The IPCC's report on Global Warming of 1.5°C positioned climate change as one of the most worrying issues mankind has ever faced. Although many people worry about climate change, there is still much unknown about the origins and outcomes of worry about climate change; particularly, whether and how it can motivate *specific* and *personal* climate actions. The current paper investigates this critical relationship with data from the European Social Survey Round 8 (44,387 respondents from 23 countries). As expected, the more individuals worried about climate change, the more likely they were to take and support climate action. Yet, the process through which this association occurred differed between actions. Specifically, worry was both directly and indirectly, via feelings of personal responsibility to reduce climate change, associated with climate policy support; whereas worry was mostly indirectly associated with personal climate mitigation behaviours, via personal responsibility. In addition, worry about climate change appears partly rooted in biospheric values (i.e., caring about nature and the environment), and biospheric values were also clearly, directly and positively related to personal climate mitigation behaviours. The relationships were highly consistent across countries but varied somewhat in size. The results show how generic feelings about climate change can directly and indirectly affect both climate policy support and personal climate mitigation behaviours, thereby providing critical insights for science and policy making.

When worry about climate change leads to climate action and policy support

1. Introduction

"Final call to save the world from 'climate catastrophe'" (McGrath, 2018), "The world stands on the brink of failure" (Mooney and Dennis, 2018), "Wake Up, World Leaders. The Alarm Is Deafening" (The New York Times, 2018) headlined the news after the Intergovernmental Panel on Climate Change released its Global Warming of 1.5°C report (2018) that, based on an extensive assessment of empirical studies from various disciplines, defined climate change as one of the – if not the – most worrying issues mankind has ever faced. But does the general public share these worries about climate change? And can these worries be translated into the climate actions which are urgently needed to limit climate change's negative impacts (Carrico et al., 2015; Hackmann et al., 2014; Intergovernmental Panel on Climate Change, 2018; Stern et al., 2016)? Although there is some evidence to support the popular assumption that worry about climate change can promote more general support for climate policies (Smith and Leiserowitz, 2014; Van der Linden et al., 2019, 2015), less is known about climate worry's relationship with individuals' more specific and personal climate actions (cf. Van der Linden, 2017). Yet, such individual climate actions are – like more generic policy support – urgently needed to reach the ambitious climate targets set by countries worldwide. Accordingly, the current paper aims to address this gap by investigating among 44,387 respondents from 23 countries whether and how worry about climate change may relate to specific actions aimed at mitigating climate change.

1.1 Worry about climate change

Worry is typically defined as a personal, active and motivational emotional state that is characterized by the repeated experience of anxiousness thoughts about a potential negative event

(Ricci et al., 2010), and that is closely related to individuals' personal goals, preferences and behaviours (Leiserowitz, 2009; Levy and Guttman, 1976; Loewenstein et al., 2001; Peters et al., 2006; Smith and Leiserowitz, 2014; Van der Linden, 2017). Individuals who experience worry, feel personally bothered about a real or imagined threat, which often motivates them to deal with the (imagined) threat in question (e.g. Szabó and Lovibond, 2002).

Although conceptually related, worry is typically differentiated from concern, perceived risk and fear. Specifically, worry is considered more experiential than concern (Leiserowitz, 2009; Smith and Leiserowitz, 2014; Van der Linden, 2017), less of a cognitive assessment than perceived risk (Loewenstein et al., 2001; Peters et al., 2006; Schmiege et al., 2009), and less overwhelming than the more intense emotion fear (Smith and Leiserowitz, 2014), which makes worry relatively personal and active, and particularly likely to motivate mitigative actions (Smith and Leiserowitz, 2014; Szabó and Lovibond, 2002; Van der Linden, 2017; Van der Linden et al., 2019; Weber, 2010), and which is why we decided to focus on climate worry.

Applied to the context of climate change, worry about climate change signals that an individual is actively and emotionally engaged with the topic of climate change and feels personally bothered by its consequences, making this person seemingly motivated to act upon the issue. In line with this proposition, different studies and models – such as the hierarchy of concern model (Van der Linden, 2017) and gateway belief model (Van der Linden et al., 2019, 2015) – positioned worry about climate change as a main predictor of climate mitigation behaviours and policy support. Indeed, some empirical studies have found support for the relationship between worry about climate change and climate action. Yet, these findings are largely limited to support for abstract climate policies (Smith and Leiserowitz, 2014; Van der Linden et al., 2019) or for general public action (Van der Linden et al., 2015), and to our

knowledge did not consider whether worry can also motivate individuals to undertake more specific actions to mitigate climate change (for a similar argument, see: Van der Linden, 2017).

Different lines of research have suggested that feelings about something as abstract and global as climate change are unlikely to directly result in concrete, personal and specific actions. Specifically, the abstractness and scale of climate change can make worry about climate change too psychologically distant from – and therefore "incompatible" with – individual climate actions, which are often more concrete, specific and personal; thereby, limiting the likelihood that climate worry will motivate such actions (Ajzen and Fishbein, 1977; Hornsey et al., 2016; Spence et al., 2012; Trope and Liberman, 2010; Van der Linden, 2015a). Moreover, the abstractness and scale of climate change can make it unclear to individuals what they can do themselves and whether their actions can make a difference (Moser, 2016; Poortinga et al., 2006; Ricci et al., 2010; Spence et al., 2010; Steg et al., 2015), making individuals likely to question whether they *personally* are the ones who should act (Brügger et al., 2015; Evensen et al., 2018; Poortinga et al., 2006; Ricci et al., 2010; Spence et al., 2010).

Hence, whereas some studies suggest that worry about climate change directly relates to comparably abstract actions, such as support for abstract climate policies and general public action, worry's relationship with more specific climate mitigation actions is less studied and might be less direct. Specifically, there may be a gap between feelings of worry about *abstract and global* climate change, and *specific and personal* climate mitigation actions. Yet, specific and personal climate actions are needed to reach climate targets, making it critical to identify whether and how this gap between general worries about climate change and specific and personal climate actions can be bridged.

1.2 Bridging the gap: The role of personal responsibility to reduce climate change

1.2.1 From abstract feelings to specific actions: A value-belief-norm approach

Following the reasoning of the norm activation model (NAM; Schwartz, 1977) and the value-belief-norm theory (VBN; Stern, 2000), we argue that feelings of personal responsibility to reduce climate change can be pivotal in bridging the gap between worry about abstract and global climate change, and more specific and personal climate actions. Although not explicitly focusing on worry, the VBN theory argues that feelings of personal responsibility are key in translating feelings about abstract goals into more concrete and specific actions (Stern, 2012, 2000). Specifically, the VBN theory proposes that when a situation threatens an abstract goal that is an important guideline in the life of someone personally (i.e., values), and an individual has the feeling that this threat is caused and can be relieved by their actions, this individual is likely to feel a personal responsibility to take these actions (Stern, 2012), which according to the VBN and NAM prompts individuals to take personal actions to mitigate the threat. This general process is widely supported across studies, countries and domains, including the environmental domain (Fornara et al., 2016; Hiratsuka et al., 2018; Jakovcevic and Steg, 2013; Nordlund et al., 2016; Poortinga et al., 2012; Steg et al., 2005; Ünal et al., 2019).

1.2.2 Applying VBN and NAM processes to worry about climate change

While VBN theory and NAM do not focus on feelings of worry, we believe their central propositions could explain how worry is relevant to specific and personal climate actions. As we will discuss in more detail below, we argue that worry often originates from threats to personal values that also initiate the VBN process, and that worry is – due to its origins and unique characteristics – likely to enhance those feelings of personal responsibility that could motivate specific actions according to the VBN theory and NAM.

The earlier mentioned definition of worry already described worry as closely linked to individuals' personal goals and preferences (Leiserowitz, 2009; Levy and Guttman, 1976; Loewenstein et al., 2001; Peters et al., 2006; Smith and Leiserowitz, 2014; Van der Linden, 2017), which are at a more general level represented by someone's personal values; that are, overarching personal goals that function as guiding principles in individuals' lives (Rokeach, 1973; Schwartz, 1992; Schwartz et al., 2012). Individuals seem particularly more likely to worry when a situation threatens the values they personally endorse and prioritize. Indeed, research showed that individuals are more likely to worry about climate change when they endorse and prioritize biospheric values more strongly (Van der Linden, 2015b); that is, when they strongly and personally care about nature and the environment (Bouman et al., 2018; Bouman and Steg, 2019; De Groot and Steg, 2008; Steg and De Groot, 2012; Stern et al., 1998), which are obviously threatened by climate change. Hence, we propose that an individual will be particularly likely to worry about climate change when it threatens something they personally value, such as nature and the environment, and thus when they strongly endorse biospheric values.

We argue that because climate worry is closely linked to threats to the things individuals *personally* care about the most (Leiserowitz, 2009; Levy and Guttman, 1976; Loewenstein et al., 2001; Peters et al., 2006; Smith and Leiserowitz, 2014; Van der Linden, 2017), individuals will feel particularly personally responsible to take action to mitigate climate change. More specifically, individuals who worry about climate change are expected to not only want to address the negative emotion climate change evokes (i.e., emotion-focused coping), but also to actively try to reduce the problem itself (i.e., problem-focused coping), as climate change is negatively affecting the things they personally value (e.g., biospheric values). This likely sets worry apart from fear, which appears more likely than worry to result in emotion-focused coping strategies (Smith and Leiserowitz, 2014), as well as from concern and risk perception, which lack

the personal emotional connection with the topics at stake (Leiserowitz, 2009; Smith and Leiserowitz, 2014; Van der Linden, 2017), and could potentially explain why worry is often regarded a relatively active and motivational emotional state (Leiserowitz, 2009; Levy and Guttman, 1976; Loewenstein et al., 2001; Peters et al., 2006; Smith and Leiserowitz, 2014; Van der Linden, 2017) which seems particularly likely to spark feelings of personal responsibility that motivate specific and personal climate mitigation actions.

1.3 Current study

Based on the above, we hypothesize that the more individuals endorse biospheric values, the more likely they are to experience the personal, active and motivational emotion of worry about climate change (Hypothesis 1). We also expect that this worry – in turn – enhances individuals' feelings of personal responsibility to reduce climate change (Hypothesis 2). Whereas worry about climate change may sometimes directly and positively relate to support for climate policies (Hypothesis 3a) (Smith and Leiserowitz, 2014; Van der Linden, 2017; Van der Linden et al., 2019, 2015), we argue that its effects on specific and personal climate actions is mostly indirect by strengthening feelings of personal responsibility to reduce climate change (Hypothesis 3b). To investigate the robustness and generalizability of our conceptual model (see Figure 1), we tested across 23 countries how biospheric values, worry and personal responsibility were related to each other, to two personal climate mitigation behaviours, and to support for three specific climate policies.

2. Methods

2.1 The European Social Survey

We used unique data from a module on climate change and energy preferences included in Round 8 of the European Social Survey (ESS 8), in which 44,387 respondents from 22

European countries plus Israel participated (European Social Survey, 2016). The European Social Survey is a high-quality cross-national study that uses strict random probability sampling and an extensive concept-based design process to ensure measure equivalence, providing a unique opportunity to robustly test the model in multiple countries at the same time.

ESS 8 consists of a Core Module, focusing on topics such as media use, social trust, politics, wellbeing, socio demographics, and human values, which are collected every round. ESS 8 further includes two Rotating Modules, focusing on 'Welfare attitudes in a changing Europe: Solidarities under pressure' and 'Public attitudes to climate change, energy security, and energy preferences'. The Rotating Module on climate change and energy was of core interest to the current paper. The questionnaire was developed in English through a two-year design process, which included extensive testing, piloting and translation by national teams (Fitzgerald, 2015).

Data were collected through face-to-face interviews, which took place in respondents' own homes. Respondents who had not participated in previous rounds of the ESS and were aged 15 years and over, were selected by random probability sampling to form cross-sectional samples representative for the nations of residence. Each participating country with a population larger than 2 million had to achieve a minimum effective sample size of 1,500 respondents. Smaller countries had to achieve a minimum sample of 800 respondents. Data were collected between August 2016 and December 2017, the duration of data collection within each country varied between two and eight months. The full questionnaire and other methodological details can be found on the ESS website (European Social Survey, 2016). The complete ESS Round 8 dataset is available for download from http://www.europeansocialsurvey.org, the analyses and procedures followed for this specific paper can be accessed on the Open Science Framework at **<< removed for blind review >>**.

2.2 Materials

2.2.1 Predictor variables

Our model consists of three person-level predictor variables – *biospheric values*, *worry about climate change* and *feelings of personal responsibility to reduce climate change* – that we hypothesized would relate to the outcome variables *energy-saving behaviours* (i.e. climate mitigation behaviours) and *climate policy support* (see Figure 1). Biospheric values were measured in the core module of the ESS Round 8 (European Social Survey, 2016), and worry about climate change and feelings of personal responsibility to reduce climate change were measured in the 'Rotating Module on climate change and energy' of the ESS Round 8 (Poortinga et al., 2018).

Biospheric values. Biospheric values were measured with one item, which was included in the modified 21-item Portrait Value Questionnaire (Schwartz, 2003) in the ESS Core Module. The biospheric item consisted of the following, gender-matched, short two-sentence description of a person "[She/he] strongly believes that people should care for nature. Looking after the environment is important to [her/him]." Respondents were asked to indicate how similar the described person was to themselves on a 6-point scale (1 *very much like me* to 6 *not like me at all*). For easier interpretation, the item was reversed coded so that higher scores reflect stronger biospheric values, after which the grand mean was 4.84 (*SD* = 1.03; See SI, Table S1, for a full overview of the country means and standard deviations).

Worry about climate change. Respondents answered the question "How worried are you about climate change?" on a 5-point scale (1 *not at all worried*, 2 *not very worried*, 3 *somewhat worried*, 4 *very worried*, and 5 *extremely worried*). The grand mean was 3.04 (*SD* = 0.92; See SI, Table S1, for a full overview of country means and standard deviations).

Feelings of personal responsibility to reduce climate change. Respondents indicated on an 11-point scale (0 *not at all* to 10 *a great deal*) "To what extent do you feel a personal responsibility to try to reduce climate change?". The grand mean was 5.71 (*SD* = 2.66; see SI, Table S1, for a full overview of the country means and standard deviations).

2.2.2 Outcome variables

We included five outcome variables, of which two reflected different types of energy-saving behaviours, and three reflected support for different climate policies.

Personal energy-saving behaviours. We used two items to measure energy-saving behaviours. The first reflected *energy efficiency* behaviour: "If you were to buy a large electrical appliance for your home, how likely is it that you would buy one of the most energy efficient ones?". Scores could vary from 1 *not at all likely* to 10 *extremely likely*. The variable had a grand mean of 7.83 (*SD* = 2.22; see SI, Table S2, for a full overview of the country means and standard deviations). The second item reflected *energy curtailment* behaviour: "There are some things that can be done to reduce energy use, such as switching off appliances that are not being used, walking for short journeys, or only using the heating or air conditioning when really needed. In your daily life, how often do you do things to reduce your energy use?". Responses could vary from 1 *never*, 2 *hardly ever*, 3 *sometimes*, 4 *often*, 5 *very often*, and 6 *always*. The grand mean was 4.18 (*SD* = 1.18; see SI, Table S2, for a full overview of the country means and standard deviations).

Climate policy support. Respondents indicated their support for three different climate policies on a 5-point scale (1 *strongly in favour*, 2 *somewhat in favour*, 3 *neither in favour nor against*, 4 *somewhat against*, and 5 *strongly against*). For easier interpretation, the items were reversed coded so that higher scores reflect stronger support for the climate policy. The items

were "increasing taxes on fossil fuels, such as oil, gas and coal" (i.e., *tax fossil fuels*, $M = 2.81$; $SD = 1.23$), "using public money to subsidise renewable energy such as wind and solar power" (i.e., *subsidize renewables*, $M = 3.97$; $SD = 1.05$), and "a law banning the sale of the least energy efficient household appliances" (i.e., *ban least energy efficient appliances*, $M = 3.57$; $SD = 1.16$); the SI (Table S2) provides a full overview of the country means and standard deviations.

2.3 Data preparation and analyses

All analyses were performed in R Studio, a program based on the R statistical software. Before running the regression and mediation analyses, for which we used the R-package *lavaan* (Rosseel, 2012), we standardized all variables at the country level to prevent the occurrence of Yule's (Yule, 1903) and Simpson's (Simpson, 1951) paradoxes, and to enhance the comparability of effect sizes across variables. We visualized our results (Figure 2 to 4) with the R-package *ggplot2* (Wickham, 2009).

For some respondents, data were missing on one or multiple variables of interest to this paper (13.16% of the overall sample). Inspection of the data indicated that most missing values were caused by the survey flow. That is, when respondents indicated to not believe in climate change (2.99% of the overall sample), the items *worry about climate change* and *personal responsibility to reduce climate change* were regarded as irrelevant for those respondents and were therefore skipped, resulting in missing values on these items. Other missing data were caused by respondents not answering a question, refusal to answer a question, or not knowing what to answer. To appropriately deal with those missing values, we first inspected the data, after which we compared three different approaches to handle missing data.

Approach 1 relies on the sample containing only those respondents who answered all questions discussed within this paper ($n = 38{,}546$). We believe this approach best reflects the

theorizing behind the survey – that is, the deliberate choice to not ask questions that presume people believe in climate change to those individuals who do not believe in climate change, and to give respondents the opportunity to deliberately not answer questions – although outcomes of corresponding analyses may not represent people who deny the existence of climate change (< 3% in current sample).

Approach 2 used a data-driven method of imputation. We used the R-package *mice* (Van Buuren and Groothuis-Oudshoorn, 2011) to impute scores for all missing data. These scores were estimated based on the respondent's scores on all variables of the climate change and energy module that were not included in the current paper's analyses.

Approach 3 employed an expert-knowledge based method of imputing. Specifically, when respondents indicated to not believe in climate change, and accordingly had missing data on worry and personal responsibility, we respectively imputed a 1 (not at all worried) and a 0 (not at all [personally responsible]), which were the lowest scores possible on these scales, assuming respondents who do not believe in climate change also do not worry about it and do not feel personally responsible to reduce it. Other missing values were, like Approach 2, imputed with the R-package mice.

Overall, only very minor differences in outcomes were observed between the three approaches, which is why we decided to only report the results of one approach in the main paper; that is, the results of Approach 1. We selected this approach because we believe it best reflected the theorizing behind the study, and results from this approach only relied on scores directly provided by respondents themselves, instead of also on scores being indirectly inferred from answers on other questions or theory (and corresponding assumptions). Summaries of the other approaches' outcomes are included in the SI (Figure S1 to S4), and all R code, data tables and plots can be accessed on the Open Science Framework at **<< removed for blind review >>.**

3. Results

Following our model, we tested the proposed relationships in three steps, for which we report statistics for the overall sample, as well as for the 23 separate countries (Figures 2 to 5).

3.1 Biospheric values, worry about climate change and personal responsibility

First, we tested the relationships between our model's three predictor variables biospheric values, worry about climate change, and feelings of personal responsibility to reduce climate change (see Figure 1, $\beta_{1\text{-}3}$).

As expected (Hypothesis 1), we found that stronger endorsement of biospheric values related to stronger feelings of worry about climate change (overall: $\hat{\beta}_1 = 0.25$, *SE* = .005, 95% CI = 0.24 to 0.26). The direction of this relationship was consistently positive across all countries, providing strong support for Hypothesis 1, although effect sizes varied somewhat (see Figure 2, blue diamonds, for country-specific betas and Cis). In general, effect sizes were stronger in Northern-European countries (e.g., Iceland, Norway) and Western-European countries (e.g., France, Germany), and weaker in Eastern-European countries (e.g., Lithuania, Russia, Hungary).

We proceeded by testing how worry and biospheric values were together associated with personal responsibility (see Figure 1, β_2 and β_3, respectively). In line with Hypotheses 2, we found that worry was strongly positively related to personal responsibility (overall: $\hat{\beta}_2 = 0.41$, *SE* = .005, 95% CI = 0.40 to 0.42; controlling for biospheric values). In general, the more individuals worried about climate change, the stronger their feelings of personal responsibility to reduce climate change. The direction of this relationship was consistently positive across all countries, and only slightly varied in size (see Figure 2, black circles, for country-specific betas and CIs), providing strong support for Hypothesis 2.

The direct relationship between biospheric values and personal responsibility, for which we did not formulate a hypothesis, was in general weakly positive (overall: $\hat{\beta}_3 = 0.13$, $SE = .005$, 95% CI = 0.12 to 0.14; controlling for worry). When inspecting country-specific coefficients, we observed that the direction of this relationship was less consistent across countries than the earlier reported relationships, with weak negative coefficients in Lithuania and Czech Republic (see Figure 2, orange triangles, for country-specific betas and CIs). In general, the association between biospheric values and personal responsibility was strongest in Northern- and Western-European countries, whereas weaker effects were observed in Eastern-European countries, as well as in Southern-European countries (e.g., Portugal and Italy).

Mediation analyses with estimates based on 10,000 bootstraps revealed that the relationship between biospheric values and personal responsibility was (partially) mediated by worry in all countries, with an overall total effect of $\hat{\beta}_{3+1*2} = 0.23$, $SE = .005$, 95% CI = 0.22 to 0.24. Again, country-specific total effects were generally stronger in Northern- and Western-European countries, and weaker in Eastern- and Southern-European countries (see Figure 2, green squares and CIs).

Overall, these analyses supported our reasoning that worry about climate change would positively relate to feelings of personal responsibility to reduce climate change (Hypothesis 2), and that biospheric values would positively relate to worry (Hypothesis 1), and mostly via worry to personal responsibility to reduce climate change. The consistency in which we found support for the hypothesized relationships across all countries, strongly highlights the universality of our model.

3.2 Personal responsibility, energy-saving behaviours and climate policy support

Second, we tested the relationship between feelings of personal responsibility and the outcome variables reflecting energy-saving behaviours and climate policy support, respectively (see Figure 1, β_4). As predicted, personal responsibility to reduce climate change positively and similarly related to both energy-saving behaviours, as well as support for the three climate policies, which is in line with our Hypothesis 3b. In general, stronger feelings of personal responsibility were related to a higher likelihood of purchasing energy efficient household appliances (overall: $R^2 = .04$, $\hat{\beta}_4 = 0.20$, $SE = .006$, 95% CI = 0.19 to 0.21) and stronger engagement in energy curtailment behaviours (overall: $R^2 = .04$, $\hat{\beta}_4 = 0.20$, $SE = .006$, 95% CI = 0.19 to 0.21), as well as to being more supportive of fossil fuel taxation (overall: $R^2 = .05$, $\hat{\beta}_4 = 0.22$, $SE = .005$, 95% CI = 0.21 to 0.23), subsidizing renewables (overall: $R^2 = .04$, $\hat{\beta}_4 = 0.19$, $SE = .006$, 95% CI = 0.18 to 0.20) and banning unsustainable appliances (overall: $R^2 = .05$, $\hat{\beta}_4 = 0.21$, $SE = .005$, 95% CI = 0.20 to 0.22). The direction of these relationships was consistently positive across all studied countries, although effect sizes did vary (see Figure 3). Specifically, as was also observed for the relationships between biospheric values, worry and personal responsibility, effect sizes were generally stronger in Northern- and Western-European countries, and weaker in Eastern- and Southern-European countries.

3.3 Personal responsibility, biospheric values and worry's association with climate mitigation behaviours and policy support

Third, we tested the model consisting of all measured potential antecedents of energy-saving behaviours and policy support by including feelings of personal responsibility ($\hat{\beta}_4$), worry about climate change ($\hat{\beta}_5$) and biospheric values ($\hat{\beta}_6$). For all outcome variables, this model clearly explained more variance than the model comprising only personal responsibility (see

Table 1). The standardized beta-coefficients for each of the five outcome variables are plotted in Figure 5a for biospheric values, Figure 5b for feelings of personal responsibility, and Figure 5c for worry about climate change. Overall, biospheric values, worry about climate change and feelings of personal responsibility to reduce climate change were positively related to energy-saving behaviours and climate policy support. Yet, the strength of these relationships considerably varied across the different outcome variables.

When controlling for the other predictors, only personal responsibility was similarly related to both energy-saving behaviours and climate policy support, which was in line with our Hypothesis 3b. In general, the stronger individuals felt personally responsible to reduce climate change, the more likely they were to take or support a wide range of specific climate actions. Relationships between personal responsibility and each of the five individual climate actions were consistently positive in most countries. Again, stronger effects were observed in Northern- and Western-European countries, and weaker effects were observed in Southern- and Eastern-European countries (see Figure 5b).

When taking the other predictors into account, biospheric values were overall relatively strongly and positively related to the two energy-saving behaviours, and this relationship was consistently positive across all countries. Hence, stronger endorsement of biospheric values was associated with stronger engagement in climate mitigation behaviours. Biospheric values' relationship with climate policy support was weaker, but overall still positive. This relationship was much less consistent across countries, and significantly negative in some countries (see Figure 5a). Notably, biospheric values were relatively strongly *negatively* related to support for fossil fuel taxation in Hungary, which deviated from all other observed relationships between biospheric values and individual climate actions.

When taking the other predictor variables into account, worry about climate change was overall positively related to climate policy support, which supports Hypothesis 3a, but was only weakly positively related to personal energy-saving behaviours, which was also expected beforehand. Hence, higher levels of worry about climate change were overall directly associated with enhanced policy support, and less so with climate mitigation behaviours. In most countries worry's associations with support for specific climate policies were positive, whereas the direction of the relationships between worry and climate mitigation behaviours appeared more inconsistent (see Figure 5c).

4. Discussion

Our findings offer clear support for the proposition that worry about climate change can play an important role in motivating individuals to support specific climate policies and to undertake personal behaviours to mitigate climate change. Specifically, in line with our Hypothesis 3a and previous research (Smith and Leiserowitz, 2014; Van der Linden, 2017; Van der Linden et al., 2019, 2015), we observed an unique, direct and positive relationship between worry about climate change and climate policy support across most countries: individuals who worried more about climate change were more likely to support climate policies. Moreover, our findings also supported our newly proposed indirect pathway through which worry about climate change may link to a wider range of specific and personal climate actions. Specifically, worry was positively related to feelings of personal responsibility to reduce climate change (Hypothesis 2), which, in turn, also linked to climate policy support, as well as to personal climate mitigation behaviours (Hypothesis 3b), to which worry was only weakly, and less consistently, directly positively related. Thereby, our findings provide new and critical insights in the direct and indirect pathways through which worry about climate change relates to individuals' engagement

in different forms of climate action, which is urgently needed to reach the ambitious climate targets set by many countries across the world (Intergovernmental Panel on Climate Change, 2018).

Importantly, next to providing insights in the potential consequences of worry about climate change, our data also offer key insights into the origins of worry about climate change. In line with the definition of worry (Leiserowitz, 2009; Levy and Guttman, 1976; Loewenstein et al., 2001; Peters et al., 2006; Smith and Leiserowitz, 2014; Van der Linden, 2017) and our Hypothesis 1, worry about climate change was strongly related to individuals' personal goals and preferences, here represented by individuals' personal biospheric values. That is, the more individuals cared about nature and the environment (i.e., biospheric values), the more likely they were to worry about climate change. In addition, biospheric values were also directly, positively and uniquely related to personal climate mitigation behaviours, but less to climate policy support. These findings are important as they may indicate what individuals perceive to be threatened by climate change (e.g., nature and the environment), thereby providing a better understanding of individuals' climate-related beliefs and feelings, and offering directions on what outcomes climate policies and interventions could communicate and target as to increase public support.

4.1 Theoretical implications

Our findings are relevant for – and extend – various lines of research. Whereas the observed direct relationship between worry about climate change and climate policy support replicates initial findings on the gateway belief model (Van der Linden et al., 2019, 2015), our data also suggests that worry's impact on climate actions – particularly personal climate mitigation behaviours – may be less direct than assumed by this model. Specifically, our findings showed that personal responsibility to reduce climate change may be key in translating abstract

worries into more concrete and personal climate mitigation behaviours, which is in line with and extends reasoning from the VBN theory (Steg et al., 2005; Stern, 2000; Ünal et al., 2019) and the principle of compatibility, which maintains that predictors should be at a similar level of abstractness as the behaviour being predicted (Ajzen and Fishbein, 1977). Moreover, our findings suggest that worry about climate change may be rooted in individuals' personal biospheric values, potentially adding a predictor to the gateway belief model, and showing another parallel with the VBN theory.

Overall, our results could be interpreted as support for a novel value-*emotion*-norm (VEM) pathway to climate action, which might occur next to the commonly used VBN pathway which focuses more on cognitions than emotions. Importantly, this could mean that individuals not only feel personally responsible to take action when they perceive themselves as playing a role in causing the problem, as is proposed in the VBN, but that such feelings of personal responsibility might also arise from how the issue affects them emotionally, specifically when they worry about it. Indeed, different lines of research suggest that emotions can play an important – and sometimes even more important role than cognitions – in motivating individuals to act (Chapman et al., 2017; Marlon et al., 2019; Moser, 2016; Pfister and Böhm, 2008; Taufik et al., 2016). Future studies could test these propositions.

4.2 Unique effects of values, worry and personal responsibility on different climate actions

The observation that climate policy support and climate mitigation behaviours were differently associated with our predictor variables personal responsibility, worry about climate change and biospheric values, indicate that different processes may underlie different types of climate actions. This has important implications for research on climate action, suggesting that existing theory to explain or promote one specific climate action (e.g., climate mitigation

behaviours) may not fully generalize to other climate actions (e.g., climate policy support), even though both actions are aimed at achieving the same goal (i.e., to mitigate climate change). Importantly, the observed relationships may also be indicative for how individuals perceive specific climate actions and offer insights in the meaning of specific variables (e.g., biospheric values, worry about climate change) to people, which we will discuss below.

Specifically, the relatively strong direct and indirect link between climate mitigation behaviours and biospheric values signify the personal nature of these actions. Biospheric values indicate how much someone *personally* cares about nature and the environment (Schwartz and Butenko, 2014; Steg et al., 2014; Stern and Dietz, 1994), which appear particularly guiding in how individuals want to live their lives *themselves*, as reflected in their individual climate mitigation behaviours. Furthermore, the unique relationship between biospheric values and personal climate mitigation behaviours supports that the scope of biospheric values is broader than climate change alone. Biospheric values may therefore provide an additional reason to engage in (pro-environmental) climate mitigation actions, next to climate-specific feelings of personal responsibility to reduce climate change. These findings imply that to promote personal climate mitigation behaviours, it is important to make these actions relevant for – and benefit – the key values individuals personally endorse, in particular biospheric (Bouman and Steg, 2020, 2019).

Compared to values, worry about climate change seems more problem focused. The focus is on reducing the global problem of climate change, which requires individuals to collectively change their behaviours around the world. Climate policies, which typically have society-wide implications, maybe more likely than individual actions to achieve such collective changes, which could explain why worry is mostly associated with climate policy support. Moreover, worry's unique link with climate policy support indicates that worry may provide other

motivations to support climate policies than feeling personally responsible to do so. Possibly, people support climate policies not only because they regard it their own responsibility, but also because they see climate mitigation as others' responsibility. This would imply that whereas values mainly prescribe individuals to engage in climate actions themselves, feelings of worry also makes individuals prescribe climate actions to others.

Whereas biospheric values and worry about climate change seem to primarily relate to respectively personal actions *or* policy support, personal responsibility to reduce climate change was in similar ways uniquely, positively and directly related to both types of climate actions. The observation that personal responsibility to reduce climate change related to a wider range of climate actions could be explained by its roots in both worry and biospheric values, which might widen individuals' scope on what climate actions could be taken. Moreover, as proposed in the VBN and NAM, feelings of personal responsibility to act are conceptually strongly connected to actual actions (Schwartz, 1977; Stern, 2000), making personal responsibility a key predictor of a wide range of actions (der Werff et al., 2016; Van Der Werff et al., 2015).

The notion that a wide variety of climate actions is associated with personal responsibility to reduce climate change is critical given that effects of general predictors – such as values, worry and personal responsibility – on single actions are typically small of size, and that the main value of such predictors largely lays in the range of actions it can predict, which together can add-up into a large overall effect (der Werff et al., 2016; Van Der Werff et al., 2015). Indeed, the observed effects were all small to medium of size, suggesting the main strength of our model – and particularly the role of personal responsibility to reduce climate change – lays in predicting a multitude of actions and policy preferences rather than predicting one action extremely well. This may be particularly critical in situations like climate change, which require a wide variety of

actions, at both the individual and societal level (Intergovernmental Panel on Climate Change, 2018).

4.3 Consistent effects, different effect sizes, across countries

Importantly, we found strong support for our proposed model in all countries. That is, in all countries the process variables in our model (i.e., biospheric values, worry about climate change, personal responsibility to reduce climate change) consistently related to each other, and to almost all climate actions, in the hypothesized ways. These insights are particularly valuable given that they were found in a large sample consisting of 23 countries, in which the exact same measures and methodologies were used. Hence, the consistency of our observations thereby strongly supports the validity and robustness of our model and findings, and clearly advances scientific understanding on the antecedents of climate action, and therefore contributes to international climate policy and, in particular, the development of international climate strategies.

Yet, while effects were consistently in the hypothesized direction, there were some differences in terms of the size of the effects. When focusing on the relationships between the model's process variables, biospheric values were comparatively strongly associated with climate worry and personal responsibility in most Northern- and Western-European countries, while relatively weak associations were observed in most Eastern- and Southern-European countries. Although cross-country differences in the model effects were not the primary focus of the current paper, they could provide insights into the conditions under which biospheric values, worry, and personal responsibility relate to each other. Accordingly, future research could explore these differences in effect sizes further. It is, for example, possible that the observed differences can be explained by the extent to which climate change is considered primarily a threat to nature and the environment, which connects biospheric values to climate change (cf. Ponizovskiy et al., 2019).

Specifically, in comparison to Northern- and Western-European countries, the association between biospheric values and climate-related feelings might be weaker among Eastern-European countries because they are generally more sceptical about climate change and its impacts (e.g. Poortinga et al., 2018), and might therefore be less likely to perceive threats of climate change to nature and the environment. Moreover, the relatively weak association between biospheric values and climate-related feelings in Southern-European countries could potentially be explained by what consequences of climate change are focal. These countries might be primarily bothered by climate change's disruptive impacts on society (rather than nature) as they more likely face such issues than other European countries due to more extreme weather conditions (e.g., droughts, floods) and limited means to effectively adapt to it (European Environment Agency, 2015).

The hypothesized positive relationship between personal responsibility and specific climate actions was also consistently supported across countries but appeared variable in size as well. Again, effect sizes were often larger in Northern- and Western-European countries, and weaker in Eastern- and Southern-European countries. Following the reasoning of the previous paragraph, these differences could be explained by what origins and impacts climate change is perceived to have and, accordingly, which actions are perceived most necessary and effective. Specifically, if individuals do not perceive the presented measures to result in desired outcomes (e.g., not targeting the cause, not affecting the primary issue), feelings of personal responsibility to reduce climate change unlikely motivate engagement in such actions. Furthermore, country-level factors, such as wealth or fossil fuel dependency could play a role (Demski et al., 2018; European Environment Agency, 2017; International Energy Agency, 2018; Poortinga et al., 2019). For example, it might on average be easier for Northern and Western Europeans to translate their feelings of personal responsibility into action as they often are less financially

burdened by climate action (e.g., because of higher income), are presented with more concrete and better sustainable alternatives (e.g., energy from renewable sources), and receive more support (e.g., by governments or energy companies). Critically, these disparities may further increase over time, as higher uptake of options is often associated with decreasing costs, and increases in perceived efficacy and social support (Bouman and Steg, 2019; Steg et al., 2005; Stern, 2000), which could widen the gap and may therefore be key to target at EU-policy level.

Worry and biospheric values were also uniquely positively related to climate actions in most countries, but overall these relationships appeared weaker and less consistent, which we beforehand already assumed would be the case (Figure 1, β_5 and β_6). Some of our analyses even seemed to suggest that in some countries worry and/or biospheric values were negatively associated with one or two climate actions (Figure 5), in particular support for fossil fuel taxation. Yet, most of these negative relationships only occurred when we controlled for the other predictor variables, while these relationships were close to zero or positive when simple bivariate correlations were inspected. Given the large number of relationships tested (3 predictor variables, 5 outcome variables, across 23 countries), it is not unlikely that some deviations or unexpected findings have occurred simply by chance. Accordingly, no strong conclusions should be drawn from these exceptions, though future research could investigate these relationships further.

Overall, our findings show the universality of our proposed model. The examined country-specific relationships are almost all in the hypothesized direction, and only vary somewhat in size. This highlights the usefulness of psychological models to explain climate action across different contexts, but also the relevance of conducting cross-cultural research, using high-quality datasets such as the European Social Survey to identify and understand differences where they may occur. Specifically, whereas the observed directions of the relationships between variables strongly conformed to our hypotheses and were highly consistent

across countries, effect sizes varied between countries, suggesting that country- and region-level factors may moderate the hypothesized relationships. Critically, the list of moderators we have discussed in this section is not exhaustive, and further theorizing and testing is required to draw firm conclusions on the proposed moderators' effects.

4.4 Unanticipated findings, future directions and potential limitations

This research produced a few findings that were not a-priori theorised. For example, we found relatively strong direct relationships between biospheric values and personal climate mitigation behaviours. Whereas we already provided a justification as to why biospheric values might not only be related to (pro-environmental) climate actions via climate-related feelings, future research could investigate further processes through which biospheric values and climate actions are associated. It is possible that other climate-related factors (e.g. efficacy beliefs), or environmental factors (e.g. environmental self-identity) (der Werff et al., 2016; Gatersleben et al., 2014; Van Der Werff et al., 2014) explain how values translate into climate action, which may be key to promote climate actions in relatively climate sceptical countries. Similarly, the direct relationship between worry about climate change and climate policy support deserves further investigation, in which a feeling that others (e.g., other citizens, companies or governments), next to oneself, are responsible for taking action may be a key mediator. Specifically, individuals who worry about climate change may be likely to perceive climate action as a joint responsibility, as only through joint efforts the climate change they worry about can be reduced. These feelings of joint responsibility may, in turn, be a key predictor of support for climate policies with society-wide implications.

Another promising avenue for future research would be to expand the model with other climate-relevant emotions (Nabi et al., 2018; Smith and Leiserowitz, 2014), such as hope, and

explore whether our proposed process or other processes could lead these emotions to turn into actions. For example, as indicated in the introduction, we would expect concern to be less associated with personal actions than worry, as it appears less experiential and personal (Leiserowitz, 2009; Smith and Leiserowitz, 2014; Van der Linden, 2017). Yet, concern might relate similarly as worry to more pragmatic and collective responses, such as climate policy support or support for public action. In addition, it would be interesting to research how more positive and constructive emotions – such as hope, pride and happiness (Marlon et al., 2019; Smith and Leiserowitz, 2014; Taufik et al., 2016; Venhoeven et al., 2016) – can promote personal actions, and whether similar processes play a role for these emotions.

Future research could also address some of the potential weaknesses of the current study. Whereas our model infers causal relationships between variables from theory, our data are correlational; meaning that future research is needed to confirm the theorized directions of the relationships. Moreover, the way in which the data were collected (large scale, international, high-level) restricted the number of items we could use to measure relevant constructs, potentially limiting their reliability. Although this might have had small effects on our outcomes, most likely weakening them due to unintended answering tendencies, we do believe that the consistency of the observed relationships between predictor and various outcome variables across countries (and languages) supports the usability of the items, and the validity and reliability of the results presented.

5. Conclusion

In conclusion, we believe the most significant contribution of our paper lies in the consistency in which our model predicts a wide range of climate actions and policy preferences across countries. These similarities may be critical for international climate policy, offering

insights in which variables could be targeted at a more global level to promote wide-scale changes in climate action and policy support. More concretely, in order to change an unprecedented range of behaviours and preferences – as was recently deemed necessary by the IPCC (2018) – it seems critical to raise feelings of personal responsibility to reduce climate change. This can be done directly (e.g., by highlighting individuals' role and responsibilities within climate mitigation), but also indirectly via worry about climate change and biospheric values, which might have additional direct influences on climate policy support or climate actions, respectively.

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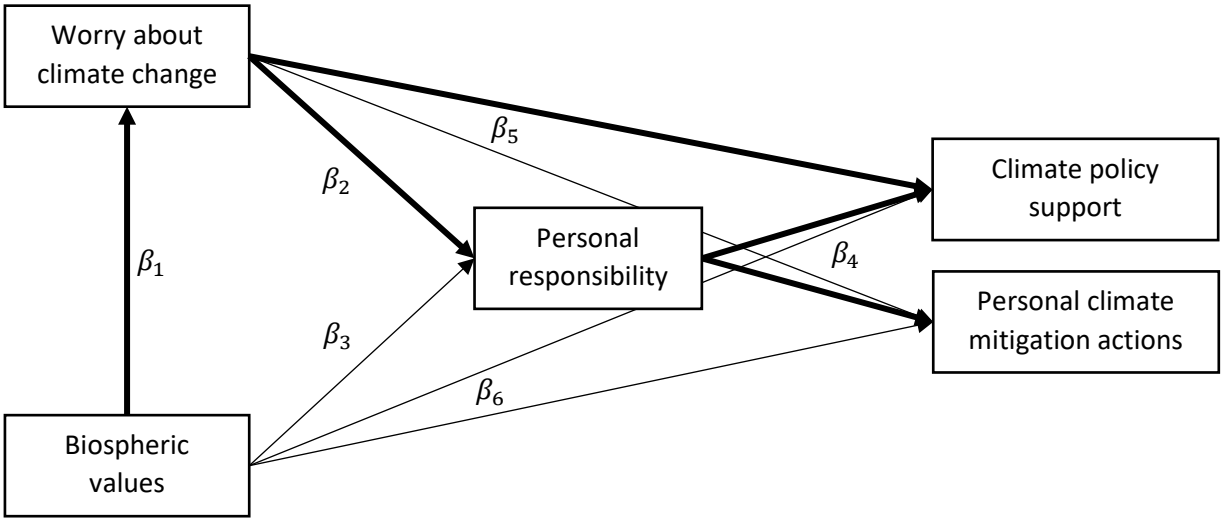


Fig. 1. Proposed conceptual model through which biospheric values and worry about climate change relate to personal climate mitigation behaviours and support for climate policy. Thicker lines represent hypothesized stronger relationships.

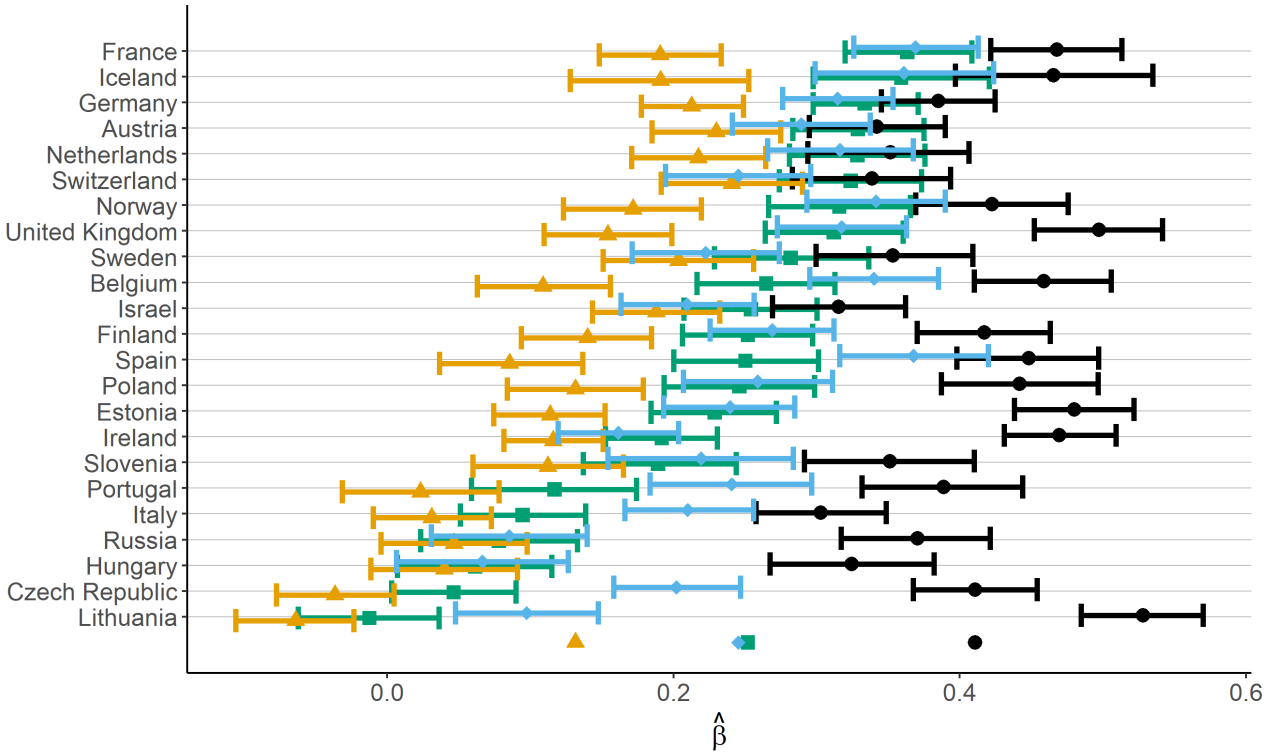


Fig. 2. Standardized regression coefficients and corresponding 95% confidence intervals for each county for the relationship between biospheric values and worry ($\hat{\beta}_1$, blue diamonds), worry and personal responsibility ($\hat{\beta}_2$, black circles), biospheric values and personal responsibility ($\hat{\beta}_3$, orange triangles), and the total effect of biospheric values on personal responsibility (green squares). Countries are ordered based on the strength of the total effect. The four symbols above the horizontal axis represent the grand mean over all 23 countries.

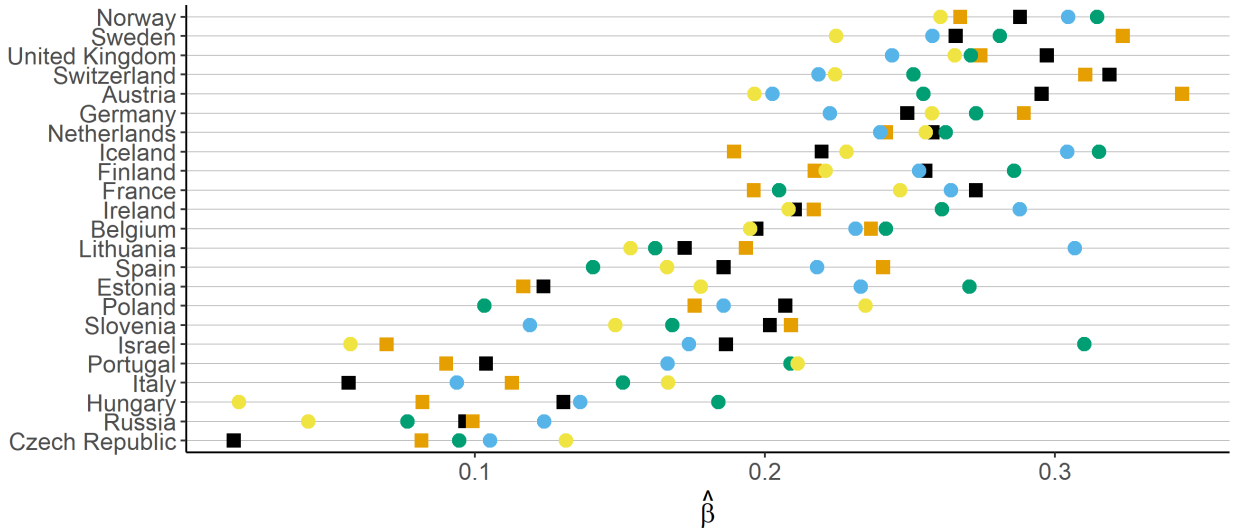
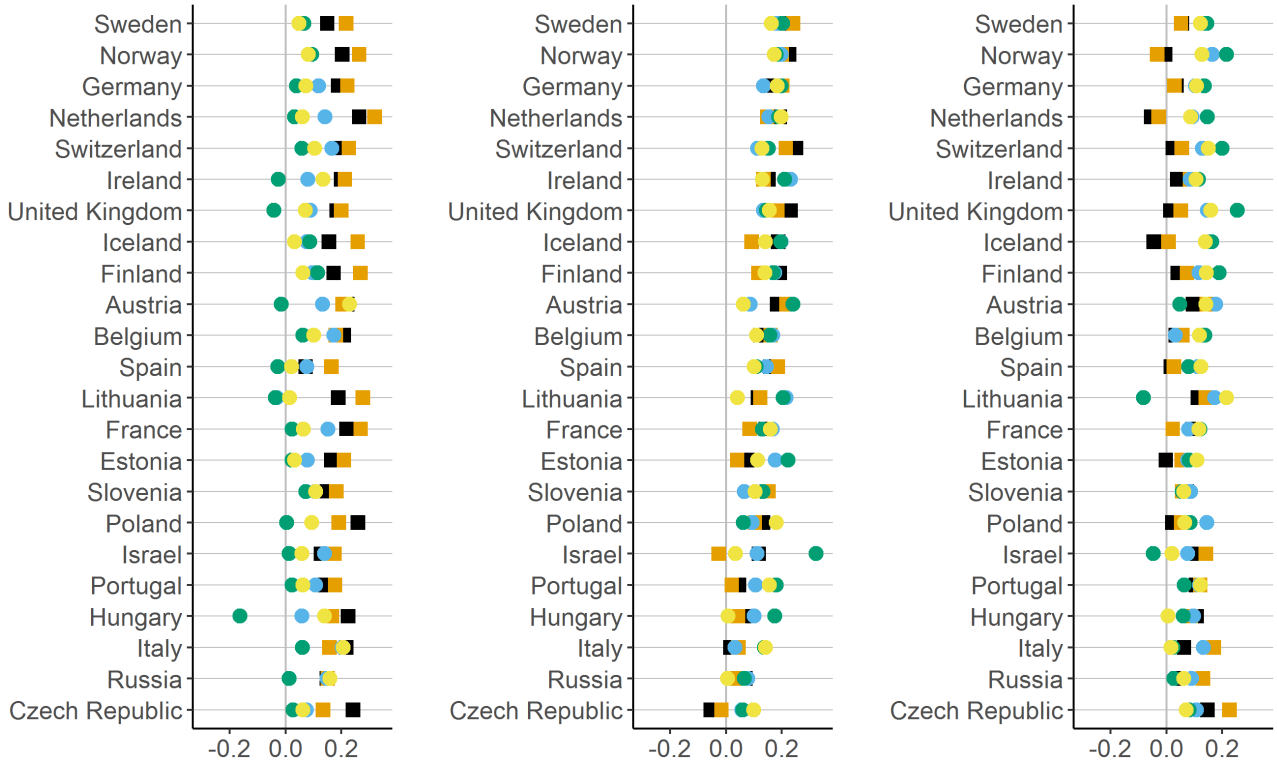


Fig. 3. Standardized regression coefficients for each country for the relationship between personal responsibility and the outcomes variables energy efficiency behaviour (black), energy curtailment behaviour (orange), support for tax on fossil fuels (green), support for subsidizing renewables (yellow), and support for law banning energy inefficient products (blue). Countries are ordered based on the strength of the overall relationship.

Fig. 4. Map displaying the average effect of personal responsibility to reduce climate change on energy saving behaviours and climate policy support. Darker shades indicate stronger effect sizes.



(A) Biospheric values (B) Personal responsibility (C) Worry about CC

Fig. 5. Standardized regression coefficients for each country for the relationship between biospheric values (A), personal responsibility (B), worry (C) and the outcomes variables energy efficiency behaviour (black), energy curtailment behaviour (orange), support for tax on fossil fuels (green), support for subsidizing renewables (yellow), and support for law banning energy inefficient products (blue). Countries are ordered based on the strength of the overall relationship.

Table 1. Regression of energy-saving behaviours and climate policy support on biospheric values, personal responsibility and worry about climate change (CC) across countries.

		Personal responsibility		Worry about CC		Biospheric values	
	R^2	$\hat{\beta}_4$	95% CI	$\hat{\beta}_5$	95% CI	$\hat{\beta}_6$	95% CI
Energy efficiency	.08	.13	[.12, .14]	.05	[.04, .06]	.19	[.18, .20]
Energy curtailment	.09	.12	[.11, .13]	.08	[.07, .09]	.21	[.20, .22]
Tax fossil fuels	.06	.17	[.16, .18]	.10	[.09, .11]	.03	[.02, .04]
Subsidize renewables	.06	.12	[.11, .13]	.10	[.09, .11]	.10	[.09, .11]
Ban unsustainable appliances	.07	.14	[.13, .15]	.12	[.11, .13]	.11	[.10, .12]

Note. Betas refer to Figure 1

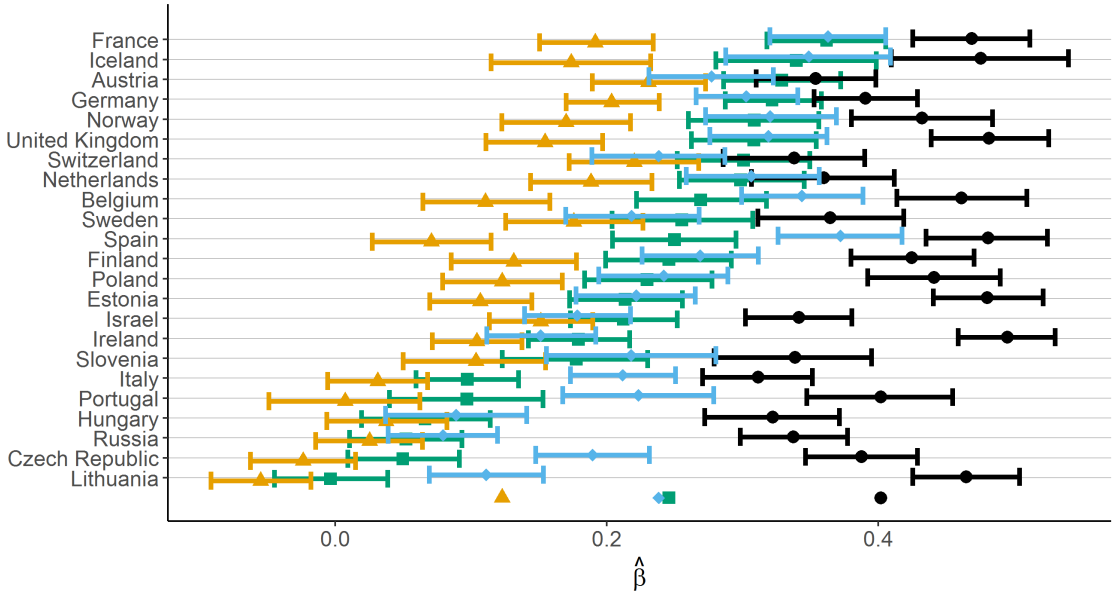


Figure S1. Outcomes of model 1a where missing data is imputed based on approach 2 (all missing values imputed). Points represent standardized regression coefficients and corresponding 95% confidence intervals for each county for the relationship between biospheric values and worry ($\widehat{\boldsymbol{\beta}}_1$, blue diamonds), worry and responsibility ($\widehat{\boldsymbol{\beta}}_2$, black circles), biospheric values and personal responsibility ($\widehat{\boldsymbol{\beta}}_3$, orange triangles), and the total effect of biospheric values on responsibility (green squares). Countries are ordered based on the strength of the total effect. The four symbols above the horizontal axis represent the grand mean over all 23 countries.

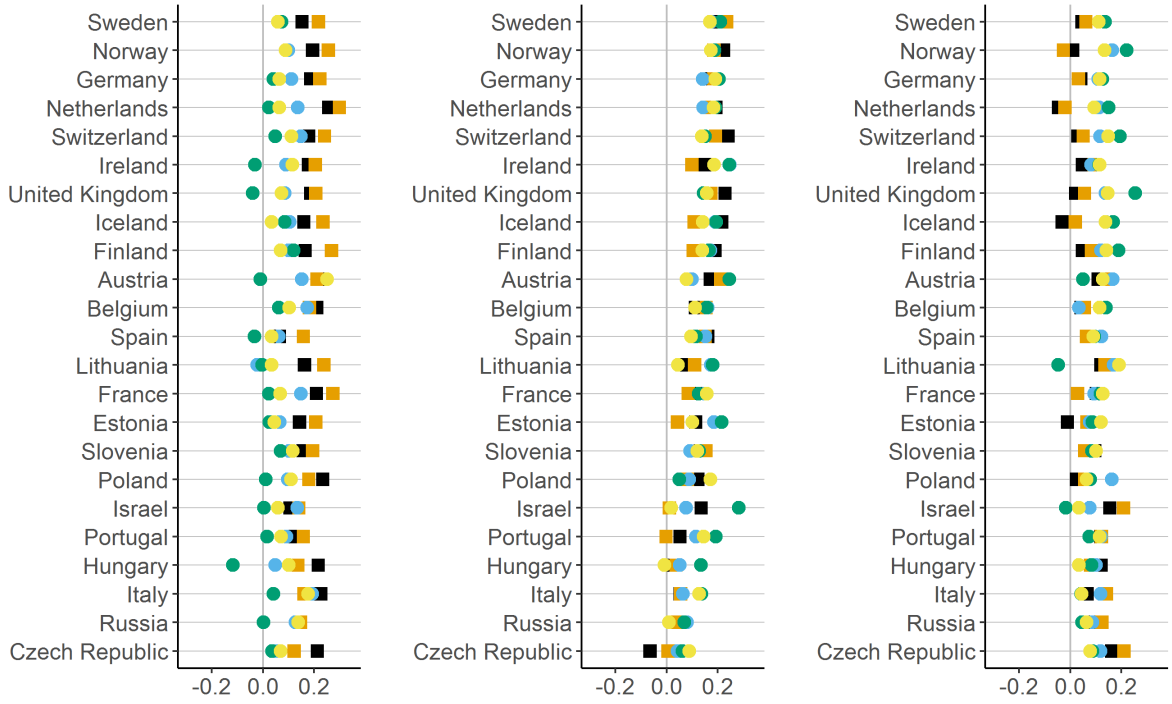


Figure S2. Outcomes of model 1c where missing data is imputed based on approach 2 (all missing values imputed). Points represent standardized regression coefficients on for each country for the relationship between biospheric values (A), personal responsibility (B), worry (C) and the outcomes variables energy efficiency behaviour (black), energy curtailment behaviour (orange), support for tax on fossil fuels (green), support for subsidizing renewables (yellow), and support for law banning energy inefficient products (blue). Countries are ordered based on the strength of the overall relationship.

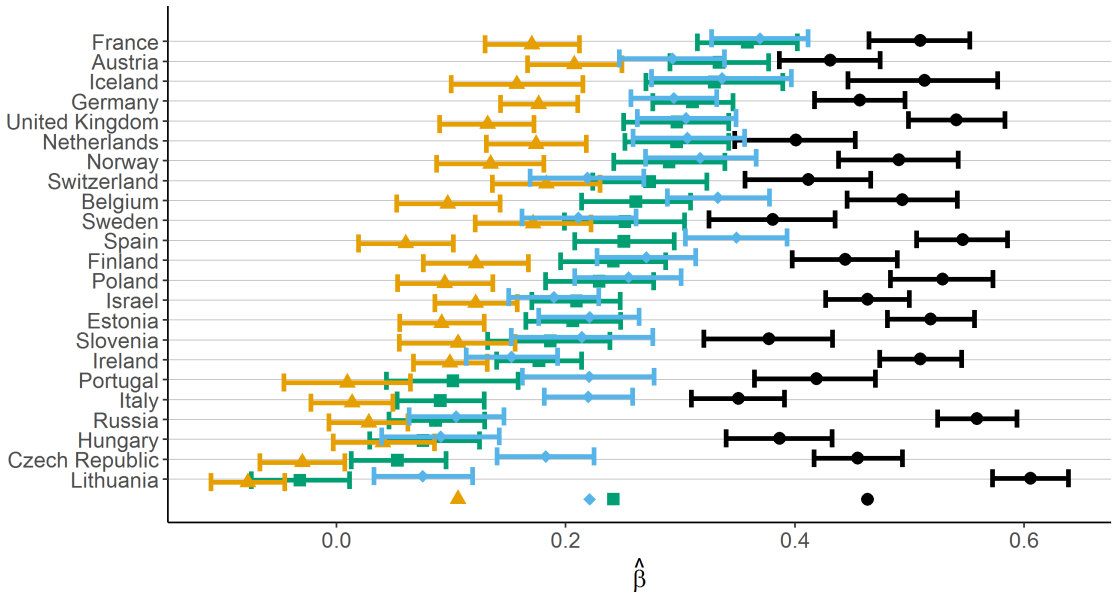


Figure S3. Outcomes of model 1a where missing data is imputed based on approach 3 (expert-knowledge based imputation). Points represent standardized regression coefficients and corresponding 95% confidence intervals for each county for the relationship between biospheric values and worry ($\hat{\beta}_1$, blue diamonds), worry and responsibility ($\hat{\beta}_2$, black circles), biospheric values and personal responsibility ($\hat{\beta}_3$, orange triangles), and the total effect of biospheric values on responsibility (green squares). Countries are ordered based on the strength of the total effect. The four symbols above the horizontal axis represent the grand mean over all 23 countries.

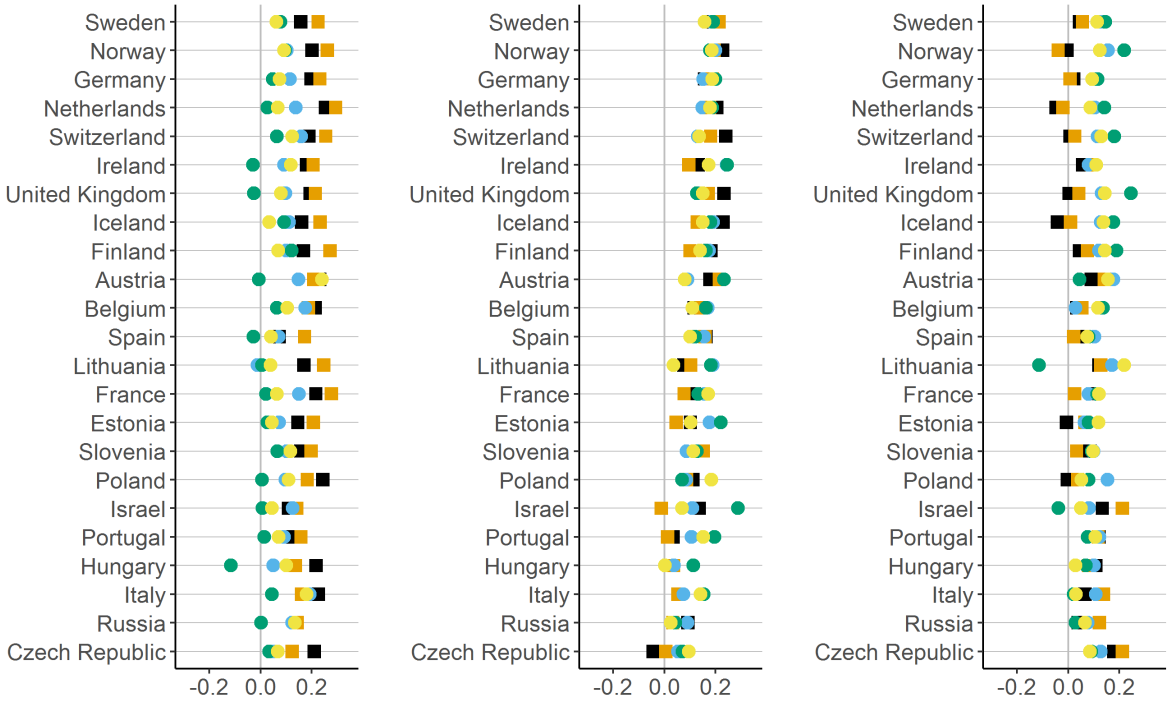


Figure S4. Outcomes of model 1c where missing data is imputed based on approach 4 (expert-knowledge based imputation). Points represent standardized regression coefficients on for each country for the relationship between biospheric values (A), personal responsibility (B), worry (C) and the outcomes variables energy efficiency behaviour (black), energy curtailment behaviour (orange), support for tax on fossil fuels (green), support for subsidizing renewables (yellow), and support for law banning energy inefficient products (blue). Countries are ordered based on the strength of the overall relationship.

Table S1. Mean scores and standard deviation for biospheric values, worry about climate change and personal responsibility to reduce climate change.

			Biospheric values		Worry about climate change		Personal responsibility	
	n	% complete data	*M*	*SD*	*M*	*SD*	*M*	*SD*
Austria	2010	91.24	4.89	1.05	3.06	0.90	6.00	2.62
Belgium	1766	98.13	4.88	0.87	3.19	0.85	6.00	2.33
Czechia	2269	86.29	4.59	1.05	2.74	1.06	3.39	2.58
Estonia	2019	92.32	4.92	0.93	2.66	0.94	4.36	2.83
Finland	1925	96.21	4.99	0.97	3.06	0.81	6.57	2.24
France	2070	96.33	4.71	1.22	3.23	0.93	6.93	2.28
Germany	2852	95.93	4.89	0.99	3.36	0.85	6.62	2.31
Hungary	1614	77.01	5.03	1.01	3.09	0.83	4.42	2.54
Iceland	880	92.39	4.79	1.06	3.12	0.89	6.28	2.40
Ireland	2757	91.15	4.77	1.10	2.83	0.91	5.78	2.48
Israel	2557	73.17	4.76	1.19	2.79	0.99	5.44	3.07
Italy	2626	80.08	5.03	0.88	3.26	0.82	5.49	2.47
Lithuania	2122	69.75	4.55	1.18	2.92	0.93	5.03	2.68
Netherlands	1681	92.92	4.79	0.95	3.02	0.85	5.88	2.29
Norway	1545	96.44	4.41	1.11	3.00	0.82	6.29	2.27
Poland	1694	81.17	4.99	0.89	2.78	0.84	5.61	2.45
Portugal	1270	91.97	4.75	0.94	3.53	0.90	5.81	3.05
Russian Federation	2430	59.38	4.81	1.08	2.82	0.95	4.06	2.53
Slovenia	1307	92.35	5.21	0.79	3.21	0.84	5.47	2.70
Spain	1958	80.64	5.16	0.87	3.52	0.83	6.19	2.49
Sweden	1551	93.49	4.78	1.01	2.86	0.86	6.55	2.19
Switzerland	1525	93.77	5.06	0.90	3.13	0.84	6.90	2.20
United Kingdom	1959	94.33	4.75	1.10	2.95	0.94	5.91	2.48
Overall	44,387	86.84	4.84	1.03	3.04	0.92	5.71	2.66

Note. Percentage of complete data is the percentage of respondent who had no missing data on any of the measures included in the current paper. The largest proportion of missing data could be explained by the respondent not believing in climate change, in such a case no questions about climate change engagement, among which worry and

personal responsibility, were asked.

Presented Means and Standard deviations represent respondents who did not had missing data on any of the variables of interest to our study, as indicated in the Method section of the paper this data from these respondents were used for the main analyses presented in the paper.

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Table S2. Mean scores and standard deviation for energy-saving behaviours and climate policy support

	Energy efficiency		Energy curtailment		Tax fossil fuels		Subsidize renewables		Ban least energy efficient appliances	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Austria	8.11	1.99	4.01	1.19	2.80	1.21	4.24	0.85	3.80	1.10
Belgium	8.04	1.87	4.24	1.13	2.76	1.23	3.95	1.04	3.74	1.09
Czechia	7.92	2.05	4.01	1.16	2.67	1.29	3.51	1.32	3.46	1.36
Estonia	7.68	2.30	4.20	1.17	2.59	1.03	3.93	0.92	3.30	1.06
Finland	7.87	2.09	4.21	1.02	3.37	1.07	3.94	0.97	3.55	1.02
France	7.93	2.10	4.47	1.14	2.53	1.18	3.90	1.02	3.69	1.12
Germany	8.46	1.95	4.47	1.05	2.98	1.15	4.12	0.94	3.83	1.16
Hungary	7.63	2.34	4.33	1.10	2.69	1.26	4.46	0.92	3.49	1.16
Iceland	6.88	2.70	3.89	1.13	3.23	1.14	3.68	0.97	3.19	1.17
Ireland	7.67	2.23	4.17	1.19	2.64	1.26	3.73	1.16	3.34	1.24
Israel	7.89	2.51	3.87	1.38	2.68	1.23	3.86	1.18	3.63	1.19
Italy	8.44	1.76	4.33	1.20	2.63	1.25	3.94	1.06	3.85	1.01
Lithuania	8.15	2.00	4.10	1.17	2.70	1.27	3.87	0.99	3.25	1.14
Netherlands	7.54	2.16	4.14	1.10	2.94	1.23	4.23	0.89	3.42	1.23
Norway	6.95	2.36	4.04	1.08	3.22	1.24	4.25	0.82	3.35	1.13
Poland	8.12	2.04	4.02	1.10	2.36	1.04	4.01	0.95	3.61	1.10
Portugal	8.41	2.06	4.44	1.20	2.64	1.31	3.79	1.27	3.87	1.16
Russian Federation	6.38	2.52	3.56	1.35	2.70	1.11	3.61	1.04	3.30	1.02
Slovenia	8.10	2.18	4.38	1.13	2.67	1.23	4.50	0.79	3.75	1.16
Spain	8.10	2.12	4.44	1.23	2.49	1.24	4.06	1.11	3.72	1.08
Sweden	7.49	2.19	4.08	1.09	3.49	1.21	4.26	0.87	3.35	1.19
Switzerland	8.20	2.10	4.23	1.11	3.23	1.17	4.13	0.89	3.81	1.13
United Kingdom	7.27	2.50	4.31	1.18	2.87	1.17	3.71	1.07	3.45	1.13
Overall	7.83	2.22	4.18	1.18	2.81	1.23	3.97	1.05	3.57	1.16

Note. Presented Means and Standard deviations represent respondents who did not had missing data on any of the variables of interest to our study, as indicated in the Method section of the paper this data from these respondents were used for the main analyses presented in the paper.

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