Article

Exploring the Moral Challenges of Confronting High-Carbon-Emitting Behavior: The Role of Emotions and Media Coverage

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Abstract: In this article, we address the climate crisis as a moral issue and discuss the relevant moral and emotional processes and the role of the media underlying the motivations of individuals to behave in a less carbon-emitting manner. We provide theoretical insights from social psychology and emotion research and empirical data based on an online survey from Germany ($N = 979$). In the theoretical part, we outline the role of emotions in influencing carbon-related behavior, with a particular focus on self-condemning (e.g., guilt or shame), self-praising (e.g., pride), or other-suffering emotions (e.g., empathy). We further summarize the reasons for the low influence of the media on carbon-related behavior compared to the COVID-19 pandemic. The empirical results confirm that participants reported other-suffering and self-condemning emotions in response to news content and rated their likelihood of personal behavior change as high when confronted with news about the climate crisis on a daily basis, as has been widely the case during the COVID-19 pandemic. We argue that the media is responsible for regularly reporting on the victims of the climate crisis in order to generalize self-condemning and other-suffering emotions into affective attitudes. Opinion leaders can function as role models for low-carbon behavior.

Keywords: moral motivation; media representation; (moral) emotions; moral disengagement; high-carbon behavior; pro-environmental behavior

1. Introduction

1.1. The Climate Crisis as a Moral Issue

In this article, we address the climate crisis as a moral issue. While the global poorest, who make up 50% of the world's population, are most afflicted by the climate crisis, they contribute least to it in comparison with the global richest, who make up only one percent of the world's population. That is, the carbon footprint of the global richest can be as high as 687 tonnes of carbon emissions per year, in comparison with the global average of seven tonnes [1]. These observations are supported and extended by a recent Oxfam report [2], which states that the scale of carbon-based, consumption-driven emissions from higher-income populations is not only enormous but also increasing. Over one-third (37%) of the increase in carbon-based discharges between 1990 and 2015 was generated by five percent of the world's population.

The growing climate injustice outlined here has already led to breaches in key human rights, such as the taking of life, health, and reasonable subsistence from those already being harmed and further threatened [1,3,4]. Thus, the growing climate injustice should be considered as a moral issue. The moral problem is that high polluters, usually the better-off, have many options to fall back on to mitigate the consequences of their behavior. For example, they have the financial means to protect themselves from climate change impacts

(e.g., droughts and floods). Because of persistent delays and the inadequate national and global political delivery of indispensable incentives and regulation, the individuals, communities, companies, and civil society at large play a vital role in overcoming the injustices and harmful consequences described above.

1.2. The Role of the Individual

In this article, we focus on high- and middle-income citizens, mainly in richer countries but including global elites, and discuss the conditions and potentials for personal transitions to a progressive lowering of carbon-based emissions. Axon [5,6] and others [7–10] observe that individuals can substantially contribute towards lower carbon futures through reducing their carbon footprints, influencing 45–55% of total energy use in typical developed countries [1]. There are a variety of differentially effective instruments used to initiate and foster a behavioral change in the individual towards low-carbon behavior. Goldsmith and Goldsmith [11] summarize studies that demonstrate the effectiveness of using social influence to promote low-carbon behavior. One example shows that "curb-side recycling among community residents could be increased through positive feedback from the neighborhood" [12]. Another example demonstrates the importance of social influence for energy conservation [13].

In sum, according to Goldsmith and Goldsmith [11], social influence is a potent—yet often ignored—way to shape human behavior because individuals care about others' opinion of them. An individual's behavior is influenced by the striving for a high social reputation while avoiding disapproval. Therefore, individuals observe and imitate others' behavior. However, certain individuals called "opinion leaders" were found to be more central, i.e., influential, than others [11]. Depending on the behavior they demonstrate, these opinion leaders might turn out to be positive or negative role models, and therefore enablers or barriers, for individuals to initiate a change towards low-carbon behavior.

We also discuss how emotions can play an important role in engaging in low-carbon behavior. Therefore, our research question reflects the role of moral emotions and media coverage in influencing individual behavior to address the moral challenges of the climate crisis. We synthesize the available theoretical and empirical literature and our empirical data to complement the few existing studies on the role of emotions in climate communication. Although several studies have already explored factors for sustainable behavior change, few of them have focused on the influence of the media on behavior and even fewer have focused on the influence of emotions. In contrast to previous studies investigating the isolated influence of media or emotions, we focus on the influence of generalised emotions established via frequent media coverage. We discuss the relevant emotions and the role of the media underlying the motivations of individuals to behave in a less carbon-emitting manner.

1.3. The Role of Emotions

Emotions were found to shape carbon-related behavior and its moral dimensions [14]. Additionally, they are pivotal in climate change communication. Roeser [15] argues that people lack a sense of urgency in regards to climate change. In her study, emotions made up for this lack of urgency and made people aware of the negative consequences of climate change, as they perceived the climate crisis to be a moral issue. Consequently, emotions are necessary for moral decision making and understanding the moral impacts of the risks of climate change. Roeser [15] even argues that emotions might be the missing link to successfully communicate about climate change. In a recent review [16], this key role of emotions receives support: climate change emotions are "consistently found among the strongest predictors of climate change risk perceptions, mitigation behavior, adaptation behavior, policy support, and technology acceptance" (p. 18). Therefore, we attempt to integrate the different lines of theory and research in regard to moral emotions and media coverage to demonstrate ways of reducing high-carbon-emitting behavior.

Information regarding humans suffering from consequences that could be attributed to one's own high-carbon behavior might give rise to strong, emotionally distressing reactions (e.g., shame or guilt) and lead to the conclusion that this behavior is not compatible with widely held moral standards [17,18]. The conclusion that "the stronger a person's emotional reaction, the more likely that person will engage in a new behavior" [19] proved to be the case irregularly [20]. In some cases, individuals employ psychological strategies to prevent themselves from experiencing these negative feelings. These strategies comprise, among others, denial, diffusion, or delegation of responsibility (see the moral disengagement strategies below), and have most prominently been investigated by Bandura [21]. Bandura's theory is based on Festinger's [22] theory of cognitive dissonance. Cognitive dissonance is described as perceiving either two conflicting cognitions or the conflict of a cognition and an incompatible action. Cognitive dissonance leads to emotional distress and the associated stress of avoiding it. Therefore, the theory predicts that individuals who experience cognitive dissonance strive to resolve or deny it. Festinger studied the psychological effects of new, inconsistent information on one's existing beliefs and observed a natural, psychological resistance to belief revision as a result of dissonant information.

Therefore, to understand the many causes of persistent and undesirable climate-altering behaviors, it is necessary to focus on emotions and emotion-regulation strategies, as they are central to behavioral decision making [15,19,23] and influence carbon-related behaviors in several respects [24–26]. Environmental psychologists distinguish between different emotional types as being relevant to carbon-related behavior [14,27]. Here, we refer to the categories of Landmann [14]. Three of these emotional types are of particular relevance here. First, when personal norms are violated, a person is confronted with self-condemning emotions, such as guilt, shame, or embarrassment, which lead to a tendency to correct the mistake or repair the environmental damage. Second, when personal norms are altered in a positive way, a person feels self-praising emotions such as pride. As a result, self-support is sought. Third, observing others' suffering, other-suffering emotions occurs (e.g., compassion, empathy, or emotional contagion), which in turn leads to helping those in need.

Of course, "whether an emotion enhances or hinders pro-environmental behavior depends on its object" p. 66 [14]. Consequently, to make people behave in a less carbon-emitting way, they need to be aware of others' suffering, realize that this fact is violating their own norms, and learn to act in ways that are consistent with moral norms so that self-praising emotions can be anticipated and self-condemning emotions can be prevented as a consequence of this alternative behavior.

Above all, guilt and pride have been investigated in the domain of high-carbon-emitting behavior [28]. Hurst and Sintov [28] discuss several studies that show that pride and guilt can positively influence pro-environmental behavior in general but that these findings are inconsistent: some studies find guilt, but not pride, to be an effective motivator of pro-environmental behavior, whereas others show the opposite pattern, or even observe that both emotions function as motivators. For example, Shipley and van Riper [29] found an equally strong explanatory power of anticipated guilt and pride on pro-environmental behavior. In contrast, only experienced guilt predicted intended and reported actions, while experienced pride did not (see also Adams et al. [30]). In their own results, Hurst and Sintov [28] found that the influence of these two emotions depends upon the context of their induction. Overall, their findings "provide consistent evidence supporting the role of guilt in motivating behavior change and suggest that evoking pride can work in some contexts" p. 9 [28]. The authors assume a negativity bias resulting in a higher and more reliable impact of guilt than pride. According to Hurst and Sintov [28], a negativity bias asserts that experiencing negative events indicates a need for change, whereas positive events indicate no need to modify behavior as things are going well. We follow this interpretation as negative emotions are highly aversive and therefore might motivate behavior that changes the situation.

However, we acknowledge that positive emotions, such as pride, can lead to positive behavior but, in line with the findings on the inconsistency of the effect of positive emotions, we examine the impact of guilt on low-carbon behavior in the context of this study.

If we assume that people want to avoid unjust conditions, even when they benefit from them (as evidenced by various empirical studies, e.g., [31–36]), then those with high carbon footprints should be confronted repeatedly and in emotion-inducing manners that demonstrate how their high levels of emissions engender climate injustice. According to the model of affect generalization, repetition is important since one single emotional experience might not be sufficient to change behavior. Landmann [14] concludes, "emotions are relevant for behavioral intentions only if they generalize to affective attitudes" p. 69 [14]. This repetition can be a role of the media. Media, such as TV, images, videos, or newspapers have already been used successfully in emotion-based psychology research to evoke certain emotions (for literature on affect elicitation by images, see, e.g., [37,38]; see below for a detailed analysis).

1.4. The Role of Media Coverage

According to Moser and Dilling [39], individuals gain understanding and engage in emotional responses while consuming media content, it is useful to scrutinize the influence of the media on the cognitive, emotional, and behavioral dimensions that influence carbon-related behavior.

So far, when it comes to exploring low-carbon behavior, a practice referred to as "climate silence" has been observed as a continuing disregard of climate victims [40]. Climate silence is defined as a social construct, and it describes people tacitly agreeing to ignore the "more disturbing" implications of the climate crisis, e.g., the fact that other people are already dying (e.g., due to floods or heatwaves) around the globe. In particular, we see at least two concrete tasks for climate change communication via the media: first, the connection of one's own privileges to high-carbon behavior and others' disadvantages is rarely apparent. The harmful consequences of the climate crisis are abstract, temporally and spatially distant, and complex as well as unintended [41]. Hence, some people do not feel responsible, which hinders them from feeling a moral obligation. To show this linkage, appropriate and relevant media coverage is essential. Second, people might tend to morally disengage when they face emotional distress such as guilt due to their carbon behavior. Therefore, the media should combine (1) reporting about harmful consequences, and (2) efficient mitigation and adaptation strategies.

Up to now, it has been apparent that a wide range of information about climate change in the media often fails to motivate behavior change in its audiences [42]. One reason for that failure is that motivating low-carbon behavior through the media is complicated by not knowing whom or what to trust regarding the most appropriate behavior, a confusion rooted in the media's mixing of opinions and arguments [42]. Furthermore, the range of conflicting messages about the climate crisis across the media has contributed to confusion. Therefore, messages reflecting scientific consensus across the media are important. While, as in any scientific field, there will be disagreement on specific topics, the basic arguments about anthropogenic climate change are increasingly accepted. Goldberg and his colleagues argue that public understanding of this scientific consensus acts as a 'gateway belief': people who learn about the existing consensus become more convinced that climate change is happening, human caused, and a serious threat, and in turn become more supportive of climate change policies [43]. Therefore, the language of risk, which is rather unfamiliar to a large share of the population, and which is increasingly used in climate change communication [44], should always be contextualized with information about how science works and that the current scientific consensus about human-made climate change is immense. A core strategy of individuals denying the climate crisis is to foster public confusion about scientific consensus and thus prevent or delay political climate change efforts [45,46].

Another reason for the media's failure to motivate carbon-related behavior change is that the climate crisis is subject to peaks and troughs in media attention [42]. It is noteworthy that, since the onset of the COVID-19 pandemic, global media coverage of the climate crisis has dipped dramatically (for the situation in Germany, see Figure 1).
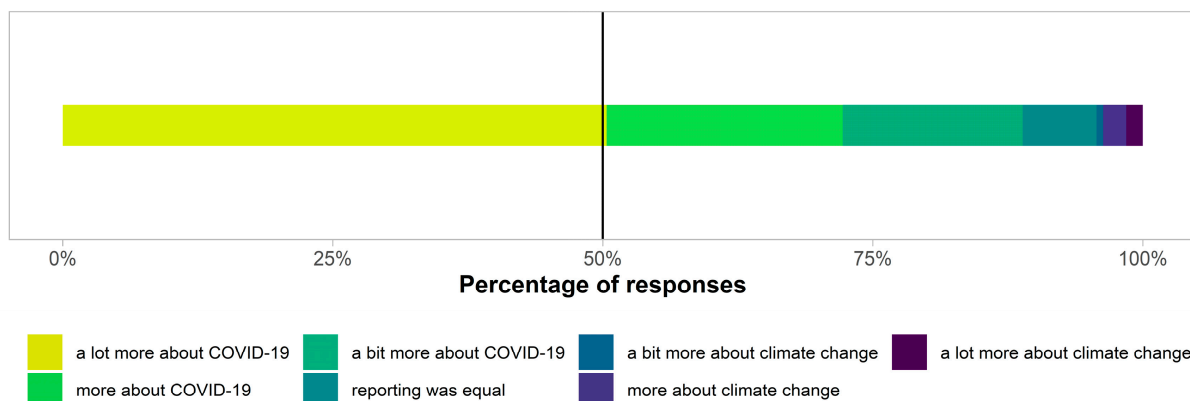

Figure 1. Relative frequencies of perceived media coverage on climate change in comparison to COVID-19. Vertical line indicates median response. *N* = 979.

The media's failure to adequately report about the climate crisis (especially, but not only in times of the COVID-19 pandemic) can be explained using Chomsky and Herman's *Propaganda Model* [47], which offers a framework for analyzing and understanding the workings of the mainstream media and its connections to government propaganda demands. Chomsky argues that the media serve powerful stakeholders who control and finance their actions. This is realized by the "selection of right-thinking personnel and by the editors' and working journalists' internalization of priorities and definitions of newsworthiness that conform to the institution's policy". Chomsky strives for the creation of a large number of media outlets, including the activities of grassroots movements and non-profit organizations, which would better reflect the perspectives of ordinary citizens, and so democratize information flows.

Our concern in this study is to bring together the role of moral motivation and emotions for low-carbon behavior and draw conclusions on climate change communication by the media, partially in comparison to media communication during the COVID-19 pandemic.

During the first peak of the pandemic in Germany (March–May 2020) (the first lockdown in Germany lasted from March to May 2020, e.g., [48]), the media showed that an agenda can change abruptly in reaction to what is perceived as a current crisis. As an example, we searched two major German daily newspapers for their publications on both crises during the first peak of the COVID-19 pandemic. For the period 1 March–31 May 31 2020, *Süddeutsche Zeitung* (integrated search function on the website of the daily newspaper *Süddeutsche Zeitung* (https://www.sueddeutsche.de/), accessed on 10 March 2022) published 5000 articles with the keyword "corona" and 770 with the keyword "climate"; *Frankfurter Allgemeine Zeitung* (integrated search function on the website of the daily newspaper *Frankfurter Allgemeine Zeitung* (https://www.faz.net/suche/), accessed on 10 March 2022) published 7581 with the keyword "corona" and 196 with the keyword "climate". Furthermore, the daily reports of the numbers of infected people and deaths due to the pandemic have been presented in a wide range of media formats. This approach rendered the reports and accompanying press photos prominent to the audience. Two years earlier, however, more than 10,000 people in Germany had fallen victim to a long summer heatwave that could have been causally linked to the climate crisis [49].

In a German quota sample, we investigate whether commonly used principles of COVID-19 pandemic reporting (regular coverage, focus on victims causing other-suffering, and self-condemning emotions) can be strategically applied to climate crisis reporting. Afterwards, we will discuss the effects of applying these communication principles on

climate crisis reporting to trigger emotional reactions and responsibility attributions, and to facilitate the acceptance of political measures.

2. Materials and Methods

2.1. Sample

We recruited 1100 German participants via the platform meinungsplatz.de. *Meinungsplatz.de* is a German survey platform offering a pool of 250,000 active participants from all sociodemographic strata in Germany and Switzerland for market and opinion research purposes. All participants were compensated for their expenses in accordance with the policy of the panel service.

Inclusion criteria were set on the basis of quotas in regard to age and gender to assure representativeness regarding these sociodemographic dimensions. Participants had to be at least 18 years old. The scheduled age and gender proportions were based on the Federal Statistical Office [50] (see Table 1 for the distribution of age and gender in Germany in comparison to the study sample.) As can be seen in Appendix A, all 16 federal states of Germany (Figure A1), as well as various education (Figure A2), occupation (Figure A3) and income categories (Figure A4), were represented. The sex distribution in Germany (50.7% female and 49.3% male, as of the Federal Statistical Office [50]) is nearly equal and the gender proportion was accordingly assumed to be equal as well.

Table 1. Proportions of German age groups (in 2018) and the derived sampling goals along with the final sample proportions.

Age Group	Proportion	Sampling Goal	Sampling Observed		
			Female	**Male**	**Total**
18–25 years	12%	136	74	52	126
26–35 years	15%	166	59	52	111
36–45 years	14%	154	67	61	128
46–55 years	18%	200	95	87	182
56–65 years	16%	182	85	88	173
66 years or older	24%	262	131	128	259

Note: Proportions are based on Federal Statistical Office data [50]. We assumed the genders to be equally distributed.

We excluded 121 participants due to concerns regarding meaningless data related to the relative speed index (RSI, [51]) with RSI > 2. The relative speed index is computed by dividing the median page completion time of the sample by the page completion time of the respective individual. A relative speed index of 2 indicates that an individual was twice as fast as the median of the respondents. Consequently, the final sample for this study comprised of 979 participants: 511 women and 468 men (age $M = 50.4$, $SD = 17.2$, range = 18–84 years). The age and gender quotas were set for the total sample of $N = 1100$. Albeit slightly changed after exclusion, the resulting sample ($N = 979$) was still representative of the German adult population in terms of the predefined age and gender quotas [52].

2.2. Research Design, Instruments, and Procedure

The data reported here were part of a survey with different components. We will focus only on the components suitable in this context. The other components of the study were: scales of justice sensitivity, proneness to emotions, and personality traits (e.g., Big Five, and empathy). These scales can be found in the Supplementary Materials File S1 and the associated results will be discussed in other articles (e.g., [53]). Addressing only the components relevant for the purpose of this article, the associated forms were answered in the following order.

2.2.1. Sociodemographic Variables

We asked for gender, age, education, working situation, household income, religiousness, voting behavior, federal state, and the size of the city participants currently lived in.

2.2.2. Media Coverage

We created five specifically designed questions on the role of the media. First, we asked participants, "in your perception, was there more coverage on climate change or COVID-19 during the period from March to May 2020?" (7-point verbal scale; 1 = "a lot more about climate change", 4 = "equally much about climate change and COVID-19", 7 = "a lot more about COVID-19"). To compare the respondents' awareness of climate change victims, we then asked, "Were you aware that more than 10,000 people died in 2018 due to the climate change-related heatwave in Germany in 2018: more than the number of those who died due to COVID-19 in Germany in 2020?" (1 = "Yes, I was aware of it", 2 = "No, I was not aware of it", 3 = "I doubt that this information is correct"). Bearing in mind the necessity of repeating emotional episodes to shape emotional attitudes, as described above, we wondered whether giving the information about the number of heat-related deaths [49] in 2018 would emotionally affect individuals. Therefore, the next question was "Did this information emotionally affect you?" (1 = "no", 2 = "yes"; if yes, a free-text form was presented to specify that emotion). The free-text answers were coded independently by two different raters (interrater correlation r = 0.87). As these answers might contain multiple types of emotional information, they were coded accordingly, with multiple emotion codes if necessary.

Given that repeated reporting on the climate crisis in the media is required to have an effect on behavior, we asked participants how likely they would be to change their high-carbon behavior in favor of low-carbon alternatives if, e.g., the numbers of heat deaths were reported credibly and on a daily basis (as was the case for the death reports due to the COVID-19 pandemic; 5-point scale with 1 = "very unlikely", 5 = "very likely").

2.2.3. Political Measures

The participants had to answer three questions on political measures. First, we were interested in learning who the respondents regarded as being the actors responsible for climate protection measures: (1) politicians; (2) economists; (3) individuals; (4) the society; (5) industrialized countries; (6) emerging economies; (7) developing countries (6-point scale; 1 = "not responsible at all", 6 = "highly responsible"). The second question assessed the acceptance of nine political measures to mitigate climate change, e.g., a carbon tax on all products (5-point scale; 1 = "I would strongly reject this measure", 5 = "I would strongly support this measure"). Third, we asked the participants whether they think they would be personally affected by the interventions "somewhat detrimentally", "detrimentally and beneficially to an equal extent", "somewhat beneficially", or "neither detrimentally nor beneficially". Beyond that, we were interested in whether the support of a political measure (question 2) depends on its consequences for the participant (question 3).

2.2.4. Low-Carbon Behavior

Participants calculated their personal carbon footprint with the help of the calculator developed by the German Environment Agency [54].

All of these questionnaires can be found in the Supplementary Materials File S1. The survey was conducted in September 2020, which was between the first and second peaks of the COVID-19 pandemic in Germany. The online questionnaire was implemented and made available using *SoSci Survey* [55]. The study was administered in German.

Statistical analyses were conducted using *R* [56]. The statistical analyses are constrained to descriptive calculations and confidence intervals.

3. Results and Discussion

We were interested in the subjective media coverage of climate change in comparison to the COVID-19 pandemic. The respondents' answers impressively reflect the dominance of COVID-19 reporting, as one can see in Figure 1. That is, 51% of the participants perceived overwhelmingly more reporting about COVID-19 than about climate change.

Most of the survey participants were not aware of the high number of heatwave-related deaths in 2018 (69%). Only 15% expressed familiarity with this information, while 16% doubted that it was correct. Of course, comparisons of this kind are difficult, as people may not remember exact numbers reported by the media, and may not want to weigh one kind of suffering against another. However, it seems reasonable to assume that if the media coverage of the 2018 deaths had been more dominant, more people would have remembered the details. Mentioning a mere number (more than 10,000 heat deaths in 2018) in the context of climate change triggered an emotion in nearly half of the respondents (47%), while the remaining half were not affected by that information.

The latter response of not being emotionally affected by the number of deaths can have various causes, of which two will be highlighted. First, individuals might not properly attribute the information to climate change and/or their own behavior. This is in line with what Markowitz and Shariff [41] name the "blamelessness of unintentional action," which describes the human moral judgement system as "finely tuned to react to intentional transgressions only" (p. 244). The general abstract nature of climate change as "non-intuitive and cognitively effortful to grasp" (p. 244) is a potential additional explanation for not being emotionally affected. Markowitz and Shariff [41] conclude that "understanding climate change as a moral imperative does not occur automatically, at an intuitive level. Instead it requires cold, cognitively demanding and ultimately relatively less motivating, moral reasoning" (p. 244).

Second, these individuals might face moral disengagement, as described above. More-over, the "guilty bias," as a type of a self-defensive bias which was described by Markowitz and Shariff [41] for the case of climate change, is probably becoming activated here. As described above, we further asked the half of the participants who were emotionally affected by the information on the number of deaths due to the 2018 heatwave in Germany to further specify their emotions. The codes and their absolute frequencies can be found in Figure 2.
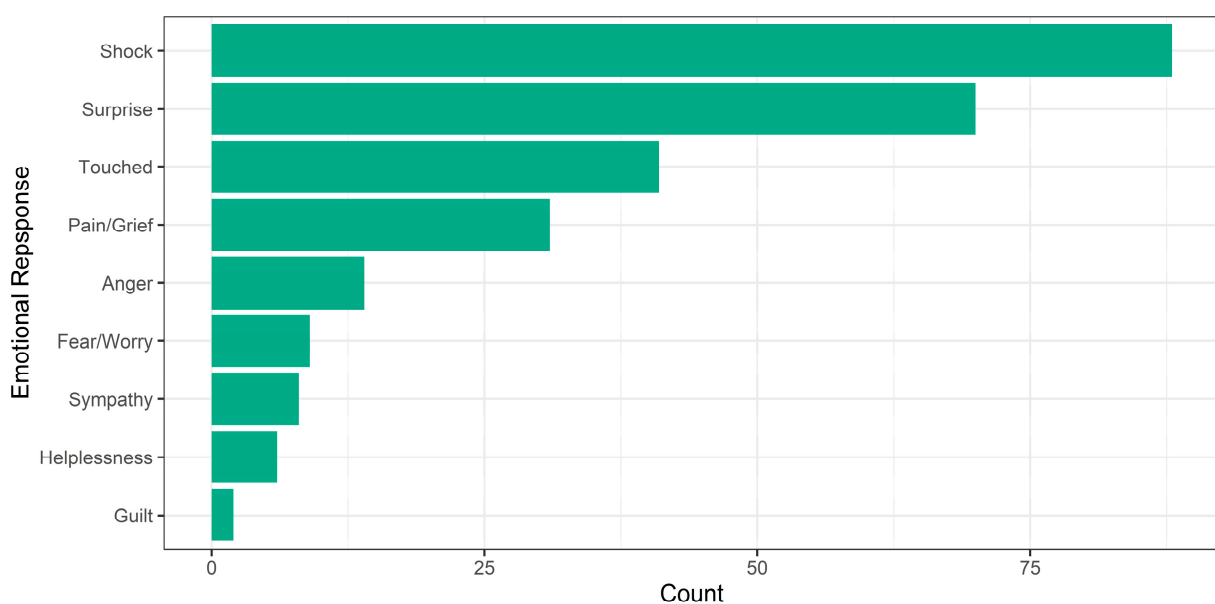

Figure 2. Absolute frequencies of the coded emotional responses due to the presentation of the number of deaths due to the heat wave in 2018; *k* = 269 reported emotions of *n* = 248 participants.

The predominant emotional response was shock, followed by surprise, being touched, and experiencing pain/grief. Less frequently, the participants reported anger, fear/worry, sympathy, helplessness and, at the very least, guilt. The distribution of emotions differs from a recent representative study that was also conducted in Germany [57]. In this study, the emotions that are generally felt in regards to the climate crisis were queried. The three most common emotions were helplessness, disappointment, and anger. However, since in our study the emotion was asked about a specific fact, it is also plausible that the distribution differs.

It seems that being confronted with the plight of other humans elicits a predominantly unpleasant emotional response. We were able to find mostly other-suffering (shock, touched, pain/grief, sympathy, worry) emotions and few self-condemning (guilt) emotions. Therefore, moral motivation might be activated by confronting people with actual events and other people situations. This might especially trigger the motivation to reassess one's own behavior and shift the focus to protecting the vulnerable from avoidable plights.

Figure 3 reveals that the participants would probably change their climate-related behavior ($M = 3.4$, $Mdn = 4.0$) as a consequence of media reporting equivalent to that seen for the COVID-19 pandemic. Participants, therefore, might have successfully linked their carbon behavior to climate change outcomes for others. Moreover, they might have anticipated that, if they were reminded of the consequences of the climate crisis, they would reduce their carbon emissions. This tends to support our argument on the outcome attribution. These findings are in line with a study by Holbert et al. [58], who demonstrated that "television news and nature documentary use are predicted by environmental concern and contribute to pro-environmental behaviors" (p. 177), and a study from Taiwan by Huang [59] that clearly reveals the effect of global warming media coverage on people's environmental behavior and suggests that "governments and organizations can use the media as promotional tools and actively market mitigation policies and efforts through various media channels to induce more environmental actions by individuals" (p. 2206).
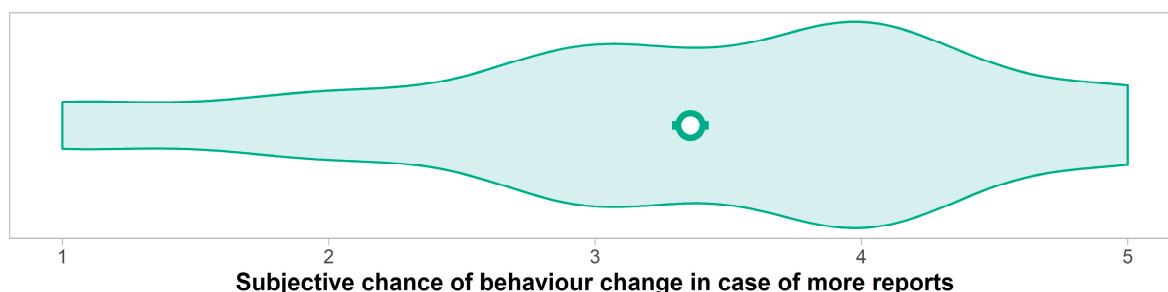

Figure 3. Density distribution (bandwidth = 0.4) and mean estimate (white circle) along with the 95% bootstrap confidence interval of the mean on the subjective chance of behavior change in case of more (credible) reporting about the number of climate-related deaths appeared on the news on a daily basis. $N = 979$.

In this context, it seems important that the causes, consequences, and ways of overcoming the climate crisis must become tangible for recipients to make them understand the causal chain between their own behavior and the suffering of others [41,60], which has also been proven by media effects research. In a qualitative study, images showing the consequences of the climate crisis elicited positive emotional responses and were less polarizing for climate change sceptics. However, these images were less motivating for action than authentic and credible human subjects in climate pain [61].

In line with such an authentic and credible way of communicating climate change, Brosch [16] suggests working with personal stories:

While climate change is sometimes too abstract [. . .] to elicit emotional responses via experience-based mechanisms, personal stories about how climate change is harming individuals have been identified as a promising means of increasing one's emotional

engagement with climate change. Listening to a personal story about climate change consequences increased worry and compassion [. . .]. By reducing psychological distance to climate change and promoting experiential processing and associative appraisal, narrative-based communication strategies may provide an effective tool to promote climate change engagement (pp. 16f).

As Roeser [15] argues, rational information (alone) might overwhelm people, as we might think our efforts will be unsuccessful, and therefore will not lead to action. Instead, "coming face to face with the destiny of a single person can successfully evoke a direct sense of compassion" (p. 1036).

Participants reported a strong intention to engage in low-carbon behavior if such information (e.g., the number of heat-related deaths) is believable (as mentioned, 16% doubted that the given information was correct), and regularly and reliably reported. This stands in line with current literature, that media exposure to environmental-related messages positively predicts environmental concern and perceived personal responsibility [62,63].

To support this intention, message framing can be an essential part of motivating communication. This can be detrimental when economic growth is framed as the default option in messages or advantageous when specific emission-reduction strategies are deemed most effective to promote engagement. While general doom often results in disengagement to suppress fear, threats to people's immediate surroundings, such as their family, living areas, or belongings, can trigger active behavior [64,65].

Happer and Philo [42] concluded that moral disengagement is rooted in a general distrust of political figures and the perception of individual powerlessness. Therefore, effective media coverage showing active engagement by sympathetic individuals could motivate action. Trust in the media, while elusive, is increasingly important in motivating the transition to low-carbon behavior through the emotions mentioned above. The probability of people changing their climate-related behavior or accepting useful political action increases [39].

As can be seen in Figure 4, on average, every actor was considered as being highly responsible for climate protection measures. However, there are small differences in the average rating scores. While developing countries were held least responsible compared to other actors, the participants attributed the highest responsibility to industrialized countries. The individual was assumed to be less responsible than politicians, economists, or society in general.

Unfortunately, as we can see from the ongoing climate crisis and its features, political actors, businesses, and industries, and industrialized countries on the whole, are not fulfilling their responsibilities. One reason for this failure is lobbyism. Brulle [66] outlines the fact that lobbyism impacts the success of climate change legislation strongly. For example, in the USA, many fossil fuel companies are part of influential lobbying groups (e.g., American Petroleum Institute, API; American Coal Council, ACC; or American Legislative Exchange Council, ALEG). To continue extracting gas, oil, and coal, these companies seek to forestall the implementation of carbon-emission regulatory policies by disseminating false information on climate science. Most fossil fuel companies still do not disclose the substantive climate change risk of their production to their shareholders [67]. Nevertheless, as our survey reflects a strong devolution of responsibility among political actors (Figure 4), it is interesting to see which political measures people regard as more and less acceptable. We asked participants how likely they would be to support a selection of carbon-reducing interventions. The acceptance ratings for these political interventions are shown in Figure 5.
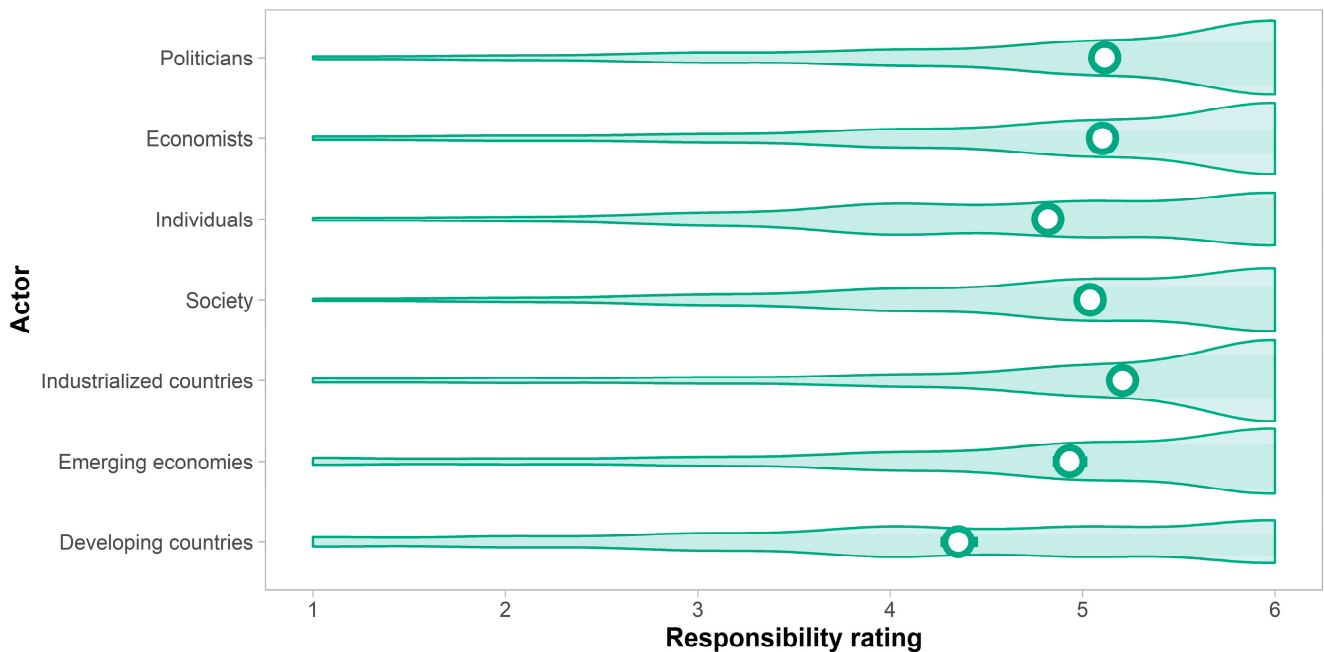
Figure 4. Density distributions (bandwidth = 0.4), means (white points), and their 95% bootstrap confidence interval of the responsibility ratings for climate changing measures for different actors. *N* = 979.
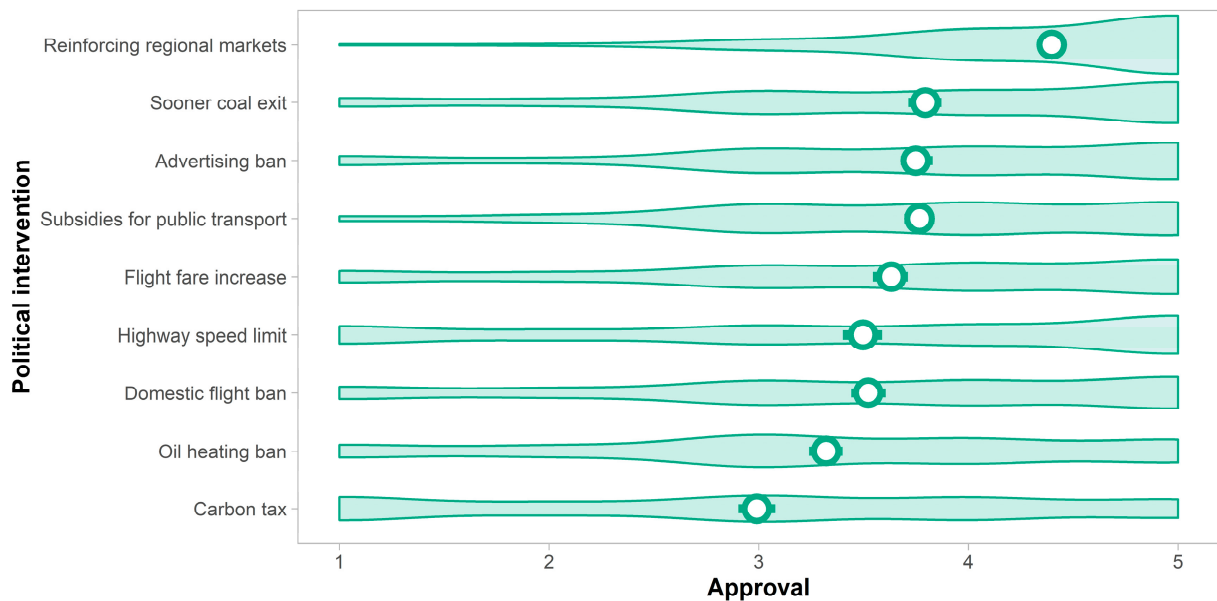

Figure 5. Density distributions (bandwidth = 0.4), means (white points), and their 95% bootstrap confidence interval of the acceptance ratings for different climate-changing measures. *N* = 979.

As Figure 5 shows, the average agreements with most of the indicated policy interventions were very similar, ranging from 3.3 to 3.8 (an oil heating ban, flight ban, speed limit, airfare increase, higher subsidies for public transport, advertising ban, and earlier coal phase-out). Two exceptions to this observation are the least—in comparison to the other interventions—popular intervention, carbon tax (*M* = 3.0), and the most—in comparison to the other interventions—popular intervention, reinforcing regional markets (*M* = 4.4). All of the average agreement ratings were at least equal to or above the midpoint of the scale (3), therefore indicating support for each of the interventions in our sample. Our analyses show that there is a tendency to either generally agree or disagree with measures

to reduce carbon emissions, as indicated by the intercorrelations of the support values for the different political measures, averaged (using Fisher's *z*-transformation) *r* = 0.38, range = [0.25, 0.59].

The only exception is the even higher approval of strengthening regional markets. A recent study [68] confirms a trend in Germany toward buying more regional products compared to imported products. This could stem from the fact that this behavior primarily results in benefits rather than personal restrictions. It therefore may be a low-cost behavior, as it is easier to engage in it than in the other behaviors. Anticipated outcomes of potential behaviors may also be important here.

We therefore asked the participants whether they think they would be personally affected by the interventions "somewhat detrimentally", "detrimentally and beneficially to an equal extent", "somewhat beneficially", or "neither detrimentally nor beneficially". As can be seen from Figure 6, the participants indicated that, in most cases, they would be either beneficially or neither beneficially nor detrimentally affected by the interventions. However, this was not the case for higher carbon taxes, by which the majority of the respondents stated that they would see themselves detrimentally affected. A little less unequivocal was the situation with domestic flight bans and flight fare increases: the respondents would see themselves detrimentally affected.
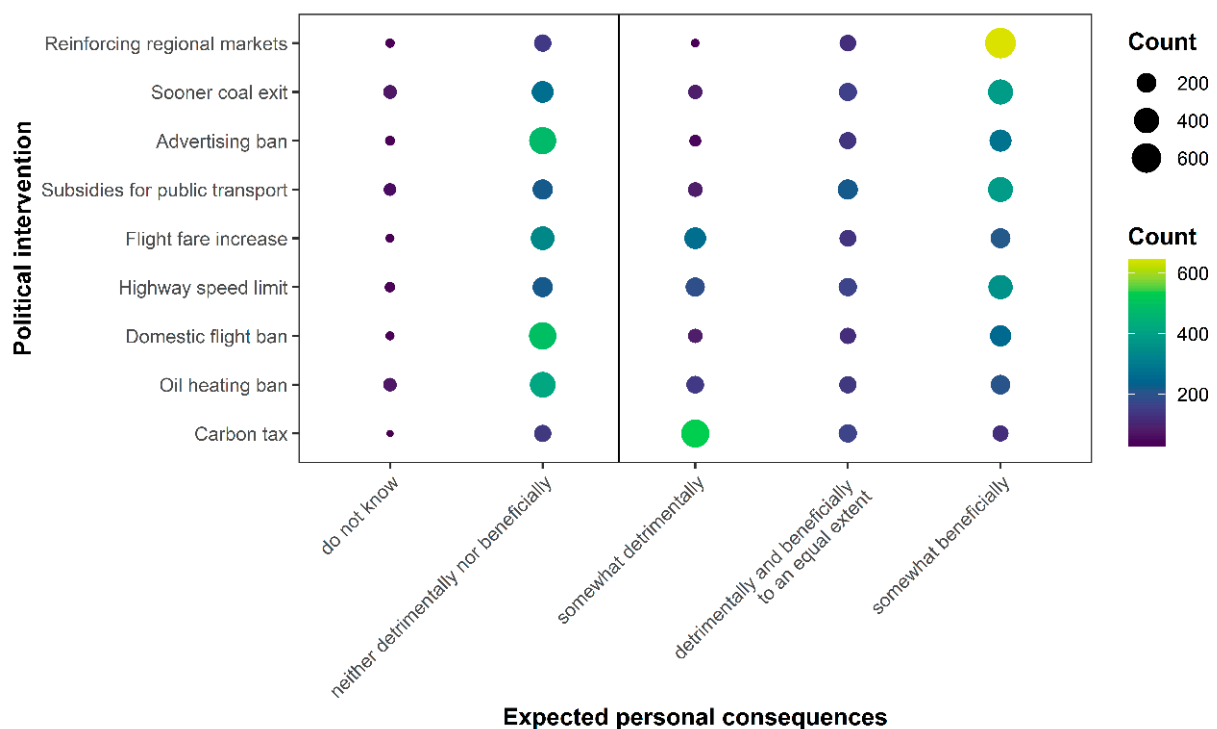

Figure 6. Frequencies of answers on the expected personal consequences of the selected interventions; the size of the points indicates the number of answers given in the respective category. *N* = 979.

Figure 7 combines the information from Figures 5 and 6 and, hence, associates the expected personal consequences with the approval of the political interventions. Therefore, it addresses the question of whether the support of a specified political intervention depends on the nature of its consequences for the individual. As can be seen, political interventions received more approval if the respondents expected to be positively affected by these measures than if the positive and negative consequences were balanced. Moreover, the participants were less supportive of political measures if they expected to be negatively affected by them. This tendency was statistically supported by positive Spearman correlations (computed per intervention) ranging from $\rho = 0.37$ (reinforcing regional markets) to 0.77 (highway speed limit); the median of the correlations was $\rho = 0.56$. Thus, the more

beneficial the expected personal consequences, the higher the support for the political measure.
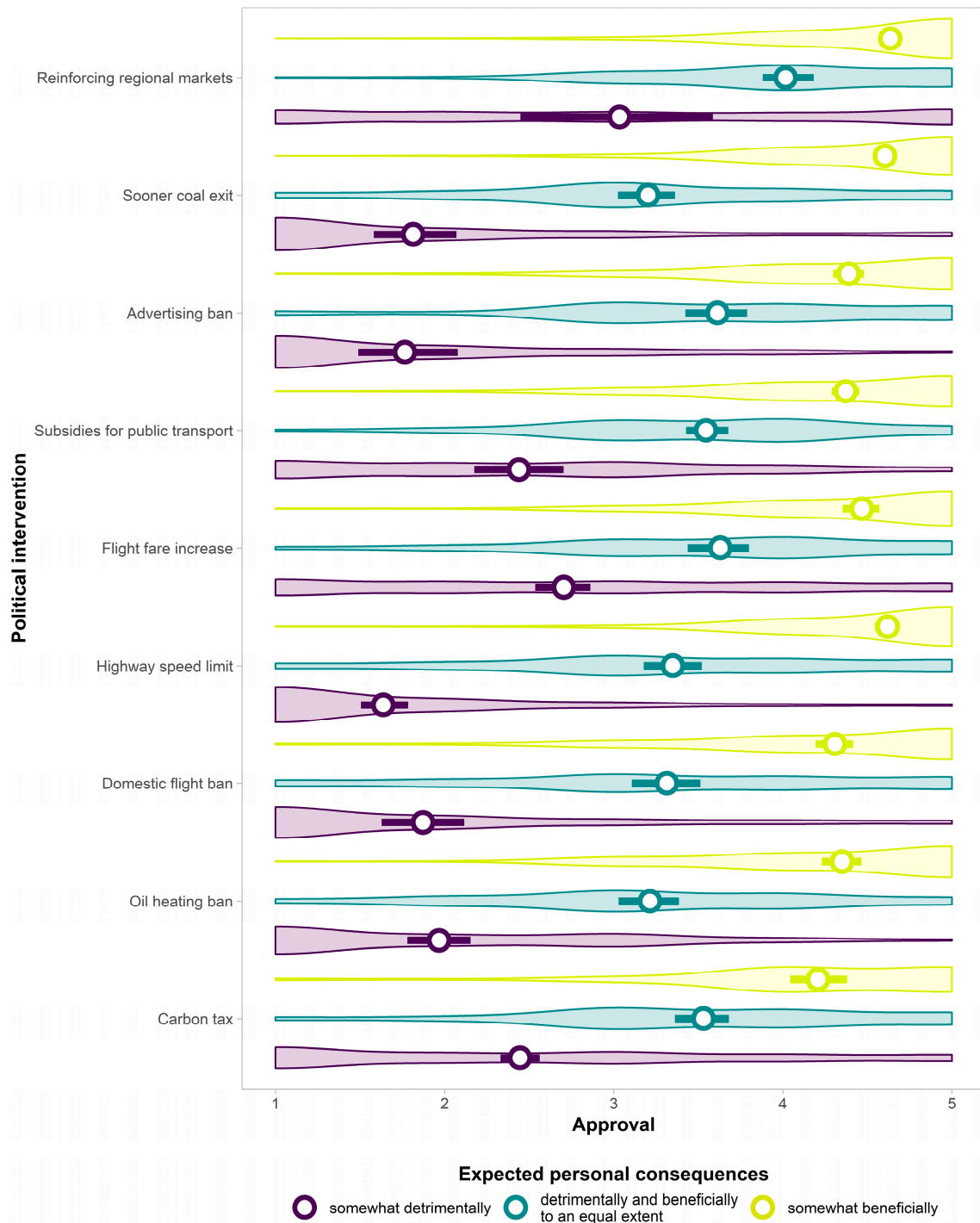

Figure 7. Density distributions (bandwidth = 0.4), means (white points), and their 95% bootstrap confidence interval of the acceptance ratings for different climate changing measures, separated by the expected personal consequences. *n* = 919.

Research on the influence of discrete emotions on policy support is rare, and yet, no studies on the effect of discrete emotions on global warming policy acceptance exist [69]. Some studies, however, have investigated the differential influence of fear and anger on policy preferences. In general, anger has been found to be strongly associated with a support for retribution-focused policy initiatives [69]. Meijnders et al. [70] found that

a greater fear of climate change was associated with greater systematic processing of information on energy-related behavior. A positive affect was found to be more strongly associated with support for wind energy than with support for coal or nuclear power [71].

The limitation of our questionnaire is that the data are based on self-reported behavior. These might have been subject to socially desirable responding, especially regarding high-carbon behavior. Moreover, since we used online questionnaires, it is more difficult to assess how conscientiously the participants completed the questionnaires. However, this approach allowed us to reach more people and meet the quotas for gender and age.

4. Conclusions

In this article, we discussed the relevant moral and emotional processes, and the role of media coverage underlying the motivations of individuals to behave in a less carbon-emitting manner. We were able to show that the confrontation with information about victims of climate change resulted in moral emotional reactions and that the participants in our study indicated that they would change their behavior if they were confronted with such media coverage on a daily basis. We also provided insight into research on emotions as barriers to as well as motivators of low-carbon behavior and explained the necessity of repeated emotional exposure to generalize emotions, particularly self-condemning and other-suffering emotions. We perceive the current media coverage of the climate crisis in Germany, compared with the reports on the COVID-19 pandemic, to be neither sufficient nor focused enough to induce emotions on the current climate crisis and, hence, initiate behavior change. The fact that participants in our study showed other-suffering emotions in reaction to news content and rated the likelihood of personal behavior change in the event of increased climate change reportage as high, provides hope that news about the climate crisis, presented on a daily basis, has the potential to encourage low-carbon behavior. We conclude that the frequency as well as the content of media reporting, which should be linked to—in particular moral—emotions is important to motivate people to change their behavior. Furthermore, we argue that a scientific consensus needs to be emphasized to provide a better understanding of the causes and effects of the climate crisis and the individual's role in it.

However, it is not only "negative" emotions such as guilt that can serve as a moral motivation for action. As mentioned in the introduction, self-praising emotions lead to an action tendency to support oneself. This can lead to the retention of actions. When the media show opportunities to behave in a low-carbon-emitting way, they also show a way to experience "positive" emotions such as pride. We assume that such media content would help people to find concrete ways to engage in low-carbon behaviors. Based on the fact that social influence is a potent measure to initiate behavioral change, one strategy would be to make opinion leaders more visible, as they can serve as role models for such behavior.
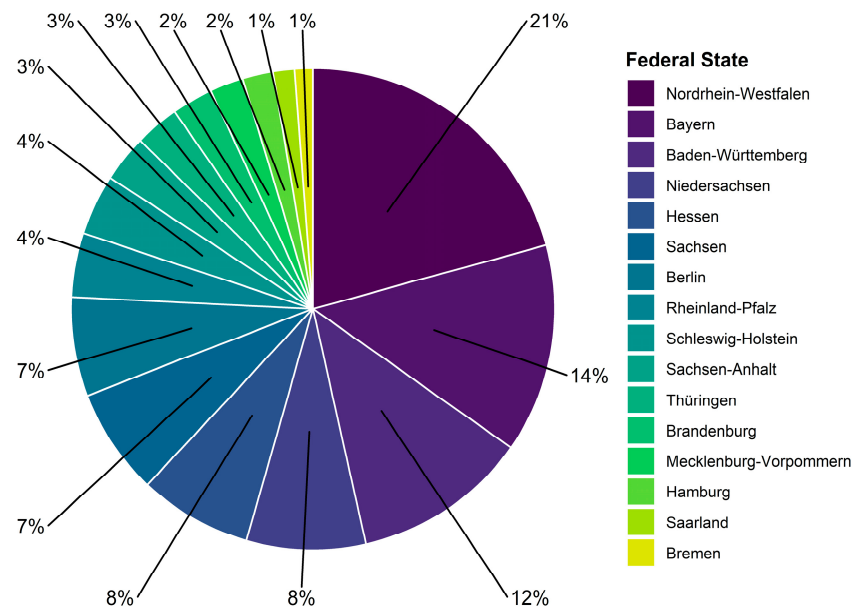
Appendix A. Sociodemographic Profiles

Figure A1. Relative frequencies of federal states in our sample. *N* = 979.
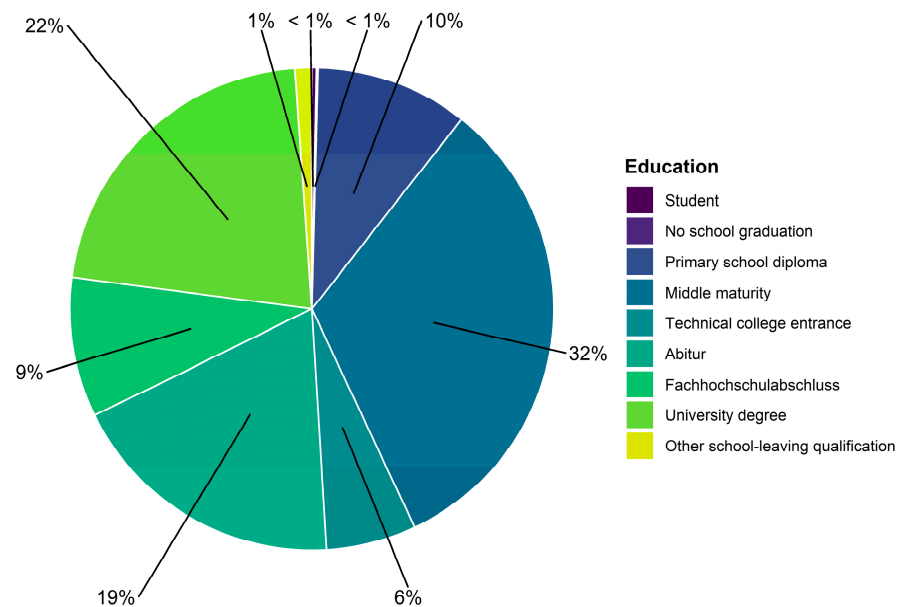

Figure A2. Relative frequencies of educational backgrounds in our sample. *N* = 979.
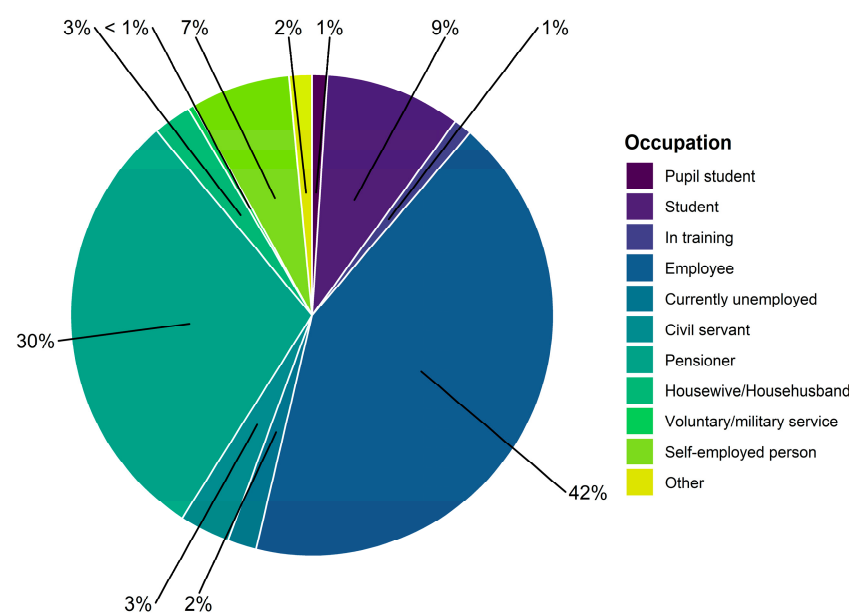
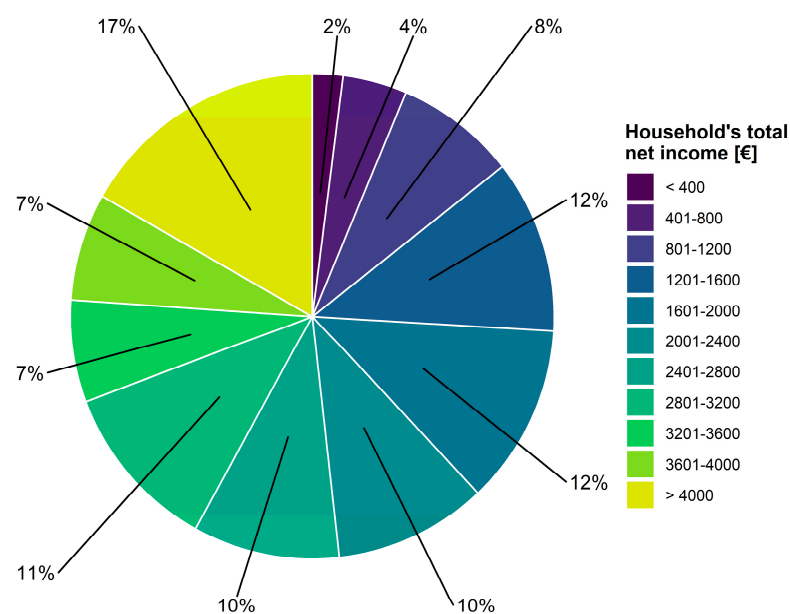**Figure A3.** Relative frequencies of occupations in our sample. *N* = 979.

Figure A4. Relative frequencies of household's total net income in our sample. *N* = 979.

References

1. United Nations. Human Development Report. 2020. Available online: https://report.hdr.undp.org/ (accessed on 4 May 2022).
2. Gore, T. Confronting Carbon Inequality. Available online: https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621052/mb-confronting-carbon-inequality-210920-fr.pdf?sequence=3 (accessed on 4 May 2022).
3. Caney, S. Climate change, human rights, and moral thresholds. In *Climate Ethics: Essential Readings*; Gardiner, S., Caney, S., Jamieson, D., Shue, H., Eds.; Oxford University Press: Oxford, UK, 2010; pp. 163–177. ISBN 978-0-19-539961-5.
4. Gardiner, S.M. Ethics and global climate change. *Ethics* **2004**, *114*, 555–600. [CrossRef]
5. Axon, S. "Keeping the ball rolling": Addressing the enablers of, and barriers to, sustainable life-styles. *J. Environ. Psychol.* **2017**, *52*, 11–25. [CrossRef]
6. Axon, S. Sustaining public engagement with addressing climate change and the role of social solutions. *Int. J. Sustain. Soc.* **2016**, *8*, 185–205. [CrossRef]
7. Girod, B.; van Vuuren, D.P.; Hertwich, E.G. Climate policy through changing consumption choices: Options and obstacles for reducing greenhouse gas emissions. *Glob. Environ. Chang. Hum. Policy Dimens.* **2014**, *25*, 5–15. [CrossRef]
8. O'Halloran, T.L.; Law, B.E.; Goulden, M.L.; Wang, Z.; Barr, J.G.; Schaaf, C.; Brown, M.; Fuentes, J.D.; Gödeckede, M.; Black, A.; et al. Radiative forcing of natural forest disturbances. *Glob. Chang. Biol.* **2012**, *18*, 555–565. [CrossRef]

9. Whitmarsh, L.; Seyfang, G.; O'Neill, S. Public engagement with carbon and climate change: To what extent is the public 'carbon capable'? *Glob. Environ. Chang. Hum. Policy Dimens.* **2011**, *21*, 56–65. [CrossRef]

10. Wynes, S.; Nicholas, K.A. The climate mitigation gap: Education and government recommendations miss the most effective individual actions. *Environ. Res. Lett.* **2017**, *12*, 74024. [CrossRef]

11. Goldsmith, E.B.; Goldsmith, R.E. Social influence and sustainability in households: Social influence and sustainability in households. *Int. J. Consum. Stud.* **2011**, *35*, 117–121. [CrossRef]

12. Schultz, P.W. Changing behavior with normative feedback interventions: A field experiment on curbside recycling. *Basic Appl. Soc. Psychol.* **1999**, *21*, 25–36. [CrossRef]

13. Noland, J.M.; Schultz, P.W.; Cialdini, R.B.; Goldstein, N.J.; Griskevicius, V. Normative social influence is underdetected. *Personal. Soc. Psychol. Bull.* **2008**, *34*, 913–923. [CrossRef]

14. Landmann, H. Emotions in the context of environmental protection: Theoretical considerations concerning emotion types, eliciting processes, and affect generalization. *Umweltpsychologie* **2020**, *47*, 61–73. [CrossRef]

15. Roeser, S. Risk communication, public engagement, and climate change: A role for emotions. *Risk Anal.* **2012**, *32*, 1033–1040. [CrossRef] [PubMed]

16. Brosch, T. Affect and emotions as drivers of climate change perception and action: A review. *Curr. Opin. Behav. Sci.* **2021**, *42*, 15–21. [CrossRef]

17. Stoll-Kleemann, S.; O'Ridoran, T.; Jaeger, C.C. The psychology of denial concerning climate mitigation measures: Evidence from Swiss focus groups. *Glob. Environ. Chang.* **2001**, *11*, 107–117. [CrossRef]

18. Stoll-Kleemann, S.; O'Ridoran, T. Revisiting the psychology of denial concerning low-carbon behaviors: From moral disengagement to generating social change. *Sustainability* **2020**, *12*, 935. [CrossRef]

19. Kollmuss, A.; Agyeman, J. Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environ. Educ. Res.* **2002**, *8*, 239–260. [CrossRef]

20. Stoll-Kleemann, S. How integrating fundamental insights from psychology can help us better understand ongoing inaction in the light of an exacerbating climate crisis. In *Denialism in Environmental and Animal Abuse: Averting Our Gaze*; Grušovnik, T., Syse, K.L., Spannring, R., Eds.; Lexington Books: Lanham, MD, USA, 2020; pp. 17–34. ISBN 978-1-7936-1046-1.

21. Bandura, A. *Moral Disengagement: How People do Harm and Live with Themselves*; Worth Publishers; Macmillan Learning: New York, NY, USA, 2016; ISBN 978-1-4641-6005-9.

22. Festinger, L. *A Theory of Cognitive Dissonance*; Stanford University Press: Stanford, CA, USA, 1957; ISBN 978-0-8047-0911-8.

23. Tobey-Klass, E. Psychological effects of immoral actions: The experimental evidence. *Psychol. Bull.* **1978**, *85*, 756–771. [CrossRef]

24. Hahnel, U.J.; Brosch, T. Environmental trait affect. *J. Environ. Psychol.* **2018**, *59*, 94–106. [CrossRef]

25. Harré, N. *Psychology for a Better World: Working with People to Save the Planet*; Auckland University Press: Auckland, New Zealand, 2018; ISBN 978-1-86940-885-5.

26. Kals, E.; Maes, J. Sustainable Development and Emotions. In *Psychology of Sustainable Development*; Schmuck, P., Schultz, W.P., Eds.; Springer: Boston, MA, USA, 2002; pp. 97–122. ISBN 978-1-4613-5342-3.

27. Haidt, J. The moral emotions. In *Handbook of Affective Sciences*; Davidson, R.J., Scherer, K.R., Gold-Smith, H.H., Eds.; Oxford University Press: Oxford, UK, 2003; pp. 852–870. ISBN 978-0-19-537700-2.

28. Hurst, K.F.; Sintov, N.D. Guilt consistently motivates pro-environmental outcomes while pride depends on context. *J. Environ. Psychol.* **2022**, *80*, 101776. [CrossRef]

29. Shipley, N.J.; van Riper, C.J. Pride and guilt predict pro-environmental behavior: A meta-analysis of correlational and experimental evidence. *J. Environ. Psychol.* **2021**, *79*, 101753. [CrossRef]

30. Adams, I.; Hurst, K.; Sintov, N. Experienced guilt, but not pride, mediates the effect of feedback on pro-environmental behavior. *J. Environ. Psychol.* **2020**, *71*, 101476. [CrossRef]

31. Engel, C. Dictator games: A meta study. *Exp. Econ.* **2011**, *14*, 583–610. [CrossRef]

32. Haidt, J. Morality. *Perspect. Psychol. Sci.* **2008**, *3*, 65–72. [CrossRef] [PubMed]

33. Kals, E.; Maes, J.; Becker, R. The overestimated impacted of self-interest and the underestimated impact of justice motives. *Trames. J. Humanit. Soc. Sci.* **2001**, *55*, 269–287.

34. Kals, E.; Becker, R.; Ittner, H. Protecting nature or promoting competing values and interests? In *Visions of Nature, a Scientific Exploration of People's Implicit Philosophies Regarding Nature in Germany, The Netherlands and the United Kingdom*; van de Born, E.J.G., de Groot, W.T., Lenders, R.H.J., Eds.; LIT: Münster, Germany, 2006; pp. 129–151. ISBN 978-3-8258-9008-2.

35. Montada, L.; Schmitt, M.; Dalbert, C. Thinking about justice and dealing with one's own privileges. In *Justice in Social Relations*; Bierhoff, R.L., Cohen, R.L., Greenberg, J., Eds.; Springer: Boston, MA, USA, 1986; pp. 125–143. ISBN 978-0-306-42181-5.

36. Sabbagh, C.; Schmitt, M. Past, present, and future of social justice theory and research. In *Handbook of Social Justice Theory and Research*; Sabbagh, C., Schmitt, M., Eds.; Springer: New York, NY, USA, 2016; pp. 1–11. ISBN 978-1-4939-3215-3.

37. Franikowski, P.; Kriegeskorte, L.-S.; Reisenzein, R. Perceptual latencies of object recognition and affect measured with the rotating spot method: Chronometric evidence for semantic primacy. *Emotion* **2021**, *21*, 1744–1759. [CrossRef] [PubMed]

38. Junge, M.; Reisenzein, R. Indirect scaling methods for testing quantitative emotion theories. *Cogn. Emot.* **2013**, *27*, 1247–1275. [CrossRef] [PubMed]

39. Moser, S.C.; Dilling, L. Communicating climate change: Opportunities and challenges for closing the science-action gap. In *The Oxford Handbook of Climate Change and Society*; Norgaard, R., Schlosberg, D., Dryzek, J., Eds.; Oxford University Press: Oxford, UK, 2011; pp. 161–174. ISBN 978-0-1995-6660-0.

40. Heald, S. Climate science, moral disengagement, and self-efficacy: How Albert Bandura's theories inform our climate-change predicament. *Environment* **2017**, *59*, 4–15. [CrossRef]

41. Markowitz, E.M.; Shariff, A.F. Climate change and moral judgement. *Nat. Clim. Chang.* **2012**, *2*, 243–247. [CrossRef]

42. Happer, C.; Philo, G. New approaches to understanding the role of the news media in the formation of public attitudes and behaviours on climate change. *Eur. J. Commun.* **2016**, *31*, 136–151. [CrossRef]

43. Goldberg, M.H.; van der Linden, S.; Maibach, E.; Leiserowitz, A. Discussing global warming leads to greater acceptance of climate science. *Proc. Natl. Acad. Sci. USA* **2019**, *116*, 14804–14805. [CrossRef]

44. Painter, J. *Climate Change in the Media. Reporting Risk and Uncertainty*; Bloomsbury Publishing: London, UK, 2013; ISBN 978-1-780-7658-84.

45. Dunlap, R.E.; McCright, A.M. Challenging climate change: The denial countermovement. In *Climate Change and Society: Sociological Perspectives*; Dunlap, R.E., Brulle, R.J., Eds.; Oxford University Press: New York, NY, USA, 2015; pp. 300–332. ISBN 978-0-1993-5610-2.

46. Hansson, S.O. Science denial as a form of pseudoscience. *Stud. Hist. Philos. Sci.* **2017**, *63*, 39–47. [CrossRef] [PubMed]

47. Herman, E.S.; Chomsky, N. *Manufacturing Consent: The Political Economy of the Mass Media*; Vintage Digital: London, UK, 2010; ISBN 978-1-4070-5405-6.

48. Deutsche Welle. Chronologie: Ausbreitung des Corona-Virus in Deutschland. Available online: https://www.dw.com/de/chronologie-ausbreitung-des-coronavirus-in-deutschland/a-58003172 (accessed on 4 May 2022).

49. Schuller, K. Zehntausend Hitzetote im Rekordsommer. 2018. Available online: https://www.faz.net/aktuell/wissen/erde-klima/klimawandel-zehntausend-hitzetote-im-rekordsom-mer-sommer2018-16316361.html (accessed on 4 May 2022).

50. Federal Statistical Office. Population: Germany, Reference Date, Age [Data Set]. Available online: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Bevoelkerungsstand/Tabellen/bevoelkerung-altersgruppen-deutschland.html (accessed on 4 May 2022).

51. Leiner, D.J. Too fast, too straight, too weird: Non-reactive indicators for meaningless data in Internet surveys. *Surv. Res. Methods* **2019**, *13*, 229–248. [CrossRef]

52. Stoll-Kleemann, S.; Nicolai, S.; Franikowski, P. *Understanding, Measuring, and Overcoming High-Carbon Behavior from an Interdisciplinary and Moral Psychology Perspective. Final Report of Two Representative Surveys and the Validation and Development of the Propensity to Morally Disengage from High Carbon Behavior Scale*; Department of Sustainability Science and Applied Geography, University of Greifswald: Greifswald, Germany, 2022; *to be submitted*.

53. Nicolai, S.; Franikowski, P.; Stoll-Kleemann, S. *Predicting Pro-Environmental Intention and Behavior Based on Justice Sensitivity, Moral Disengagement and Moral Emotions—Results of Two Quota-Sampling Surveys*; Department of Sustainability Science and Applied Geography, University of Greifswald: Greifswald, Germany, 2022; *to be submitted*.

54. Umweltbundesamt. Carbon Footprint Calculator. Available online: https://uba.co2-rechner.de/de_DE/ (accessed on 4 May 2022).

55. Leiner, D.J. SoSciSurvey. Available online: https://www.soscisurvey.de (accessed on 4 May 2022).

56. R Core Team. R: A Language and Environment for Statistical Computing. Available online: https://www.R-project.org (accessed on 4 May 2022).

57. Krause, L.-K.; Gagné, J. Die Andere Deutsche Teilung: Zustand und Zukunftsfähigkeit Unserer Gesellschaft. More in Common e.V. Available online: https://www.dieandereteilung.de/ (accessed on 4 May 2022).

58. Holbert, R.L.; Kwak, N.; Shah, D.V. Environmental concern, patterns of television viewing, and pro-environmental behaviors: Integrating models of media consumption and effects. *J. Broadcasting Electron. Media* **2003**, *47*, 177–196. [CrossRef]

59. Huang, H. Media use, environmental beliefs, self-efficacy, and pro-environmental behaviour. *J. Bus. Res.* **2016**, *69*, 2206–2212. [CrossRef]

60. Schmitt, M.; Behner, R.; Monrada, L.; Müller, L.; Müller-Forhbrot, G. Gender, ethnicity, and education as privileges: Exploring the generalizability of the existential guilt reaction. *Soc. Justice Res.* **2000**, *13*, 313–337. [CrossRef]

61. Chapman, D.A.; Corner, A.; Webster, R.; Markowitz, E.M. Climate visuals: A mixed methods investigation of public perceptions of climate images in three countries. *Glob. Environ. Chang. Hum. Policy Dimens.* **2016**, *41*, 172–182. [CrossRef]

62. Liu, Y.; Li, X. Pro-environmental behavior predicted by media exposure, SNS involvement, and cognitive and normative factors. *Environ. Commun.* **2021**, *15*, 954–968. [CrossRef]

63. Young, M.W.; King, N.; Harper, S.; Humphreys, K.R. The influence of popular media on perceptions of personal and population risk in possible disease outbreaks. *Health Risk Soc.* **2013**, *15*, 103–114. [CrossRef]

64. Hine, D.W.; Phillips, W.J.; Cooksey, R.; Reser, J.P.; Nunn, P.; Marks, A.D.G.; Loi, N.M.; Warr, S.E. Preaching to different choirs: How to motivate dismissive, uncommitted, and alarmed audiences to adapt to climate change? *Glob. Environ. Chang. Hum. Policy Dimens.* **2016**, *36*, 1–11. [CrossRef]

65. Peeters, W.; Diependaele, L.; Sterckx, S. Moral disengagement and the motivational gap in climate change. *Ethical Theory Moral Pract.* **2019**, *22*, 425–447. [CrossRef]

66. Brulle, R.J. The climate lobby: A sectoral analysis of lobbying spending on climate change in the USA, 2000 to 2016. *Clim. Chang.* **2018**, *149*, 289–303. [CrossRef]

67. Frumhoff, P.C.; Heede, R.; Oreskes, N. The climate responsibilities of industrial carbon producers. *Clim. Chang.* **2015**, *132*, 157–171. [CrossRef]

68. Wippermann, P. Bewusster Leben: Konsumethik im Zeichen des Klimawandels und der COVID-19-Pandemie. Available online: https://static.ottogroup.com/media/docs/de/trendstudie/Otto-Group-Trendstudie-zum-ethischen-Konsum-2020.pdf (accessed on 4 May 2022).

69. Smith, N.; Leiserowitz, A. The role of emotion in global warming policy support and opposition: The role of emotion in global warming policy support and opposition. *Risk Anal.* **2014**, *34*, 937–948. [CrossRef] [PubMed]

70. Meijnders, A.L.; Midden, C.J.; Wilke, H.A. Role of negative emotion in communication about CO_2 risks. *Risk Anal.* **2001**, *21*, 955–966. [CrossRef] [PubMed]

71. Truelove, H.B. Energy source perceptions and policy support: Image associations, emotional evaluations, and cognitive beliefs. *Energy Policy* **2012**, *45*, 478–489. [CrossRef]