nature climate change

REVIEW ARTICLE

PUBLISHED ONLINE: XX MARCH 2012 | DOI: 10.1038/NCLIMATE1378

Climate change and moral judgement

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Converging evidence from the behavioural and brain sciences suggests that the human moral judgement system is not well equipped to identify climate change — a complex, large-scale and unintentionally caused phenomenon — as an important moral imperative. As climate change fails to generate strong moral intuitions, it does not motivate an urgent need for action in the way that other moral imperatives do. We review six reasons why climate change poses significant challenges to our moral judgement system and describe six strategies that communicators might use to confront these challenges. Enhancing moral intuitions about climate change may motivate greater support for ameliorative actions and policies.

The climate science community has arrived at a consensus regarding both the reality of rapid, anthropogenic climate change and the necessity of urgent and sustained action to avoid its worst environmental, economic and social consequences[1,2]. Public opinion, in contrast, remains mixed: recent polling reveals that roughly half of US citizens believe that climate change is caused by humans and a similar number report being unworried about the issue[3]. In terms of responding to the issue, there is even less public consensus; for example, only a small minority of US citizens endorse raising gas and electricity taxes to curb emissions, yet a large majority support limits on greenhouse-gas emissions by businesses[4]. In the 2011 iteration of an annual poll of policy priorities for the US government, respondents put dealing with climate change second-to-last out of 22 options[5]. Only 26% of US citizens rated the issue as a top priority — the lowest level since it was introduced as an option on the poll in 2007.

From a psychological perspective, the disparities between the public and the scientific community — regarding the causes of the problem and the need for solutions — are not altogether surprising; climate change poses significant challenges to our perceptual, cognitive and affective information-processing systems, making it and its threats difficult to engage with and appreciate[6]. For example, the non-linear nature of the climate system leads even highly educated individuals to incorrectly predict the trajectory of future atmospheric greenhouse-gas concentrations[7], and the abstract, probabilistic and intangible nature of climate change dampens emotional reactions to information about the issue[8]. Moreover, when individuals do respond emotionally, their reactions are often defensive and counterproductive[9].

Efforts to increase the public's concern over and response to climate change (including greater support for ameliorative policies and personal actions) have focused in recent years on the importance of framing the issue in a way that is engaging and accessible for individuals[10]. Communicators have framed climate change as an issue of national security, public and personal health, economic well-being and, of course, environmental sustainability[11]. Over the past few years, a number of organizations have also attempted to frame climate change as a moral issue, one that involves considerations of personal responsibility and stewardship for the Earth and the disadvantaged[12,13]. For example, the 'What would Jesus drive?' campaign reflects an attempt to motivate evangelical Christians to reflect on the moral implications — in the context of climate change — of their driving decisions[14].

At present, little research has explicitly examined the extent to which moral concerns motivate public support for climate stabilization policies (for example, carbon tax) and behaviour (for example, use of alternative transportation), though initial findings suggest that individuals who do consider the ethical implications of climate change report greater support for a variety of mitigation policies[15]. However, converging findings in the burgeoning field of moral psychology[16] indicate that an important barrier to public action on climate change may be that it often fails to activate our moral intuitions[17,18]. One of the chief advances in moral psychology over the past decade has been the recognition of the powerful role that moral intuition, driven by our gut instincts, plays in motivating morally relevant action[18]. Unlike financial fraud or terrorist attacks, climate change does not register, emotionally, as a wrong that demands to be righted. As a result, many individuals, even those who believe that climate change is a problem, may feel complacent in delaying immediate — and costly — ameliorative action, such as investing in alternative-energy technologies or reducing one's own energy use.

Here, we synthesize recent findings from moral psychology and neighbouring fields to explore the challenges that climate change poses to the human moral judgement system and identify strategies that communicators might use to overcome these challenges. We first discuss six reasons why climate change often fails to activate people's moral alarm system. We highlight features of the issue itself (for example, abstract, distal and uncertain outcomes) and their interactions with the ways in which our moral judgement system operates to explain the lack of clear and strong moral intuitions about climate change. Next, we provide communicators with six evidence-based strategies that might be used to bolster individual perceptions of climate change as a moral imperative. Some of these suggested strategies directly confront the various challenges raised in the first part of the Review, and all are implementable. Finally, we conclude with an outline of future steps that researchers, communicators and others can take to more effectively rally moral concern on this important issue.

Why climate change doesn't register as a moral imperative

Certain features of climate change and the ways in which it is communicated to the public interact with the human moral judgement system to decrease individual perceptions of the issue as a moral imperative. Drawing on recent research across the social and behavioural sciences, we identify six primary challenges that prevent climate change from activating the human moral alarm system. See Table 1 for a brief summary of these challenges.

Abstractness and cognitive complexity. Moral judgement is, like many other psychological processes (for example, preference

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Table 1 | Six psychological challenges posed by climate change to the human moral judgement system.

Abstractness and cognitive complexity	The abstract nature of climate change makes it non-intuitive and cognitively effortful to grasp
The blamelessness of unintentional action	The human moral judgement system is finely tuned to react to intentional transgressions
Guilty bias	Anthropogenic climate change provokes self-defensive biases
Uncertainty breeds wishful thinking	The lack of definitive prognoses results in unreasonable optimism
Moral tribalism	The politicization of climate change fosters ideological polarization
Long time horizons and faraway places	Out-group victims fall by the wayside

evaluation and construction), strongly driven by emotional responses to objects in the environment[18,19]. These moral intuitions rapidly and automatically drive our initial perceptions of right and wrong. In contrast, analytical reasoning about moral issues tends to be slow, cognitively effortful and strongly influenced by our moral intuitions. Climate change possesses few features that generate rapid, emotional visceral reactions[8]: it is an abstract, temporally and spatially distant phenomenon consisting of many different, disparate and seemingly incongruous events (for example, increased rainfall in some regions and increased severity of droughts in others). Thus, 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.

The blamelessness of unintentional action. Further inhibiting moral intuitions, climate change lacks the features of an intentional moral transgression[20]: no one wants climate change to occur or is purposefully trying to make it happen. Although climate change is the direct result of intentional, goal-directed behaviour (for example, the use of energy to provide all the trappings of modern life), it is probably perceived by many individuals as an unintentional, if unfortunate, side effect of such actions (although further research exploring the beliefs of individuals about climate change and intentionality is needed to confirm whether this is the case). Studies suggest that unintentionally caused harms are judged less harshly than equally severe but intentionally caused ones[21]. Recognizing a harmful event as the product of an intentional agent, on the other hand, is a highly motivating cue for corrective action[22]. Indeed, children as young as three behave differently in response to otherwise identical intentional and non-intentional harmful acts[23]. Moreover, neuroscientific evidence suggests that the human moral judgement system is particularly sensitive to information about the intentions of others to cause harm[24]. In sum, intentional acts provoke powerful emotional responses. Thus, understanding climate change as an unintentional phenomenon with no single villain may decrease motivation to right past wrongs, and perceiving no human role in the phenomenon at all, as many US citizens do[3], is likely to depress moral judgements even further.

Guilty bias. Though few people are blamed for intending to cause climate change, many are exposed to messages that hold them accountable for causing environmental damage as an unintended side effect of their behaviour and lifestyle. Such messages probably provoke feelings of guilt (and other negative emotions such as fear)[9]. To allay negative recriminations, individuals often engage in biased cognitive processes to minimize perceptions of their own complicity. These biases are even more likely when individuals and communities feel incapable of meaningfully responding behaviourally. Such motivated moral reasoning[25] occurs through a variety of processes, including derogating evidence of one's role in causing the problem and challenging the significance of the issue. For example, research with Swiss participants shows that individuals actively work to avoid feelings of responsibility in part by blaming inaction on others and increasing focus on the costs of mitigation[26]. The ultimate consequence of these reactions to perceived blame is that those responsible for the greatest share of harmful effects, whose behavioural changes would be most beneficial, are the people most motivated to deny their complicity and resist change.

Uncertainty breeds wishful thinking. All sides agree that the effects of climate change are uncertain in many important respects, although the implications and nature of the uncertainties that exist are hotly contested. Uncertainty about future outcomes generally increases self-oriented behaviour and optimistic (moral) thinking[27] (although see ref. 28 for exceptions to this rule); uncertainty also promotes optimistic biases[29]. Similarly, recent research shows that individuals often misinterpret the intended messages conveyed regarding the probabilistic nature of climate change outcomes — and tend to do so over-optimistically. For example, the carefully chosen verbal labels used to describe different levels of (un)certainty in the 2007 Intergovernmental Panel on Climate Change report led respondents in one study to systematically interpret the outcomes as less likely than intended by the experts[30]. Although more research is needed to fully understand the processes by which uncertainty leads to such optimism, what these studies seem to suggest is that the less definitive and incontrovertible the conclusions, the more room there is for individuals to infer unreasonably optimistic outcomes. As that optimism reduces the gravity of the issue, so too may it reduce the motivation to act.

Moral tribalism. Much of the heterogeneity in attitudes on climate change falls along political lines: conservatives show less belief in and concern over climate change than do liberals[31]. Part of this difference may be explained by the different moral priorities that liberals and conservatives endorse; liberals tend to base their moral priorities on two foundations of individual welfare — harm and fairness — whereas conservatives supplement these with three additional foundations focused on protecting the in-group — in-group loyalty, authority respect and purity/sanctity[32]. The moral framing of climate change has typically focused on only the first two values: harm to present and future generations and the unfairness of the distribution of burdens caused by climate change. As a result, the justification for action on climate change holds less moral priority for conservatives than liberals. Moreover, once attitudes acquire a political valence, they are likely to polarize, for at least two reasons. First, people's own group identification exerts a remarkably strong influence on where they stand on political issues[33] and, once they have established a position, they are likely to interpret conflicting evidence with scepticism, while accepting consistent evidence uncritically[34]. Second, individuals derive self-esteem and a sense of belongingness from exhibiting the values of their in-group, providing acute motivation to toe the party line[35]. As a result, by climate change messages remaining focused on the moral priorities of liberals at the expense of those resonant to conservatives, many in the latter group have been left not just uninvolved in action on climate change, but morally hostile to it.

Long time horizons and faraway places. Many individuals living in developed nations believe, correctly, that climate change will most negatively affect individuals who live in faraway places, or who will live far in the future, or both[3]. The consequence of this spatial and temporal distance is that victims of climate change are likely to be seen, at best, as relatively less similar to oneself than are nearby contemporaries, and at worst, as out-group members. In either case,

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such people are seen as less deserving of moral standing[36]. Extensive research in social psychology demonstrates that treatment of out-group members is worse than that of in-group members[37], even when group membership is arbitrary. Moreover, studies suggest that for sins of omission — of which inaction on climate change is a paradigmatic example — in-group/out-group parochialism may be exaggerated. For example, using various moral vignettes, it has been found[38] that although US citizens are generally hesitant to engage in acts that directly harm either fellow US citizens or foreigners, they are significantly more comfortable indirectly harming foreigners through their inaction than they are fellow US citizens. Thus, past research provides indirect evidence to suggest that the more dissimilar and socially distant the victims of climate change seem to be — be they members of faraway communities or, perhaps, future generations — the less morally obligated people will feel to act on their behalf.

How we can bolster moral sentiments about climate change

The challenges outlined above paint a sobering outlook for broadening moral concern over climate change. Nevertheless, a number of psychological mechanisms similar to those highlighted above could be used to bolster people's perceptions of climate change as a moral issue and of ameliorative action as a moral obligation. Here, we identify six interrelated strategies that communicators could use to increase recognition of climate change as a moral imperative. Some of these strategies explicitly address various challenges discussed above, whereas others describe new opportunities to leverage our growing understanding of moral psychology to encourage individuals to consider the moral implications of (in)action on climate change. See Table 2 for a brief summary of these strategies.

Table 2 | Six psychological strategies that communicators can use to bolster the recognition of climate change as a moral imperative.

Use existing moral values	Frame climate change using more broadly held values that appeal to untapped demographics
Burdens versus benefits	Focus messaging on the costs, not benefits, that we may impose on future generations
Emotional carrots, not sticks	Motivate action through appeals to hope, pride and gratitude rather than guilt, shame and anxiety
Be wary of extrinsic motivators	Pushing action on climate change as 'good business' may backfire
Expand group identity	Increase identification with and empathy for future generations and people living in other places
Highlight positive social norms	Leverage human susceptibility to social influence and approval

Use existing moral values. Highlighting the harms and injustices inherent in climate change does not go far enough to activate moral intuitions; other moral foundations should be recognized. The self-reinforcing, politically polarized discourse on climate change described above (see Moral tribalism) might be overcome by highlighting consequences in which political conservatives are invested. For example, preliminary evidence suggests that when environmental degradation is framed in terms of humans profaning the sanctity of the natural world — thereby evoking the purity/sanctity foundation — both liberals and conservatives respond with higher levels of concern, moral engagement and policy support to confront the problem (M. Feinberg, personal communication). Similarly, efforts by various religious leaders[39] to frame climate change as a religious issue of stewardship have increased the salience of the subject among traditionally sceptical audiences. Other efforts to promote moral intuitions regarding climate change[13] similarly attempt to provide diverse pathways by which individuals with very different backgrounds can nevertheless come to a shared belief regarding the necessity of action.

Burdens versus benefits. Climate-change communicators often combine messages about burdens (for example, paying for mitigation or adaptation costs) and benefits (for example, availability of a stable climate system) in a given campaign. Benefits refer to positive goods or services (for example, natural resources, surpluses) left to future generations, whereas burdens refer to negative endowments (for example, debts, epidemics). Recent findings suggest that individuals are significantly more concerned over the ethical implications of saddling future generations with burdens than they are about providing benefits[40]. For example, compared with individuals who read that climate change will diminish food and clean water supplies (that is, reducing a benefit), those who read that the phenomenon will lead to greater spread of infectious diseases (that is, increasing a burden) demonstrated higher scores on a measure of concern for the well-being of future generations[40]. In both cases, individuals read about negative consequences of climate change; however, the subtle shift in this study from describing leaving less of something good to more of something bad was enough to rally significantly more concern — a pattern that has been conceptually replicated in a number of follow-up studies. Thus, it seems that focusing messaging on the burdens that unmitigated climate change will leave on future generations (for example, higher adaptation costs, greater human suffering from disease) rather than on potential benefits (for example, a viable, vibrant planet) may be a simple and easily administrated way to bolster the moral concern of individuals over the impacts of climate change.

Emotional carrots, not sticks. Communicating the burdens that climate change places on present and future generations does not, however, necessarily require inducing feelings of guilt, shame and anxiety, all of which feature prominently in existing climate communication campaigns. Indeed, recent findings suggest that overly dire messages about climate change can backfire with some individuals[41], leading to lower levels of concern and engagement. Although some research suggests that inducing guilt may increase self-reported willingness to engage in actions to reduce greenhouse-gas emissions (for example, using efficient light bulbs)[42], other findings point to the powerful role that positive (moral) emotions — including hope, pride and gratitude — play in driving support for ameliorative climate change action (both politically and personally)[43] and prosocial behaviour more generally[44]. At the same time, prosocial behaviour (for example, charitable giving) leads to increases in subjective well-being[45], which has been demonstrated to, in turn, create a feedback loop encouraging further prosocial behaviour[46]. Linking action on climate change to positive moral emotions such as gratitude and pride, as well as to improvements in one's own well-being, may help combat the guilty-bias challenge discussed above by decreasing defensive processing of what can, at times, be very dire, frightening information about the state of the world. In turn, this may allow individuals to recognize the moral nature of the issue in a sustainable and rewarding, rather than demotivating, manner. For example, communicators could attempt to increase feelings of pride by highlighting how individuals can rise to the challenge of reducing the burdens of climate change for future generations through household or individual behavioural change (for example, taking alternative transportation to school/work one day more per week than normal). Indeed, a growing record of empirical evidence indicates that pride has powerful motivational properties. For example, salespeople who experience higher levels of pride at work exert more effort[47]. Moreover, experiments demonstrate that inducing people to experience pride increases not just task performance[48],

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but also perseverance in tasks that participants otherwise found unpleasant[49]. Encouraging pride in behaviour devoted to environmental goals is likely to be similarly motivating.

Be wary of extrinsic motivators. The recent economic recession has led to an intense focus among many policymakers and climate advocates on framing responses to climate change in economically beneficial terms (for example, green jobs). This Trojan horse approach, whereby an extrinsic motivation, such as economic benefit, is targeted to motivate individuals or corporations to act in environmentally responsible ways, can sometimes be effective. For example, engaging in positive environmental action, even if not for intrinsic reasons, could potentially lead to further pro-environmental attitude and behaviour change in an effort to avoid cognitive dissonance[50]. That said, communicators should be cautious about relying solely on extrinsic values to motivate action. Using economic incentives as a motivation creates a conflict between two values — materialism and environmentalism — that have been shown to be negatively related[51]. Moreover, recent research demonstrates that promoting extrinsic values can actively inhibit individuals from developing intrinsic, non-materialist motives (for example, virtue, affiliation) to respond to the problem[52]. Worse still, research on the overjustification effect shows that consistent reliance on extrinsic incentives for a behaviour can crowd out pre-existing intrinsic attachments to that behaviour[53]. If and when the extrinsic incentive is removed, there is no longer any motivation to continue performing that behaviour for its own sake. Thus, given that economic incentives and benefits for green behaviour and industries are bound to change over time, the present focus on such extrinsic motivators for individuals and corporations may be shortsighted and, in the long run, counterproductive.

Expand group identity. When discussing the negative effects of climate change, many communicators reinforce the widely held belief that such impacts will be felt by future generations of humans and other species. As discussed above (see Long time horizons and faraway places), however, distancing the negative consequences in this manner may decrease the moral concern of individuals over climate change. Explicitly identifying victims as future generations portrays them as individuals who can neither help us out of reciprocity for our actions nor harm us out of retribution for our inactions. Instead, communicators should adopt techniques that increase individuals' affinity and identification with future generations (for example, focusing specifically on identifiable future others such as one's children), which "can diminish interpersonal distance, decrease social discounting, limit egocentric biases and enhance intergenerational beneficence"[54]. Similar recommendations apply in discussions of victims in faraway places. Indeed, social psychological research shows the powerful, positive effect of increasing perceived similarity, shared identity and superordinate goals on helping behaviour[55]. The robber's cave experiment, a particularly famous example of dissolving intergroup divisions, saw two camps of 12-year-old boys transform from bitter and violent adversaries to a single cooperative and harmonious unit by the introduction of superordinate goals that could be solved only together[56]. Though the analogy is not perfect, the psychological research does suggest that framing the victims of climate change in ways that underscore shared goals and identities should similarly increase their moral standing, and with it, motivation to help them. Further research should confirm that such psychological tendencies can scale to these global levels.

Highlight positive social norms. Finally, as considerable social psychological research has demonstrated[57], the actions of individuals are powerfully shaped by the observations of others, particularly the behaviour of important, prestigious others[58]. Furthermore, our perceptions of the beliefs of others regarding how we ought to act — what social psychologists refer to as injunctive norms[59] — can play an especially important role in reinforcing good, and discouraging bad, behaviour. Thus, communicators should find ways to highlight pro-environmental, prosocial injunctive norms such as prohibitions against being wasteful, which are present in many, if not all, communities around the world. At the same time, communicators must be careful not to inadvertently highlight negative, but existent, descriptive norms (for example, describing excessive electricity use), which can actually encourage individuals to follow suit in the wrong direction. For example, recent social psychological research[60] reveals the powerful effects that norms can have — in both positive and negative directions. In what they termed the boomerang effect, households that were given feedback highlighting their lower-than-average energy usage subsequently increased their use. However, the simple addition of an injunctive norm — a smiley face conveying social approval — eliminated this boomerang effect, encouraging households to maintain their good behaviour.

Moving forward on climate change

Considerations of right and wrong are powerful motivators of behaviour and are built into our most enduring and sacred institutions[16]; moreover, personal moral norms play a critical role in driving prosocial and pro-environmental behaviour[61]. Unfortunately, this source of motivation for compassionate and forward-looking action, including support for both political and behavioural change, may be largely untapped in the context of anthropogenic climate change owing to the challenges that various features of the phenomenon pose to our moral judgement system. Fortunately, recent insights may point the way towards effective strategies to combat these challenges and increase recognition of action on climate change as a moral imperative; doing so may be particularly useful in motivating widespread public support for political action.

Our Review highlights the critical need for further research on at least three fronts. First, research is needed to establish the extent to which individuals do or do not identify climate change as a morally relevant issue at present — a research programme that may yield interesting and important individual (for example, personality) and group (for example, political ideology, religious affiliation) differences. Second, the link between perceiving climate change to be a moral imperative and taking proactive action (including both policy support and behavioural decisions) needs to be further established. Preliminary evidence suggests that support for progressive climate change policy is stronger among individuals who consider the moral implications of the issue[15], however further research is still needed to confirm these initial findings. Finally, intervention studies must continue to be conducted to explore the efficacy of communication strategies — be they those suggested here or others. We should also emphasize that neither our list of psychological barriers to recognizing the moral urgency of climate change nor our list of psychological opportunities for increasing this recognition are comprehensive. Those items mentioned here merely reflect the key examples for which we are aware of compelling existing evidence. There are sure to be other psychological realities that prevent moral concern and action on climate change, just as there will be more ways to increase it.

Although many individuals, communities, businesses and organizations are working hard to reduce the burdens and increase the benefits that present generations will leave to future generations, much work remains to be done. Understanding how to connect the very global and abstract issue of climate change to our very local and human moral intuitions may play a critical role in rallying first our hearts, and then our hands, to action.

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Acknowledgements

This work was supported by the National Science Foundation GRFP under grant number DGE-0829517.

Additional information

The authors declare no competing financial interests.

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