# 1 CLIMATE CHANGE AND PSYCHOLOGY

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## 1.1 Introduction

This chapter highlights four themes within the psychology of climate change. The psychology of climate change is a rich, diverse, and fast-moving area of research and so this chapter doesn't aim to provide a comprehensive snapshot of the current state of the literature.[2] The insights to be gained from engagement with the literature on the psychology of climate change are to be gained via a sustained engagement with research developments in the field rather than a one-time snapshot. The chapter, instead, draws on the existing literature to date to illustrate four ways that psychological findings bear on the philosophy of climate change. The chapter first considers how psychological research has explored the ways in which individuals think about the ethics of the relationship between humans and the environment, developing new constructs capturing various ways of thinking about that relationship and developing tools with which to measure the extent to which participants think about the relationship in the relevant ways. The remaining sections look at why people might find it difficult to act ethically in relation to the environment, the psychological impacts of the climate crisis, and at what psychology can teach us about developing effective interventions to practically respond to the climate crisis.

## 1.2 How do we relate to nature?

Key to various projects in the philosophy of climate change is a well-informed understanding of what we might call descriptive environmental ethics or moral psychology (broadly construed). Psychological research can thus be an invaluable source of information for such projects as it can examine, for example, the ways in which people view the environment and environmental

[1] Order alphabetical. Authorship equal.

[2] For something like that, see Nielsen et al. (2021) and for an overview of environmental psychology more generally Steg et al. (2013). For the purposes of this chapter we take a broad view of environmenal psychology as research in the relevant areas is somewhat interdisciplinary.

issues: their perceptions, motivations, and values. The results of such research are thus invaluable for philosophers seeking to understand the roots of the climate change problem and in helping to solve it.

Descriptive claims about moral psychology have always played a central role in the philosophy of the environment (e.g., claims about a dominant worldview versus a needed ecological worldview). During the 1960s and 70s environmental philosophy came to focus on the relationship between humans and the wider environment in response to environmental problems caused by human activity (e.g., pollution) and with an interest in diagnosing the philosophical roots of environmental destruction. One of the root causes of environmental problems (according to a common diagnosis) was an anthropocentric worldview that regarded the natural world as morally significant and worth protecting *only* insofar as doing so is of instrumental value to humanity (consider, e.g., Lynn White Jnr. 1967). This diagnosis is, in part, a psychological one.[3] It is a claim about how people currently think about nature and environmental issues. Such a diagnosis suggests a solution to be explored and developed: perhaps what is needed is a new moral outlook – a nonanthropocentric outlook that sees intrinsic value in nature.

This aspect of early environmental philosophy is closely bound up with early developments in environmental psychology.[4] Environmental psychologists develop and use scales to measure participants' attitudes to the environment. The New Environmental/Ecological Paradigm Scale (NEP) or an updated version of it has been one of the most widely used scales (Dunlap and Van Liere 1978, Dunlap et al 2000). The NEP was developed precisely to capture the kind of new nonanthropocentric moral outlook that mid-twentieth-century environmental philosophers and others argued was needed, and to measure the extent to which the public already accepted the relevant ideas. Here is the opening to Dunlap and Van Liere's 1978 article:

> Numerous writers have argued that our nation's ecological problems stem in large part from the traditional values, attitudes and beliefs prevalent within our society … that our belief in abundance and progress, our devotion to growth and prosperity, our faith in science and technology, and our commitment to a laissez-faire economy, limited governmental planning and private property rights all contribute to environmental degradation and/or hinder efforts to improve the quality of the environment … Pirages and Ehrlich … argue that our society's fundamentally anti-ecological [worldview] must be replaced by a more realistic world view if ecological catastrophe is to be avoided. Despite the predominance of an anti-ecological [worldview] within our society, new ideas

[3] It is, of course, also a claim about the ways those values are entrenched in political, legal, and economic systems. But the psychological claim is a key one.

[4] For an overview of the history of Environmental Psychology see, for example, Steg, et al (2013, chap. 1).

> have emerged in recent years which represent a direct challenge to this [worldview]. For example, we increasingly hear of the inevitability of "limits to growth," the necessity of achieving a "steady-state" economy, the importance of preserving the "balance of nature," and the need to reject the anthropocentric notion that nature exists solely for human use … [W]e term this new world view the "New Environmental Paradigm" or NEP.

Although typically used as unidimensional measures of environmental values or worldview, the NEP scales are designed to pick up on distinct facets of the New Ecological Paradigm. For example, in the revised NEP distinct groups of items are intended to pick up on the following facets: the reality of limits to growth; antianthropocentrism; the fragility of nature's balance; rejection of exemptionalism; the possibility of an eco-crisis (Dunlap et al., 2000).[5]

[Table 1 around here]

Environmental psychologists have studied the extent to which a non-anthropocentric environmental ethic (as captured by measures such as the NEP scale) is endorsed by the public, and whether, for example, endorsement of such an ethic is growing over time (Dunlap et al., 2000), is related to consumer choices (e.g., Thøgersen & Ölander 2002; Whitmarsh & O'Neill 2010) or voting behaviour (e.g., Aguilar-Luzón et al. 2020). The NEP is one of hundreds of measures of environmental attitudes that have been developed in environmental psychology (see Cruz 2020 for a recent review). See Table 1 for items in the NEP (original and revised). Various other relevant measures may be of interest to philosophers concerned with the environment and climate change, e.g., scales concerning ecological attitudes and knowledge (Maloney et al. 1975), environmental concern (Weigel and Weigel 1978), and cultural environmental bias (Price et al., 2014).

One other very prominent measure, which is worth mentioning in detail, is an adaptation of the Schwartz Value Survey (for background see Schwartz 2012) which has been called the Environmental Schwartz Value Survey (or E-SVS). There have been a few subtly different iterations of this. See Bouman et al (2018) for an overview, references, and a proposal for an adaption of the related Portrait Values Questionnaire. Participants are asked to respond to a number of value labels, e.g., "Self-indulgent (doing pleasant things)", "a world at peace (free of war and conflict)", on a scale from -1 to 7 where (where -1 is labelled "opposed to my values",

[5] Some relevant discussion in Hawcroft and Milfont (2010).

0 is “not important”, and 7 is “of supreme importance”). Using the E-SVS a participant receives a score for each of four clusters of values: Biospheric, Altruistic, Hedonic, Egoistic.

[Table 2 around here]

Environmental psychologists have then developed competing models of the role that measured environmental values and attitudes play in environmentalism and environmentally significant behaviours.[6] In the Value-Belief-Norm (VBN) theory for example, a “sense of obligation to take proenvironmental behaviours” is central to explaining why individuals engage in environmental actions. Key to explaining such a sense of obligation is the worldview captured by the NEP which comes from an understanding that “environmental conditions threaten things the individual values”, and that “the individual can act to reduce the threat”. A key part of explaining acceptance of the worldview captured by the NEP is, in turn, more basic values (biospheric, altruistic and egoistic) (Stern 2000). The VBN is just one of several models of the role that environmental attitudes and values play in producing behaviour. Another important model, for example, is the Value-Identity-Norm model (van der Werff 2016; Stern et al., 1999, Stern 2000).[7]

Engagement with research such as that surveyed above clearly has the potential to enrich any conversation in environmental philosophy that is concerned with offering and evaluating diagnoses of environmental problems that give weight to descriptive claims about *our moral outlook, values, or world view*. Such engagement might, of course, and probably should include critical engagement with the relevant psychological constructs, measures and models. Construct validity shouldn’t be taken as given. For example, it shouldn’t be taken as given that E-SVS “Biospheric” scores reflect what a philosopher might understand by biospheric values (as the scores are computed using some items that seem to express anthropocentric attitudes including treating nature as a “resource”, see Table 2). And see Lundmark 2007 for some relevant critical engagement with NEP scales.

[6] For a brief introduction to these models see Steg et al (2013, chap.18) and for further discussion of the theoretical underpinnings of models including a review of the literature see Bamberg & Möser (2007).

[7] For a comprehensive review of the models and approaches used in environmental psychology see Jackson (2005) and meta-analysis by Klöckner (2013).

Although our focus so far has been on the relevance of environmental psychology to *environmental philosophy*, rather than the philosophy of climate change, that's because the same general pattern applies in the case of the philosophy of climate change. A concern with descriptive moral psychology is also central to the philosophy of climate change. Questions about anthropocentrism versus nonanthropocentrism—the central concern of scales like the NEP scale—still loom large of course. But a number of other kinds of descriptive claims about moral psychology also play a role in the literature on the philosophy of climate change. These other relevant aspects of moral psychology on which there is relevant research within environmental psychology and cognate fields include our relationships with future generations (Meleady & Crisp 2017), technology (Lorenzoni et al 2007), government (Tam 2020), historical responsibility (Gampfer 2014), and much more. In the context of the kinds of descriptive claim that play a role in the philosophy of climate change—given the nature of the problem—there is also a particular importance for philosophers of climate change to pay attention to cross-cultural research into environmental attitudes and values, and the role they play in producing environmentally relevant behaviours (e.g., Milfont et al 2010, Milfont and Duckitt 2010; Schultz and Zelezny 1999).[8]

## 1.3 What prevents change?

The problems of climate change are in part problems of inaction including the inaction of individual citizens: Why don't people demand more effective political action on climate change? Why don't people take greater steps to reduce their own carbon footprints? Why isn't climate change treated as a priority? Philosophical and particularly ethical examination of the phenomenon of climate change thus needs an appreciation both of (a) the psychological drivers of climate change itself, and (b) psychological factors that bear on the efficacy of proposed responses to climate change.

The material and topic of the previous section is likely going to be relevant here too. One reason for being interested in descriptive environmental ethics might be, for example, that it is

[8] The experiences of many populations have not had much representation within the literature which has tended to have 'WEIRD' samples (i.e., Western, educated, industrialised, rich and democratic) (Henrich et al., 2010). For those wanting further reading, Marquart-Pyatt (2013) provides an overview of research into cross-cultural research on environmental concern and associated research challenges.

helpful in determining what kinds of solutions to climate change are likely to be (un)successful. Likewise, a rich descriptive understanding of people's existing ethical outlooks in relation to the environment and environmental issues may suggest new, or speak to existing, hypotheses about the psychological roots of environmentally destructive behaviours. However, research on both psychological drivers of climate change and psychological barriers facing proposed solutions can go far beyond the kind of general insights provided by descriptive environmental ethics of the kind described in the previous section (i.e., that which focused on the endorsement of general worldviews or values).[9]

In this section we highlight six types of barrier identified in the psychological literature. Other surveys identify as many as 29 factors (see Gifford 2011).[10]

### 1.3.1 Habits

What an individual did in the past is highly predictive of what they will do in the future (Linder et al. 2022; Ouellette & Wood 1998; Sutton 2003). A habit is simply a behaviour with a history of repetition (Orbell and Verplanken 2015). Unfortunately, many such behaviours significantly contribute to our personal carbon footprints (e.g., the ways we travel, how we heat/cool our homes, how we cook, wash). Breaking or changing habits is difficult because habitual behaviours have a high degree of automaticity, persist when there is no reward, can be performed without effortful cognitive mediation (e.g., with low self-control and ego-depletion) and are cued in stable contexts (Orbell and Verplanken 2015). Furthermore, the attempt of one individual in a household to change their habit(s) can have widespread impacts on others in a household (i.e., on the habits and routines of others within the household), the complexity of which negotiations can pose another barrier to change (Walker and Hope 2020, Nicholls and Strenger 2015, Graves and Roelich 2021). However, making more pro-environmental practices habitual can offer the promise of sustained change with aggregated benefits to the environment (Nielsen et al. 2021).

[9] For a review of theoretical frameworks attempting to explain drivers and barriers to pro-environmental action see Kollmuss and Agyeman (2002).

[10] For other important surveys of similar terrain that highlight other themes, see Markowitz and Shariff 2012, Rottman et al 2015.

### 1.3.2 Loss aversion

Loss aversion is the phenomenon of weighting potential losses more than potential gains. I am, for example, unlikely to play a game of coin toss with a fair coin in which an outcome of heads results in my losing £1000 and an outcome of tails results in my gaining £1500. Making changes in one's life to address the climate change crisis will in many cases involve some costs as well as potential gains. Accounting for loss aversion is potentially very important when predicting consumers' responses to incentives introduced to steer them towards lower carbon choices and thus the impacts of policy tools such as carbon taxes (see, e.g., Knobloch et al 2019). Psychologists have explored the impact of loss aversion in cases such as willingness to swap energy tariffs finding, e.g., that those with higher loss aversion were less willing to swap to a 'time of use' tariff (a tariff structured to incentivise energy use at non-peak times and so reduce the use of fossil fuels) (Nicolson et al., 2017).

### 1.3.3 Distance/Discounting

Another important barrier to change is the fact that many of the key benefits of successful climate change mitigation and adaption are (or are perceived to be) relatively far away in terms of social connection, geography, and time, while people's motivations to reduce their carbon footprint, take political action, and so on, prioritise issues that are closer to home (self-interest, one's family, one's community/country, one's generation). Psychological research can help us get a more informed understanding of how any such (perception of) distance affects individuals' behaviour in relation to climate change (for a review of some relevant literature, see McDonald et al. 2015).

The understanding of distance appealed to here is a very broad one and has many potential dimensions. One dimension of distance concerns distance from the self. Insofar as effective climate change action is perceived as having benefits distant from the self, people's underlying values are going to be significant, e.g., the difference between self-interest and more "transcendent" pro-social or ecocentric values. Psychological models of pro-environmental behaviour vary in the role that they give to constructs such as self-interest and altruism. Those who view pro-environmental behaviour as being predominantly pro-socially motivated tend to refer back to either the Value-Belief-Norm model (mentioned above) or to Schwartz's Norm Activation Model (e.g., Schwartz 1977). In turn, those focusing on self-interest as the main motivator tend to favour the 'Theory of Planned Behaviour' developed by Ajzen (1991) (see

Bamberg and Möser 2007 for discussion). However, it is common to recognise that, for instance, endorsement of altruistic and biospheric (rather than egoistic or hedonic) values have been found to be among the best predictors of pro-environmental action, reflecting lifegoals such as caring for others (Bouman and Steg 2020).

Another aspect of a perceived distance of climate change is spatial distance. The populations who stand to benefit most from effective climate change action are often not the populations whose actions (or failure to act) will suffer the greatest negative impacts. Those in the global North with the highest carbon footprints, for example, are at some distance from those in the global South who are most at risk from climate change (UNDP 2019). Psychological research bears on this issue. For example, Spence et al (2012) find that the perception that climate change was closer, including spatially (as well as various other dimensions relevant to this section), was associated with higher levels of concern about climate change and preparedness to act.

Another relevant aspect of a perceived distance of climate change is time. Effective mitigation and adaption require action in the present to avoid problems in the future. As people tend to discount future value in some way and to some extent, a greater perceived temporal distance between the investment called for and the payoff promised is likely to affect the priority given to taking relevant pro-environmental action. The psychological dynamics of temporal discounting have been studied extensively in economics (Ericson and Laibson 2019) and there are studies which investigate its application to support for climate policy (Sparkman et al. 2021). Findings include the potential importance of "legacy motives"; Hurlstone et al (2020) report that intergenerational discounting is mitigated by giving participants messaging that made them more aware of their own death, of intergeneration power asymmetries, and want to "reciprocate forwards the beneficent acts of prior generations". Ho et al (2020) find similar reductions in discounting when participants are asked to vividly imagine specific future actions associated with climate change mitigation action that they would carry out.

### 1.3.4 Autonomy/Efficacy

A distinct, although connected, barrier to change is where individual action is (or is perceived to be) ineffective in the face of a problem on the scale of global climate change (see, e.g., Aitken et al. 2011). A review of meta-analyses of the existing literature on climate adaptation behaviours found that among the strongest predictors of climate adaptation behaviour was the

belief that taking measures would be effective and the belief that one has the ability to engage in the relevant behaviour (Bechtoldt et al 2021). An added danger is that the bigger a problem is (or is presented as being) the more likely it will be perceived as beyond an individual's control or ability to make a difference (Niemeyer et al. 2005).

### 1.3.5 Denialism/scepticism

What leads people to doubt the reality of climate change, its causes, its effects, and about the efficacy of certain actions and policies? What attracts people to climate change denialism and leads them to take an active part in campaigns of climate denialism? Research investigating the factors underlying climate scepticism and denialism, and testing potential strategies for addressing them, is key to understanding potentially important barriers to wider change. Research has found, for example, that misinformation is much more effective in promoting climate scepticism than framings intended to promote belief in climate change were at promoting belief in climate change (e.g., Rode et al 2021), and that messaging that emphasises scientific consensus coupled with an 'inoculation' against future misinformation can be effective in combatting climate misinformation (e.g., Van der Linden et al 2017, Maertens et al. 2020).

### 1.3.6 Rationalisation

Another barrier to change is that in an attempt to absolve themselves of responsibility and/or manage uncomfortable emotions such as guilt people may rationalise a variety of high-emissions behaviours (e.g., air travel) despite having a commitment to, e.g., reducing their carbon footprint (Gifford 2011). Many studies explore the role of 'moral licensing' in such rationalisations. Moral licensing occurs when a moral action is seen to permit a subsequent immoral action (Nilsson et al. 2017); imagine a kind of bank account where "good" deeds give credit that can be redeemed against later "bad" deeds (Dolan and Galizzi 2015). There is also evidence that this process can work in reverse with individuals undertaking "purging" behaviours to make good on bad deeds (Dolan and Galizzi 2015).

A related concept to moral licensing is that of compensatory beliefs. Although now applied to environmentally significant behaviours, much of the empirical work on compensatory beliefs lies within health psychology. One study, for example, found that dieters tempted with high calorie foods spontaneously generated compensatory beliefs (e.g., "that future food deprivation will compensate for the present food consumption") (Monson et al.

2008). Compensatory beliefs can be seen as a cognitive strategy for striking a balance between maximising pleasure (e.g., eating cake) and minimising harm (e.g., avoiding unhealthy weight gain) (Rabiau et al. 2006). Unfortunately, where these beliefs are inaccurate and in instances where the belief itself assuages feelings of guilt resulting in subsequent inaction – harm may result. This is especially a risk in the case of environmental behaviours where the costs and benefits tend to be complex to calculate and also less directly impact on the individual making it easier to fudge the accounting (Hope et al. 2018).

## 1.4 What are the effects of change?

So far, we have considered one direction of influence. How can psychology identify psychological factors that contribute to the climate change problem (both drivers of change and barriers to action)? Now, we consider the other direction. What are the psychological effects of the climate change problem? Psychological impacts are a significant aspect of climate change that bears on the philosophy of climate change. Climate change and our efforts to mitigate it and adapt to it (will) have significant impacts on human populations. Psychology can help us achieve a richer understanding of those impacts – without which any ethical analysis would be incomplete. One particular focus in the literature concerns the relationship between environmental conditions and policies, and wellbeing and mental health.

### 1.4.1 Direct psychological effects of a changing climate

Climate change is associated with the increased frequency and severity of extreme weather events and the impacts of these can lead to wide spreading negative consequences. These include, for example, disruption to transport and education, reduced access to medicine, loss of homes, the destruction of communities and increases to conflict. People who experience environmental or associated disasters may suffer from mental health issues and psychological traumas including PTSD, anxiety, depression, and grief concerning the loss of valued places and things (Cianconi et al. 2020). Climate change can therefore have both direct and acute negative impacts on wellbeing which psychological research can help us better anticipate (and perhaps take steps to mitigate) (Burke et al 2018). Potentially relevant here also is research on a traditional topic of interest in environmental psychology: the physical and mental health benefits of contact with natural environments (see, e.g., Martin et al 2020, for a recent study

and literature review). These might be relevant to consider as opportunities for contact with nature are not the same under all envisaged future climate change scenarios (due to the effects of climate change, and mitigation and adaptation efforts).

### 1.4.2 Indirect psychological effects of a changing climate

The mental health impacts of climate change also include indirect emotional effects such as anxiety about climate change (Clayton 2020, Doherty and Clayton 2011). These emotional responses may be elicited by media coverage and may also include hopelessness, anger, grief, and apathy (Clayton 2020). An individual may, for instance, be concerned about possible future harm to grand/children or experience anxiety about the future environment (e.g., loss of a place due to rising sea levels). The construct of climate change anxiety has perhaps received the most attention in the literature, as a specific and measurable source of anxiety which can be differentiated from other sources that have more serious and direct impacts to the individual (Clayton and Karazsia 2020). Impacts of climate anxiety can include, for example, insomnia (Ogunbode et al. 2021) and there are anecdotal reports from media reporting which include "panic attacks, loss of appetite, irritability, [and] weakness" (Doherty and Clayton 2011).[11] It is worth recognising that while climate anxiety can be an unconstructive and clearly negative component to some individuals' wellbeing, it can also be part of a constructive "adaptive pro-environmental response" (Verplanken et al. 2020).

In addition to "Climate anxiety" a range of other terms have been coined to describe the results of studies examining people's various and complex responses to environmental issues, including the following: "ecoanxiety" or a dread of receiving negative environmental information; "solastalgia" which describes the chronic distress associated with negative environmental change (especially at a local level); and "econostalgia" or the perception that a place was better (e.g., more ecologically diverse) in the past (Clayton 2020, see also list in Cianconi et al. 2020). In a recent study, Stanley et al (2021)'s findings suggest that it is "eco-

[11] Interestingly, despite many claims/intimations in the literature that these are known or central symptoms of climate anxiety or ecoanxiety, this and similar lists of symptoms seem to be based ultimately on references to claims made in media coverage of eco-anxiety, and the referenced media reports mostly explicitly attribute the list to a single "eco-therapist" called Melissa Pickett (likely all based on a single press release) (Swim et al. 2009's reference to Nobel 2007 seems to be typical). However, such symptoms are of course congruent with a form of anxiety.

anger" rather than "eco-anxiety" or "eco-depression" that is most adaptive, being associated with better mental health and more engagement in activism.

## 1.5 How can change happen?

Climate change is a significant problem which humanity somehow needs to solve. A desire to help solve the problem lies behind most applied research on climate change. So far, we've seen some of the ways in which psychology can help us better understand the nature of the problem that climate change presents to humanity. For example: Which moral outlooks may be implicated in climate change? Why is climate change happening? What barriers are there to effective mitigation? What kinds of negative impacts does climate change have on us? While these contributions clearly help steer and inform our responses to climate change, the way in which they do so is somewhat indirect. Their main emphasis is in understanding and diagnosing the problem and not directly in proposing strategies or solutions. So, in this final section, we turn to ways in which psychology's contribution to the design of effective responses (usually described as 'interventions') to the problems of climate change is somewhat more direct, with a more constructive and less diagnostic character. An effective response to climate change requires widespread change of one kind or another—whether at the level of individual consumer behaviour, at the level of the political will, or somewhere else. Psychology can contribute by suggesting more or less concrete strategies for supporting and facilitating such changes.

In an early agenda-setting paper, Steg and Vlek (2009) identified a number of key lessons in relation to individual behaviour change.[12] One is that interventions aiming to address a "knowledge deficit" in relation to climate change are typically not particularly effective in changing behaviour. A second is that strategies that involve strengthening people's commitment to acting in pro-environmental ways, setting goals, getting them to form "implementation intentions", and providing prompts to encourage action are more effective than simply providing information. A third is that interventions that provide either social support or role models can be effective – for example, by giving information about descriptive

[12] See Grilli and Curtis (2021) for a more recent review. See also Steg et al (2013) for a more in-depth introduction to methods used to encourage pro-environmental behaviour and Ockwell and Whitmarsh (2015) for an in-depth critique of different strategies for behaviour change including, for example, public communication campaigns.

norms (e.g., on how much energy similar households to yours use) (Schultz et al 2007). And there are many other lessons in this vein that one can find in the literature. It is widely found, for example, that benefit framings are more effective than sacrifice framings in climate messaging (see, e.g., Gifford and Comeau 2011). There are also more structural interventions which aim to adjust the incentives faced by agents to make pro-environmental options more attractive or through "nudging" agents towards the desired behaviour, and more relationship-building/community-based approaches (see Grilli and Curtis 2021 for a review of these, Steg and Vlek do make some comments too).

However, it is noted by many that environmental psychology has tended to focus on influencing individual consumer behaviour in ways that often promise only relatively low climate impacts even considered collectively. A more recent agenda-setting paper, Nielsen et al 2021, identifies two "overlooked dimensions" in such research and encourages that they are explored in future research. The first concerns the fact that individuals occupy many roles and their role as consumers may often be that in which they have least influence. Nielsen et al., encourage psychologists to give greater attention to actions and changes that are available to people in their roles as investors/producers, participants in organizations, members of communities, and citizens. The second concerns the fact that some kinds of behaviour change would have much greater payoff than others. Nielsen et al (2021) urge a smarter approach to psychological research in this area with a greater focus on interventions with a high carbon-reduction potential (e.g., influencing dietary changes or choice of home). Nielsen et al.'s encouragements can hopefully be seen as a prediction of themes that will be a greater focus of environmental psychology in coming years.

## 1.6 Scope for further interaction

While both philosophical and psychological research on climate change is admirably interdisciplinary, there is scope for greater interaction between the philosophy of climate change and the psychological sciences (and between environmental philosophy and psychology more generally). Before finishing, we wanted to highlight one possible form this might be expected to take: experimental environmental philosophy.

Over the past twenty years, it has become more and more common for philosophers to incorporate the methods of empirical psychology into their research and to receive training in

empirical methods. This movement is known as 'Experimental Philosophy' and has seen the birth of vibrant interdisciplinary, empirical literatures in many areas of philosophy—from the metaphysics of causation to epistemology and to metaethics—in which philosophical and psychological questions are intimately connected (for an early overview, see Knobe 2007).

As yet, however, experimental philosophy, has made few inroads into environmental philosophy or the philosophy of climate change.[13] There is no identifiable interdisciplinary subfield, for example, at the intersection between philosophical and psychology work on climate change or environmental issues more generally. And key philosophical textbooks and anthologies in the area, contain no empirical philosophical work but plenty of projects amenable to the contribution of empirical methods (see, e.g., Budolfson et al. 2021, Gardiner et al. 2010).[14] We don't have any particular view as to why that might be.[15] But we do expect it to change. Experimental philosophy has recently made headway into applied areas of philosophy such as bioethics (Earp et al 2020), philosophy of law (Prochownik 2021), and animal ethics (Persson 2018). Experimental philosophy has also been argued as having much to contribute to projects in so-called 'conceptual engineering' (Nado 2021, Andow 2020) — a new term used to capture philosophical projects that aim to improve our concepts, projects which have long been part of environmental philosophy. We would expect (indeed encourage) the philosophy of climate change (and environmental philosophy more generally) to follow close behind. And, of course, there is a historical precedent for a close relation between experimental and environmental philosophy with Arne Naess having a strong claim to being one of the first philosophers in both fields (Murphy 2014, Naess 1938, 1973).

[13] Disciplinary boundaries are of course a little blurry and much of the empirical work mentioned above might, in some sense, count as experimental philosophy of climate change. However, climate-change oriented projects are certainly not commonly encountered in the experimental philosophy community. Exceptions include: Ranney et al 2019, Martinez and Winter (forthcoming); Kopec and Brunner (2022). And there was a similar call for such work by Frey (2014).

[14] Although it would be unfair to say there was no engagement with empirical psychology.

[15] A guess might be a sociological one. During the twentieth century attitudes to the interaction between science and philosophy tend to have been divided within philosophy. On the one hand, there is a form of naturalist position. Philosophers on this side of the divide tend to see philosophy as continuous with the sciences and perhaps hold science in esteem as a mode of enquiry. On the other hand, there is an anti-scientism position. Philosophers on this side of the divide are sceptical about such attitudes to science and the ability of scientific methods to contribute to philosophy. It is understandable that an environmental philosophy that rejected the exploitation and domination of nature in which science and its methods were implicated might not be the first area of philosophy to be receptive to the experimental philosophy movement.

## 1.7 Conclusion

This chapter aims simply to highlight a few ways in which the philosophy of climate change can benefit from engaging with psychological research. We grouped these under four themes. Environmental psychology, broadly construed, is helping us to get a purchase on various issues that are central to climate ethics. How do we relate to nature? – getting a better understanding of where and how environmental issues and concerns fall within people's moral worldviews and how these feed into their intentions and behaviour. What prevents change? – getting a better understanding of why effective action on climate change can be difficult and the barriers that effective interventions need to overcome or navigate. What are the effects of change? – getting a richer understanding of the negative mental health outcomes that will and are already resulting from climate change and the prospect of climate change. How can change happen? – getting a better understanding of opportunities for change and what strategies might make for effective climate change action. Such a richer understanding of the psychology of climate change is invaluable particularly for an ethical analysis where issues of feasibility and motivation are central.

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*Table 1 NEP Scales (based on* Hawcroft and Milfont, 2010)

| Unique to NEP scale | Common items | Unique to Revised NEP scale |
|---|---|---|
| • Plants and animals exist primarily to be used by humans.<br>• To maintain a healthy economy, we will have to develop a "steady–state" economy where industrial growth is controlled.<br>• Humans must live in harmony with nature in order to survive.<br>• Humans need not adapt to the natural environment because they can remake it to suit their needs.<br>• There are limits to growth beyond which our industrialized society cannot expand. | • We are approaching the limit of the number of people the earth can support.<br>• Humans have the right to modify the natural environment to suit their needs.<br>• The earth is like a spaceship with [only] limited room and resources<br>• [Mankind is/humans are] severely abusing the environment.<br>• When humans interfere with nature it often produces disastrous consequences.<br>• [Mankind was/humans were] created to rule over the rest of nature.<br>• The balance of nature is very delicate and easily upset. | • Human ingenuity will ensure that we do NOT make the earth unliveable.<br>• The earth has plenty of natural resources if we just learn how to develop them.<br>• Plants and animals have as much right as humans to exist.<br>• The balance of nature is strong enough to cope with the impacts of modern industrial nations.<br>• Despite our special abilities, humans are still subject to the laws of nature.<br>• The so–called "ecological crisis" facing humankind has been greatly exaggerated.<br>• Humans will eventually learn enough about how nature works to be able to control it.<br>• If things continue on their present course, we will soon experience a major ecological catastrophe. |

*Table 2: E-SVS scale items: based on Bouman et al 2018*

| Biospheric | | | |
|---|---|---|---|
| Preventing pollution (protecting natural resources) | Protecting the environment (preserving nature) | Respecting the Earth (harmony with other species) | Unity with Nature (fitting into nature) |
| **Altruistic** | | | |
| Equality (equal opportunity for all) | Social Justice (correcting injustice, care for the weak) | A world at peace (free of war and conflict) | Helpful (working for the welfare of others) |
| **Hedonic** | | | |
| Pleasure (gratification of desires) | Enjoying life (enjoying food, sex, leisure, etc.) | Self-indulgent (doing pleasant things) | |
| **Egoistic** | | | |
| Social power (control over others, dominance) | Authority (the right to lead or command) | Influential (having an impact on people and events) | Wealth (material possessions, money) | Ambitious (hardworking, aspiring) |