



Hindering Harm and Preserving Purity: How Can Moral Psychology Save the Planet?

Joshua Rottman^{1*}, Deborah Kelemen¹ and Liane Young²

¹*Boston University*

²*Boston College*

Abstract

The issues of climate change and environmental degradation elicit diverse responses. This paper explores how an understanding of human moral psychology might be used to motivate conservation efforts. Moral concerns for the environment can relate to issues of harm (i.e., causing pain or impinging on another's welfare) or impurity (i.e., engaging in sacrilegious, polluting, or disgusting actions). Aversions to harm are linked to concern for current or future generations, non-human animals, and anthropomorphized aspects of the environment. Concerns for purity are linked to viewing the environment as imbued with sacred value and therefore worthy of being protected at all costs. While both harm-based and purity-based framings of environmental issues can sometimes backfire, we argue that making these moral concerns salient can nevertheless bring about moral responses to environmental issues. In sum, scientists' emerging knowledge about the moral mind can be used to facilitate the sustainable conservation of the planet.

1. Introduction

The earth's climate is undergoing anthropogenic change: natural resources are being quickly depleted, ecosystems are being destroyed, and animal species are rapidly going extinct. The magnitude of these consequences has led many to conclude that one of the most crucial moral issues in modern times is that of environmental conservation (Friedman 2008; Leopold 1949). Notably, the belief that people have a moral obligation to preserve the environment and combat climate change is linked to increased motivation to engage in conservationist behaviors (Markowitz 2012). More generally, holding an attitude with moral conviction leads to increased involvement with the issue (Skitka 2010). Therefore, a key challenge for those concerned about environmental issues is discovering how to frame conservation as a moral imperative as opposed to a prudential or economic issue.

This task may strike some as an uphill battle, including those who have argued that conservationism is fundamentally at odds with our evolved moral psychology. For example, climate change does not automatically activate moral intuitions and emotions due to its abstractness, uncertainty, temporal distance, elicitation of guilt (which leads to motivated self-defensive reactions), and the fact that transgressions against the environment tend to be unintentional omissions (e.g., failures to recycle or conserve energy) rather than intentional commissions (Markowitz and Shariff 2012). However, the recent upswing in moral concern for the environment suggests that there are reasons to be optimistic (Dunlap et al. 1993). This paper explores some available options for moralizing issues related to environmental conservation. Specifically, we examine the efficacy of appealing to the moral concept of harm and the moral concept of purity in the service of increasing concern for the environment and thus promoting sustainable behaviors (also see Rottman 2014).

2. *The Moral Foundations of Harm and Purity*

Moral cognition is multifaceted, with research suggesting that there is a diverse range of distinct moral concerns (Graham et al. 2013; Parkinson et al. 2011; Pizarro et al. 2012). For example, although many prototypical moral violations (e.g., murder, torture) involve harm to people, other moral violations (e.g., consensual incest, eating taboo foods) may be considered wrong due to concerns about impurity or sacrilege (Haidt et al. 1993; Shweder et al. 1997; Uhlmann and Zhu 2014).

Many morally relevant behaviors are associated with a single moral concern. For example, harm concerns dictate moral beliefs about the death penalty, while purity concerns dictate moral beliefs about premarital intercourse (Koleva et al. 2012). However, other transgressions may violate multiple moral norms. For example, harm concerns and purity concerns are both potentially relevant for moral judgments of suicide, although recent work has demonstrated that purity concerns primarily drive these judgments in spite of participants' explicit reports to the contrary (Rottman et al. 2014). Crucially, environmentally relevant behaviors may also be framed in terms of harm or purity (Feinberg and Willer 2013). Below we explore the unique advantages of using each of these moral frames.

3. *Harm-based Concerns*

One way to increase moral concern for the environment is to raise awareness about the harmful consequences of climate change for humanity, thus framing environmentalism as a threatening public health issue (Maibach et al. 2010; Nisbet et al. 2012). For example, people report being concerned about leaving a positive legacy for future generations, especially after being instructed to think about the intergenerational burdens created by climate change (Wade-Benzoni et al. 2010); this feeling of responsibility could motivate people to engage in pro-environmental behaviors (Maibach et al. 2008). In addition, drawing attention to specific victims – the people who will be harmed in the absence of conservation efforts – may also prove effective. Discourse analyses suggest that talking about how climate change disproportionately impacts the poor is a common tactic to engage support for environmental issues (Wardekker et al. 2009). Concerns about how environmental damage can cause harm to humans are salient even during childhood; in both the United States and Brazil, they comprise a majority of young children's justifications for engaging in pro-environmental behaviors (Howe et al. 1996; Kahn 1997; but see Hussar and Horvath 2011).

While focusing on the wellbeing of humans is one way to engage moral concern for the environment, a key challenge is that many non-human entities are fundamental components of any environment and are often harmed much more directly than humans. Many people exclude animals, plants, and other natural kinds from the 'moral circle' of care and concern (Opotow 1993) because they construe them as lacking the requisite properties for moral standing. In particular, some philosophers and psychologists have posited that rationality and intelligence are essential for moral standing, and therefore humans are at the pinnacle of moral concern (e.g., Carruthers 1992; Hamlin 2012; Kant 1980; Premack and Premack 1994). Even those who instead argue that more passive capacities for experiencing suffering and other phenomenal states are critical (e.g., Bentham 2007; Bernstein 1998; Blair 1995; Gray and Wegner 2009, 2012; Gray et al. 2012; Jack and Robbins 2012; Singer 1975) typically concede that these mental states are most characteristically found in human beings, even if they may be found to some degree in other animal species as well. Other factors that have additionally been found to contribute to moral standing, including dispositional traits such as benevolence (Piazza et al. 2014), are also most clearly identified in humans. Fundamentally, although the precise criteria for moral standing are debated (and it is likely that more than

one of the aforementioned characteristics contributes to moral consideration; see Sytsma and Machery 2012; Theriault and Young 2014), the different views on which capacities are central to moral consideration converge in characterizing humanness as the prototypical feature of moral standing. In sum, being considered a ‘person’ is often necessary in order to achieve unambiguous inclusion in the moral circle (Farah and Heberlein 2007).

The concept of personhood is flexible, however, and attributions of personhood or humanness are extended under certain circumstances (Epley et al. 2007; Farah and Heberlein 2007; Guthrie 1993; Johnson 2003). In particular, people engage in anthropomorphism, perceiving non-human entities to be humanlike and thus deserving of moral consideration (Waytz et al. 2010). Research has shown that perceiving zoo animals as more similar to humans increases the promotion of animal welfare (Clayton et al. 2011). Furthermore, simple manipulations that induce people to anthropomorphize dogs (Butterfield et al. 2012) or to think of animals more generally as humanlike (Bastian et al. 2012) can achieve increases in pro-animal attitudes, as well as increases in the number of animal species for which people report moral concern. Finally, being instructed to take the perspective of suffering animals – as compared to viewing these animals objectively – has been demonstrated to increase concerns for non-human life, perhaps because perspective taking leads the animals to be conceptualized as more similar to the self (Schultz 2000). Other mechanisms beyond perspective taking may also facilitate anthropomorphism. For example, attributions of cuteness may have a humanizing effect, which is likely to be a reason why juvenile animals (e.g., polar bear cubs) often elicit widespread moral concern (Sherman and Haidt 2011).

The positive effects of anthropomorphism extend even beyond sentient beings, such that moral concern for plants and even ‘Mother Nature’ is enhanced when these entities are construed as ‘persons’. When explaining why trees deserve protection, from a moral standpoint, children frequently anthropomorphize them by referring to the suffering they experience when being chopped down (Gebhard et al. 2003). In adults, anthropomorphizing nature enhances feelings of connectedness to nature, which in turn leads to greater conservation behavior (Tam et al. 2013). Additionally, people who possess heightened dispositional tendencies to engage in anthropomorphism are more likely to express concern for plants, forests, and nature as a whole (Waytz et al. 2010).

3.1. DOWNSIDES TO HARM-BASED CONCERNS

Focusing on harm can aid efforts to increase moral concern for the environment, but this does not appear to be the case across the board. Evidence demonstrates that emphasis on human wellbeing often distracts from direct concerns about the environment (e.g., Severson and Kahn 2010). Compared to their peers, people who limit their environmental focus to considerations of impacts on human welfare tend to be more apathetic about environmental issues and less likely to engage in conservation behaviors (Gagnon Thompson and Barton 1994; Steg and de Groot 2012). Therefore, a harm-based morality that focuses entirely on human victims is unlikely to be entirely effective in motivating moral concern for the environment more broadly.

Furthermore, despite the role that anthropomorphism can play in facilitating extensions of harm-based concerns beyond humans to other aspects of the natural world, its influence is not always positive. Indeed, in some cases, it can even diminish conservation efforts. This may be the case when anthropomorphism causes the humanized entities to be distanced from their place in the natural world. For example, watching a video of anthropomorphized entertainment chimpanzees reduces donations to wildlife charities, compared to watching a conservation video about wild chimpanzees (Schroepfer et al. 2011). Anthropomorphism can also have negative consequences if animals are characterized as enemies or outgroup members.

For example, if an animal species is presented as being in conflict with humans over a scarce resource (e.g., inhabiting a particular area), then anthropomorphism reduces moral concern for that particular species (Opatow 1993).

Even if anthropomorphism leads to a net increase in pro-environmental attitudes and behaviors, anthropomorphism is not a process that is consistently engaged (Epley et al. 2007) and will therefore not always lead to humanlike construals of animals. Furthermore, although non-human animals and even some inanimate aspects of the environment are sometimes construed as 'persons' and therefore deserving of certain moral rights, they still remain considerably lower on the moral hierarchy than humans (Brandt and Reyna 2011), such that harm to the environment will consistently be seen as less wrong than harm to individual people (Hussar and Horvath 2011). Although this prioritization of humans may seem to make sense in the short term, it is possible that focusing on harms to the environment could lead to more beneficial long-term effects for humans in addition to a range of other natural kinds.

In sum, while more research needs to be done to determine whether harm-based concerns typically lead to an overall net benefit in motivating pro-environmental behaviors, it is also important to explore other solutions to the moralization of environmental concerns.

4. *Purity-based Concerns*

Purity-based concerns have received little attention in moral discourse surrounding environmental issues, as harm-based concerns are generally emphasized instead (Feinberg and Willer 2013). However, in the only published study to date that has directly compared the relative effects of harm-based versus purity-based moral framings on environmentalism, purity emerged as a more powerful influence on participants' attitudes toward the environment. Specifically, priming people with a persuasive message about the need to purify the contaminated environment increased general pro-environmental attitudes of political conservatives (although not political liberals), as well as their feelings of disgust toward environmental degradation and their beliefs in global warming. A similar harm-based prime had no effect on the general environmental attitudes of either liberals or conservatives (Feinberg and Willer 2013). Therefore, purity rhetoric can be effective and even more powerful than harm for enhancing overall attitudes about environmental issues, perhaps because purity-based concerns are especially salient to those whose environmental attitudes are initially relatively weak.

Other evidence also suggests that purity concepts are relevant to the development of pro-environmental moral attitudes. In a rare study of moral acquisition, 7-year-old children were found to rapidly moralize novel environmentally directed actions set on an alien planet (e.g., filling a forest with cotton balls) when they were told that the actions were 'unnatural' and/or 'disgusting' (Rottman and Kelemen 2012). Concepts related to purity are therefore sufficient to produce moral cognition about the environment such that appeals to harm may not be necessary. This study additionally found that inducing the emotion of disgust – which some studies have found to be highly associated with purity-based concerns (Cannon et al. 2011; Horberg et al. 2009; Rozin et al. 1999; Russell et al. 2013; Seidel and Prinz 2013; but see Chapman and Anderson 2012, 2013; Chapman et al. 2009; Royzman et al. 2014) – can provoke moral concern for the environment. Because disgust is linked to contamination (Rozin et al. 1986) and is generally resistant to mitigation (Russell and Giner-Sorolla 2013), such findings suggest that disgust could be leveraged to bring about the enduring stigmatization of environmental degradation.

However, it must be noted that there is controversy over whether disgust can play a causal role in moralization. While several studies are highly suggestive (Eskine et al. 2011; Horberg et al. 2009; Rottman and Kelemen 2012; Schnall et al. 2008; Wheatley and Haidt 2005), others

have failed to offer support (e.g., Case et al. 2012) and it has been suggested that some supportive results have been over-interpreted (Huebner in press; May 2014). However, even as questions have been raised as to whether disgust can push actions into the moral domain (Huebner in press; Huebner et al. 2009; Pizarro et al. 2011; Royzman et al. 2009), reasons remain for believing that this emotion could play a facilitative role in moralization, especially in the purity domain (Rottman and Kelemen 2012; Rozin 1999; Rozin and Singh 1999).

Another major advantage of applying a purity-based conceptual framework to environmental issues comes from the relatively minimal role of intent in purity judgments. In particular, while differences due to intent play a large role in harm judgments (e.g., murder is deemed to be considerably worse than manslaughter), differences due to intent matter less for purity judgments such that unintentional violations are still judged harshly (Chakroff et al. 2013; Russell and Giner-Sorolla 2011; Young and Saxe 2011). People rarely *intend* to cause environmental damage and climate change; therefore invoking purity morals that do not depend heavily on the notion of intent might be especially useful for framing environmental transgressions as immoral.

Beyond being functionally connected to disgust and disconnected from intentionality, the construct of purity has other conceptual properties that increase its relevance to environmental concerns. In particular, purity is often linked to sanctity or sacredness, such that these moral concepts are likely to be highly overlapping (e.g., Graham et al. 2009). Studies examining these ideas have found evidence that treating the environment as sacred can increase environmental concern (Stern et al. 1999; Tarakeshwar et al. 2001). Furthermore, Christian beliefs about 'conservational stewardship,' in which the earth is considered to be a sacred entity that should be preserved in its original, divinely created form, may elevate environmental concern (Wardekker et al. 2009). Buddhist beliefs and spirituality in general may also increase environmentalism (Garfield 2013).

Beliefs about the sanctity of nature may also be connected to beliefs that nature is intrinsically valuable. Research has shown that naturalness is thought to be inherently good and that people prefer natural entities to their unnatural counterparts (Kellert and Wilson 1993; Rozin et al. 2004). Moral concerns about nature sometimes involve assigning an intrinsic value to the natural world (Kahn 1997), and this construal of nature as having profound non-utilitarian value is common among environmental activists (Horwitz 1994). A sanctity-based framing may thus lead various components of the environment, such as natural forests or plant and animal species, to be viewed as worthy of protection from destruction or extinction at all costs (Baron and Spranca 1997).

In sum, invoking purity-based concerns and closely associated feelings of disgust and beliefs about sacredness can be an effective method for increasing moral concern for the environment. This may be especially true for issues related to the degradation of local and larger ecosystems, which resist harm-based framings because the individual victims within them are not easily identifiable. Indeed, purity may be most effectively used for these larger-scale, systemic issues because actions resulting in even minor 'tainting' of ecosystems may activate the concern while remaining insignificant from a harm-based perspective. Additionally, while harm-based rhetoric arguably marginalizes political conservatives, potentially provoking resistance to 'liberal' environmentalism (Feinberg and Willer 2013; Markowitz and Shariff 2012), purity-based rhetoric is especially well suited for appealing to this population.

4.1. DOWNSIDES TO PURITY-BASED CONCERNS

The previous section demonstrated that beneficial outcomes are often associated with framing environmental concerns in terms of purity or sanctity. As with harm, however, these benefits

are sometimes inconsistent. Additionally, purity concerns are not automatically linked to pro-environmentalism. On the contrary, people who are more generally concerned about issues related to purity (as measured on an independent questionnaire) tend to oppose measures for ameliorating climate change, while people who are more generally concerned about issues related to harm tend to support these measures, even when controlling for political conservatism (Koleva et al. 2012). Therefore, inducing people to care more about purity in a general sense will not help the environment. Instead, the preservation of nature must itself be framed as a purity concern.

As noted above, due to its relationship to religious beliefs and commitment, purity can positively influence moral attitudes about the environment via 'conservational stewardship' – the belief that humans should uphold the purity of nature as God's creation. However, religiosity is sometimes also negatively associated with environmentalism (e.g., Guth et al. 1995), and as a result, the relationship between religion and environmental attitudes is complex (Sherkat and Ellison 2007). Even as conservational stewardship is associated with increases in environmentalist actions, purity-based religious discourses about 'developmental stewardship' preach the anti-conservationist idea that mankind is divinely created to have dominion over nature with the sacred purpose of exploiting the earth as a garden (Wardekker et al. 2009; White 1967). This dual nature of purity-based religious framings demonstrates that the same moral concept can be recruited to make diametrically opposed prescriptions, and therefore purity-based framings must be used with care and foresight in order to elevate pro-environmentalism.

Overall, therefore, religion can be leveraged to either aid or deter conservation efforts. However, it is important to keep in mind that religious concerns are multidimensional and can be orthogonal to purity or sanctity concerns. For example, in some cases where religious individuals are found to care less about the environment than non-religious individuals, this link can be traced to comparatively greater anthropocentric concerns among the religious for harming people compared to harming plants and animals (Schultz et al. 2000). In short, differences in environmental attitudes due to religion may sometimes be attributable to harm-based concerns rather than purity-based concerns.

5. Conclusions

A crucial task in the 21st century is to develop effective strategies for increasing moral support for environmentalism. This paper has demonstrated that focusing on harm can often be beneficial, as people are generally motivated to protect others from being hurt or destroyed. Yet focusing on harm-based concerns can be limiting, as this requires individualized victims. Harm-based framings can also backfire, especially if the concerns are restricted to humans. Additionally, because the extension of harm concerns to non-humans relies on the additional process of anthropomorphism, this form of moral cognition may not always be successfully engaged.

This paper has additionally demonstrated that framing environmental conservation as an issue of purity or sanctity may also prove to be beneficial. Purity violations are linked to the stigmatizing emotion of disgust, and purity-based concerns carry the additional benefit of being activated even in the absence of malicious intent. Furthermore, linking nature to concepts of sanctity and deontological valuation of naturalness can lead the environment to be construed as a sacred or protected value and can help to engage concerns about the environment on a more abstract, systemic level. However, there are also instances in which purity-based framings can lead to negative outcomes, and in general people who are overall more concerned with purity tend to be less concerned with climate change.

Because harm-based and purity-based framings alike can lead to advantages and disadvantages for environmentalism, these different moral concerns may need to be flexibly engaged depending on the person and the context (also see Maibach et al. 2008). For example, harm-based

framings of environmental issues may be best deployed in cases where distinct victims are in danger of suffering. However, if these potential victims cannot be sufficiently humanized or individuated, purity-based framings may prove to be more beneficial. Purity frames will also be especially effective for political conservatives or for individuals who lack a dispositional tendency to anthropomorphize non-humans. Further research is needed to determine exactly how to best deploy these different framings to yield an overall net benefit for conserving the planet.

Future investigations should also explore how harm-based and purity-based framings compare to other forms of normative cognition in augmenting pro-environmental actions. For example, emphasizing norms has proven effective in reducing littering behavior (Cialdini et al. 1990) and energy consumption (Schultz et al. 2007). However, for cases where there is a norm to behave in ways that are destructive to the environment (e.g., driving to work instead of biking or taking public transportation), it is likely that considerations of harm or purity will supersede processes of social conformity in enhancing conservation behaviors.

Future research should additionally examine the extent to which particular moral attitudes lead to consistent moral behaviors. Research on moral disengagement (e.g., Bandura 1999), moral hypocrisy (e.g., Batson et al. 1997), and situational pressures (e.g., Milgram 2004) have demonstrated that people do not always act in accordance with their moral beliefs, especially when these beliefs conflict with self interest (also see Smith et al. 2013). This is certainly the case for environmentally relevant behaviors, for which pro-environmental attitudes are often subsumed by consumerist and capitalist tendencies, a lack of motivation, and the commons dilemma involved in sharing natural resources (e.g., Van Vugt 2009). Empirical work is necessary to gain knowledge about the degree to which environmentalist actions are likely to stem from moral proscriptions against harming the environment and moral prescriptions for upholding the purity of the environment.

Ultimately, it is important to probe the positive impacts of harm-based and purity-based concerns for pro-environmental attitudes and behaviors. As psychologists continue to gain a better understanding of the moral mind, clearer solutions for engaging mankind in the preservation of the planet may become increasingly apparent.

Acknowledgement

The writing of this paper was supported by NSF GRF DGE-1247312 to J. R., NSF 1007984 to D. K., and a John Templeton Foundation grant and an Alfred P. Sloan Foundation grant to L. Y. We thank Nora Davis, Matthew Feinberg, and an anonymous reviewer for helpful comments.

Short Biographies

Joshua Rottman's research lies at the intersection of cognitive development and moral psychology. His work primarily focuses on children's acquisition of moral norms involving novel, victimless actions. He has published in journals such as *Cognition*, *Evolutionary Psychology* and the *Journal of Experimental Psychology: General*. Joshua is currently a PhD student at Boston University, where his work is supported by a National Science Foundation Graduate Research Fellowship. He holds a BA in Cognitive Science from Vassar College.

Deborah Kelemen is a Professor of Psychology at Boston University where she directs the Child Cognition Lab. She studies cognitive development with a particular emphasis on children's and adults' conceptions of the natural world. Kelemen's work has been supported by the National Science Foundation, National Institutes of Health, and the Templeton

Foundation. It has appeared in journals such as *Psychological Science*, *Cognition*, *Trends in Cognitive Sciences* and the *Journal of Experimental Psychology: General*. She received her PhD in Psychology and Cognitive Science from the University of Arizona and completed her post-doctoral training at the University of California, Berkeley.

Liane Young is an Assistant Professor of Psychology at Boston College where she directs the Morality Lab. Young studies the cognitive and neural basis of moral judgment and behavior. Young received her BA in Philosophy from Harvard University in 2004, her PhD in Psychology from Harvard University in 2008, and her post-doctoral training in the Brain and Cognitive Sciences Department at MIT, where she was also a visiting scholar in the Philosophy Department.

Note

* Correspondence: Department of Psychological and Brain Sciences, Boston University, 64 Cummington Mall, Boston, MA, 02215, USA. Email: rottman@bu.edu

Works Cited

- Bandura, Albert. 'Moral Disengagement in the Perpetration of Inhumanities.' *Personality and Social Psychology Review* 3.3 (1999): 193–209.
- Baron, Jonathan and Mark Spranca. 'Protected Values.' *Organizational Behavior and Human Decision Processes* 70.1 (1997): 1–16.
- Bastian, Brock et al. 'When Closing the Human–Animal Divide Expands Moral Concern: The Importance of Framing.' *Social Psychological and Personality Science* 3.4 (2012): 421–9.
- Batson, C. Daniel et al. 'In a Very Different Voice: Unmasking Moral Hypocrisy.' *Journal of Personality and Social Psychology* 72.6 (1997): 1335–48.
- Bentham, Jeremy. *An Introduction to the Principles of Morals and Legislation*. Mineola, NY: Dover, 2007.
- Bernstein, Mark H. *On Moral Considerability: An Essay on Who Morally Matters*. New York: Oxford University Press, 1998.
- Blair, R. J. R. 'A Cognitive Developmental Approach to Morality: Investigating the Psychopath.' *Cognition* 57 (1995): 1–29.
- Brandt, Mark J. and Christine Reyna. 'The Chain of Being: A Hierarchy of Morality.' *Perspectives on Psychological Science* 6.5 (2011): 428–46.
- Butterfield, Max E., Sarah E. Hill, and Charles G. Lord. 'Mangy Mutt or Furry Friend? Anthropomorphism Promotes Animal Welfare.' *Journal of Experimental Social Psychology* 48.4 (2012): 957–60.
- Cannon, Peter Robert, Simone Schnall, and Mathew White. 'Transgressions and Expressions: Affective Facial Muscle Activity Predicts Moral Judgments.' *Social Psychological and Personality Science* 2.3 (2011): 325–31.
- Caruthers, Peter. *The Animals Issue: Moral Theory in Practice*. Cambridge, U.K.: Cambridge University Press, 1992.
- Case, Trevor I., Megan J. Oaten, and Richard J. Stevenson. 'Disgust and Moral Judgment.' *Emotions, Imagination, and Moral Reasoning*. Eds. Robyn Langdon and Catriona Mackenzie. New York: Psychology Press, 2012. 195–218.
- Chakroff, Alek, James Dungan, and Liane Young. 'Harming Ourselves and Defiling Others: What Determines a Moral Domain?' *PLoS ONE* 8.9 (2013): e74434.
- Chapman, Hanah A. et al. 'In Bad Taste: Evidence for the Oral Origins of Moral Disgust.' *Science* 323 (2009): 1222–6.
- Chapman, Hanah A. and Adam K. Anderson. 'Things Rank and Gross in Nature: A Review and Synthesis of Moral Disgust.' *Psychological Bulletin* 139.2 (2013): 300–27.
- . 'Understanding Disgust.' *Annals of the New York Academy of Sciences* 1251.1 (2012): 62–76.
- Cialdini, Robert B., Raymond R. Reno, and Carl A. Kallgren. 'A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places.' *Journal of Personality and Social Psychology* 58.6 (1990): 1015–26.
- Clayton, Susan, John Fraser, and Claire Burgess. 'The Role of Zoos in Fostering Environmental Identity.' *Ecopsychology* 3.2 (2011): 87–96.
- Dunlap, Riley E., George H. Gallup, Jr., and Alec M. Gallup. 'Of Global Concern: Results of the Health of the Planet Survey.' *Environment: Science and Policy for Sustainable Development* 35.9 (1993): 7–39.
- Epley, Nicholas, Adam Waytz, and John T. Cacioppo. 'On Seeing Human: A Three-factor Theory of Anthropomorphism.' *Psychological Review* 114.4 (2007): 864–86.
- Eskine, Kendall J., Natalie A. Kacimik, and Jesse J. Prinz. 'A Bad Taste in the Mouth: Gustatory Disgust Influences Moral Judgment.' *Psychological Science* 22.3 (2011): 295–9.
- Farah, Martha J. and Andrea S. Heberlein. 'Personhood and Neuroscience: Naturalizing or Nihilating?' *The American Journal of Bioethics* 7.1 (2007): 37–48.

- Feinberg, Matthew and Robb Willer. 'The Moral Roots of Environmental Attitudes.' *Psychological Science* 24.1 (2013): 56–62.
- Friedman, Thomas L. *Hot, Flat, and Crowded*. New York: Macmillan, 2008.
- Gagnon Thompson, Suzanne C. and Michelle A. Barton. 'Eccentric and Anthropocentric Attitudes toward the Environment.' *Journal of Environmental Psychology* 14 (1994): 149–57.
- Garfield, A. M. 'The Oneness Beliefs Scale: Buddhism-based Spirituality and Concern for Others and the Environment.' Diss. U of Wisconsin-Madison, 2013.
- Gebhard, Ulrich, Patricia Nevers, and Elfriede Billmann-Mahecha. 'Moralizing Trees: Anthropomorphism and Identity in Children's Relationships to Nature.' *Identity and the Natural Environment: The Psychological Significance of Nature*. Eds. Susan Clayton and Susan Opatow. Cambridge, MA: MIT Press, 2003. 91–111.
- Graham, Jesse et al. 'Moral Foundations Theory: The Pragmatic Validity of Moral Pluralism.' *Advances in Experimental Social Psychology* 47 (2013): 55–130.
- Graham, Jesse, Jonathan Haidt, and Brian A. Nosek. 'Liberals and Conservatives Rely on Different Sets of Moral Foundations.' *Journal of Personality and Social Psychology* 96.5 (2009): 1029–46.
- Gray, Kurt and Daniel M. Wegner. 'Moral Typecasting: Divergent Perceptions of Moral Agents and Moral Patients.' *Journal of Personality and Social Psychology* 96.3 (2009): 505–20.
- . 'Morality Takes Two: Dyadic Morality and Mind Perception.' *The Social Psychology of Morality: Exploring the Causes of Good and Evil*. Eds. Phillip R. Shaver and Mario Mikulincer. Washington, D.C.: American Psychological Association, 2012. 109–27.
- Gray, Kurt, Liane Young, and Adam Waytz. 'Mind Perception Is the Essence of Morality.' *Psychological Inquiry* 23.2 (2012): 101–24.
- Guth, James L. et al. 'Faith and the Environment: Religious Beliefs and Attitudes on Environmental Policy.' *American Journal of Political Science* 39.2 (1995): 364–82.
- Guthrie, Stewart. *Faces in the Clouds: A New Theory of Religion*. New York: Oxford University Press, 1993.
- Haidt, Jonathan, Silvia Helena Koller, and Maria G. Dias. 'Affect, Culture, and Morality, or Is It Wrong to Eat Your Dog?' *Journal of Personality and Social Psychology* 65.4 (1993): 613–28.
- Hamlin, J. Kiley. 'A Developmental Perspective on the Moral Dyad.' *Psychological Inquiry* 23.2 (2012): 166–71.
- Horberg, E. J. et al. 'Disgust and the Moralization of Purity.' *Journal of Personality and Social Psychology* 97.6 (2009): 963–76.
- Horwitz, Wendy A. 'Characteristics of Environmental Ethics: Environmental Activists' Accounts.' *Ethics and Behavior* 4.4 (1994): 345–67.
- Howe, Daniel C., Peter H. Kahn, Jr, and Batya Friedman. 'Along the Rio Negro: Brazilian Children's Environmental Views and Values.' *Developmental Psychology* 32.6 (1996): 979–87.
- Huebner, Bryce. 'Do Emotions Play a Constitutive Role in Moral Cognition?' *Topoi* (in press).
- Huebner, Bryce, Susan Dwyer, and Marc Hauser. 'The Role of Emotion in Moral Psychology.' *Trends in Cognitive Sciences* 13.1 (2009): 1–6.
- Hussar, Karen M. and Jared C. Horvath. 'Do Children Play Fair with Mother Nature? Understanding Children's Judgments of Environmentally Harmful Actions.' *Journal of Environmental Psychology* 31.4 (2011): 309–13.
- Jack, Anthony I. and Philip Robbins. 'The Phenomenal Stance Revisited.' *Review of Philosophy and Psychology* 3.3 (2012): 383–403.
- Johnson, Susan C. 'Detecting Agents.' *Philosophical Transactions of the Royal Society, B: Biological Sciences* 358 (2003): 549–59.
- Kahn, Peter H., Jr. 'Children's Moral and Ecological Reasoning about the Prince William Sound Oil Spill.' *Developmental Psychology* 33.6 (1997): 1091–6.
- Kant, Immanuel. *Lectures on Ethics*. Trans. Louis Infield. Indianapolis, IN: Hackett, 1980.
- Kellert, Stephen R. and Edward O. Wilson, eds. *The Biophilia Hypothesis*. Washington, D.C.: Island Press, 1993.
- Koleva, Spassena P. et al. 'Tracing the Threads: How Five Moral Concerns (Especially Purity) Help Explain Culture War Attitudes.' *Journal of Research in Personality* 46.2 (2012): 184–94.
- Leopold, Aldo. *A Sand County Almanac*. New York: Oxford University Press, 1949.
- Maibach, Edward W. et al. 'Reframing Climate Change as a Public Health Issue: An Exploratory Study of Public Reactions.' *BMC Public Health* 10.1 (2010): 299–309.
- Maibach, Edward W., Connie Roser-Renouf, and Anthony Leiserowitz. 'Communication and Marketing as Climate Change-intervention Assets.' *American Journal of Preventive Medicine* 35.5 (2008): 488–500.
- Markowitz, Ezra M. 'Is Climate Change an Ethical Issue? Examining Young Adults' Beliefs about Climate and Morality.' *Climatic Change* 114 (2012): 479–95.
- Markowitz, Ezra M. and Azim F. Shariff. 'Climate Change and Moral Judgement.' *Nature Climate Change* 2 (2012): 243–7.
- May, Joshua. 'Does Disgust Influence Moral Judgment?' *Australasian Journal of Philosophy* 92.1 (2014): 125–41.
- Milgram, Stanley. *Obedience to Authority: An Experimental View*. New York: HarperCollins, 2004.
- Nisbet, Matthew C., Ezra M. Markowitz, and John E. Kotcher. 'Winning the Conversation: Framing and Moral Messaging in Environmental Campaigns.' *Talking Green: Exploring Contemporary Issues in Environmental Communications*. Eds. Lee Ahren and Denise Seveck Borette. New York: Peter Lang, 2012. 9–36.

- Opatow, Susan. 'Animals and the Scope of Justice.' *Journal of Social Issues* 49.1 (1993): 71–85.
- Parkinson, Carolyn et al. 'Is Morality Unified? Evidence that Distinct Neural Systems Underlie Moral Judgments of Harm, Dishonesty, and Disgust.' *Journal of Cognitive Neuroscience* 23.10 (2011): 3162–80.
- Piazza, Jared, Justin F. Landy, and Geoffrey P. Goodwin. 'Cruel Nature: Harmfulness as an Important, Overlooked Dimension in Judgments of Moral Standing.' *Cognition* 131.1 (2014): 108–24.
- Pizarro, David, Yoel Inbar, and Chelsea Helion. 'On Disgust and Moral Judgment.' *Emotion Review* 3.3 (2011): 267–8.
- Pizarro, David A., David Tannenbaum, and Eric Uhlmann. 'Mindless, Harmless, and Blameworthy.' *Psychological Inquiry* 23.2 (2012): 185–8.
- Premack, David and Ann James Premack. 'Moral Belief: Form Versus Content.' *Mapping the Mind: Domain Specificity in Cognition and Culture*. Eds. Lawrence A. Hirschfeld and Susan A. Gelman. New York: Cambridge University Press, 1994. 149–68.
- Rottman Joshua. Breaking Down Biocentrism: Two Distinct Forms of Moral Concern for Nature. *Frontiers in Psychology* 5 (2014): 905.
- Rottman, Joshua and Deborah Kelemen. 'Aliens Behaving Badly: Children's Acquisition of Novel Purity-based Morals.' *Cognition* 124.3 (2012): 356–60.
- Rottman, Joshua, Deborah Kelemen, and Liane Young. 'Tainting the Soul: Purity Concerns Predict Moral Judgments of Suicide.' *Cognition* 130.2 (2014): 217–26.
- Royzman, Edward et al. 'CAD or MAD? Anger (Not Disgust) as the Predominant Response to Pathogen-free Violations of the Divinity Code.' *Emotion* 14.5 (2014): 892–907.
- Royzman, Edward B., Robert F. Leeman, and Jonathan Baron. 'Unsentimental Ethics: Towards a Content-specific Account of the Moral-Conventional Distinction.' *Cognition* 112.1 (2009): 159–74.
- Rozin, Paul. 'The Process of Moralization.' *Psychological Science* 10.3 (1999): 218–21.
- Rozin, Paul et al. 'The CAD Triad Hypothesis: A Mapping Between Three Moral Emotions (Contempt, Anger, Disgust) and Three Moral Codes (Community, Autonomy, Divinity).' *Journal of Personality and Social Psychology* 76.4 (1999): 574–86.
- . 'Operation of the Laws of Sympathetic Magic in Disgust and Other Domains.' *Journal of Personality and Social Psychology* 50.4 (1986): 703–12.
- Rozin, Paul and Leher Singh. 'The Moralization of Cigarette Smoking in the United States.' *Journal of Consumer Psychology* 8.3 (1999): 321–37.
- Rozin, Paul et al. 'Preference for Natural: Instrumental and Ideational/Moral Motivations, and the Contrast between Foods and Medicines.' *Appetite* 43.2 (2004): 147–54.
- Russell, Pascale Sophie and Roger Giner-Sorolla. 'Moral Anger, but Not Moral Disgust, Responds to Intentionality.' *Emotion* 11.2 (2011): 233–40.
- . 'Bodily Moral Disgust: What It Is, How It Is Different From Anger, and Why It Is an Unreasoned Emotion.' *Psychological Bulletin* 139.2 (2013): 328–51.
- Russell, Pascale Sophie, Jared Piazza, and Roger Giner-Sorolla. 'CAD Revisited: Effects of the Word *Moral* on the Moral Relevance of Disgust (and Other Emotions).' *Social Psychological and Personality Science* 4.1 (2013): 62–8.
- Schnall, Simone et al. 'Disgust as Embodied Moral Judgment.' *Personality and Social Psychology Bulletin* 34.8 (2008): 1096–109.
- Schroepfer, Kara K. et al. 'Use of 'Entertainment' Chimpanzees in Commercials Distorts Public Perception Regarding Their Conservation Status.' *PLoS ONE* 6.10 (2011): e26048.
- Schultz, P. Wesley. 'Empathizing with Nature: The Effects of Perspective Taking on Concern for Environmental Issues.' *Journal of Social Issues* 56.3 (2000): 391–406.
- Schultz, P. Wesley et al. 'The Constructive, Destructive, and Reconstructive Power of Social Norms.' *Psychological Science* 18.5 (2007): 429–34.
- . 'A Multinational Perspective on the Relation between Judeo-Christian Religious Beliefs and Attitudes of Environmental Concern.' *Environment and Behavior* 32.4 (2000): 576–91.
- Seidel, Angelika and Jesse Prinz. 'Sound Morality: Irritating and Icky Noises Amplify Judgments in Divergent Moral Domains.' *Cognition* 127.1 (2013): 1–5.
- Severson, Rachel L. and Peter H. Kahn, Jr 'In the Orchard: Farm Worker Children's Moral and Environmental Reasoning.' *Journal of Applied Developmental Psychology* 31.3 (2010): 249–56.
- Shekat, Darren E. and Christopher G. Ellison. 'Structuring the Religion-Environment Connection: Identifying Religious Influences on Environmental Concern and Activism.' *Journal for the Scientific Study of Religion* 46.1 (2007): 71–85.
- Sherman, Gary D. and Jonathan Haidt. 'Cuteness and Disgust: The Humanizing and Dehumanizing Effects of Emotion.' *Emotion Review* 3.3 (2011): 245–51.
- Shweder Richard A. et al. 'The 'Big Three' of Morality (Autonomy, Community, and Divinity) and the Big Three Explanations of Suffering.' *Morality and Health*. Eds. Allan M. Brandt and Paul Rozin. New York: Routledge, 1997. 119–69.
- Singer, Peter. *Animal Liberation*. New York: Random House, 1975.
- Skitka, Linda J. 'The Psychology of Moral Conviction.' *Social and Personality Psychology Compass* 4.4 (2010): 267–81.
- Smith, Craig E., Peter R. Blake, and Paul L. Harris. 'I Should but I Won't: Why Young Children Endorse Norms of Fair Sharing but Do Not Follow Them.' *PLoS ONE* 8.3 (2013): e59510.

- Steg, Linda and Judith I. M. de Groot. 'Environmental Values.' *The Oxford Handbook of Environmental and Conservation Psychology*. Ed. Susan D. Clayton. New York: Oxford University Press, 2012. 81–92.
- Stern, Paul C. et al. 'A Value-belief-norm Theory of Support for Social Movements: The Case of Environmentalism.' *Human Ecology Review* 6.2 (1999): 81–98.
- Sytsma, Justin and Edouard Machery. 'The Two Sources of Moral Standing.' *Review of Philosophy and Psychology* 3.3 (2012): 303–24.
- Tam, Kim-Pong, Sau-Lai Lee, and Melody Manchi Chao. 'Saving Mr. Nature: Anthropomorphism Enhances Connectedness to and Protectiveness toward Nature.' *Journal of Experimental Social Psychology* 49.3 (2013): 514–21.
- Tarakeshwar, Nalini et al. 'The Sanctification of Nature and Theological Conservatism: A Study of Opposing Religious Correlates of Environmentalism.' *Review of Religious Research* 42.4 (2001): 387–404.
- Theriault, Jordan and Liane Young. 'Taking an 'Intentional Stance' on Moral Psychology.' *Advances in Experimental Philosophy of Mind*. Ed. Justin Sytsma. London: Bloomsbury Publishing, 2014. 101–24.
- Uhlmann, Eric Luis and Luke Zhu. 'Acts, Persons, and Intuitions: Person-centered Cues and Gut Reactions to Harmless Transgressions.' *Social Psychological and Personality Science* 5.3 (2014): 279–85.
- Van Vugt, Mark. 'Averting the Tragedy of the Commons: Using Social Psychological Science to Protect the Environment.' *Current Directions in Psychological Science* 18.3 (2009): 169–73.
- Wade-Benzoni, Kimberly A., Harris Sondak, and Adam D. Galinsky. 'Leaving a Legacy: Intergenerational Allocations of Benefits and Burdens.' *Business Ethics Quarterly* 20.1 (2010): 7–34.
- Wardekker, J. Arjan, Arthur C. Petersen, and Jeroen P. van der Sluijs. 'Ethics and Public Perception of Climate Change: Exploring the Christian Voices in the US Public Debate.' *Global Environmental Change* 19.4 (2009): 512–21.
- Waytz, Adam, John Cacioppo, and Nicholas Epley. 'Who Sees Human? The Stability and Importance of Individual Differences in Anthropomorphism.' *Perspectives on Psychological Science* 5.3 (2010): 219–32.
- Wheatley, Thalia and Jonathan Haidt. 'Hypnotic Disgust Makes Moral Judgments More Severe.' *Psychological Science* 16.10 (2005): 780–4.
- White, Lynn, Jr. 'The Historical Roots of Our Ecologic Crisis.' *Science* 155 (1967): 1203–7.
- Young, Liane and Rebecca Saxe. 'When Ignorance Is No Excuse: Different Roles for Intent Across Moral Domains.' *Cognition* 120.2 (2011): 202–14.