

# How Will I Be Remembered? Conserving the Environment for the Sake of One's Legacy



**Lisa Zaval<sup>1,2,3</sup>, Ezra M. Markowitz<sup>2,4,5</sup>, and Elke U. Weber<sup>1,2,3</sup>**

<sup>1</sup>Department of Psychology, Columbia University; <sup>2</sup>Center for Research on Environmental Decisions, Columbia University; <sup>3</sup>Center for Decision Sciences, Columbia University; <sup>4</sup>Princeton Institute for International and Regional Studies, Princeton University; and <sup>5</sup>Department of Environmental Conservation, University of Massachusetts Amherst

Psychological Science  
2015, Vol. 26(2) 231–236  
© The Author(s) 2015  
Reprints and permissions:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/0956797614561266  
pss.sagepub.com  
 SAGE

## Abstract

Long time horizons and social distance are viewed as key psychological barriers to proenvironmental action, particularly regarding climate change. We suggest that these challenges can be turned into opportunities by making salient long-term goals and motives, thus shifting preferences between the present self and future others. We tested whether individuals' motivation to leave a positive legacy can be leveraged to increase engagement with climate change and other environmental problems. In a pilot study, we found that individual differences in legacy motivation were positively associated with proenvironmental behaviors and intentions. In a subsequent experiment, we demonstrated that priming legacy motives increased donations to an environmental charity, proenvironmental intentions, and climate-change beliefs. Domain-general legacy motives represent a previously understudied and powerful mechanism for promoting proenvironmental behavior.

## Keywords

decision making, judgment, environmental effects, climate change, open data, open materials

Received 3/27/14; Revision accepted 11/4/14

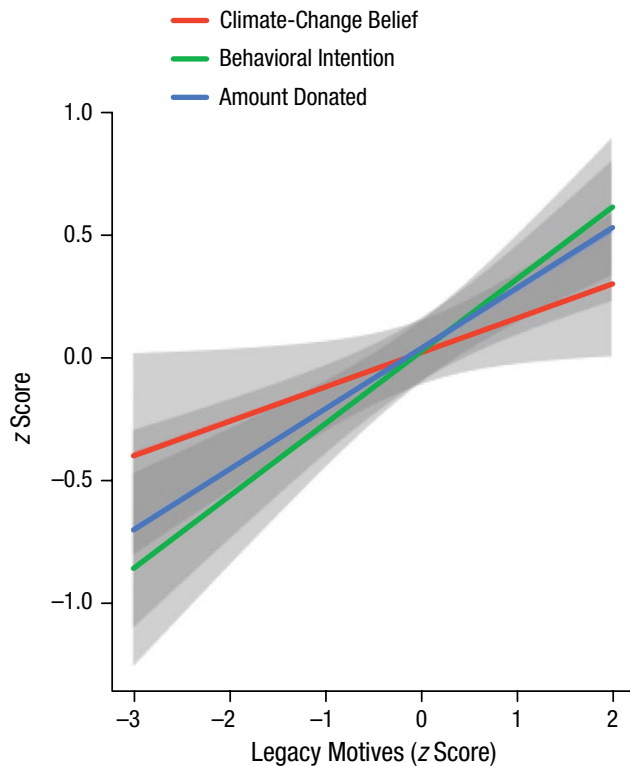
The U.S. public consistently ranks climate change as a low national priority (Pew Research Center for the People & the Press, 2014); as a result, the nation's mitigation efforts are viewed by most climate scientists and environmental economists as woefully insufficient (Solomon et al., 2007; Stocker, 2013). This underinvestment in the future is partially due to a perceived sense of temporal and social distance from the most severe consequences of climate change. This sense of distance can act as a psychological barrier to environmental action by promoting intertemporal and interpersonal discounting (Gifford, 2011; Markowitz & Shariff, 2012; Spence, Poortinga, & Pidgeon, 2012; Weber & Stern, 2011). Yet it is exactly the long time frame and strong path dependencies inherent in climate change that make taking ameliorative action in the present so critical, as decisions made today will determine future climatic conditions (for better or worse).

Emerging research indicates that people's latent motivation to extend themselves into the future via their personal legacies may provide a pathway to overcoming such psychological barriers to proenvironmental, intergenerational action (Wade-Benzoni, Tost, Hernandez, & Larrick, 2012). Interest in passing along knowledge, skills, and resources to future other individuals may play a key role in motivating preemptive action on long-term environmental threats, which involve making sacrifices and

## Corresponding Authors:

Lisa Zaval, Columbia University, Department of Psychology, 406 Schermerhorn Hall, New York, NY 10027  
E-mail: lz2261@columbia.edu

Ezra M. Markowitz, University of Massachusetts Amherst, Department of Environmental Conservation, 160 Holdsworth Way, Amherst, MA 01003  
E-mail: emarkowitz@eco.umass.edu



**Fig. 1.** Results from the pilot study: regression lines showing mean climate-change belief, behavioral intention, and amount donated to charity as a function of legacy motives. Shaded bands represent 95% confidence intervals.

investments for future generations in the present (Wade-Benzoni, Sondak, & Galinsky, 2010). Such interest can take multiple forms, including the multidimensional aspiration to leave a positive legacy (Hunter & Rowles, 2005; Newton, Herr, Pollack, & McAdams, 2014).

We propose that legacy motivations, which have been previously under-studied, represent a powerful mechanism by which to circumvent the otherwise detrimental psychological barriers that inhibit preventive action on climate change. Our predictions are grounded in existing data, which show a positive relationship between generative concern and proenvironmental attitudes (Matsuba et al., 2012; Milfont et al., 2012; Van Winden, Van den Berg, & Pol, 2007). For example, Wade-Benzoni et al. (2010) found that legacy concerns were enhanced when people were asked to think about global warming in terms of the creation of “burdens” for future generations compared with “benefits.” Salient legacy motives may also affect intertemporal decision making more systematically by influencing individuals’ orientation toward future outcomes (Wade-Benzoni et al., 2012).

On the basis of these findings, we decided to examine whether legacy motives can be leveraged to circumvent core psychological barriers that limit actions to mitigate

climate change. We advanced previous work by moving from examining legacy motives as an outcome variable to treating them as a motivating factor that can be tapped to promote proenvironmental behavior. We also built on emerging decision-making research, which suggests that attitudes toward climate change are malleable and influenced by psychological factors (e.g., Weber & Johnson, 2009; Zaval, Keenan, Johnson, & Weber, 2014). Although there are multiple routes to increasing willingness to take action on behalf of future other individuals, we predicted that making salient individuals’ concern for their own legacy would be a powerful strategy for increasing action on climate change. To test this claim, we first confirmed the relationship between domain-general legacy motives and proenvironmental behavior in a pilot study. Next, using a novel legacy prime, we manipulated the salience of legacy motives and examined subsequent effects on proenvironmental beliefs, intentions, and behavior.

## Pilot Study

### Method

A diverse sample of 245 U.S. participants, recruited through Amazon’s Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011), elected to participate in an online study advertised as a survey on how people make decisions (see Table S1 in the Supplemental Material available online for demographic and participant-recruitment details).

Participants answered three sets of questions: one assessing individual differences in legacy motives ( $\alpha = .90$ ; see Supplementary Analyses in the Supplemental Material for details regarding factor structure), the second assessing their beliefs about climate change ( $\alpha = .88$ ), and the third assessing their willingness to take proenvironmental action ( $\alpha = .76$ ). (Detailed information about the question items and scales used in the pilot are available in the Supplemental Material.) Following the legacy, climate-change belief, and behavioral-intention measures, we told participants they would be entered into a lottery to win a \$10 bonus. We then gave participants the option of donating part of the bonus to a nonprofit environmental-advocacy organization, Trees for the Future. Participants typed in the amount they would donate, from \$0 to \$10. A lottery winner was selected after the study was completed, and the donation was made to the organization according to the winner’s allocation. The study was approved by the Columbia University Institutional Review Board.

### Results

Figure 1 illustrates the relationship between legacy scores and our three measures of environmental engagement.

People who reported being highly motivated by their legacy were likely to show stronger proenvironmental beliefs and greater behavioral intentions compared with those who were not motivated by legacy goals. Simple linear regressions showed a significant positive relationship between legacy motives and both proenvironmental beliefs,  $\beta = 0.13$ ,  $t(238) = 2.08$ ,  $p = .038$ , and behavioral intentions,  $\beta = 0.29$ ,  $t(239) = 4.69$ ,  $p < .001$ . Additional regressions revealed the robustness of these relations when we controlled for demographics, including political affiliation and parental status (see Table S2 in the Supplemental Material). Legacy motives alone accounted for a greater proportion of the variance in behavioral intention (.081) compared with whether someone identified politically as a Democrat versus an Independent or a Republican (.028).

Participants with greater legacy motivation also donated a larger amount of their bonus money to the environmental nonprofit organization,  $\beta = 0.23$ ,  $t(241) = 3.73$ ,  $p < .001$ . Participants in the bottom quartile of legacy motives donated an average of \$1.75 ( $SD = \$2.21$ ; 22% in this quartile donated), whereas those in the top quartile donated an average of \$3.41 ( $SD = \$2.87$ ; 31% donated). The effect of legacy motives on donations remained robust after we controlled for demographics (see Table S3 in the Supplemental Material).

## Experiment

Results from the pilot study demonstrated a robust relationship between legacy motives and environmental engagement. To investigate whether legacy motives can be leveraged to promote action on climate change, and to clarify the causal direction of this relationship, we tested whether priming legacy motives positively influenced environmental engagement. In an experiment, we added a manipulation of the accessibility or salience of legacy motives, in the form of an essay-writing task, prior to administering the same engagement scales as in the pilot study. We hypothesized that participants exposed to a legacy-motive-inducing prime would show enhanced proenvironmental beliefs and behaviors.

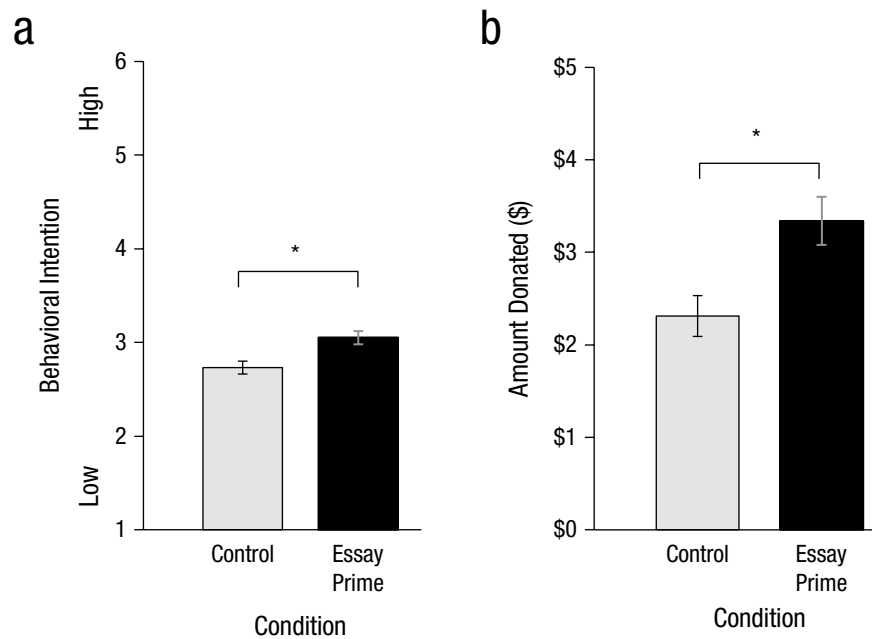
## Method

Three hundred twelve U.S. participants who did not complete the pilot study were recruited via Amazon's Mechanical Turk to participate in an online experiment advertised as a study on decision making. Participants were randomly assigned to two conditions. In the legacy condition, participants began by writing a short essay describing what they want to be remembered for by future generations. We validated this legacy manipulation in a separate experiment, which confirmed that the

essay-writing exercise significantly increased reported legacy motives. We determined sample size for the present experiment based on these results, which suggested a small to medium effect size. The instructions asked participants to think about ways in which they would have a positive impact on future generations (e.g., "think about skills or knowledge you will teach others"). Participants took 6.5 min on average to complete their essays. The essay-writing task was omitted in the control condition, which otherwise followed the same procedure as the legacy condition.

Participants next answered two sets of questions, one assessing their beliefs about climate change and the other their willingness to take proenvironmental action. Climate-change beliefs were measured using the average score of four randomly ordered items ( $\alpha = .88$ ; e.g., "I feel a responsibility to reduce my personal contribution to climate change"). Participants responded to each statement on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Similarly, proenvironmental behavioral intentions were measured using the average score of six items that asked participants how often they intend to perform actions to help mitigate climate change over the next month ( $\alpha = .76$ ; e.g., "Buy green products instead of regular products"); responses were made on a scale from 1 (*never*) to 6 (*all the time*). Following the belief and intention questions, participants were given the opportunity to donate part of their experimental bonus to an environmental organization, as in the pilot study. (Detailed information about the essay task and all question items and scales used in the experiment are available in the Supplemental Material. The experiment was approved by the Columbia University Institutional Review Board.)

To confirm that our manipulation induced shifts in climate-change attitudes and actions by increasing legacy motives, we constructed a new short-form scale that uniquely tapped people's legacy motives. Using the Loyola Generativity Scale (McAdams & de St. Aubin, 1992) as a model, we constructed a measure explicitly focused on one's future legacy and reputation in the eyes of future generations, excluding generative motives (such as the desire to pass skills and knowledge to future generations). This measure consisted of the average score of three items relating to legacy motives ( $\alpha = .82$ ): (a) "It is important to me to leave a positive legacy," (b) "It is important for me to leave a positive mark on society," and (c) "I care about what future generations think of me." Participants indicated the extent to which each statement described them on a scale from 1 (*not at all*) to 6 (*a great amount*). This legacy-motives scale was placed at the end of the survey, which was separated from the essay task by 8 min on average. We predicted that participants exposed to the legacy prime would agree more with



**Fig. 2.** Results from the experiment: (a) mean behavioral-intention score and (b) mean amount donated to charity as a function of legacy condition. Error bars denote  $\pm 1$  SEM. An asterisk indicates a significant difference between conditions ( $*p < .01$ ).

these items, compared with those in the control condition, and further, that this strong agreement would drive the effect of the essay prime on the dependent variables. Additional items tapping more generalized prosocial motives were also included at the end of the survey but were not expected to mediate the effect of the prime on the environmental outcomes of interest. We recognize that our measure of legacy motives can alternatively be treated as a manipulation check.

## Results

As expected, the essay manipulation successfully enhanced overall legacy motives. Almost 10 min after being exposed to the manipulation, participants who wrote the essay reported higher legacy motives ( $M = 4.47$ ,  $SD = 1.06$ ), compared with those in the control condition ( $M = 4.19$ ,  $SD = 1.05$ ),  $F(1, 310) = 5.64$ ,  $p = .018$ , Cohen's  $d = 0.27$ . Moreover, as predicted, we found a significant effect of the legacy prime on willingness to engage in behaviors aimed at combating climate change. Participants who were primed with legacy motives had higher belief scores ( $M = 5.39$ ,  $SD = 1.08$ ) than those in the control condition ( $M = 5.11$ ,  $SD = 1.27$ ),  $F(1, 309) = 4.08$ ,  $p = .040$ ,  $d = 0.23$ . We also found a significant effect of the legacy prime on behavioral intentions. Participants who were primed reported greater behavioral intentions ( $M = 3.05$ ,  $SD = 0.86$ ) than those who were not primed ( $M = 2.73$ ,  $SD = 0.85$ ),  $F(1, 309) = 10.07$ ,  $p = .002$ ,  $d = 0.36$

(see Fig. 2a). Additional analyses revealed the robustness of these effects when we controlled for a range of demographic variables (see Table S4 in the Supplemental Material).

To confirm that the influence of the legacy prime on climate-change attitudes was driven by increases in legacy motives, we conducted a mediation analysis using the mean legacy-motives score as a mediator. The effect of the legacy prime on individuals' climate-change beliefs was fully mediated by increases in legacy motives—direct effect of the priming condition on beliefs:  $t(308) = 2.01$ ; effect of priming condition on beliefs, mediated by legacy motives:  $t(308) = 1.29$ , Sobel's  $z = 2.19$ ,  $p = .028$ . Mediation was also confirmed by a bias-corrected bootstrapping procedure using 5,000 samples (Preacher & Hayes, 2008; see Median Test in the Supplemental Material). This analysis showed that the indirect effect of the legacy prime on climate-change beliefs through legacy motives was significant, with a 95% confidence interval (CI) that excluded zero ( $\beta = 0.041$ , 95% CI = [0.01, 0.09],  $p = .029$ ). When we replaced climate-change attitudes with behavioral intentions as the outcome variable, behavioral intentions were also partially mediated by increases in legacy motives—direct effect of priming condition on intentions:  $t(311) = 3.17$ , effect of priming condition on intentions, mediated by legacy motives:  $t(311) = 2.65$ , Sobel's  $z = 2.11$ ,  $p = .034$ ; the indirect effect was significant ( $\beta = 0.034$ , 95% CI = [0.01, 0.08],  $p = .035$ ).

Results for our donation measure were consistent with the self-report results. As Figure 2b shows, participants who were primed with legacy motives donated significantly more of their earnings to an environmental organization than did those in the control condition,  $F(1, 310) = 8.79$ ,  $p = .003$ ,  $d = 0.34$ . Those who were not primed donated an average of \$2.31 ( $SD = \$2.74$ ; 61% donated), whereas those who were primed donated an average of \$3.34 ( $SD = \$3.29$ ; 70% donated). The differences remained significant when we examined the square-root-transformed values of the donation amounts in order to account for the negatively skewed distribution,  $\beta = 0.15$ ,  $t(310) = 2.74$ ,  $p = .007$ . Using a bootstrapping procedure with 5,000 samples, we found marginally significant evidence of partial mediation through legacy motives ( $\beta = 0.015$ , 95% CI = [0.001, 0.045], Sobel's  $z = 1.52$ ,  $p = .13$ ). We conducted additional analyses that revealed the robustness of these effects when we controlled for demographics, including political affiliation and general environmental attitude.

## General Discussion

Researchers and policymakers recognize that the psychological obstacles to climate-change mitigation need to be addressed in order to foster progress on this critical topic. The present results provide the first experimental demonstration that increasing the salience of legacy motives increases people's engagement in environmental sustainability. We found that climate-change attitudes and mitigation behaviors are related to the generalized motivation to leave behind a positive legacy and that differences in legacy motives are related to environmental charitable giving.

The long time horizons involved in environmental conservation are often viewed as barriers to mitigation because of intertemporal and interpersonal discounting. In contrast with this view, our findings demonstrate that this fundamental feature of environmental problems can be leveraged to promote rather than inhibit environmental engagement. Specifically, when people's latent motivation to leave behind a positive legacy is made salient prior to making a present-self versus future-other trade-off, behavior shifts toward favoring the well-being of future others.

Moreover, in follow-up experiments analogous to those presented here, we found evidence that making legacy motives salient may be influential in shifting behavior only in contexts in which individuals feel some personal control over future outcomes. This appears to be the case for environmental issues and also for personal action related to forward-looking health and financial issues (see Experiments 2a and 2b in the Supplemental

Material). Taken together, these results indicate that legacy motives may influence environmental behavior by simultaneously counteracting intertemporal and interpersonal discounting associated with environmental engagement and, perhaps, by focusing individuals on the future impact of their own actions. These dual mechanisms, which require further examination, would help to explain the positive effects observed in the experiment reported in this article and in Experiment 2a.

Our work demonstrates that legacy motives matter deeply for proenvironmental action, which involves making trade-offs between current and future consumption and well-being. This finding is critical, as policymakers continue to grapple with the question of how to increase citizen engagement on this issue and develop new forms of discourse to support sustainability efforts (Bandura, 2007; Moser & Dilling, 2011). Further research can explore whether other types of forward-looking manipulations generate similar results (e.g., Hershfield, Bang, & Weber, 2014), as well as investigate the duration of a legacy prime's impact on environmental decisions. Future studies can leverage the practical benefits of this research by exploring how to couple a legacy prime with actual campaigns focused on changing environmental behavior.

Our results suggest that public policies that make individuals' legacy motives salient may be effective in encouraging environmentally and ecologically sustainable behaviors. Prompts that encourage people to think about how they would want to be remembered (or perhaps what they don't want to be remembered for) may effectively promote environmental behavior by framing decisions as "win-win" for both present and future generations.

## Author Contributions

L. Zaval and E. M. Markowitz conceived and designed the study. Data were collected and analyzed by L. Zaval and E. M. Markowitz. L. Zaval and E. M. Markowitz drafted the manuscript and share joint authorship. E. U. Weber provided critical revisions. All authors approved the final version of the manuscript for submission.

## Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

## Funding

Funding was provided under the cooperative agreement NSF SES-0951516 from the National Science Foundation awarded to the Center for Research on Environmental Decisions. Funding was also provided by the Princeton Institute for International and Regional Studies Communicating Uncertainty research community at Princeton University.



## Supplemental Material

Additional supporting information can be found at <http://pss.sagepub.com/content/by/supplemental-data>

## Open Practices



All data and materials have been made publicly available via Harvard Dataverse Network and can be accessed at [http://thedata.harvard.edu/dvn/dv/lzav/faces/study/StudyPage.xhtml?globalId=doi:10.7910/DVN/27740&studyListingIndex=3\\_81dd3734f5b119094c28f53886bc](http://thedata.harvard.edu/dvn/dv/lzav/faces/study/StudyPage.xhtml?globalId=doi:10.7910/DVN/27740&studyListingIndex=3_81dd3734f5b119094c28f53886bc). The complete Open Practices Disclosure for this article can be found at <http://pss.sagepub.com/content/by/supplemental-data>. This article has received badges for Open Data and Open Materials. More information about the Open Practices badges can be found at <https://osf.io/tvyxz/wiki/view/> and <http://pss.sagepub.com/content/25/1/3.full>.

## References

- Bandura, A. (2007). Impeding ecological sustainability through selective moral disengagement. *International Journal of Innovation and Sustainable Development*, 2, 8–35.
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6, 3–5. doi:10.1177/1745691610393980
- Gifford, R. (2011). The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *American Psychologist*, 66, 290–302.
- Hershfield, H. E., Bang, H. M., & Weber, E. U. (2014). National differences in environmental concern and performance are predicted by country age. *Psychological Science*, 25, 152–160.
- Hunter, E. G., & Rowles, G. D. (2005). Leaving a legacy: Toward a typology. *Journal of Aging Studies*, 19, 327–347.
- Markowitz, E. M., & Shariff, A. F. (2012). Climate change and moral judgement. *Nature Climate Change*, 2, 243–247.
- Matsuba, M. K., Pratt, M. W., Norris, J. E., Mohle, E., Alisat, S., & McAdams, D. P. (2012). Environmentalism as a context for expressing identity and generativity: Patterns among activists and uninvolved youth and midlife adults. *Journal of Personality*, 80, 1091–1115.
- McAdams, D. P., & de St. Aubin, E. (1992). A theory of generativity and its assessment through self-report, behavioral acts, and narrative themes in autobiography. *Journal of Personality and Social Psychology*, 62, 1003–1015. doi:10.1037/0022-3514.62.6.1003
- Milfont, T. L., Harré, N., Sibley, C. G., & Duckitt, J. (2012). The climate-change dilemma: Examining the association between parental status and political party support. *Journal of Applied Social Psychology*, 42, 2386–2410. doi:10.1111/j.1559-1816.2012.00946.x
- Moser, S. C., & Dilling, L. (2011). Communicating climate change: Closing the science-action gap. In J. S. Dryzek, R. B. Norgaard, & D. Schlosberg (Eds.), *The Oxford handbook of climate change and society* (pp. 161–174). Oxford, England: Oxford University Press.
- Newton, N. J., Herr, J. M., Pollack, J. I., & McAdams, D. P. (2014). Selfless or selfish? Generativity and narcissism as components of legacy. *Journal of Adult Development*, 21, 59–68.
- Pew Research Center for the People & the Press. (2014). *As new dangers loom, more think the U.S. does 'too little' to solve world problems*. Retrieved from <http://www.people-press.org/2014/08/28/as-new-dangers-loom-more-think-the-u-s-does-too-little-to-solve-world-problems/>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891.
- Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K. B., . . . Miller, H. L. (2007). *Climate change 2007: The physical science basis*. Cambridge, England: Cambridge University Press.
- Spence, A., Poortinga, W., & Pidgeon, N. (2012). The psychological distance of climate change. *Risk Analysis*, 32, 957–972.
- Stocker, T. F. (2013). The closing door of climate targets. *Science*, 339, 280–282.
- Van Winden, W., Van den Berg, L., & Pol, P. (2007). European cities in the knowledge economy: Towards a typology. *Urban Studies*, 44, 525–549.
- Wade-Benzoni, K. A., Sondak, H., & Galinsky, A. D. (2010). Leaving a legacy: Intergenerational allocations of benefits and burdens. *Business Ethics Quarterly*, 20, 7–34.
- Wade-Benzoni, K. A., Tost, L. P., Hernandez, M., & Larrick, R. P. (2012). It's only a matter of time: Death, legacies, and intergenerational decisions. *Psychological Science*, 23, 704–709.
- Weber, E. U., & Johnson, E. J. (2009). Mindful judgment and decision making. *Annual Review of Psychology*, 60, 53–85.
- Weber, E. U., & Stern, P. C. (2011). Public understanding of climate change in the United States. *American Psychologist*, 66, 315–328.
- Zaval, L., Keenan, E. A., Johnson, E. J., & Weber, E. U. (2014). How warm days increase belief in global warming. *Nature Climate Change*, 4, 143–147.