

Improving Public Engagement With Climate Change: Five “Best Practice” Insights From Psychological Science

Perspectives on Psychological Science
2015, Vol. 10(6) 758–763

© The Author(s) 2015

Reprints and permissions:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/1745691615598516

pps.sagepub.com



**Sander van der Linden¹, Edward Maibach², and
Anthony Leiserowitz³**

¹Department of Psychology, Woodrow Wilson School of Public Affairs, and Andlinger Center for Energy and the Environment, Princeton University; ²Department of Communication, George Mason University; and ³Yale Project on Climate Change Communication, Yale University

Abstract

Despite being one of the most important societal challenges of the 21st century, public engagement with climate change currently remains low in the United States. Mounting evidence from across the behavioral sciences has found that most people regard climate change as a nonurgent and psychologically distant risk—spatially, temporally, and socially—which has led to deferred public decision making about mitigation and adaptation responses. In this article, we advance five simple but important “best practice” insights from psychological science that can help governments improve public policymaking about climate change. Particularly, instead of a future, distant, global, nonpersonal, and analytical risk that is often framed as an overt loss for society, we argue that policymakers should (a) emphasize climate change as a present, local, and personal risk; (b) facilitate more affective and experiential engagement; (c) leverage relevant social group norms; (d) frame policy solutions in terms of what can be gained from immediate action; and (e) appeal to intrinsically valued long-term environmental goals and outcomes. With practical examples we illustrate how these key psychological principles can be applied to support societal engagement and climate change policymaking.

Keywords

climate change, public engagement, behavioral policy

In 2013, President Barack Obama issued an executive order titled “Preparing the United States for the Impacts of Climate Change,” which requires federal agencies to begin preparing for one of the most serious challenges facing our planet and its inhabitants: global climate change. Although this initiative is important to adequately limit and prepare for climate change, significant further actions are needed at the federal, state, and local government level, as well as in industry, civic organizations, and individual households. Yet, a persistent lack of public engagement with the issue poses serious challenges to accomplishing these actions (Gifford, 2011; Leiserowitz, 2006; Weber & Stern, 2011). In fact, most Americans continue to view climate change as a nonurgent issue and consistently rank it well below the economy, terrorism, health care, and a myriad of other issues (Pew Research Center, 2014). This lack of engagement has led to much deferred public decision making about enacting effective adaptation and mitigation policies.

Thus far, climate change policymaking has primarily revolved around technological solutions or standard economic models (e.g., market and incentive-based mechanisms). As Shafir (2012) notes, “it is remarkable how small a role the attempt to understand human behavior has played in policy circles” (p. 2). This is surprising because *psychological science* has important insights to offer policymakers in managing climate change, especially because human behavior and decision making are at the very core of the climate change problem (Gifford, 2011). Indeed, the field of psychology is in a unique position to offer a theoretically and empirically based understanding of human behavior at the individual level (Swim et al., 2011). Accordingly, in this article, we draw on extensive research

Corresponding Author:

Sander van der Linden, Department of Psychology, Peretsman-Scully Hall 421, Princeton University, Princeton, NJ 08544
E-mail: sander.vanderlinden@princeton.edu

from psychology to formulate five simple but important guidelines for improving public policy and decision making about climate change (Table 1).

1. The Human Brain Privileges Experience Over Analysis

Because climate change can only be studied in statistical terms (e.g., by analyzing long-term changes in temperature and precipitation patterns), the issue is generally communicated and presented in relatively abstract, descriptive, and analytical formats. This approach, however, relies on the assumption that people process uncertain (climate) information in a logical and analytical matter (Marx et al., 2007). Yet, decades of research in social, cognitive, and clinical psychology has shown that the human brain relies on two qualitatively different processing systems (Chaiken & Trope, 1999; Evans, 2008; Sloman, 1996).

The first system (i.e., System 1) is often described as intuitive, experiential, automatic, affective (emotional), and fast. System 2, on the other hand, is deliberate, analytical, effortful, rational, and slow (Kahneman, 2012). In practice, these two systems continually interact and operate in parallel to guide human judgment and decision making (LeDoux, 1989). Yet, when they diverge, System 1 often exerts a greater influence in guiding human decision making (Loewenstein, Weber, Hsee, & Welch, 2001). For example, research has consistently shown negative affect to be one of the strongest drivers of climate change risk perceptions and policy support (Leiserowitz, 2006; van der Linden, 2014a). In short, how we feel about a given situation often has a potent influence on our decisions about how to respond (Slovic & Peters, 2006).

Policy implications

Statistical descriptions of the risk of climate change often fail to elicit action because statistical information, by itself, means very little to (most) people. Experience, on the other hand, can be a powerful teacher. For example, although the odds of death or injury from a terrorist attack in the United States are very low, terrorism is ranked as a top national priority, whereas the reality of climate change is not. The difference lies in the fact that for terrorism, vivid, memorable experiences readily come to mind (e.g., 9/11, ISIS). The role of experience, however, has largely been ignored in climate policymaking (Marx et al., 2007), partly because climate change is a slow-moving, “invisible” process that cannot easily be experienced directly (Weber, 2006).

Yet, research has indicated that to some extent, people are able to accurately detect broad changes in local weather and temperature patterns (Akerlof, Maibach,

Fitzgerald, Ceden, & Neuman, 2013; Howe, Markowitz, Ming-Lee, Ko, & Leiserowitz, 2012) and that personal experiences with extreme weather events (e.g., hurricanes) can influence risk perceptions (van der Linden, 2014b), beliefs (Myers, Maibach, Roser-Renouf, Akerlof, & Leiserowitz, 2012), behavior (Spence, Poortinga, Butler, & Pidgeon, 2011), and policy support (Rudman, McLean, & Bunzl, 2013). Public policymakers should try to appeal to both the analytical and experiential processing system and expect that public support for action will require highlighting relevant personal experiences through recall, scenarios and powerful narratives and metaphors (Marx et al., 2007). In short, information about climate change risks needs to be translated into relatable and concrete personal experiences.

2. People Are Social Beings Who Respond to Group Norms

Because climate change is a global problem with global consequences, peoples' sense of *personal efficacy* (i.e., the belief that individual actions can make a difference) is often very low (Kerr & Kaufman-Gilliland, 1997). Indeed, the global nature of the climate change problem tends to make people feel powerless. Instead, it is often more effective to appeal to and leverage the social context in which people make decisions, particularly to help promote *collective efficacy* (i.e., the belief that group actions can make a difference; Roser-Renouf, Maibach, Leiserowitz, & Zhao, 2014). Humans evolved living in social groups, and it is through social comparison with referent others that people validate the correctness of their opinions and decisions (Festinger, 1954). In fact, imitating the behavior of the majority (i.e., following the norm) is a common heuristic in group-living species because it reduces the cost of individual learning. As Cialdini, Kallgren, and Reno (1990) put it, “if everyone is doing it, it must be a sensible thing to do” (p. 1015).

Psychologists generally distinguish between two separate sources of normative influence, namely; *descriptive* and *prescriptive* social norms (Deutsch & Gerard, 1955). Whereas prescriptive norms contain information on how people ought to behave, descriptive norms simply describe how others are behaving (Cialdini et al., 1990). When activated and aligned, social norms can serve as powerful sources of influence. For example, the more people hear social referents (e.g., family and friends) talk about the risk of climate change, and the more climate change is viewed within one's social network as a risk that requires action, the more it amplifies an individual's own risk perception and intention to act (Renn, 2010; van der Linden, 2014b). In short, social norms and contexts play an important role in human decision making.

Policy implications

Although social norms are an “underemployed” lever for managing climate change (Griskevicius, Cialdini, & Goldstein, 2008), to be leveraged, they must first be in place. For example, there is often a divergence between what people ought to do (e.g., evacuate before a hurricane) and what they perceive others doing (e.g., riding out the storm). Policymakers should therefore aim to define, activate, and leverage social group norms. Research has found, for instance, that highlighting descriptive norms such as the high degree of scientific agreement (97%) on human-caused climate change can lead to greater science acceptance and support for public action (Lewandowsky, Gignac, & Vaughan, 2013; van der Linden, Leiserowitz, Feinberg, & Maibach, 2015). Similarly, field experiments have demonstrated that when people are informed about the average energy consumption of their neighbors, they tend to adjust their own energy use to conform to the group norm (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). When energy-conservation norms are promoted and rewarded within a community, pro-environmental behavior change is more likely to be sustained.

3. Out of Sight, Out of Mind: The Nature of Psychological Distance

Discourse among scientists, the media, and policymakers has largely revolved around the future consequences of climate change over varying time scales (e.g., 50 to 150 years). Yet, this focus is problematic, as psychological research has shown that people tend to heavily discount (uncertain) future events when making trade-offs between cost and benefits that accrue at different points in time (i.e., intertemporal choices; Berns, Laibson, & Loewenstein, 2007). In fact, the discounting of future risk events is a pervasive feature of the way in which human psychology evolved; immediate day-to-day concerns take precedence over planning for the future (van Vugt, Griskevicius, & Schultz, 2014). One likely explanation for time discounting is that people psychologically construe representations of future events differently from those of present events (Trope & Liberman, 2010). As temporal distance increases, mental representations become less concrete and increasingly abstract. Accordingly, research has found that many people view climate change as a psychologically distant, future threat (Leiserowitz, 2005; Spence, Poortinga, & Pidgeon, 2012).

In addition to temporal discounting, people discount risks “spatially” as well. For example, research across 18 nations has found that many people systematically judge the risks of climate change to be much more likely

and more serious for other people and places than for themselves (Gifford et al., 2009; Leiserowitz, 2005; van der Linden, 2014b). This phenomenon can partly be explained by two psychological tendencies: (a) the *third-person effect*—the greater the distance between the “first” and the “third” person, the more impersonal the risk becomes (Tyler & Cook, 1984), and (b) *optimism bias* (Weinstein, 1980)—the tendency to believe that others are more likely to be affected by exactly the same risk.

Policy implications

People discount the risks of climate change in both temporal and spatial dimensions (i.e., it is more likely to happen in the future to other people in distant places). One way to reduce such psychological distancing is by highlighting the fact that climate change impacts are already happening. Public communication often emphasizes impersonal global impacts (e.g., sea level rise, average rising temperatures). Yet, policymakers should also emphasize local risks by highlighting the regional impacts of climate change for specific localities and communities (Leiserowitz, 2006). Research has shown that policy frames focusing on the regionally relevant impacts of climate change (and highlight local opportunities for reducing emissions) are often more effective than those that use distant global frames (e.g., Scannell & Gifford, 2013).

4. Framing the Big Picture: Nobody Likes Losing (but Everyone Likes Gaining)

Much of the media, scientific, and policy discourse around climate change has consistently invoked the idea of “losses.” For example, climate solutions are often framed as an immediate loss for society (e.g., higher taxes, reducing energy consumption). Yet, long-standing behavioral research has shown that people psychologically evaluate gains and losses in fundamentally different ways. For example, prospect theory (Kahneman & Tversky, 1979) demonstrates that people are more risk-seeking in loss domains than they are in gain domains. In particular, people are more reluctant to take action when losses are paired with uncertainty (Tversky & Shafir, 1992). In other words, when climate change impacts are framed as potential (i.e., uncertain) losses in the distant future, whereas climate change solutions are framed as certain losses for society at present, it encourages people to conclude that maintaining the status quo may be “worth the gamble.”

Policy implications

These psychological insights suggest that shifting the policy conversation from the potentially negative

future consequences of not acting (losses) on climate change to the positive benefits (gains) of immediate action is likely to increase public support. In fact, in comparison with negative loss scenarios, positive gain frames have shown to increase pro-environmental attitudes and support for mitigation and adaptation policies (Hurlstone, Lewandowsky, Newell, & Sewell, 2014; Spence & Pidgeon, 2010).

5. Playing the Long Game: Tapping the Potential of Human Motivation

Psychologists generally distinguish between two separate sources of motivation: extrinsic and intrinsic. Whereas the former mainly relies on external incentives to produce motivation to change (e.g., monetary incentives), the latter draws on personal and internal processes. In contrast to the predominant assumption among many policymakers that people are inherently (or rationally) motivated by money (Miller, 1999), a large body of psychological research has illustrated that this is not necessarily the case—many people intrinsically care about the well-being of others and the environment (Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Accordingly, recent experiments have shown that appealing to people's intrinsic motivational needs can be a more effective and long-lasting driver of pro-environmental behavior (Bolderdijk, Steg, Geller, Lehman, & Postmes, 2013; van der Linden, 2015). There are two main reasons for this. First, in comparison, extrinsic incentives only tend to work for as long as they can be maintained. Second, external rewards can actually undermine (i.e., “crowd

out”) people's intrinsic motivation to change (Deci, Koestner, & Ryan, 1999).

Policy implications

Policies that only consider short-term extrinsic incentives (e.g., promoting energy conservation to save money) are less likely to be successful because they are not tied to achieving intrinsically valued long-term environmental goals. Ideally, extrinsic policy incentives should be provided in tandem with intrinsic appeals. Because climate change is a long-term global environmental problem, viable adaptation and mitigation solutions will require leveraging stable long-term drivers of pro-environmental behavior and policy support (van der Linden, 2015).

Conclusion

This memo describes five “best practice” insights from psychological science to help improve public decision making about climate change. We argue that climate change has traditionally been framed as an analytical, temporally and spatially distant risk that represents an (uncertain) future loss for society. Yet, psychological research suggests that in order to improve public engagement with the issue, policymakers should emphasize climate change as an experiential, local and present risk; define and leverage relevant social group norms; highlight the tangible gains associated with immediate action; and last, but certainly not least, appeal to long-term motivators of pro-environmental behavior and decision making.

Table 1. Overview of Key Psychological Lessons and Policy Advice

| Psychological lesson | Policy guideline | Example policy recommendation |
|---|--|---|
| 1. The human brain privileges experience over analysis | Highlight relevant personal experiences through affective recall, stories, and metaphors. | The National Park Service (NPS) gives concrete examples of how climate change has already harmed natural resources in specific parks. |
| 2. People are social beings who respond to group norms | Activate and leverage relevant social group norms to promote and increase collective action. | Government climate science agencies could improve efforts to highlight descriptive norms (e.g., the scientific consensus on human-caused climate change). |
| 3. Out of sight, out of mind: reduce psychological distance | Emphasize the present and make climate change impacts and solutions locally relevant. | NASA and The National Oceanic and Atmospheric Administration (NOAA) are supporting efforts to enable TV meteorologists to educate their viewers about current local climate change impacts. |
| 4. Nobody likes losing but everyone likes gaining | Frame policy solutions in terms of what can be gained (not in terms of what is lost). | The Environmental Protection Agency's (EPA) “Clean Power Plan” focuses on cleaning up the nation's fuel supply, which will help clean up the nation's air and water, providing direct health benefits to all Americans. |
| 5. Tapping the potential of human motivation | Leverage intrinsic motivation to support long-term environmental goals. | The President, Congress, and all federal agencies should be openly aspirational in designing climate policy initiatives that tap into citizens' deeply held motivations for building a better tomorrow. |

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

The authors gratefully acknowledge support from the National Science Foundation (Award #DRL-1422431) and NASA (Award #NNX11AQ80G).

References

- Akerlof, K., Maibach, E. W., Fitzgerald, D., Ceden, A. Y., & Neuman, A. (2013). Do people "personally experience" global warming, and if so how, does it matter? *Global Environmental Change*, 23, 81–91.
- Berns, G. S., Laibson, D., & Loewenstein, G. (2007). Intertemporal choice—Toward an integrative framework. *Trends in Cognitive Sciences*, 11, 482–488.
- Bolderdijk, J. W., Steg, L., Geller, E. S., Lehman, P. K., & Postmes, T. (2013). Comparing the effectiveness of monetary versus moral motives in environmental campaigning. *Nature Climate Change*, 3, 413–416.
- Chaiken, S., & Trope, Y. (1999). *Dual-process theories in social psychology*. New York, NY: Guilford.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1990). A focus theory of normative conduct. *Advances in Experimental Psychology*, 24, 201–234.
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125, 627–668.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *The Journal of Abnormal and Social Psychology*, 51, 629–636.
- Evans, J. S. B. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology*, 59, 255–278.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117–140.
- Gifford, R. (2011). The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *American Psychologist*, 66, 290–302.
- Gifford, R., Scannell, L., Kormos, C., Smolova, L., Biel, A., Boncu, S., & Uzzell, D. (2009). Temporal pessimism and spatial optimism in environmental assessments: An 18-nation study. *Journal of Environmental Psychology*, 29, 1–12.
- Griskevicius, V., Cialdini, R. B., & Goldstein, N. J. (2008). Social norms: An underestimated and underemployed lever for managing climate change. *International Journal of Sustainability Communication*, 3, 5–13.
- Howe, P., Markowitz, E. M., Ming-Lee, T., Ko, C.-Y., & Leiserowitz, A. (2013). Global perceptions of local temperature change. *Nature Climate Change*, 3, 352–356.
- Hurlstone, M. J., Lewandowsky, S., Newell, B. R., & Sewell, B. (2014). The effect of framing and normative messages in building support for climate policies. *PLoS ONE*, 9(12), e114335.
- Kahneman, D. (2012). *Thinking, fast and slow*. New York, NY: Farrar, Straus and Giroux.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 47, 263–291.
- Kerr, N. L., & Kaufman-Gilliland, C. M. (1997). "... and besides, I probably couldn't have made a difference anyway": Justification of social dilemma defection via perceived self-inefficacy. *Journal of Experimental Social Psychology*, 33, 211–230.
- LeDoux, J. E. (1989). Cognitive-emotional interactions in the brain. *Cognition & Emotion*, 3, 267–289.
- Leiserowitz, A. (2005). American risk perceptions: Is climate change dangerous? *Risk Analysis*, 25, 1433–1442.
- Leiserowitz, A. (2006). Climate change risk perception and policy preferences: The role of affect, imagery and values. *Climatic Change*, 77, 45–72.
- Lewandowsky, S., Gignac, G. E., & Vaughan, S. (2013). The pivotal role of perceived scientific consensus in acceptance of science. *Nature Climate Change*, 3, 399–404.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, E. (2001). Risk as feelings. *Psychological Bulletin*, 127, 267–286.
- Marx, S. M., Weber, E. U., Orlove, B. S., Leiserowitz, A., Krantz, D. H., Roncoli, C., & Philips, J. (2007). Communication and mental processes: Experiential and analytic processing of uncertain climate information. *Global Environmental Change*, 17, 47–58.
- Miller, D. T. (1999). The norm of self-interest. *American Psychologist*, 54, 1053–1060.
- Myers, T., Maibach, E. W., Roser-Renouf, C., Akerlof, K., & Leiserowitz, A. (2012). The relationship between personal experience and belief in the reality of global warming. *Nature Climate Change*, 3, 343–347.
- Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underdetected. *Personality and Social Psychology Bulletin*, 34, 913–923.
- Pew Research Center. (2014). *Thirteen years of the public's top priorities*. Retrieved from <http://www.people-press.org/interactive/top-priorities/>
- Renn, O. (2010). The social amplification / attenuation of risk framework: Application to climate change. *WIREs Climate Change*, 2, 154–169.
- Roser-Renouf, C., Maibach, E., Leiserowitz, A., & Zhao, X. (2014). The genesis of climate change activism: From key beliefs to political action. *Climatic Change*, 125, 163–178.
- Rudman, L., McLean, M. C., & Bunzl, M. (2013). When truth is personally inconvenient, attitudes change: The impact of extreme weather on implicit support for green politicians and explicit climate-change beliefs. *Psychological Science*, 24, 2290–2296.
- Scannell, L., & Gifford, R. (2013). Personally relevant climate change: The role of place attachment and local versus global message framing in engagement. *Environment & Behavior*, 45, 60–85.
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science*, 18, 429–434.

- Shafir, E. (2012). *The behavioral foundations of public policy*. Princeton, NJ: Princeton University Press.
- Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin*, 119, 3–22.
- Slovic, P., & Peters, E. (2006). Risk perception and affect. *Current Directions in Psychological Science*, 15, 322–325.
- Spence, A., & Pidgeon, N. (2010). Framing and communicating climate change: The effects of distance and outcome frame manipulations. *Global Environmental Change*, 20, 656–667.
- Spence, A., Poortinga, W., Butler, C., & Pidgeon, N. F. (2011). Perceptions of climate change and willingness to save energy related to flood experience. *Nature Climate Change*, 1, 46–49.
- Spence, A., Poortinga, W., & Pidgeon, N. F. (2012). The psychological distance of climate change. *Risk Analysis*, 32, 957–972.
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6, 81–98.
- Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., & Weber, E. (2011). *Psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change*. Washington, DC: American Psychological Association.
- Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, 117, 440–463.
- Tversky, A., & Shafir, E. (1992). The disjunction effect in choice under uncertainty. *Psychological Science*, 3, 305–309.
- van der Linden, S. L. (2014a). On the relationship between personal experience, affect and risk perception: The case of climate change. *European Journal of Social Psychology*, 44, 430–440.
- van der Linden, S. L. (2014b). The social-psychological determinants of climate change risk perceptions: Towards a comprehensive model. *Journal of Environmental Psychology*, 41, 112–124.
- van der Linden, S. (2015). Intrinsic motivation and pro-environmental behaviour. *Nature Climate Change*, 5, 612–613.
- van der Linden, S. L., Leiserowitz, A. A., Feinberg, G. D., & Maibach, E. W. (2015). The scientific consensus on climate change as a gateway belief: Experimental evidence. *PLoS ONE*, 10(2), e0118489.
- van Vugt, M., Griskevicius, V., & Schultz, P. (2014). Naturally green: Harnessing stone age psychological biases to foster environmental behavior. *Social Issues and Policy Review*, 8(1), 1–32.
- Tyler, T. R., & Cook, F. L. (1984). The mass media and judgments of risk: Distinguishing impact on personal and societal level judgments. *Journal of Personality and Social Psychology*, 47, 693–708.
- Weber, E. U. (2006). Evidence-based and description-based perceptions of long-term risk: Why global warming does not scare us (yet). *Climatic Change*, 77, 103–120.
- Weber, E. U., & Stern, P. C. (2011). Public understanding of climate change in the United States. *American Psychologist*, 66, 315–328.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39, 806–820.