3

More bad news: the risk of neglecting emotional responses to climate change information

Susanne C. Moser
National Center for Atmospheric Research

> If one does not look into the abyss, one is being wishful by simply not confronting the truth about our time. ... On the other hand, it is imperative that one not get stuck in the abyss.
>
> *Robert Jay Lifton (1986)*[1]

Introduction[2]

Listening to climate change communicators, advocates, and scientists, there is a growing frustration that politicians and the public don't pay more attention to the issue. In their attempts to ring the alarm bells more fiercely, many are tempted either to make the issue scarier or to inundate people with more information, believing that if people only understood the urgency of global warming, they would act or demand more action. When the desired response then fails to materialize, they get disappointed, yet plow ahead undeterred. Surely, if people aren't getting the message, we must give it more loudly! Yet is "not getting the message" really the problem? And is scarier and more information the answer?

Almost every new story about global warming brings more bad news. In 2005 alone, people opened the morning papers to stories that warming could be far worse than previously projected, that our emissions are committing us to warming and sea-level rise for decades to centuries even if we could stop all of them point-blank, today. Increasingly urgent is the news about the rapidly accelerating melting of the Greenland and West Antarctic ice shields.

Esther Elizur (Jerusalem), Sarah Conn (Arlington, MA), Veronica Laveta (Boulder, CO), Neena Rao (Naropa University), Jeffrey Kiehl (NCAR), Hal Shorey (University of Kansas), Lisa Dilling (University of Colorado), and Susan Watrous (Santa Cruz) provided helpful resources, comments and constructive feedback on an earlier draft of this chapter. The final interpretation of the works cited here and any remaining oversights are mine.

Meanwhile, every freak of the weather makes us more uneasy – be it relentless heat in Phoenix or the devastating hurricane season of 2005.

It gets worse when international climate negotiators are unable to commit to significant emissions reductions, and the US Congress can't agree on any binding caps or market-based mechanism to bring emissions down. Then we hear of administration officials editing climate reports to downplay the issue's seriousness, and even the environmental community is internally torn on the issue. The best news yet is of the hundreds of local communities, numerous states, selected businesses and industries, and faith communities around the United States reducing their emissions and usually saving money in the process (see the chapters by Young, Chapter 24, Watrous and Fraley, Chapter 25, Pratt and Rabkin, Chapter 26, Arroyo and Preston, Chapter 21, duVair *et al.*, Chapter 27, Tennis, Chapter 26 and Bingham, Chapter 9, this volume). Most experts agree that these actions alone – while exceedingly important to build precedent, experience, and wider engagement on the issue – won't solve the climate problem (e.g., Betsill, 2001; Victor, House, and Joy, 2005).

For most people, it is challenging to keep listening to such depressing news. Many find it hard to stay optimistic about climate change, about society's ability to significantly reduce its emissions, overcome the technological challenges, and appropriately address the economic, social, and ethical concerns in the process (Agyeman *et al.*, Chapter 7, this volume). Besides, what could we as individuals do about it anyway? The problem is too big, too complicated, too overwhelming – it's hopeless.

Or so it would seem. This chapter speaks to these psychological responses to climate change information and to the effectiveness of emotional appeals used to motivate action. I argue that neglecting the emotional reception of climate-related news makes communication and outreach efforts more likely to fail. Below I describe common feelings people may experience, how communication strategies aimed at increasing the sense of urgency either deliberately or inadvertently play into them, and often produce undesirable outcomes. I conclude with some good news: better alternatives.

Emotional responses to climate change information

> Merely thinking about [the looming realities of our world] is to flirt with despair.
>
> *Paul Rogat Loeb (2004a: 2)*

To some, the introduction to this chapter is merely an enumeration of facts. Others may experience any number of emotional reactions: fear, guilt, anger,

defiance, a desire to blame someone, powerlessness, despair, a sense of exhaustion or annoyance at having to hear the litany one more time. After a few sentences into this barrage maybe numbness sets it. Of all these, numbness was probably the least unpleasant. This is precisely the reason why even those who are interested in climate change can "go numb" over time – it's just too hard to stay present to the constant onslaught of bad news.

"Bad news" tells us of a potential danger or of examples in place and time where a threat has materialized in a significant incident. It also informs us – directly or indirectly – about the source or reason for the danger. For example, when we see disasters as "acts of nature" (or God), we might feel we have no influence (see also Bostrom and Lashof, Chapter 1, this volume). If on the other hand we are the culprits, then we may feel implicated and guilty. Or we might feel angry that not more has been done to prevent or contain the problem. We may get worried about who will have to pay. What do we do with all these emotional responses? All too often we keep them to ourselves or suppress them altogether.

The critical importance of emotions

In the western cultural context, we tend to think of a person's cognitive responses to a stimulus in binary ways: rational or irrational. Many interpret "emotional" as synonymous with irrational, and thus as opposite to, and exclusionary of, rational thought. Because of cultural ideals associated with rationality (and related concepts of reason, objectivity, analysis, scientific knowledge, expertise, etc.), we have attached many negative labels to "being emotional." Researchers studying emotions tell us, however, that our cultural suppositions lag significantly behind modern scientific insights (see e.g., Slovic *et al.*, 2004; Wallenius, 2001; Davidson, 2000).

From an evolutionary perspective, emotions can be life-savers. Together with experience and memory, they offer critical "interpretations" of situations around us. In the case of immediate dangers, these basic reactions can induce us to fight, flee, or freeze (e.g., Levine, 1997; Wallenius, 2001).

Insights from cognitive and risk studies further suggest that without emotions (or affect, see Leiserowitz, Chapter 2, this volume), our thinking would be impaired (e.g., Slovic *et al.*, 2004; Davidson, 2000). As Slovic and colleagues (2004: 311) suggest, "analytic reasoning cannot be effective unless it is guided by emotion and affect." This is particularly true in situations where the threat is near and immediate. In situations where the threat is not (yet) directly perceived – as in the case of climate change – we may misleadingly believe that there is no danger at all. Thus, emotionally

under- or overreacting without the help of our cognitive facilities will lead to inappropriate responses. According to Davidson (2000: 91), "Cognition would be rudderless without the accompaniment of emotion, just as emotion would be primitive without the participation of cognition."

Finally, emotions play a critical role in health and the course of illness (e.g., Groopman, 2004). Fear, hope, despair, and denial affect a patient's psychological and physiological health (e.g., Groopman, 2004; Snyder *et al.*, 2000; Goldbeck, 1997; Ramachandran and Rogers-Ramachandran, 1996; Morse and Doberneck, 1995; Hall, 1994; Schussler, 1992). Moreover, they are critically important for an individual's ability to persist – physically and psychologically – in extreme adverse situations (e.g., Lifton, 1967).

Together, these scientific insights suggest that emotions are to be seen in a much more positive light than we often do; in fact, they are essential. What is equally true is that unhampered, or unattended to, feelings can also paralyze or mislead us. This just further underscores why we ignore or dismiss them at our peril.

The danger of unhampered and unattended emotions

The psychological purpose of fight, flight, or freeze reactions is to control either the external danger or the internal experience of fear (see reviews in Johnson, 2005; Ruiter *et al.*, 2004; Ruiter *et al.*, 2003; Wallenius, 2001; Witte, 1998). Both responses prove to be positive adaptations if they increase a person's ability to cope with the dangerous situation. An initial focus on fear control, for example, can enable an individual to deal more effectively with reducing the danger (Witte, 1998; Ruiter *et al.*, 2004). On the other hand, if a person's reaction only aims to control the fear or pain without reducing the danger, psychologists consider such a response maladaptive.

Maladaptive or avoidant behaviors (i.e., defense mechanisms) on the individual or collective scale typically include the following (see also Grothmann and Patt, 2005; Ruiter *et al.*, 2004; Osbaldiston and Sheldon, 2002; Cohen, 2001; Opotow and Weiss, 2000):

- the denial of the existence of the threat;
- a belief that the problem won't happen here/to us – a form of exceptionalism;
- the projection of responsibility onto someone else (blaming others for it or transference that experts will fix it);
- wishful thinking or rationalization that the problem will go away on its own, is less severe than believed, or that silver-bullet solutions will be found;
- a traditionalist refusal to do anything different ("we've always done it this way");
- the uncertainty trap ("we don't yet know enough to act");

- displacement of one's attention on other, maybe more immediate issues; and
- feeling trapped, fatalism, or "capitulatory imagination" (Loeb, 2004b: 128) – thoughts that lead to giving up.

Numerous studies have shown that these various forms of denial can be useful in the short run, but tend to be an obstacle over the long term (e.g., Goldbeck, 1997; Ramachandran and Rogers-Ramachandran, 1996; Greer, 1992).

Maybe the leading maladaptive response to threats that are particularly scary, ill understood, difficult to control, overwhelming, and in which we are complicit – such as global climate change – is psychic numbing or apathy.[3] While several writers have suspected that environmental problems may contribute to numbness and apathy (e.g., Clayton and Brook, 2005: 89; Macy and Brown, 1998; Searles, 1972), only a few empirical studies have actually examined the emotional and cognitive responses to climate change, its impacts and solutions (Stoll-Kleemann, O'Riordan, and Jaeger, 2001; Grothmann and Patt, 2005).[4] None of these explicitly examined psychic numbing. Weber's (2006) "finite pool of worry" hypothesis is relevant here: people can only worry so much about currently salient risks (e.g., terrorism), which makes it difficult to worry about another (e.g., climate change). This suggests that people may not be numb to all danger, but that numbness to one issue may simply result from being deeply concerned elsewhere.

Numbing requires at least a minimal amount of engagement with the threat: one first must realize the magnitude of the threat and perceive an inability to affect it before one goes numb. This secondary reaction should not be confused with the apathy many individuals display toward the issue in the first place, which prevents them from even learning about it and having an informed emotional reaction (Cafaro, 2005; Marshall and Lynas, 2003). It is likely that this primary apathy occurs in response to the combination of problems that converge and in their totality overwhelm us. Differently put, climate change does not exist in isolation. The synergistic effect of a drumbeat of news about various overwhelming environmental and societal problems on people's perception of the world may have this numbing effect. Add to this the immediate demands of daily life, and it will take something even worse to break through the walls of apathy (e.g., Gidley, 2005).[5]

Not facing the magnitude of such problems, however, requires conscious (or more likely subconscious) psychological repression: people find it highly unpleasant to feel pain, despair, or guilt, overwhelmed and powerless, to appear morbid or cause distress to others, or to be viewed as unpatriotic and

weak (Clayton and Brook, 2005; Macy and Brown, 1998: 26–32). Some have argued that repression of this onslaught of emotions both requires and contributes to commonly observed "cultural ailments" such as alienation from and distrust of oneself and others, isolation, escapist activities, blaming and scapegoating, political passivity, avoidance of information that could reawaken the unpleasant feelings, diminished intellectual performance, dysphoria and depression, and so on (e.g., Gidley, 2005; Macy and Brown, 1998; Searles, 1972).[6] Such repressive mechanisms may even be sanctioned if dire predictions do not (immediately) materialize, allowing listeners to turn away from alarming news (McComas and Shanahan, 1999).

Other maladaptive responses to fear and frustration can include reactance[7] and counterproductive behaviors that may in fact increase one's objective risk to external danger (e.g., Gray and Ropeik, 2002). Survey studies have found, for example, that one common response to information about the threats of climate change is a desire to buy a sports utility vehicle (SUV) as a means of protecting against an unpleasant or unpredictable environment (FrameWorks Institute, 2001). Unfortunately, of course, SUVs at current low levels of fuel efficiency exacerbate the climate problem (Plotkin, 2004; see also Dilling and Farhar, Chapter 23, this volume).

The above discussion illustrates how humans can react to unbridled fear and overwhelming circumstances, or even just the prospect of a potentially overwhelming situation. Clearly, emotions can be powerful motivators as well as de-motivators of action. Thus, playing with emotional appeals to create urgency is like playing with fire.

Emotional appeals to create urgency

> If a red light blinks on in a cockpit, should the pilot ignore it until it speaks in an unexcited tone? ... Is there any way to say [it] sweetly? Patiently? If one did, would anyone pay attention?
>
> *Donnella Meadows (1996)*

The conundrum so well expressed by the late Donnella Meadows is one that concerned scientists and other communicators face daily. If scientific findings about serious environmental risks presented "sweetly and patiently" (not to speak of their obscure, jargon-heavy technical cousins) cannot capture public or political audiences, then what would move someone to act? The temptation to break through indifference and apathy by using fear appeals is very real, especially as the problem grows more urgent.

If global warming is made scarier, it might become more salient. Scientists and editors of flagship science journals deplore the inattention given to

climate change, and on and off the record suggest that "a useful catastrophe or two" and other fear-provoking measures (such as terror alert systems for the state of the climate) are needed to motivate adequate policy response.[8] Similarly, policy advisors and politicians evoke currently resonant public fears, such as weapons of mass destruction, terrorism, and war, and compare the seriousness of climate change to that of more frightening issues (e.g., Blix, 2004; Gorbachev, 2004; King, 2004). But can such fear appeals generate a sustained and constructive engagement with climate change? The answer is: usually not.

Fear appeals have been effective at various times through US history. The recent American response to fear appeals regarding terrorism (including "pre-emptive" war) achieved the desired intent.[9] Further back in history, Franklin D. Roosevelt famously said during the Great Depression, "Let me assert my firm belief that the only thing we have to fear is fear itself – nameless, unreasoning, unjustified terror which paralyzes needed efforts to convert retreat into advance." Acknowledging people's legitimate fears, he went on to say, "only a foolish optimist can deny the dark realities of the moment" and then called for a renewed vision and concrete action plan (cited in Wilson, 2004).

Numerous studies, however, caution us about using fear appeals. Empirical studies show, for example, that fear may change attitudes and verbal expressions of concern but not necessarily increase active engagement or behavior change (e.g., Ruiter, Abraham, and Kok, 2001). More specifically, threat information is more likely to be persuasive, causing persistent attitude change, and motivating constructive responses only when people

- feel personally vulnerable to the risk;
- have useful and very specific information about possible precautionary actions;
- positively appraise their own ability (self-efficacy) to carry out the action;
- feel the suggested action will effectively solve the problem (response efficacy);
- believe the cost associated with taking precautionary action is low or acceptable;
- view the reward for *not* taking the action as unappealing; and
- tend to consciously and carefully process threat information (i.e., engage in central/systematic processing as opposed to peripheral/heuristic information processing).

These findings – while extracted from different empirical studies and based on a variety of theories – appear to be relatively stable and consistent (Johnson, 2005; Ruiter *et al.*, 2004; Das, de Wit, and Stroebe, 2003; Ruiter *et al.*, 2003; Osbaldiston and Sheldon, 2002; Ruiter, Abraham, and

Kok, 2001; Bator and Cialdini, 2000; Floyd, Prentice-Dunn, and Rogers, 2000; Witte, 1998; Bandura, 1997; Baldassar and Katz, 1992; Ajzen, 1991; Block and Keller, 1998; Hine and Gifford, 1991; Leventhal, Safer, and Panagis, 1983; Lynn, 1974). Perceived self-efficacy in responding to a threat, expected response costs, social support, and intention to act are the strongest predictors of concurrent or future behavior (Milne, Sheeran, and Orbell, 2000).[10] If threat information is unspecific, uncertain, perceived as manipulative, or if it comes from little-trusted sources, it may not even evoke fear but resentment, dismissal, or no response at all (Gray and Ropeik, 2002; Osbaldiston and Sheldon, 2002; Slovic, 1993).

Guilt – the emotional response to some self-perceived shortfall with respect to one's own standards of conduct – is another potentially powerful (and sometimes inadvertently used) motivator of individual or social response. People who feel guilty want to make amends or feel a moral responsibility to behave differently (O'Keefe, 2002a). Research suggests that explicit guilt appeals can indeed evoke such feelings, but do not necessarily persuade or induce behavior change because individuals just feel resentful or annoyed with overt manipulation (O'Keefe, 2002a). Yet milder guilt appeals are less persuasive and thus less motivational than overt techniques. To the extent that guilt challenges one's sense of personal integrity, it can initiate the search for self-affirmation. Responses to guilt thus aim primarily at maintaining one's sense of a moral self, and may or may not also motivate behavior that ends or rectifies the guilt-invoking action (O'Keefe, 2002a,b; Nabi, 2002). Take someone's reaction to the criticism that they drive an SUV, by many perceived as "guilt-tripping." The almost invariably resentful reaction is frequently followed with justifications for owning such a vehicle. People may argue they need the vehicle to reach off-road or mountainous locations, transport big items, or protect their children – thus reaffirming the sense of being a reasonable person and responsible parent. The implications are twofold: one, guilt appeals are unreliable as motivators of environmentally benign behavior; and two, people will maintain their sense of self and identity before changing an environmentally damaging behavior, *unless* the new behavior is consistent with who they want to be in the world (see also Clayton and Brooke, 2005; Vasi and Macy, 2003).

In summary, the key to whether or not threat and guilt appeals cause the desired impact is the presence or absence of concurrent supportive, enabling conditions (Eagly and Kulesa, 1997). The recommended alternative behavior must also reinforce (or at least not undermine) one's self-identity. Thus, given the highly complex and uncertain outcomes of such appeals and the limited ability to control people's emotional responses to information, using positive

motivations and forms of communication may prove more successful in engaging social actors.

Implications for communication

> One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is quite invisible to lay [people]. An ecologist must either harden his [or her] shell and make believe that the consequences of science are none of his [her] business, or [s]he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise.
>
> *Aldo Leopold (1953, 1993: 165)*

Communicators and change agents can become very frustrated with the indifference and ignorance they encounter in some of their audiences. I have yet to meet one who does not nod sadly to this quote from Aldo Leopold. Some audiences, of course, are interested and eager to learn more, and care deeply about the environment, but it is still hard to prevent them from slipping into hopelessness as they begin to fully grasp the magnitude of the challenge. Other chapters in this volume suggest that people are motivated by different things; here I focus only communication strategies that are cognizant of the insights of the psychological literature discussed above.

Greater self-reflexivity among communicators

Maybe the first insight is for communicators themselves to acknowledge their own emotional responses to environmental degradation and society's responses. Many choose to work on climate change because of deep passions and emotional, identity- and value-driven motivations, and thus are likely to experience strong emotional reactions.

The benefits of such greater self-awareness are manifold. First, unacknowledged feelings among communicators can lead to the impulsive, frustrated, or at least unskilled use of threat and guilt appeals which are unpredictable at best and counterproductive at worst. Second, with some audiences, acknowledging one's own feelings – in subtle if sincere ways – can be an important rapport- and trust-building process. While some want "just the facts, ma'am," especially lay audiences respond well when they feel that they are spoken to as "whole" people. If allowed to bring both head *and* heart to the issue, people can pay attention more fully and engage more deeply. Finally, taking time (the nearly impossible hurdle!) to acknowledge

one's emotional responses to climate change and seek and provide emotional support with colleagues and friends helps in the prevention or healing of burn-out (e.g., Moyer *et al.*, 2001, Maslach and Leiter, 2005).

From fear appeals to fostering true hope

Various aspects of climate change, its impacts and even what society may choose to do about it can evoke fear. Many people don't even realize these potentially scary aspects yet, thus lack the emotional motivation to act on climate change. As Block and Keller (1998) and Das, de Wit and Stroebe (2003) among others suggest, at this early stage, people need first to accept that they are vulnerable to the risks of climate change and thus need messages that increase their personal sense of vulnerability. As people move toward contemplating taking action, stronger fear appeals can help form a behavioral intent. However, such fear appeals must be coupled with constructive information and support to reduce the danger (see the discussion in the section on "Emotional appeals to create urgency" above).

Well-designed behavior change efforts seem more effective, as others in this book attest: individual transportation behavior is hard to change when there are limited behavioral alternatives, high response cost, low self-efficacy, and lack of social support and norms (Tribbia, Chapter 15, this volume). Neighborhood and community efforts to reduce emissions (Rabkin with Gershon, Watrous and Fraley, Chapters 19 and 25, this volume) work better with simple instructions, social support, low-cost alternatives, and regular feedback. The literature on hope confirms this. People need a minimum amount of information, a realistic assessment of the threat or diagnosis, a sense of personal control over their circumstances, a clear goal, an understanding of the strategies to reach that goal (including the possible setbacks along the way), a sense of support, and frequent feedback that allows them to see that they are moving in the right direction (e.g., Groopman, 2004; Morse and Doberneck, 1995). Importantly, fostering true hope is not erasing fears or doubts, but facing reality full on, while banking on promising strategies and uncertainty. Precisely because the future is not fully determined by present conditions concerted efforts can now make a positive difference. Communicators must learn to better hold up a positive future, depict an engaging goal and what Snyder *et al.* (1991) have called "the will and the ways," i.e., provide a sense of empowerment, clear instructions on what to do, and helping people see themselves on the path of reaching the goal (Courville and Piper, 2004).

From defense mechanisms to embracing positive values

Defense mechanisms – as mentioned above – are intended to reduce worry and to deflect personal responsibility for a situation, thus making it hard to reach people. Increasing the sense of personal vulnerability, responsibility, and empowerment is critical in tapping into people's positive motivation to pay attention. But as Clayton and Brook (2005: 90) contend, "Most people drastically overestimate the impact of individual motivations and dispositions on behavior, discounting the effect of the situational context. ... People's behavior is heavily influenced by the behavior and expectations of other people, especially important others." This statement points toward the immense significance of social values, identities, and support for behavior change (Lane, 2000; Opotow and Weiss, 2000; see also the chapters by Tribbia; Michaelis; and Chess and Johnson, Chapters 15, 16, and 14, this volume).

Ultimately, humans are social beings, whose physical, psychic, and social survival depends on others. Communicators can tap into this deeply anchored need. Social norms give us a compass for "good" behavior. They are maintained by deep values, core beliefs, and relevant institutions (e.g., the courts, faith communities), and are re-enacted daily within our social cohorts (at work, with families, neighbors, and friends). Americans, for example, deeply cherish values such as competitiveness, leadership, ingenuity, innovation, fairness, team play, stewardship, and responsibility for the welfare of others (FrameWorks Institute, 2001). Several of these directly counteract the defense mechanisms mentioned above. Communication strategies can focus on these cherished values to frame needed action as furthering what is "good." Communicators can encourage deeper conversations about the "good life" (see Michaelis, Chapter 16, this volume), about deeply held and sometimes conflicting values (see Regan, Chapter 13, this volume), or personal responsibility in the global context (see Bateson, Chapter 18, this volume).

A recent study tested the appeal of various messages encouraging action on climate change (commissioned by The Advertising Council and Environmental Defense and conducted in 2005 by S. Radoff Associates).[11] Participants responded best to one which suggested that taking action would be "doing good," which appealed to their innate goodness. The second-best response was to a message that appealed to logic and responsibility. Positive psychologists confirm that people have a deep desire to live a "good" or "meaningful" life, in which they derive gratification from exhibiting their strengths, talents, and virtues, and use these skills and strengths to belong

to and serve a larger purpose (Seligman, 2004). Reminding people of this larger common good provides meaning beyond self-serving goals, and is essential to counter individuals' sense of isolation and futility vis-à-vis global warming.

Envisioning a future worth fighting for

Finally, building on all the elements of a more positive communication strategy suggested so far, it will be critical to engage people in envisioning a future worth fighting for. While many have spoken to the importance of positive visioning, it is actually difficult to begin. A grand positive vision may well be something that no one creates but eventually emerges out of a myriad of images, stories, and on-the-ground efforts in developing alternatives (lifestyles, technologies, behaviors, environments, communities, institutions, etc.). The lack of such a compelling vision – one that is believable, inclusive, problem-solving, and meaning-giving (Olson, 1995) – has been implicated in the apathy of young people (e.g., Gidley, 2005), and has recently served as a provocative rallying cry to the environmental community (Shellenberger and Nordhaus, 2004). Communicators can serve the emergence of such a vision, first, by ceasing to conjure a doomsday scenario in people's imagination; second, by pointing to the many positive efforts under way; and finally, by providing fora where people can engage in the visioning process. Charismatic leaders have played important roles in this regard in past social movements ("I have a dream ..."). Yet waiting for the Martin Luther King Jr. or Mahatma Gandhi of climate change might waste precious time. Instead, creating a vibrant vision together, drawing up pathways there, and supporting each other in working toward this goal, will get us more than halfway there.

Notes

1. This quote appears here and in other publications, slightly rephrased, numerous times.
2. This chapter is an adapted version of a portion of an article by Moser and Dilling (2004). I am grateful for the permission from Heldref and *Environment* (www.heldref.org/env.php) to expand on it here.
3. Etymologically, the term apathy means the absence of feeling or, more specifically, of suffering (whether due to an inability or a refusal to feel pain). The term "psychic numbing" was first introduced by Lifton (1967). Most work on psychic numbing has focused on war atrocities, the Holocaust, extreme abuse, and nuclear catastrophes (e.g., Lifton, 1967; Cohen, 2001).
4. See also the review in Grothmann and Patt (2005) of a small number of additional studies, conducted mostly in Europe.
5. Witness the world's response to the Indian Ocean tsunami in late 2004. Indirect evidence for people's response to the combination of big problems comes from a study conducted

by the American Geophysical Union (Immerwahr, 1999), which found that focus group participants had very low expectations of society ever being able to solve the climate problem. They related these low prospects to a perception of general moral decay of society.

6. This chapter cannot do justice to these topics. For a longer treatment, see Nicholsen (2002), esp. chapter 5; Greenberg, Solomon, and Pyszczynski (1997); and Ruiter, Abraham, and Kok (2001).
7. Psychological reactance occurs in response to a perceived restriction of choices. For example, an individual who feels manipulated, caught, embarrassed, hurt, frightened, or otherwise restricted in his/her freedom will try to reassert him/herself by attaching negative characteristics on another person, e.g., by denigrating that person as a liar or evil person.
8. The call for a few "useful catastrophes" comes from Tickell (2002). Kennedy (2004) deplored the lack of attention that climate change is receiving in an editorial in *Science*.
9. See a discussion of this issue with UC-Berkeley linguist and framing expert George Lakoff at: http://www.berkeley.edu/news/media/releases/2004/08/25_lakoff.shtml; accessed January 29, 2006.
10. Many of these insights come from research on precautionary behavior related to health and crime – issues that affect a person directly, immediately, and tangibly. Transfer of these findings to environmentally significant behavior (especially on a remote, systemic, and complex issue like climate change) must still be interpreted with caution. While numerous studies have been conducted on the relationship between environmental concern, attitudes, values, and behavior, a careful assessment of the psychodynamics underlying this relationship is still wanting.
11. Thanks to George Perlov from the Ad Council for sharing this information.

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