

Psychological Adaptation to the Threats and Stresses of a Four Degree World

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Abstract

Some climate scientists now believe warming of four degrees or more this century is likely. Stresses and conflicts associated with harsher living conditions and greater resource competition will demand social and psychological adaptation as well as changes to physical infrastructure and economic systems.

Extensive social scientific research into human reactions to threats provides some insights into the psychological strategies humans are likely to adopt. These “coping strategies” are designed to defend against or manage the unpleasant emotions associated with “waking up” to the dangers of a warming globe.

We group coping strategies into three types. *Denial strategies* aim primarily at suppressing anxiety associated with predictions of climate disruption by not allowing the facts to be accepted into the conscious mind. *Maladaptive coping strategies* are deployed to blunt the emotional impact of the facts about climate change. *Adaptive coping strategies* are used when the person accepts both the facts and the accompanying emotions, and then tries to act on the basis of both.

In short, denial strategies suppress both facts and emotions, maladaptive coping strategies admit some of the facts and allow some of the emotions, both often in distorted form, and adaptive coping strategies accept the facts and allow the emotions to be felt, thus promoting more positive behaviors. Some ways of promoting adaptive coping are considered.

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1. Introduction

Some climate scientists now believe warming of four degrees or more this century is likely (Anderson and Bows 2008; Meinshausen 2009). To date, there has been little research on the likely social and psychological effects of the disruption expected in a world of four or more degrees of warming. Yet, as we know from the collapse of previous civilizations following rapid changes to local climatic conditions, the effects will be profound (Diamond 2005). Stresses and conflicts associated with harsher living conditions and greater resource competition will demand social and psychological adaptation as well as changes to physical infrastructure and economic systems.

Given that humanity's ability to adapt physically will depend in part on how well people adapt psychologically, this paper considers how humans might adjust to or cope with the threat associated with a world under a radically transformed climate. We intend our argument to apply to developed countries only. Generally speaking, a threat is an anticipated loss or harm to oneself or something one cares about. So what is threatened in the case of global warming, bearing in mind that it is not likely to markedly transform the conditions of life in developed countries for some decades?

The harms or losses anticipated will of course vary among individuals and societies but, broadly speaking, many people will experience threats related to: the well-being and survival of descendants; the state of the planet, including its natural wonders and biological diversity; and the stability and progress of the societies in which they live. In short, the threat of climate change is a threat to one's conception of how the future will unfold. While nuclear annihilation was a binary threat—either nothing changed or everything changed suddenly—climate disruption will occur slowly and with a high degree of certainty.

Extensive social scientific research into human reactions to threats provides some insights into the psychological strategies humans are likely to adopt in the face of the threat of global warming. As we shall see below, all of these “coping strategies” are designed to defend against or manage the unpleasant emotions associated with “waking up” to the dangers of a warming globe. These unpleasant emotions include fear, anxiety, guilt, anger, anguish, sadness, depression and helplessness. These unpleasant emotions arise in part because the threat of warming may also destabilise an individual's identity or sense of self—threatening one's life plans, reminding one of the fact of eventual death, challenging the morality of ecologically destructive or apathetic behaviours, or subverting one's internalised expectations of the future.

We group the coping strategies that people are likely to use in the face of global warming into three types.

1. **Denial strategies.** These strategies aim primarily at suppressing anxiety associated with predictions of climate disruption by not allowing the facts to be accepted in the conscious mind. By denying the reality of the facts, no emotions need be felt.
2. **Maladaptive coping strategies.** Those using these methods acknowledge and accept the facts about global warming up to a point, but the emotional impact is such that they need somehow to blunt some aspects of the facts or the

associated emotions. As such, these methods of coping can be maladaptive or unhelpful both to the individual and to the situation because they impede appropriate action.

3. **Adaptive coping strategies.** These strategies are deployed when the person accepts both the facts and the accompanying emotions, and then tries to act on the basis of both. They are adaptive in the sense of promoting psychological adjustment to new circumstances and stimulating actions appropriate to the new reality.

In short, denial strategies suppress both facts and emotions, maladaptive coping strategies admit some of the facts and allow some of the emotions, though often in distorted form, and adaptive coping strategies accept the facts and allow the emotions to be felt, thus promoting more positive behaviors. The three groups of coping strategies may be considered to be sequential in the sense that moving from the first to the second and the second to the third requires that obstacles be overcome (Swim et al. 2009, p. 124). However, we do not mean to imply that there is a linear progression, as people are likely to mix strategies from these three groups at different times and in different circumstances.

Survey and other evidence in Western countries (Lieserowitz 2006; Maibach et al. 2009) indicates that a minority of the population resists or ignores the facts of climate science, while a majority seems mainly to use maladaptive coping strategies. Another minority, which includes many climate scientists and some environmental campaigners, has made the transition to adaptive coping through acceptance and action. Over the next decades, as the message of climate science sinks in and concrete evidence of a changing climate becomes more apparent, more people are likely to move from maladaptive to adaptive forms of coping, although, as we will note below, this may not necessarily occur. Some people who use denial strategies are likely to remain “stuck” there regardless of the evidence.

2. Denial strategies

The most prominent form of denial is displayed by “climate sceptics” who actively reject all or most of the main propositions established by climate science. It seems that for many such individuals, acceptance of climate science and the response it calls for conflict with one or more of their fundamental beliefs—for example, that it is natural for humans to exploit the Earth’s resources, that continued economic growth should not be disrupted, or that governments should not intervene in the marketplace. For others, accepting the facts of climate science is seen to be a vindication of environmentalism, which conflicts with a neo-conservative worldview (Jacques et al. 2008). For such “sceptics” the idea of human-induced global warming can give rise to “cognitive dissonance”, the uncomfortable feeling people have when they begin to understand that something they believe to be true is contradicted by evidence (Festinger 1957). Rejection of the scientific claims resolves the dissonance, and thus removes the unpleasant feeling.

A more “casual” form of denial is engaged in by many members of the public. Anxiety can be reduced simply by restricting exposure to distressing information, such as by skipping news stories about climate change or disengaging from conversations (Crompton and Kasser 2009). Certain inner narratives can also be

deployed as rationales for deflecting or ignoring discomforting facts: “scientists are often wrong”, “they can’t make up their minds” or “they are exaggerating”.

3. Maladaptive coping strategies

For those who do not reject the scientific warnings, various coping strategies help to manage the unpleasant emotions associated with the recognition that the world is expected to be less amenable to human well-being and survival. Several of these are considered below. In each case, these forms of coping are likely to worsen the environmental (and socio-cultural) situation because they block potential social responses to climate change or because they actively contribute to ecologically damaging behaviours.

Reinterpreting the threat

People sometimes cope with global warming by “de-problematising” the threat, such as by making its scale seem smaller. Examples of such appraisals include using inner narratives such as “Humans have solved these sorts of problems before”, “If it were that big a threat, the government would be doing something about it” or “It won’t affect me much” (Homburg et al. 2007). Unlike casual forms of denial that deflect or ignore information about climate change, reinterpreting the threat filters the information in a way that reduces its power and tempers its emotional impact.

In addition to filtering, people sometimes engage in “distancing” by emphasising the time lapse between now and when the consequences of warming will be felt. “I’ll worry about it later” trades on the principle that a problem deferred is a problem diminished (Norgaard 2006). People may also tell themselves that because the effects are a long way off, there is time to find solutions; this is similar to the strategy of wishful thinking mentioned below in the section on unrealistic optimism. A related form of distancing is to keep one’s thoughts in the present, avoiding reflection on future impacts of climate change.

Diversionsary strategies

Diverting attention from anxious thoughts and unpleasant emotions is also an effective, but often maladaptive, coping strategy. Engaging in minor behaviour changes can help mollify feelings of helplessness or guilt. A Swiss study labeled this strategy the “metaphor of displaced commitment” and noted participants referring to daily measures such as turning down the thermostat and reducing water use as actions that defend against feelings of hopelessness (Stoll-Kleeman et al. 2001). Another example is the purchase of “carbon offsets” by airline passengers. While these strategies can help people feel as though they are “doing something”, they can also serve as a form of absolution that relieves people of the need to engage in the more radical political and lifestyle changes that are ultimately necessary.

While minor behaviour change can have positive, if trifling, environmental effects, pleasure-seeking works in the opposite direction. Recognised as a way of escaping from reality, it may include pursuit of exciting experiences, new acquisitions, or use of substances, each of which can provide psychic relief from anxiety. Homburg et al. (2007) found that among some groups of adults, pleasure-seeking is the most preferred coping strategy for avoiding environmental threats.

Pleasure-seeking can serve a second function, as a defence against thoughts of death. Studies using the theoretical framework known as Terror Management Theory (Solomon et al. 1991; Greenberg et al. 2004) have consistently shown that when given brief reminders of their own mortality, people are more likely to seek out means of enhancing their self-esteem. One way of doing so is to attach greater importance to money, image and status (Sheldon and Kasser 2008). Unfortunately, greater emphasis on materialism both diverts people from thinking about solutions to climate change and leads to higher greenhouse gas emissions (see Crompton and Kasser 2009).

Blame-shifting

Blame-shifting is a form of moral disengagement whereby people disavow their responsibility for the problem or the solution. Denial of guilt is the first step to shifting blame onto others and is reflected in narratives such as “It’s not my fault because my country is small” and “My carbon footprint is smaller than others”. In a Norwegian study, Norgaard identifies blame-shifting as an effective method of managing troublesome emotions. Some of her participants were quick to blame “Amerika”. Mortality awareness (fleeting reminders of death) can strengthen the appeal of blame shifting by reinforcing in-group/out-group distinctions (Crompton and Kasser 2009). Derogation of out-groups can be used to solidify one’s sense of self and ward off threats to it. Throughout the world over the last few years China has become a favoured scape-goat. In developed countries, the facts that China “builds a new coal-fired power plant every week” and is now “the world’s biggest carbon emitter” are frequently repeated. In small, rich countries this coping approach is akin to a shoplifter absolving himself because someone else robbed a bank; in large, rich countries it is akin to a bank robber absolving himself because someone else shoplifted.

Indifference strategies

While typically understood as meaning the absence of feeling, apathy can serve the useful psychological function of suppressing feeling. For example, Renée Lertzman argues that inaction around global warming does not always mean that people do not care; it may sometimes be a way for people to defend themselves from the anxiety and distress that follow from allowing themselves to care too much (Lertzman 2008). In essence, the unconscious narrative is “If I don’t care I won’t feel bad.” The temptation to practice apathy is particularly strong in the case of global warming because of the feelings of helplessness that can grow as more information is uncovered about the nature and scale of the threat. Nevertheless, the refusal to feel can exact a heavy psychological toll (Macy 1991) and resignation can induce passivity, including a reluctance to engage in pro-environmental behaviour (Homburg et al. 2007).

Unrealistic optimism/wishful thinking

Although we generally think of a willingness to face up to reality as a sign of mental health, Shelley Taylor (1989) reviews substantial empirical evidence indicating that the normal human mind interprets events in ways that promote “benign fictions” about oneself, the world and the future. Cultivating these benign fictions can be an adaptive response to an often unfriendly world that threatens to erode one’s self-belief or confidence in dealing with the external world. Taylor defines this tendency towards

“unrealistic optimism” as a proclivity that leads us to predict what we would prefer to see, rather than what is objectively most likely to happen (Taylor 1989, p. 33). High expectations that the 1997 Kyoto Protocol would bring about substantial action may be an example of such a benign fiction.

Yet within the phenomenon of unrealistic optimism it is important to distinguish between illusion and delusion. Illusions respond and adapt to reality as it forces itself on us, whereas delusions are held despite the evidence of the outside world. “Delusions are false beliefs that persist despite the facts. Illusions accommodate them, though perhaps reluctantly” (Taylor 1989, p. 36). Martin Seligman, an advocate of “learned optimism”, also recognises that cultivating optimism is helpful only when the future can be changed by positive thinking; when that is not the case “we must have the courage to endure pessimism” (Seligman 1991, p. 292). An example here is the rebranding of the December 2009 Copenhagen climate conference as “Hopenhagen,”¹ which contradicted the belief of many climate scientists that even the best-conceivable agreement would not go far enough to avoid dangerous warming. Indeed, that seems well borne out by the results of that meeting.

4. Adaptive coping strategies

Some maladaptive strategies are similar to early grief responses, i.e., the use of denial, distractions, and blame-shifting and reinterpretation of the meaning of a loss in order to cope with the feelings of anger, fear and loneliness associated with the loss of a loved one (Archer 1999; Bonanno and Kaltman 1999). Rather than passing through well-defined stages, most contemporary approaches to grief suggest that it is marked by episodic feelings like anger, depression and longing that may pass and then recur with even greater intensity, before eventually fading. In a similar way, strategies to cope with the emotions brought on by climate change may be deployed for shorter or longer periods at different points in time, with adaptive and maladaptive strategies inter-mingled. The task is to facilitate and encourage the more adaptive ones.

Adaptive coping strategies are akin to later phases of mourning and involve acceptance of, rather than resistance to, some of the pain and distress that follows recognition of the facts of climate science and their meaning. Although entailing the experience of strong negative emotions, these strategies are more likely to give rise to effective responses consistent with the new reality. In the case of climate change, the “death” that triggers a mourning process may be the loss of the individual’s understanding of how the future will unfold—including the future imagined for one’s children and grandchildren—to which strong attachments are often held.

Expressing and controlling emotions

It seems likely that there is a great deal of unconscious anxiety about climate change in the community—more in some countries than in others (Leiserowitz 2007). The hidden nature of the anxiety not only inhibits stronger policy responses to the threat but also prevents individuals from coming to terms with the changes that are required. Allowing one’s self to feel anger, depression and despair for a time may be a healthy response to anticipated climate change (Crompton and Kasser 2009). These feelings are natural human responses to the situation humanity is encountering, and to

¹ <http://www.hopenhagen.org/>

encourage their suppression, by urging people not to worry or suggesting some solution will be found, may mean the energy behind them manifests in other, damaging or maladaptive ways (Macy 1991).

The purpose of emotion-focused coping is to allow these deep feelings of anger, depression and despair to be expressed (Homburg et al. 2007). Remaining indefinitely within these feelings can, however, be debilitating, leading to apathy and resignation, so the objective is to manage or transcend the emotions by engaging with them. The cultivation of mindfulness—a calm and detached awareness of one’s own feelings and emotions—has been shown to assist this process (Brown and Kasser 2005). There is also evidence that more mindful people are less likely to endorse materialistic values, more likely to adopt an intrinsic goal orientation and more likely to engage in pro-environmental behaviours (Brown and Kasser 2005). A second effective method of passing through immobilising emotions is to act, which brings us to the next type of strategy.

Problem solving

For many people, fear of the unknown is more frightening than fear of the known, so one healthy response to the prospect of a transformed and less friendly climate is to find out more about climate change (Homburg et al. 2007). Although finding out more about anticipated climate change can generate more stress, understanding what to expect at least alleviates anxiety of the unknown and can help people plan more effectively for a different future.

Problem-solving can itself be an effective strategy for reducing stress. For example, the adoption of problem-solving as a coping strategy might impel people to work with others so as to prepare for a changed climate, through political activism or joining local groups or councils that might develop mitigation and adaptation measures. It is well-known that taking action and thereby exerting some control over the situation is an effective response to depression (Jacobson, Martell and Dimidjian 2001). The sense of shared purpose associated with working more collaboratively with others to protect the common interest can also reduce the “burden of knowing”.

New value orientation

We saw in the section on maladaptive strategies that fleeting thoughts about death tend to promote more self-enhancing and materialistic behaviours, which in turn are associated with more environmental damage. However, more conscious and careful processing of death has been shown to bring about the opposite reaction. Some studies indicate that more sustained and considered reflection on death tends to stimulate goals and behaviours that have greater intrinsic value, goals that are less materialistic and more pro-social (Cozzolino et al. 2004; Lykins et al. 2007). This type of reflection on death—parallel to the changes that sometimes follow traumatic events, including near-death experiences—can cause people to shift away from more superficial pursuits in favour of more meaningful ones. The expected effects of a changing climate over this century naturally stimulate thoughts of mortality—of ourselves, our descendents, vulnerable people in poor countries and non-human animals—and reflection on the possible end of civilisation and progress. While it is natural to resist such thoughts and push them out of awareness, the research evidence suggests that an open public engagement with notions of impermanence and death

could contribute to a shift in value orientation that is more protective of the environment (Kasser 2009).

5. Promoting adaptive coping

This paper has focused on coping strategies deployed by individuals in response to the threat of climate change. While it is beyond the paper's scope to consider how societies and their institutions will respond physically and psychologically to climate disruption, it is important to stress that the way individuals cope will be influenced by how their societies react to the new environment. For example, the present distress felt by the small minority who use more adaptive forms of coping (allowing in the full facts and emotions associated with the climate threat) may be intensified because of their isolation (Cooper 1998). If such individuals are surrounded by others who do not recognise the seriousness of the danger, they may alienate friends and family by expressing their concerns too strongly or insistently, which will in turn lead them to experience less social support for living in more ecologically sustainable ways and possible ridicule as "eco-obsessives". Such experiences in turn will magnify their unpleasant emotional state.

The dominance of denial and maladaptive coping strategies among the populace may not only isolate those using more adaptive strategies, but also relieve pressure on political leaders and institutions to respond to the scientific warnings. Blaming China or promoting private action through "green consumerism" reduces the motivation of leaders to adopt bolder policies. On the other hand, a nation composed of people engaged in problem solving and willing to vent their anger and sadness will create an environment in which politicians and businesses feel compelled to take stronger action to reduce carbon emissions.

As we have indicated, the shift from complacency to anxiety is likely to accelerate as acceptance of the threats involved in climate change becomes more common. At some point, it seems likely that governments, non-government institutions and professional organisations will recognise the benefits of promoting and supporting adaptive coping strategies. As far as we are aware, the only work that has considered how this might be achieved is by Crompton and Kasser (2009). They propose two types of response: encouraging adaptive instead of maladaptive coping strategies; and acting in ways that promote a shift to intrinsic values.

Among the methods to encourage adaptive coping strategies, Crompton and Kasser recommend that that environmental campaigns could: help people express their feelings of fear, sadness and helplessness; gently point out when people are avoiding facing up to the facts of climate science; and, promote problem-focused strategies and mindfulness.

Among the methods to encourage a value shift, Crompton and Kasser recommend that environmental campaigns could: avoid appealing primarily to selfish desires and motivations (such as by promoting "Ten ways you can save money by reducing your carbon emissions"); frame messages to connect with intrinsic values like cooperation and non-material benefits; and, deploy programs that activate an awareness of the inherent value of nature and empathy for non-human animals.

These latter recommendations have particular relevance for a world under four degrees of warming as there is a danger that threats to survival will stimulate a retreat to maladaptive strategies of apathy, pleasure-seeking, blame-shifting and derogation of “outsiders”. The research literature on death reflection (the more thoughtful and prolonged engagement with death) suggests that an open and wide-ranging public debate over questions of mortality and survival would make recourse to maladaptive coping strategies less attractive (Kasser 2009). More conscious reflection on mortality could also encourage more pro-social and less materialistic goals. At present most governments and environmental organisations adopt a “don’t scare the horses” approach, perhaps out of fear that exposing people fully to the scientific predictions will immobilise them. With climate scientists now stressing the need for extremely urgent action and spelling out more catastrophic impacts if action is inadequate, this now seems to us a dangerous approach to undertake.

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