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Regulating Psychological Threat
The Motivational Consequences of Threatening Contexts

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Modern society has become increasingly complex and uncertain. On both the individual and societal level, there are numerous examples of instability, crisis, and threat that might instil the view that we are living in a risk society (Beck, 1992), or even more extreme, in "the age of anxiety" (Twenge, 2000). Crisis and threat can be societal, man-made, or natural; examples include the recent financial crises, climate change, war, disease, tsunamis, and terrorist threat. These disruptions of the status quo can lead to decreased perceptions of personal control and choice, and enhance feelings of risk, uncertainty, and unpredictability. Moreover, events like the 9/11 terrorist attacks resulted in public safety measures that serve as continual reminders of terrorism-related threats (Bongar, Brown, Beutler, Breckenridge, & Zimbardo, 2006).

The crumbling authority of experts (e.g., scientists and politicians) when it comes to interpreting phenomena such as terrorism and climate change (e.g., Gleick et al., 2010) likely contributes further to the uncertainty that is associated with these threats. Contemporary Western or industrialized societies have also undergone a process of secularization; in many European countries, for example, church membership has declined significantly (Halman & Draulans, 2006). Together with the aforementioned decline of the interpretive power of

authorities, the reduction of institutionalized religious practice arguably contributes to feelings of uncertainty and randomness when faced with threatening events (Kay, Gaucher, McGregor, & Nash, 2010). Thus, remedies that arguably once buffered people against perceptions of threat seem to have lost part of their threat-regulation potential.

Simultaneously, there is ample research showing that societal threats can affect well-being and health. Examples are research on the transitions in Eastern European countries after the fall of the Berlin wall (Wardle et al., 2004), research on societal changes in the past decades in the United States (Twenge, 2000), and investigations aimed at understanding reactions to traumatic events like terrorist attacks (Bonanno, 2004) and large-scale technological or natural disasters (Baum, Gatchel, & Schaeffer, 1993; Gautam, Menachem, Srivastav, Delafontaine, & Irimpen, 2009). These examples illustrate the adverse impact of the lack of control and unpredictability that is associated with crisis. In the current chapter, we will not focus on these long-term consequences, but rather on how people tend to cope when confronted with uncertainty and lack of control, and how they attempt to regulate their cognitive and emotional reactions to threat. Thus, the current chapter describes research that addresses the motivational consequences of threats to perceptions of control and predictability that may result from crisis. In doing so, we also elaborate on the various ways in which people attempt to compensate for, and cope with, such psychological threat.

Control and Order Motivation

Experiencing personal control over life's outcomes and our social and physical environment is a fundamental human motivation, and there is an extensive body of literature suggesting that lack of control and predictability are generally experienced as aversive (e.g., Heckhausen & Schulz, 1995). Control has been found to enhance well-being and the ability to cope with stress, improve performance, reduce anxiety, increase resilience (see also Freitas & Downey, 1998), and decrease perceptions of pain (Glass et al., 1973; Thompson & Spacapan, 1991). In a simple demonstration of the power of feelings of control, a classic study by Rodin and Langer (1977) showed that providing inhabitants of a home for the elderly with some control and choice over mundane daily activities (such as care for houseplants) led to a decrease in mortality rates assessed 18 months later. Subsequent studies have found similarly beneficial effects of control and predictability on psychological and physical well-being (e.g., Adler, 2011; Schulz, 1976). Thus, a basic

level of control over the environment is of fundamental importance for healthy and adaptive human functioning.

In a similar vein, confrontations with randomness and unpredictability are generally seen as aversive, except when embedded in a clearly positive narrative (e.g., windfalls or winning the lottery; Krantz, 1998). An important cause of the aversive nature of perceived randomness is that it highlights the fact that we are unable to control and predict our environment (Krantz, 1998). Various models in the literature suggest that when personal (i.e., primary) control is unavailable or compromised, people may still be able to maintain an indirect or secondary sense of control (cf. Rothbaum, Weisz, & Snyder, 1982) by engaging in a variety of strategies. For example, even in the absence of actual control, people may cling to the illusion of control. Indeed, research has shown that people tend to see order and structure even in random events (Whitson & Galinsky, 2008), and sometimes go so far as to think that they can influence these events (Thompson, Armstrong, & Thomas, 1998).

Responses such as this may not stem from the desire to exert control per se. Instead, they may stem from the fact that we do not want to look upon the world as a place defined by randomness and chaos (Kay, Gaucher, Napier, Callan, & Laurin, 2008). In other words, people are strongly motivated to believe that the world in which they live, their social environment, is *orderly, predictable, and that it makes sense* (Kruglanski & Webster, 1996). According to Kay et al. (2008), control motivation can thus be considered a submotive for the more general and inclusive motivation to maintain perceptions of order. These authors propose a model of compensatory control, which essentially states that the aversive experience of lack of personal control (which threatens perceptions of order) can be reduced by the endorsement of external systems (such as God or government) that control the world. In other words, when people feel they lack control over certain events, they compensate for this by endorsing external systems that can exert control over the world. This compensatory control, in turn, restores perceptions of order. Importantly, what distinguishes the compensatory control model from secondary or vicarious control accounts such as that posited by Rothbaum et al. (1982) is that it argues that the endorsement of external systems does not serve as a means to regain perceptions of personal control. Rather, it encompasses an attempt to affirm the basic belief that things are under control, and that the world is thus an orderly and predictable place where things do not just happen haphazardly (Kay et al., 2008).

In sum, several research programs, including the research that will be presented in this chapter, have identified control motivation as

emanating from the more inclusive need to perceive order and believe that one's world and social environment make sense. Therefore, threats to personal control threaten order perceptions, and order perceptions can subsequently be restored via different strategies (i.e., by affirming order in a different domain or by reaffirming personal control, see Kay, Shepherd, Blatz, Chua, & Galinsky, 2010).

Threats to Order and Control

As indicated above, previous research has identified that both societal and natural crises can pose a threat to individuals' desired levels of order and control. Terrorist threat (Duckitt & Fisher, 2003; Fischer, Greitemeyer, Kastenmüller, Jonas, & Frey, 2006), environmental threat (Feinberg & Willer, 2011), resource scarcity (Gelfand et al., 2011), system threat (Banfield, Kay, Cutright, Wu, & Fitzsimmons, 2011), randomness threat and personal control threat (Kay, Moscovitch, & Laurin, 2010), and intergroup threat (Stephan, Diaz-Loving, & Duran, 2000) have all been shown to trigger motivational compensatory beliefs and preferences aimed at restoring perceptions of order – for example as displayed in, respectively, increased authoritarian tendencies, ingroup defense, denying and dismissing evidence for the threat, intolerance toward outgroups, system defense and nationalism, belief in a controlling God, system justification/endorsement of a strong government, and prejudice. Although triggered by diverse circumstances, these tendencies all can be seen to revolve around a motivation to defend the status quo that existed prior to the appearance of the threat. In other words, threats have been shown to trigger a host of motivational consequences which seem to entail the wish to return to the situation before crisis kicked in. Moreover, many of these responses reference an *agent* that is assumed to help provide order. This might be a supernatural agent (God), the ingroup, or a (governmental) system. Along these lines, Newman, Keil, Kuhlmeier, and Wynn (2010) argued that humans tend to believe that only animate agents are capable of restoring order, whereas inanimate objects (i.e., the wind, the sea) do not have this capacity, and instead can only increase disorder. Thus, according to these authors, from childhood onward humans subscribe to a belief that only agents can reverse entropy (i.e., restore the status quo or facilitate progress).

Extending the above ideas, we want to advance the notion that the motivational consequences of threat are more dynamic, and that these responses need not entail pre-existing belief systems that can be

interpreted as a defensive return to the status quo. Importantly, we also believe that threat regulation does not require external agents that provide or restore order per se. In the current chapter, we will review our recent research into these issues. More specifically, we will review evidence showing that (a) threat can also trigger compensation without an external agent and (b) compensation extends beyond religious or political endorsement of external systems and the (inter-)group level, and finally we also hope to show that (c) motivational beliefs and preferences following threat can even be future-oriented instead of conservative, and harbor the promise of improvement (i.e., faith in societal progress).

The Effect of Threat on Religious and Scientific Belief Systems

In recent times, there has been an upsurge of research into the psychological underpinnings of religious belief (see Sedikides, 2010). This is likely due to an increased interest in the role of belief systems in helping people to cope with or compensate for threat. Perhaps one of the most striking and well-established findings from this line of research is that belief in God and other supernatural agents can increase in response to psychological threats such as existential uncertainty (Norenzayan & Hansen, 2006) and lack of control (Kay, Gaucher, McGregor, & Nash, 2010). As outlined above, bolstering belief in God as a controlling agent is argued to thwart notions of randomness in the universe and to provide the threatened individual with reassurance that the world is under control, and therefore orderly and sense-making (Kay et al., 2008).

As a first step in our program of research on these themes, we tested whether an external agent is necessary for control restoration in the face of threat, or whether control restoration is also achievable via a mere affirmation of an orderly world without reference to a specific agent. If order is indeed the primary motivation, then order affirmation should suffice. In that case several worldviews, including secular or scientific belief systems, should be able to satiate this need and facilitate threat compensation and regulation. To test this possibility, in one study (Rutjens, van der Pligt, & van Harreveld, 2010) we manipulated control-threat (via a memory task in which participants were asked to vividly recall an event in their lives over which they lacked control or had control; see also Kay et al., 2008; Whitson & Galinsky, 2008) after which participants were asked to indicate their preference for different

perspectives on the world and the evolution of life. We employed three different perspectives; the first was Intelligent Design, which states that the evolution of life is directed and controlled by a higher power (i.e., an explanation that includes order and an agent). The second perspective was Darwin's Theory of Evolution, stating that evolution is largely an unstructured and random process (i.e., no order, no agent). The third perspective was a slightly modified version of Darwin's theory developed by Conway-Morris (2005), which states that evolution is not a random process but an orderly and predictable one. In other words, Conway-Morris's view provides order, but no agent. Each participant was presented with two of these three perspectives and asked to indicate which perspective they preferred. We hypothesized that a threat to personal control would only increase belief in an external agent (i.e., God) when the alternative belief system does not provide the notion of an orderly world (i.e., Darwin's Theory of Evolution).

The results supported this hypothesis. Among the participants that were asked to choose between intelligent design and classic evolutionary theory as "the best framework to explain the origin of life on this planet," threatened participants more often chose Intelligent Design than non-threatened participants. However, when choosing between Intelligent Design and the orderly perspective on evolution this threat-induced preference was eliminated. Finally, when participants were instead asked to choose between the two versions of evolutionary theory, threat led to an increased preference of the orderly perspective on evolution over the non-orderly Darwinian version (see Table 3.1). These results suggest that even a secular, scientific, worldview (see Preston & Epley, 2009) can provide a protective buffer against the aversive experience of randomness. In

Table 3.1   Preference for Theories About the Origin of Life in Percentages of Participants per Condition

Preference	Threat (%)		No threat (%)	
Intelligent Design (ID) versus	ID	(TE)	ID	(TE)
Darwin's Theory of Evolution (TE)	22	(78)	4	(96)[a]
Conway-Morris's Theory of Evolution	CM	(TE)	CM	(TE)
(CM) versus Darwin's Theory	33	(67)	5	(95)[b]
of Evolution (TE)				
Intelligent Design (ID) versus Conway-	ID	(CM)	ID	(CM)
Morris's Theory of Evolution (CM)	16	(84)	12	(88)[c]

Note: rows differ with [a]$p < .06$; [b]$p < .05$; [c]$p > .30$.
Based on Rutjens, van der Pligt, & van Harreveld, 2010.

the context of compensation for control-threat, therefore, the availability of such a perspective can render the specific belief in a controlling God superfluous.

It is important to note that participants in the previous study were generally secular. In a second study (Rutjens, van Harreveld, van der Pligt, & Bremmer, in preparation) we examined these ideas in a religious sample of participants. These participants were also asked to indicate their preference for the orderly versus non-orderly perspective on evolution. Here, control-threat led to a shift from 50 percent to more than 80 percent preferring the orderly perspective, but only when there was no explicit opportunity to affirm belief in an intervening God that imbues the world with order. This result again shows that people who are motivated to restore order perceptions can turn to order-providing worldviews that do not contain an obvious agent.

The results described above give rise to the possibility that such differences could also be found between different scientific theories (e.g., in the field of psychology) that aim to explain the same phenomenon. It is feasible that some scientific theories imbue the world with order to a higher extent than other theories. Thus, in a second set of studies (Rutjens, van Harreveld, van der Pligt, Kreemers, & Noordewier, in press), we further explored the idea that scientific theories that offer order become more attractive when the individual experiences threat. In this series of studies we also looked at the role of valence in order restoration. As noted previously, the ability to construe randomness as part of a positive narrative (e.g., windfalls or winning the lottery) has been argued to neutralize the threat of unpredictability (Krantz, 1998). However, according to our perspective, order restoration is a primary need that might supersede other needs. Accordingly, we wondered whether threat might lead people to sometimes favor negative predictability over the uncertain possibility of more hopeful outcomes. Such a finding would show that the motivation to perceive order is strong enough to override valence.

To investigate this, we looked at the prominence of "stage theories" in various domains of science. Inspired by an observation made by Shermer (2008), who suggested that an important reason for the ubiquity of stage theories in science is that they satisfy people's need to detect patterns and meaning in the world, we conducted three studies in which the motivational effects of threat on preference for stage theories versus "continuum" theories were tested. Stage theories are characterized by the assumption that a certain process moves through an orderly and predictable series of steps, while continuum theories do not discern a clear sequence of steps and generally allow for more

variance caused by external variables (e.g., demographic and genetic variables that hinder or facilitate transition to a subsequent stage). For example, in the domain of moral development, Kohlberg's well-known stage theory argues that moral reasoning develops in six identifiable stages, while critics of this view argue that there is overlap between these stages to such an extent that moral development cannot sufficiently be captured by a stage theory. Similarly, in the domain of grief recovery, critics of the well-known five-stage theory of grief argue that there are many variables that exert influence over the duration and order in which stages, such as denial and anger (if these exist at all), occur (e.g., James & Friedman, 1998). In our studies, participants were subjected to a control-threat or a randomness prime (Kay et al., 2010a) versus a no-threat condition. Subsequently, they were asked to choose between a stage theory and a continuous alternative in one of the domains of grief, moral development, and dementia. The stage theories in each of these domains were the famous five stages of grief theory (Kübler-Ross, 1969), Kohlberg's (1958) stage theory of moral development, and a stage theory of Alzheimer's disease (Reisberg et al., 2003). Participants indicated which theory they thought best explains the process at hand.

As an example, the stage theory of grief describes five stages in the process of dealing with loss, from denial to acceptance. The description of the relevant continuum theory against which this was contrasted pointed to the absence of a discernible and clear sequence of adaptation phases and argued that bereavement is different for each individual (and depends on personality, age, demographic variables, etc.). Similarly, Kohlberg's theory of moral development describes six identifiable developmental stages that occur for every individual, while the alternative theory argued that moral development should be regarded as a continuum; it is possible that people skip certain stages, never reach a certain end stage, or regress to a previous stage. Finally, the stage theory of dementia described Alzheimer's disease progressing in five stages, from very mild to very severe cognitive decline, whereas the alternative continuum theory argued that there is no evidence for clearly discernible stages, and that there are large individual differences with regard to the severity of the symptoms. Importantly, in this study, the description of the continuum theory highlighted the hopeful possibility of living in relative health for a considerable number of years after being diagnosed with the disease (i.e., an uncertain but positive outcome not permitted within the stage theory).

As expected, threat increased preference for the stage theory in all three domains (see Table 3.2). Importantly, this was equally the case in the domain of dementia, in which the stage theory embodied negative

Table 3.2   Percentage of Participants Preferring a Stage Theory (ST) Over a Continuum Theory (CT) as a Function of Threat

Preference	Threat (%)		No threat (%)	
Grief (Experiment 1)	ST	(CT)	ST	(CT)
	18	(82)	0	(100)
Dementia (Experiment 2)	ST	(CT)	ST	(CT)
	46	(54)	16	(84)
Moral development (Experiment 3)	ST	(CT)	ST	(CT)
	48	(52)	18	(82)

Note: in Exp. 1 and Exp. 2, $p < .05$; in Exp. 3, $p = .053$.
Based on Rutjens, van Harreveld, van der Pligt, Kreemers, & Noordewier, in press.

predictability and the alternative theory was more hopeful but less orderly. Indeed, while the majority of the non-threatened participants preferred the uncertain possibility of a more hopeful outcome, upon threat, close to 50 percent of the participants opted for the negatively valenced predictable stages describing the development of Alzheimer's disease. In these studies, we also obtained evidence for the underlying motivational mechanism. Specifically, we assessed participants' (illusory) perception of patterns in a modified snowy pictures task (Whitson & Galinsky, 2008). Perceiving patterns where there are none can be seen as the product of a motivated search. Consistent with this reasoning, the effect of threat on preference for stage theories was mediated by the number of illusory patterns that participants identified. Thus, threat triggers the motivation to impose order on chaos, and this results in clear preferences with respect to scientific theories. Importantly, the motivation to regulate a threat to control and order seems powerful enough to override people's preference for positively valenced outcomes. What are the most likely consequences of these preferences and what makes order perceptions override valence? Although evidence for the affective consequences of threat compensation is currently scarce (see Rutjens, van Harreveld, & van der Pligt, 2010), it is likely that affirming order and predictability help reduce the anxiety and negative arousal associated with threat (Kay et al., 2010b). Thus, threat compensation may help to restore the affective status quo by reducing feelings of anxiety and stress.

Together, the above studies attest to the idea that compensation for threat can occur outside the realm of religious and political system bolstering, and that this need not involve an external agent. Rather, threat seems to motivate people to actively seek, and prefer, order and predictability in a more dynamic and diverse way than might be

expected based on earlier research and theorizing. In the next section, we explore the implications of this further. Specifically, we will review recent research showing that the motivational effects of threat can be future-oriented, rather than simply preserving the status quo, and can be directed at moral, societal, and technological improvement and as such facilitate societal engagement. Thus, when we think about how crises induce threats to control and predictability (e.g., terrorism or financial crisis), it might be possible to identify ways to regulate these threats that involve positive and progressive beliefs and preferences, and thereby allow for a form of restoration that moves individuals to optimism about the future and positive engagement with others in society.

The Effect of Threat on Belief in Societal and Scientific Progress

"The desire to understand the world and the desire to reform it are the two great engines in progress." This quote from Bertrand Russell (1929, p. 184) resonates with a more recent observation by John Gray, a British political philosopher, who argued that the promise of progressing knowledge enables humanity to increase control over the world (Gray, 2002). Belief in progress might be defined as faith in the idea that the course of human history is not cyclical, but rather follows an upward linear trend. In other words, history spirals upward and always returns in net gain (Wagar, 1972); an advancement that is facilitated by humanity's ability to learn from the past and the capability to generate scientific, societal, and moral advances. In the context of threat, it is not hard to envision how a belief in societal and technological progress might assuage perceptions of low control and randomness. The notion of progress provides the individual with the belief that things will (eventually) be under control (much like order-providing systems such as a strong government or a controlling God can affirm the belief that things *are* under control and thus orderly). Through progressing knowledge, humankind becomes more able to control its environment.

Obvious examples of this can be found in the medical sciences, where the development of new medicines or the refinement of surgical techniques can facilitate progress and help to control problems that until then were more or less uncontrollable (e.g., diseases or the medical consequences of natural disasters). Similarly, advances in genetic modification might prove to be helpful to solve large-scale famines and thus combat resource scarcity (Borlaug, 2000). There are

also various examples in societal and more ethical domains. Something that is problematic today (e.g., the role of banks in the recent financial crisis) can be different tomorrow (e.g., banks will be kept under tight control due to new regulations), and will hopefully even be better (i.e., representing progress). Thus, progress promises future control. Moreover, as argued by Bury (1920/1955), a gradually progressing course of human history is *orderly* and relatively predictable.

In this section we investigate belief in progress as a motivational consequence of threat. To explore this issue, we conducted a set of studies in which we assessed the effects of control-threat on the motivation to defend the notion of progress, willingness to invest in progress-related research and development, and general faith in moral, societal, and technological progress (Rutjens, van Harreveld, & van der Pligt, 2010). In the first two of these studies, participants were presented with a brief essay in which the author claimed that human progress is an illusion, focusing in particular on the cyclical nature of history (see Gray, 2002). Participants were subjected to control-threat or not (as in previous studies, the manipulation consisted of a memory task in which participants were asked to recall a situation over which they either lacked or had control), and then read and evaluated either the "progress is an illusion" essay or a negative essay about an unrelated topic. We hypothesized that threatened participants would be more inclined to defend the notion of progress, as indicated by their ratings of the author of the essay denying progress. Indeed, both studies showed that threat led to more negative author evaluations (there were no effects of threat on the evaluations of the negative essay that was unrelated to progress).

A further experiment examined control-threat in a real-world situation. Here, airplane passengers (whilst airborne) and control participants (approached on a university campus) filled out a questionnaire in which perceptions of control and belief in progress were assessed. All participants were students; age and gender did not differ between the two groups. They were asked to indicate the amount of control they were currently experiencing, and subsequently completed five items measuring belief in progress. Indeed, perceptions of control were lower among airplane passengers and, as expected, they also showed an increased belief in progress. Further analyses showed that control perceptions mediated the effect of being airborne (or not) on participants' belief in progress.

A final laboratory study examined the effects of threat on the willingness to support investments in progress, in the form of three ranking tasks. The first task focused on science funding. Participants were asked to imagine that they were members of a committee of the

Dutch Science Foundation and had to decide which of five areas should receive funding priority. We found that threat led participants to assign the highest budget to progress-related research areas such as stem-cell research and nanotechnology, as opposed, for example, to research on the history of Dutch culture or on business administration. In another task, revolving around the topic of reducing carbon dioxide emission, control-threatened participants preferred assigning priority to the development of hybrid cars and electric vehicles, as opposed to options such as road pricing and car use restrictions. A final task assessed general belief in moral/societal and technological progress by presenting participants with empty graphs, in which they could draw a line that indicated their views on the future. Participants were asked to think about the (un)controllability of life and subsequently indicated whether they believed in societal and scientific progress. Indeed, threatened participants expressed an enhanced faith in progress, as indicated by the slope of the lines they drew (i.e., the vertical difference between the starting point and endpoint of the lines was larger for threatened participants, indicating a more positive view on future developments).

In sum, the above studies show that control-threat increases the motivation to believe in progress. Belief in progress is, as Russell (1929) stated, fueled by mankind's desire to exert control over the world (i.e., understanding and reforming it). It provides individuals with the promise that things eventually will be under control, thus functioning as a compensatory control mechanism and provider of order. Compared to religious and governmental sources of compensatory control (Kay et al., 2008), belief in progress does not however involve an explicit external agent or entity (God, government, ingroup) but rather entails a more abstract belief system that revolves around the notion of a progressing humanity. As such, it also harbors a restorative quality when faced with a threatening context. We expect this enhanced belief in progress to have similar beneficial effects as the affirmation of religious and scientific belief systems. It removes the sharp edges of the negative affect associated with randomness and unpredictability, and as such it likely helps to restore the affective status quo.

It might well be that stressing the belief that things will get better also has motivational consequences in the sense that it helps to prevent maladaptive coping styles such as fatalism (e.g., Rippetoe & Rogers, 1987). However, as stated earlier, the affective underpinnings of threat compensation are still not well documented, and future research will hopefully more fully illuminate its dynamics. An interesting avenue of research might be to compare different compensatory strategies and assess their effectiveness in the context of different types of threat.

Although, of the belief systems described in this chapter, belief in progress most clearly impacts engagement with society, it is at the same time the coping strategy that is the least directly relevant in the here and now. That is, rather than facilitating immediate improvement, this belief focuses on the promise that things will get better in the future. In the context of a distanced threatening context that is not immediately impacting on people's lives (e.g., a technological disaster on another continent, or global warming concerns), belief in progress might prove to be a potent threat regulation mechanism. However, in the context of a more immediate and proximal threat (e.g., a nearby terrorist attack), clinging to one's religious beliefs or sociopolitical system might prove to be the preferred means of threat regulation, because such belief systems provide compensation that is more direct and as such facilitate more or less immediate perceptions of order and control.

In conclusion, the research presented in this part of the chapter further attests to the dynamic nature of threat regulation. Upon experiencing threat, people can find solace in the idea that, with time, things get better and mankind undergoes progress in its quest to "understand and reform the world" (Russell, 1929). Again, this implies that the threat that is associated with crisis might facilitate the motivation to regulate the threat in diverse and dynamic ways. Bolstering faith in the progress of both science and society appears to provide a potent means to cope with threatening contexts. As such, one could argue that there can even be positive psychological benefits stemming from the motivation to regulate psychological threat.

Discussion

Modern societies frequently encounter crises, both human-induced and natural. These crises can instill a sense of threat in individual members of society – specifically a threat to their cherished perceptions that they live in an orderly, predictable, and sensible world. Such threat to order and control, in turn, triggers the motivation to increase and bolster different types of beliefs that arguably serve as threat regulation and compensation. These belief systems help the individual to cope with, or compensate for, the experienced threat by affirming that the world is an orderly place in which things and events make sense.

Considerable research has highlighted the negative consequences of such motivated support for belief systems, in particular the ways in which this can lend support for the status quo and the unfortunately related consequences of intolerance and prejudice, authoritarianism and nationalism. In this chapter we have argued that motivated support

for particular belief systems, however, is not restricted to a defensive return to the status quo. Specifically, the current chapter presents findings that illuminate the fact that the mechanisms of threat regulation can be more diverse and dynamic. Threat regulation can involve attempts at compensatory perceptions that do not rely on an external system or agent. Bolstering or reaffirming available religious and political belief systems, and the external agents these imply (e.g., a deity, a governmental system, or the ingroup), are, as might be concluded from this chapter, optional but not necessary when facing the consequences of crisis and the uncertainty, chaos, and unpredictability that stem from it. Indeed, as argued in this chapter, religious and political beliefs seem to entail only one way of regulation; people may also endorse alternative affirmations of an orderly world when confronted with threat.

Together, the research described here provides an indication that the widely reported "defensive" ways in which people respond to threat (see, e.g., Banfield, Kay, Cutright, Wu, & Fitzsimmons, 2011; Fischer et al., 2006; Gelfand et al., 2011) seem to represent only one side of the coin. Threats to order, predictability, and control trigger specific psychological needs (i.e., restoring perceptions of order), but the ways in which people can try to regulate these threats are more diverse and versatile than might be concluded from previous research, which tends to focus on the more defensive and sometimes deleterious outcomes associated with threat regulation and compensation. Of course, we do not wish to argue against religious and sociopolitical beliefs as powerful sources of threat compensation, nor that these beliefs are necessarily defensive. Nevertheless, people can have recourse to fundamentally different belief systems and perceptions of the world in order to regulate threat; for example, belief systems that are aimed at change and progress rather than consolidation and conservatism. This opens up interesting and hopeful avenues for future research aimed at understanding the various responses to threatening contexts, as well as for potential interventions in the case of crisis. For example, the effects that societal threats (e.g., uncertainty and unpredictability sparked by the recent financial crisis) can have on authoritarianism, stereotyping, and intolerance, might be assuaged by alternative order affirmations (e.g., reminding people of other domains in life where there exists control and predictability, such as in the context of scientific theorizing or societal advances). Indeed, threat regulation can be progressive and aimed at the future, opening windows for an engaging and future-oriented way of coping (i.e., belief in societal progress). Offering compensatory order and/or hope for progress ("yes we can") thus

harbors the potential to emerge from the aftermath of crisis in such a way that not only reduces threat, but also perhaps advances us to a better state than the pre-crisis status quo.

Arguably, many of the threats that are discussed in this chapter affect the fundamental human motivation to control and predict the social environment, and to perceive the world as an orderly and sense-making place. Unfortunately, modern societies are riddled with complexity and uncertainty. Societal and natural crises that disrupt people's regular perceptions and expectations of the world have the potential to profoundly impact on individual belief systems and preferences, often resulting in more or less defensive attempts to regulate, or compensate for, the threatening information. It seems reasonable to conclude that the way people respond to threat is strongly driven by the available compensatory belief systems. If a certain threat emerges, it is likely that people will draw on the compensation strategies currently available. For example, as we have shown in the first study described in this chapter, lack of control increases the appeal of intelligent design relative to evolutionary theory. It is only when evolution is explicitly framed as an orderly process that this preference shift is cancelled out. However, in lay perceptions of the process of evolution, randomness and meaninglessness arguably play a large role (Rutjens, van der Pligt, & van Harreveld, 2010; Tracy, Hart, & Martens, 2011). It also seems likely that threat initially motivates people to seek compensatory control by bolstering faith in the currently dominant sociopolitical system, at least as long as there is no viable alternative available. If however scientific and technological sources of order are explicitly present, we might see a different response to threat.

In a similar vein, the uncertainties and unpredictability caused by the recession prior to the 2008 United States' presidential election might have helped to tip the balance in the direction of Obama and his campaign of hope and progress, precisely because the recession reflected badly on the Bush administration. Thus, instead of attempting to regulate threat by aligning oneself with the Bush campaign, Obama's message of hope in the face of uncertainty might have come across as particularly appealing. It might therefore indeed be the case that the ways people respond to threat can to a certain extent be directed by (a) explicitly framing certain compensatory belief systems as order-providing and threat-reducing, and (b) facilitating behavior that helps to restore order perceptions. As a simple example, recent research has yielded evidence that a threat to order can facilitate sustainable behavior (Meijers & Rutjens, in preparation) and prosocial behavior (Banfield, Nadolny, & Kay, 2011), because both types of action can be construed as a means to effectuate control and restore

perceptions of order. Thus, facilitating opportunities to engage in behavior aimed at realizing progress seems potentially to cut both ways, in the sense that this not only reduces psychological threat (thereby dispelling the need to engage in more defensive means to regulate threat) but simultaneously fosters desirable behavior.

To conclude, in this chapter we hope to have shown that threat regulation is a more dynamic process than is often assumed, and that as such it is feasible that potentially disruptive consequences of threat can be countered by affirming a variety of alternative threat-assuaging beliefs. Indeed, our findings indicate that it is even possible to emerge from crisis in a future-oriented motivational state, in which there is room for engagement and the opportunity to advance.

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